

# CONTRIBUTION OF CUSTOMS INFORMATION SYSTEM TO THE PERFORMANCE OF THE CUSTOMS DEPARTMENT UGANDA REVENUE AUTHORITY: A CASE STUDY OF CUSTOMS KAMPALA REGION

**BY**

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**A DISSERTATION SUBMITTED TO HIGHER DEGREES DEPARTMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTERS DEGREE IN MANAGEMENT STUDIES (PROJECT PLANNING AND MANAGEMENT) OF UGANDA MANAGEMENT INSTITUTE**

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## DECLARATION

I, **Lillian Joy Namulesa**, declare that this is my original work and has, to the best of my knowledge, never been submitted for award of a degree or any other award in any university or other institution of higher learning.

Signature: ……..

Date: …….

## APPROVAL

We certify that **Lillian Joy Namulesa** prepared the research proposal under our guidance and supervision. We confirm that this is the researchers own original work.

Name: **Mr. Benon Basheka**

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Signed…….

Date…….....**.....**

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Signed…….

Date…….....

## DEDICATION

This work is dedicated to my dear family; Maliza my grandmother whose memory I will always cherish, Augustine my husband and our dear children; Noella, Lydia and Edgar; my parents, sisters and brothers whose endeavors and encouragement for higher education resulted into production of this work.

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## TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ASYCUDA++ | Automated System for Customs Data |
| B2B | Business-to-Business linkage |
| B2C | Business to Customer linkage |
| BIS | Business Information System |
| C2C | Customer-to-Customer linkage |
| CIS | Customs Information System |
| CRM | Customer Relationship Management |
| CVI | Content Validity Index |
| DIAD | Delivery Information Acquisition Device |
| DTI | Data Trade Input |
| EDI | Electronic Data Interchange |
| ERP | Enterprise Resource Planning |
| ESS | Executive Support System |
| IS | Information Systems |
| IT | Information Technology |
| MIS | Management Information System |
| OECD | Organization for Economic Commission on Development |
| OIs | Information Obligations |
| RADDEx | Revenue Authorities Digital Data Exchange |
| RBT | Resource Based Theory |
| SAQ | Self-administered questionnaires |
| SCM | Supply Chain Management |
| SEM | Strategic Enterprise Management |

| | |
|---|---|
| SIMBA | A Customs Information System equivalent of ASYCUDA++ used by Kenya Revenue Authority |
| ST | Systems Theory |
| TPS | Transaction Processing System |
| TQM/TQC | Total Quality Management and Total Quality Control |
| TTF Theory | Task-Technology Fit Theory |
| UMI | Uganda Management Institute |
| UNCTAD | United Nations Conference on Trade and Development |
| UPS | United Parcel Service |
| URA | Uganda Revenue Authority |
| WCO | World Customs Organization |
| WTO | World Trade Organization |

## ABSTRACT

The study examined the contribution of Customs Information System (CIS) as the independent variable to the performance of URA's Customs Department as dependent variable. Performance measures were efficiency, control, and administrative burden and the moderating variable was capacity of users. To explain how CIS could help users perform and control tasks employed the Systems Theory, Resource-Based Theory and Task Technology Fit Theory. It also used a case study design using both quantitative and qualitative approaches. A population sample of 114 was selected using stratified and purposive sampling techniques. Quantitative data was analyzed using frequencies, percentages, mean, standard deviation and correlations established relationships while regression assessed the contribution of the CIS to performance in the Customs Department. Qualitative data analysis involved data reduction, data display, analysis and interpretation. Findings revealed a strong significant relationship between the CIS and efficiency ($r = .658$, $p = .000$); CIS and control ($r = .711$, $p = .000$); except administrative burden which was ($r = -.104$; $p = .334$) in performance of the Customs Department. The CIS accounted for 43.2% of variance in efficiency in performance and 50.5% of variance in control but did not significantly affect the administrative burden.

Some of the lessons learnt from the study are; the importance of IS/IT in supporting organizational performance by improving efficiency, giving due consideration to antecedent factors. With regard to control, nature of jobs and values, referred to as standards are explained. Furthermore, IS explains how administrative burden arising from tax regulations can be reduced, while the importance of fit between technology and capacity of users enable the achievement of intended goals. It was concluded that CIS significantly affected performance of the Customs Department. Therefore, URA should continue using CIS by improving data input, processing, output and user capacity to further improve efficiency, control and reduce the administrative burden in performance of the Customs Department.

# CHAPTER ONE

# INTRODUCTION

## 1.0 Introduction

The study examined the contribution of the Customs Information System (CIS) namely, the Automated System for Customs Data (ASYCUDA++) to the performance of the Customs Department in Kampala. The justification for the study was to establish whether project objectives ASYCUDA++ set out to achieve had been achieved by evaluating the extent these objectives had contributed to performance in Customs Department. CIS (with dimensions of input, processes and output) was conceptualized as the independent variable while performance of the URA Customs Department (with dimension of efficiency, control and administrative burden) was conceptualized as the dependent variable. Adopting Amin's (2005) approach, this chapter was divided as follows: background, following historical background, theoretical background, conceptual background and contextual background, statement of the problem, purpose of the study, objectives of the study, research questions, hypotheses, conceptual framework, significance of the study, justification of the study, scope of the study and operational definition of terms and concepts.

## 1.1 Background to the Study

### 1.1.1 Historical Background

Automated information system (IS) evolved in the last 50 years driven by internal organizational needs such as efficiency, improved control and reducing costs (Pearlson & Saunders, 2006). First, the focus was on lowering transaction costs. Next was to provide support to managers by collecting and distributing information. Following this was to redesign business processes. As competitors built similar systems, organizations lost the

advantage they held from their information systems, and forces that existed prior to the new technology drove competition within a given industry.

Pearlson and Saunders (2006) categorized five eras (era 1 - the 1960s, era II - the 1970s, era III - the 1980s, era IV - the 1990s and era V - the 2000+) of the evolution of automated IS. In the 1960s, the primary role of IS was to achieve efficiency by automating existing paper based operations, which previously were manual. The justification for expenditure on IS in the 1960s was return on investment, which can measure the performance of an organization (Bocij, Greasely, Chaffey & Hackie, 2006; Pearlson & Saunders, 2006; Saffady, 1998).

In the 1970s, the primary role of IS was to achieve effectiveness by providing solutions to problems and creation of opportunities for performance (Yeates & Cadle, 1996 & Bocij, Greasley, Chaffey & Hickie, 2006). The justification for expenditure in automating existing manual systems and streamlining procedures and processes was to increase productivity and better decision quality (Bendoly & Schoenherr, 2005).

In the 1980s and 1990s, the primary role of IS was strategic to increase individual and group effectiveness and transform the industry/organization and the justification for expenditure was gaining competitive positions (Laudon & Laudon, 2007; Pearlson & Saunders, 2006; Laudon & Laudon, 2007). In the era 2000+, the primary role of IS included business process value addition and creating corroborative partnership while the justification for expenditure was adding value to the business (Pearlson & Saunders, 2006).

The CIS at URA was initially manual and predominantly paper based resulting in delays in processing transactions, inaccuracies in tax computation, difficulty in monitoring, control and accountability. The Customs Department adopted an automated CIS in mid 1990s, starting with ASYCUDA version 2.7 later upgraded to ASYCUDA++ in 2000. The CIS/ASYCUDA++ facilitated management in transaction processing by distributing captured data to Customs staff and stakeholders all-over the country to enable; coding, naming, describing, classifying and computing taxes, monitoring and accounting for all imports/exports cleared through Customs Department. The primary role of the CIS in Customs Department was to transform strategically customs processes and procedures from being predominantly manual and cumbersome to automated, harmonized and simplified in line with global customs reforms under World Customs Organization- WCO (Granger, 2008) for better performance.

The ASYCUDA++ is characteristic of the 1980s, 1990s and to some extent of 2000 that is user driven and value adding to business processes and business eco-systems, linking Customs offices to; banks, other customs in the region like the Rwanda and Kenya tax bodies through Revenue Authorities Digital Data Exchange (RADDEx); logistics providers and Data Trade Input (DTI) centers.

### 1.1.2 Theoretical Background

In this study, the following theories were adopted: Systems Theory (ST), Task-technology fit (TTF) theory and Resource Based Theory (RBT). Each of these links CIS to one or more variables of performance as presented in the following subsections:

#### 1.1.2.1 Systems Theory

Systems Theory (ST) by Bertalanffy (1951) focuses on different subsystems of an organization, which are integrated and interrelated into a whole for efficient organizational performance (Kerzner, 1987; Bocij et al., 2006). ST states that if subsystems are aligned to interact with one another, organization performance will improve. In this study, the different subsystems of an organization were the CIS input, processing, and output subsystems. From the theory, if the three are not integrated and interrelated, there will be a decline in the organizational performance in terms of efficiency, control and administrative burden and vice versa. For example, if data is not correctly input it will negatively affect data processing and output which in turn reduces the organization performance.

#### 1.1.2.2 Task-Technology Fit (TTF) Theory

The current emphasis on business productivity and efficiency suggests an additional theory, Huber's (1990) Task-Technology Fit. It suggests that a better fit between technology functionalities, task requirements, and individual abilities will lead to better performance. In the context of information systems, technology refers to tools such as computers (hardware and software), which individuals use in carrying out tasks. Tasks are defined as the actions users of the technology undertake and in this study, they include data input, data processing and data output. According to the TTF, in order to perform these tasks, the technology must be suitable and the people performing the tasks must be competent. If these conditions are satisfactory, improvement in organizational performance follows. On the contrary, if the technology used is not suitable and people performing the tasks are incompetent, execution of the tasks will be ineffective consequently the performance of the organization declines. Therefore, the theory helped

to explain how tasks performed by the CIS (data inputting, processing and outputting) affected ustoms Departments' performance in terms of efficiency, control and administrative burden.

#### 1.1.2.3 Resource Based Theory (RBT)

Another theory adopted was Barney's (1991) Resource Based Theory (RBT), which combines the rationale of economics with management perspective by emphasizing resources that enable firms to earn sustained returns. It states that sustained returns arise if firms gain access to and properly utilized key resources (Barney 1991). The rationale of economics is about improving organizational performance while the management perspective is how organizations gain access to and utilize key resources. In view of this study, these returns were in terms of efficiency, control and administrative burden and the key resource was the CIS with indicators of input, process and output. RBT helped to explain how the Customs Department gained access to and utilized key resource of the CIS, which included data that was input, processed and output by the CIS. It further helped to explain whether access to and utilization of data that was inputted, processed and outputted increased performance of Customs Department in terms of increased efficiency, control and reduced administrative burden or lowered the performance in terms of decreased efficiency and control and increased administrative burden.

### 1.1.3 Conceptual Background

This study conceptualized a relationship between the CIS (the independent variable) and the performance of the Customs Department (the dependent variable). The CIS indices (input, processes, and output) were predictors of the Customs Department performance indices (efficiency, control and administrative burden).

Any information system (IS) such as the CIS refers to a set of interrelated components that collect, process, store, retrieve, and distribute information to support decision-making and control in an organization and also help managers and workers to analyze problems, visualize complex subjects and create new products (Laudon & Laudon, 2006). The CIS, which was under study in the Customs Department, was the Automated System for Customs Data (ASCYUDA++).

Input in this study was conceptualized as the capturing of raw data from within the organizations and external environment into the CIS (Laudon & Laudon, 2006). The study focused on time taken to capture data including the content and form of data captured and once processed how these affected the Customs Department performance in terms of efficiency, control and administrative burden.

Processing referred to the conversion or manipulation of raw input into a form that was more meaningful to managers (Bocij *et al*., 2006). According to Prokopenko and Klaus (1996) and Bocij *et al.,* data processes involves verification, classification, computation, selection and summarizing. Thus, in this study, verification, classification, computation, selection and summarizing were taken as processing indices, which were examined in relation to how they affected the Customs Department performance in terms of efficiency, control and administrative burden.

Output on the other hand referred to the distribution of processed information to external users and workers in the organization for management control and decision-making (Bocij *et al*., 2006). The output indices include information and feedback. These were

examined to determine how they affected the Customs Department performance in terms of efficiency, control and administrative burden.

Performance is a multidimensional variable that has no universally accepted definition (Barnards, 1938: Shand, 1996). Some authors define performance at the process level (Ittner & Larcker, 1997: Oakland, 1993) while others define performance in relation to outputs (Devanport, 1993: Petter, 2008). At the output level, the study considered efficiency, control and administrative burden as measures of organizational performance. A process is a set of activities that when completed together produced results to the customer (Ittner & Larcker, 1997). Efficiency had indicators of accuracy, processing time, processing cost and operational excellence (Prokopenko & Klaus 1996; Laudon & Laudon, 2006). Control involved among others, methods, policies and procedures that ensure protection of organizations assets, accuracy, and reliability of record and operational adherence to management standards.

Control exercised by management involved establishing standards and objectives, inspection and later on comparing actual performance against the expected and monitoring compliance. Control involved both preventive and corrective actions (Siriyam, 2007). Lastly, businesses spend time and money in order to comply with administrative regulations. The costs incurred during this compliance process are often referred to as "administrative burden". In other words, the administrative burden of regulation is the cost in time or money of regulators' inspection and enforcement activities. In this study, administrative burden was taken to refer to the part of administrative costs in terms of time or money that businesses sustain repeatedly simply because it is a regulatory requirement.

This study took into consideration the moderating variable as capacity of users. This was because to input the raw data, process it and then output it, requires people with the capacity to do these activities (Laudon & Laudon, 2006). As such, people's training background and experience were considered as the moderating variable.

### 1.1.4 Contextual Background

The project justification for upgrading from ASYCUDA version 2.7 to ASYCUDA++ was that the government of Uganda saw it fit to adapt an already existing software package, based on modern client-server architecture, using the most reliable operating systems and data base platforms as satisfactory key features (Project Document, 2000). In an effort to streamline and harmonize the customs procedure, the government of Uganda selected ASYCUDA program in June 1996 as a tool for modernization of customs. In June 1997, within the framework of the ASYCUDA project TP-UGA/96/A48, URA implemented the first pilot site of ASYCUDA version 2.7 at Entebbe airport. The system was subsequently rolled out to five major sites including Kampala Nakawa long room, which accounts for 70% of the revenue. Rigidities and weaknesses in ASYCUDA version 2.7 led to upgrading to ASYCUDA++. The ASYCUDA++ was intended to facilitate the whole transit process in Uganda through automatic massaging system equipped with alarms to automatically write off bonds and reconcile transactions. The immediate objective of ASYCUDA++ project was to further improve efficiency in the customs clearance process, improve control and to reduce the administrative burden to the trading community among others (Project Document, 2000).

Despite the stated objectives, justifications and advantages of the system feature of ASYCUDA++, there was still delay in transaction processing time contrary to the set

standard time of 30 minutes to 2 days and frequent breakdown in the communication, which created customers dissatisfaction putting to question Customs Departments' performance (Time Release Study Report, Nov. 2008). The performance problems that were cited include failure in auto reconciliation of transactions leading to audit queries and non-adherence to set standards (Auditor Generals' Report, 2008/09). Delays and processing costs to both URA and the trading community were still an issue despite the upgrade (Project Team Report, 2008). Some of these performance issues have resulted into flaring tempers. A case in point (among other) is when the situation nearly exploded in November 2008 when Customs clearing agents and importers attempted to strike at Nakawa having run out of patience with an inefficient system (New Vision Newspaper, 1st Dec 2008). It was against this background, that there was need to investigate why the Customs Information System (ASYCUDA++) was not achieving its intended objectives.

## 1.2 Statement of the Problem

Despite the fact that 97% of customs operations were conducted using ASYCUDA++ to process customs data at URA, the objectives of improving efficiency in the clearance process and control including reduction of the administrative burden to the trading community were yet to be achieved. For example, despite upgrading to ASCYUDA++ using a lot of resources such as; time spent in project implementation, funds estimated at USD 291,540 used to recruit and train human resources (Project Document, 2000), there was still untimely sharing of information, failure in auto-reconciliation of transactions, persistent delays in processing transactions, insecure and inaccurate data output, and compromise in control standards (Project Team Report Jan, 2008; Auditor Generals' Report, 2008/09; Time Release Study Report, Nov. 2008). The constraints observed in

ASYCUDA++ put to questions the attainment of project objectives, Customs Department and URA's targets, and hence timely execution of national plans and programs.

It was hypothesized that the performance constraints were due to ASYCUDA++, which in this study was the CIS with dimensions of data input, data processing and data output. For example, stakeholders complained about frequent system breakdown and unreliable network often falling back to manual process, incomplete, outdated and unclean data, inconsistencies and delays in data input, processing and retrieval (Project Team Report Jan, 2008; Auditor Generals' Report, 2008/09; Time Release Study Report, Nov. 2008). However, since no study had been conducted to verify whether the performance constraints were related to the ASYCUDA++, this study was therefore conducted.

### 1.3 Purpose of the Study

The study examined the contribution of ASYCUDA++ to the performance of the Customs Department in URA.

### 1.4 Objectives of the study

The following objectives guided the study:

1. To assess the extent to which the CIS has contributed to the efficiency in the performance of the Customs Department.
2. To examine the contribution of the CIS on control in the performance of the Customs Department.
3. To assess the extent the CIS influenced the administrative burden in the performance of the Customs Department.

4. To examine the moderating effect of the capacity of users on the relationship between CIS and the performance of the Customs Department.

## 1.5 Research Questions

The study answered the following research questions:

1. To what extent has the CIS contributed to the efficiency in the performance of the Customs Department?
2. To what extent has the CIS contributed to control in the performance of the Customs Department?
3. To what extent has the CIS influenced administrative burden in the performance of the Customs Department?
4. What is the moderating effect of the capacity of users on the relationship between the CIS and the performance of the Customs Department?

## 1.6 Hypotheses

The study tested the following hypotheses:

1. The CIS significantly contributes to the efficiency in the performance of the Customs Department.
2. The CIS significantly contributes to control in the performance of the Customs Department.
3. The CIS significantly influences administrative burden in the performance of the Customs Department.
4. The capacity of users has a significant moderating effect on the relationship between the CIS and the performance of the Customs Department.

## 1.7 Conceptual Framework

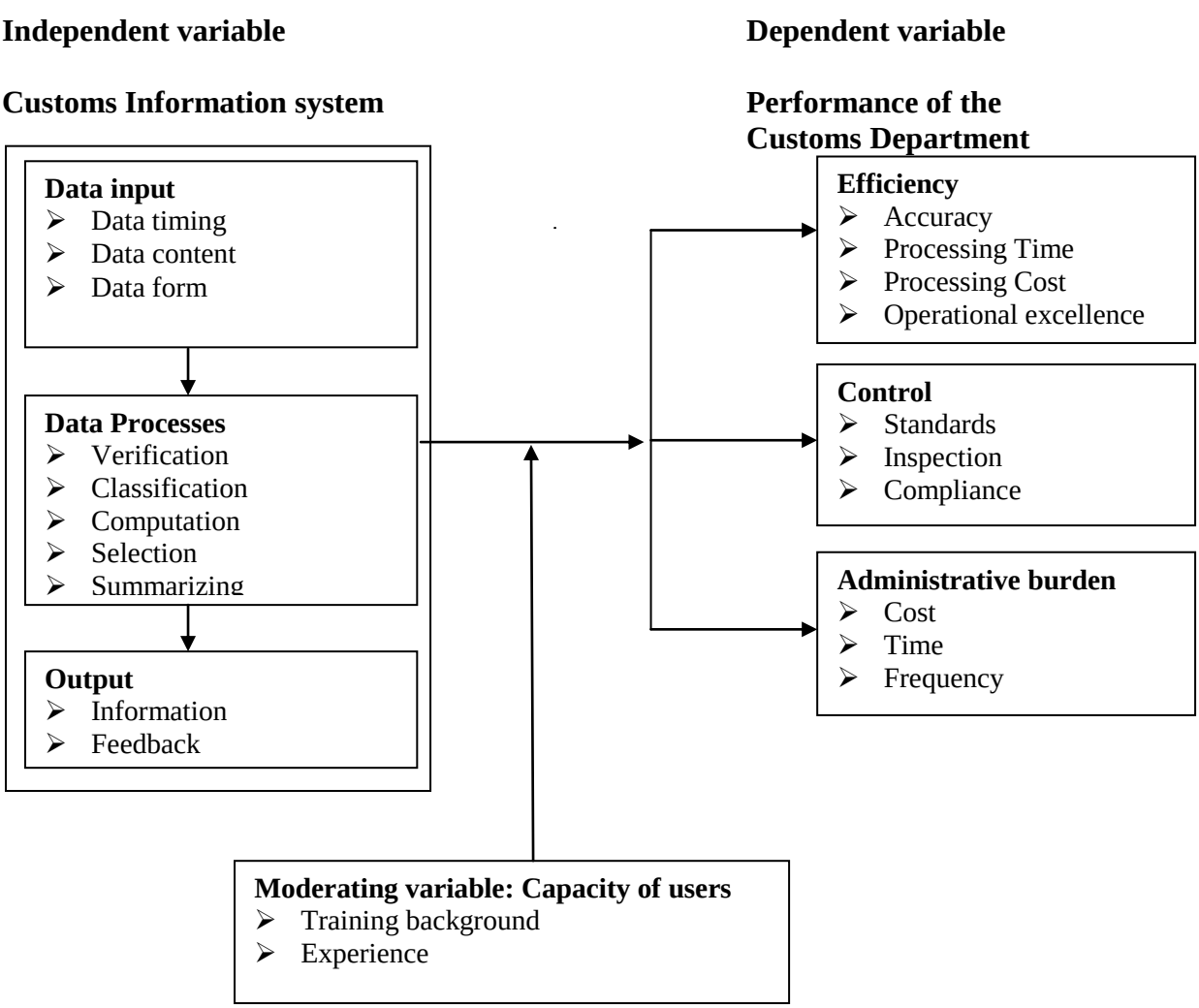


**Figure 1: Contribution of the custom information system to the performance of the Customs Department Uganda Revenue Authority**

**Source: Adapted from Systems Theory by Bertalanffy (1951); Task Technology Fit theory by Huber (1990) and Resource Based Theory by Barney (1991)**

It was conceptualized that CIS contributes negatively or positively to performance. The CIS was operationalized with dimensions of data input, data processes and data output (ASYCUDA++ Project document, 2000). Performance was operationalized with dimensions of efficiency, control and administrative burden (ASYCUDA++ Project document, 2000; Ittner & Larcker, 1997; Oakland, 1993; Devanport, 1993; Petter, 2008 and URA Corporate Plan, 2006-2010). Efficiency had indicators of accuracy, processing time, processing cost and operational excellence (Gustafsson, Nilsson & Johnson, 2003).

Control on the other hand had indicators of standards, inspection and compliance (Siriyam 2007; Bernerjee & Sachdeva, 1995; Jawadekar, 2003; Laudon & Laudon, 2006). Administrative burden had indicators of cost, time and frequency (Centre for Tax Policy and Administration, 2008). However, it was conceptualized that the contribution of the ASYCUDA++ information system on performance of the Customs Department can be affected by a moderating variable (capacity of users with indicators of training background and experience) by enhancing or compromising the effect.

## 1.8 Significance of the Study

The study findings about CIS and performance may be useful in the following ways: UNACTAD (ASYCUDA software developer), will take note of the system inefficiencies, inflexibilities, and control limitations (weaknesses) in terms of functionality. Doing so, will enhance data cleanliness, reliability, security and auto reconciliation, to avail accurate and complete record; and ease administrative burden associated with ASYCUDA++ in Uganda in order to improve it for current and future users.

Ministry of finance and the donor community may use the information to assess the capacity of URA to fully finance the national budget; and in addition take decisions and formulate policy guidelines.

The URA, Customs management and staff at large may be availed with a record of lessons learned, to guide review of strategies and actions aimed at achieving operational efficiency and control of revenue leakage using CIS. In addition, the CIS may avail information for policy formulation and decision-making, guide strategic planning, and so deliver better services in a changing environment.

To the trading community, study findings may highlight the burden imposed by regulators' demanding for compliance with information obligations such as, filling out forms, applying for permits and licenses, reporting business information, notifying changes by facilitating transaction processing aimed at reducing the administration burden in terms of time, cost and frequency, through improved communication and administration to satisfy customer.

Academicians and researchers may use the study findings to enrich their knowledge on how IS can improve performance in organizations in terms of efficient coordination of activities, better control of revenue leakage and means of easing of the administrative burden, since findings may be documented to enable sharing of information.

### 1.9 Justification of the Study

The study was undertaken to establish whether objectives ASYCUDA++ set out to achieve have been achieved (Meredith, 2000; PMBOK, 2001; Project Document 2000). The CIS/ASYCUDA++ was to provide information needed by Customs management to make decisions leading to efficiency in revenue collection, better control and reduce administrative burden to the trading community since its roll out in 2004.

The findings were expected to provide URA management with information to deal decisively with factors highlighted as constraining the system and so impacting Customs performance as per recommendation that have been made. Dealing with systems weakness may guarantee continued use of the system where possible, or seek for an alternative tool to modernize Customs revenue operations in order to meet Customs performance objectives.

## 1.10 Scope of the Study

The study covered the Kampala Customs Department (see Appendix I) managed by URA customs staff, and external users of ASYCUDA++ representing the Kampala trading community such as the customs clearing and forwarding agents, Data Trade Input (DTI) clerks, logistics suppliers and warehouse keepers. Content scope included the ASYCUDA++ input, processes, and output as dimensions of the independent variables while performance was operationalized into efficiency, control and administrative burden as the dimension of the dependent variables. In terms of time scope, the study covered 2005 when it was rolled out, to 2010, the period during which ASYCUDA++ has been widely used in Customs Department and when the department experienced inefficiency, control ineffectiveness and increased administrative burden in performance.

## 1.11 Operational Definition of Key Terms and Concepts

**Accuracy**: Refer to information meeting set quality criteria that is, being correct, complete, clear and free of un-necessary repetitions. Accuracy in the context of URA refer to correct assessment of revenue paid or payable from transaction data captured, customs entry forms being complete and accurate in content and form, information being clear and without duplication to collect the right amount of tax.

**Administrative burden:** Refer to part of administrative costs in terms of time and money spent by the business community, seeking approval of specific transactions by filling forms for submission to URA, from regulatory bodies confirming goods for clearance by customs comply with set regulations.

**Capacity of users:** This refers to training background and experience of users in the use of the CIS in URA. Users include customs officers, bank officials and the trading

community for example, clearing and forwarding agents, DTI owners and warehouse operators.

**Compliance:** Refer to adherence to customs systems, procedures, policies, laws and regulations in clearing goods in URA.

**Control:** Control refers to methods, policies and procedures that protect Custom Departments' information assets to ensure accuracy and reliability of record and operational adherence to management standards in URA customs transactions clearance of goods. Control in addition, refer to the ability of Customs Department to set targets, systems, process, procedures and mechanism for inspecting operations for any variances and undertake corrective action based on feedback received to ensure conformance to management standards in customs clearance of goods and revenue collection.

**Customs Information System:** In this study, refer to the URA Automated System for Customs Data (ASCYUDA++). It is an automated business information system used to process transactions declared to Customs Department for clearance, with dimensions of input, processes and output. The word ASYCUDA++ is used interchangeably to mean Customs Information System (CIS).

**Data:** Data refers to facts on customs declared transactions input and processed through the URA CIS into information output. Data has three indicators namely, time, content and form.

**Data Timing:** In this study refers to the timeliness, up to date and frequency of data captured.

**Data content:** Refers to the substance of data captured, that is, correctness, relevance and completeness of customs data declared.

**Data Form**: Refers to the level of detail, orderliness and clarity of data declared to customs.

**Data Input:** Refers to customs data as a resource captured in ASYCUDA++ in Customs Department and processed into information for further usage; data usefulness depends on it being relevant, complete, correct, clear and timely, hence its quality.

**Efficiency:** Is a dimension of Customs Department performance achievement that has indicators of; accuracy, process time, process cost and operational excellence. Accuracy is in revenue payable/paid and accounted for, processing time targets met for a given transaction, processing cost incurred against budget, and operational excellence in terms of value added in revenue collection and administration by adapting and using the CIS.

**Feedback** is a self controlling/checking mechanism that monitor and compares expected output to the desired output in the process of systems functionality aimed at meeting URA customs' performance goals.

**Information system:** Means a set of interrelated components that collect, process, store, retrieve and distribute information to support decision-making and control in URA for example Management Information Systems that support transaction processing.

**Inspection:** Is a process of checking and monitoring URA customs' transaction to control variation in quality, eliminate delays, difficulties in accountability, and minimize cost.

**Operational Excellency**: Is achieving efficiency in resource utilization, minimizing wastage, and achieving high productivity output in number of transactions and amount of revenue in a given time as value addition to business operations to meet performance targets set by Customs Department.

**Output:** Is the information from the system in terms of URA revenue statistics and reports for further use. It also refers to availability of quality information from established database and ability to obtain feedback for further action.

**Performance:** Refer to efficiency, control, and administrative burden in Customs Department clearance process of goods as defined earlier on in the customs context.

**Processes:** Refer to action relating to verifying, classifying, computing selecting and summarizing input data to generate output from the URA CIS.

**Processing cost**: Is an expense in monetary terms for processing of a transaction through the customs systems from the time transaction data is captured until goods are released and delivered.

**Processing time**: Is the period taken from start of the processing of a transaction through the customs systems until goods are released and delivered.

**Standards**: Refers to planned performance targets, policies and guidelines, methods and procedures that guide action in Customs Department.

**Users:** Are the people within and outside the Customs Department authorized to interface with the ASYCUDA++ information system.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

This chapter is a review and evaluation of literature on information system (IS) and organizational performance. The first section is the theoretical review. This is followed by related literature on IS and performance. The last section is a summary of the literature reviewed. The review enabled the researcher identify and understand relevant theories including concepts that underpin the study to explain events in the area of study as conceptualized (Amin, 2005). The review involved the researcher analyzing and evaluating information and documents related to this study (Amin 1997). By doing so, evidence of the contribution, weaknesses, gaps and lessons learned from available literature on IS in relation to how they have impacted performance and how they could be applicable in URA were revealed.

## 2.1 Theoretical Review

### 2.1.1 Systems Theory

Systems Theory by Bertalanffy and Boulding as cited by Kerzner (1987) explains the importance of information systems to the performance of organizations. The theory considers the organization to be made of sub systems integrated and interrelated into a whole. The theory helps to understand how sub systems in an information system interact and are coordinated by information exchange to meet set organizational goals. Bocij et al. (2006) argue that for business systems having a clear interface between subsystems is important to an efficient organization as it facilitates tracking and monitoring of transactions from one stage to another systematically. They gave an example of sales orders passed to finance system from the sales subsystem and then to distribution

subsystem in a clear and repeatable way. Bocij et al. (2006) observed that if there is no systematic flow, orders may be lost or delayed and customer service will decline hence lowering performance. The proponents of Systems Theory further propose the concepts **of input, processes and output.** The input is manipulated by processing it into output and a **feedback loop** between output and input provides data for **corrective action** in order to achieve the desired output. Kerzner (1987) and Bocij et al. (2006) further assert that a system operates as an open system having a dynamic interplay with its sub components and the environment where it get resources for production and that it is influenced by other subsystems due to the interaction that occurs at the interface. As a result, maintenance of stability is critical during these interactions.

The theory is relevant to the study of the CIS in the Customs Department in that it collects transaction data from the environment as its input; process it into output as information and feedback for use by Customs Department and its stakeholders such as the government, clearing firms, importers and exporters to mention some. The data, which is input, processed and output has an impact, positive or negative, on the performance of the Customs Department. Thus, using the theory, the study envisioned four subsystems as the CIS input sub system, CIS processing sub system, CIS output sub system and the URA Customs Department sub system. Thus, the theory guided this study in understanding how the four subsystems interacted while using CIS in an effort to improve the performance of the Customs Department. For example, it was conceptualized in this study that if any of the subsystems that comprised the independent variable such as the CIS input, processing and output subsystems is not functioning appropriately, according to the theory, then the performance of the Customs Department subsystem would be compromised.

### 2.1.2 Resource Based Theory

Penrose's (1959) Resource-based theory (RBT) as cited in Barney (1991) emphasizes firm resource endowment (such as human capital, financial resources, technology to mention some that firms use) as a basis for improving firm performance. The firm resource in this study is the CIS i.e. ASYCUDA++ with dimensions of input, processes and output. Penrose (as cited in Barney, 1991) conceptualizes the firm as a bundle of resources within an administrative framework, which if ineffectively/effectively or inefficiently/efficiently used impact negatively or positively the performance of an organization. In this respect, ASYCUDA++ is one of the resources in URA administrative framework to improve the Customs Department's performance and it was conceptualized in a way that how it was used determined the performance of the Customs Department. Other related research studies (such as Dierick & Cool, 1989; Peteraf, 1993; Dovev, 2002) went further to examine how resource attributes (for those who may not understand, an attribute can be a characteristic/feature/element such as resource quality) lead to improved organizational performance and they found that attributes were related to organizational performance. Resource attributes in this study referred to information technology attributes like quality input, processes and output and these were examined to determine how they contributed to performance in terms of efficiency, control and administrative burden in revenue collection related activities.

The RBT has been used to examine efficiency and advantage implications of firm resources (Nelson & Winter, 1982). It is also useful in the IT context, providing a robust framework for analyzing whether and how IT contributes to performance. Strategy researchers have used it to analyze theoretically the performance implications of information technology (Mata et al., 1995) and to assess empirically the

complementarities between IT and other firm resources such as the people who use the IT (Powell & Dent-Micallef, 1997) and found that IT was positively related to performance. IS researchers have also begun to employ the resource perspective to help people understand the IT business value (Bharadwaj, 2000; Caldeira & Ward, 2003; Clemons, 1991; Jarvenpaa & Leidner, 1998; Santhanam & Hartono, 2003). This provided a firm foundation for adopting this theory in this study based on these research works and its focus on resource and their attributes. Its "integration of a management perspective with an economics perspective" (Peteraf & Barney, 2003, p. 309) also provides the reason for adopting this theory.

### 2.1.3 Task Technology Fit (TTF) Theory

Galbraith's (1973) opines that, Task Technology Fit (TTF) Theory is deterministic to the extent that it prescribes expectations about performance, based on characteristics of task and technology. Task Technology Fit is defined as the extent that technology functionality matches task requirements and individual abilities. The theory emphasizes that a fit between characteristics of task and technology enhances performance and if such fit does not exist, performance is compromised (Barley, 1986; McGrath et al., 1993; Orlikowski, 1992 Barley, 1986). The theory was useful in this study in that CIS is the technology whose tasks it performed in terms of input, processes and output were investigated in relation to the performance of the Customs Department.

Ideal profiles of task/technology fit can be viewed as consistent with the perspective of a "taxonomy of scripts" that describe episodes of structuring behavior leading to differences in technological effects. Those episodes are larger in scope than the profiles in this study since the episodes account for the strategic role of human actors, but the theory

presented here is a useful starting point that can be viewed as an "inner layer" of the complex totality of human and technological interaction during work.

TTF is presumed to lead to higher performance and it is based on the basic propositions that: a) an individual's performance is affected by how well technology options "fit" his or her task requirements and b) fit operates through its impact on task processes. For example in URA, the performance of Customs Department officers is affected by how well CIS fit the officers' task requirements. If the CIS does not fit the officers' task requirements, then the performance of Customs Department would be compromised.

The term 'fit' is widely used in a variety of models that deal with contingencies among variables (Joyce et al., 1982) and the strategic management literature is where fit (typically between strategy and structure) has been examined in some detail. Different definitions of fit have been identified: fit as congruence, fit as interaction, and fit as internal consistency (Drazin & Van de Ven, 1985). These ideas were extended to identify six unique perspectives on fit in the strategy literature: fit as matching, as covariation, as gestalts, as moderation, as mediation, and as profile deviation (Venkatraman, 1989).

The first three perspectives of fit are criterion-free (Venkatraman, 1989), i.e.; they have universal applicability and are not anchored to any particular dependent variable, such as effectiveness. Since the desire in this study is to tie task technology fit to effective performance, these three perspectives are not suitable (Nidumolu, 1996). The fourth and fifth perspectives are limited in the number of variables considered, that is, they are typically used in an association between a single predictor variable, a single moderating

or intervening variable, and a single dependent variable. Thus, this too was not suitable for this study.

The most promising perspective for Task Technology Fit in this study context was fit as an ideal profile. This view is consistent with approach to contingency theory (Drazin & Van de Ven, 1985), which allows for a holistic approach to examining the complexity inherent in organizations. From this perspective, fit is viewed as feasible sets of alternative designs, which in this study included input, processes and output. Each design should be internally consistent and matched to a configuration of unforeseen event that face the organization, which in this study is the performance of the Customs Department.

According to Zigurs and Buckland (1998), an appropriate Task Technology Fit should result in higher performance. Performance is a multifaceted construct that has been defined by such concepts as efficiency, outcome quality, process quality, satisfaction, and consensus (Fjermestad & Hiltz, 1997; Hollingshead & McGrath, 1995). For a given task and staff, the relevant performance measures may vary, whether this is in real-life organizational tasks or in experimentally controlled situations. Therefore, it is recognized that performance can be operationalized in different ways, and in the discussion of ideal task technology alignments, the term "performance" is used generically but in this study, it was limited to efficiency, control and administrative burden.

TTF has some important similarity to organizational structural contingency theories (Galbraith 1973, Van de Ven and Delbecq 1974, Van de Ven and Drazin 1985). These typically propose that to have higher performance, an organization's structure must "fit" its organizational context (usually the task to be accomplished or the core technology

used). In TTF, information technology must "fit" task characteristics. Though structural contingency theory is at the organizational level, and Task Technology Fit is at the individual level, the logic of the two perspectives is quite similar.

## 2.2 Contribution of Customs Information System to Efficiency

Information systems are designed to help users perform tasks more efficiently. Organizations spend millions of dollars on information systems to improve organizational or individual performance (Goodhue, 1995). A critical concern in information systems research has been to understand the linkage between information systems and individual performance in general, but this study was to find out how the CIS has enabled Customs Department meet set performance objective in particular. Task-technology fit is a key factor but often overlooked in understanding the impact of technology on individual performance.

Goodhue defines TTF as the degree to which technology assists an individual in performing his or her tasks. More specifically, it is the fit among task requirements, individual abilities, the functionality and interface of the technology (Goodhue, 1997). In the context of information systems research, technology refers to computer systems (such as hardware, software, and data) and user support services (such as training and help lines). Technologies are viewed as tools used by individuals in carrying out their tasks. Tasks are defined as "the actions carried out by individuals in turning inputs into outputs" (Goodhue, 1995; pp. 1828).

For an information system to have a positive impact on individual performance, 1) technology must be utilized, and 2) there must be a good fit with the tasks the technology

supports (Goodhue & Thompson, 1995). If either the task-technology fit of the technology or its utilization is lacking, the technology will not improve performance. This theory for example has been formally recognized in studies such as those by Pentland (1989), who found that auditors had positive attitudes toward personal computers (PCs) and utilized them extensively, but that the PCs had little positive impact on their performance, or even negative impacts. According to Pentland, the PCs were being utilized for inappropriate tasks, that is, tasks where the technology had no good fit with task needs (Pentland, 1989).

In another study by Keil, Beranek and Konsynski (1995), it was found that task-technology fit is more important than the user interface of an information system. In this study, a computer company implemented an expert support system (ESS) for its sales representatives, but found that usage was low. Feedback indicated that the system was difficult to use, so the company's developers performed a major rewrite of the user interface. After deploying the new and improved tool, they surveyed the users and found that there was no significant increase in use. In addition, the users still perceived the software to be cumbersome. Based on user comments, it was determined that the deficiencies were a function of the mismatch between the tasks the system supported and those that the users needed to perform (Keil et al, 1995). Here, task-technology fit was completely overlooked, rendering a system of no value to the users.

According to Sajady, Dastgir and Hashem (2008), although the information generated from an information system can be effective in decision-making process, usage of such a system is beneficial when the benefits exceed its costs. Benefits of accounting information system can be evaluated by its impacts on improvement of decision-making

process, quality of information, performance evaluation, and facilitation company's transactions.

Yeates and Cadles (1996) identified four drivers why firms invest heavily in IS while Laudon and Laudon (2006) give six strategic objectives with some similarities to include: operational excellence; new products, services and business models; customer and supplier intimacy; improved decision-making; competitive advantage and survival. On the other hand, Gulledge and Chavusholu (2008) and Bendoly and Schoenherr (2005) observed the growing interdependence between firms' ability to use IT and ability to implement corporate strategies to achieve corporate goals. Harris and Devonport (2005) argue that automated IS and IT are some of the most important tools available to improve performance. Harris *et al* assert that the use of automated IS and IT has enabled firms to excel worldwide. Harris *et al* cited an example of the finance industry transformation, which has been the most progressive in this regard as evidenced by widespread usage of automated teller machines.

It is in this respect that the last nearly fifteen years had seen URA's effort to transform the organization driven by the need to 1) excel and deliver new services 2) achieve intimacy with taxpaying community 3) improve decision-making 4) achieve competitive advantage among other Revenue Authorities in the East African Community Region and 6) survival. A combination of these factors in varying proportions could have driven URA's corporate strategy to impact Customs clearance in terms of its people, processes and systems by implementing and later upgrading the CIS to met set goals (URA Corporate plans for the period 2006 – 2010).

### 2.2.1 Contribution of Customs Information System to Accuracy

The value of information depends on data being relevant, complete, accurate, clear and timely; which factors affect its usefulness in organization's ability to respond to market needs (Jawadekar, 2003; Laudon & Laudon, 2006). If information output does not meet these quality criteria, organizational performance suffer. Organizations achieve data quality using information systems (Smee, North & Jones, 2001; Laudon & Laudon, 2006, Wilson, 1997; Barnejee, 1997). Managers need data obtained from IS to measure and control performances (Gulledge & Chavusholu, 2008). Control involves methods, policies and procedures that ensure protection of the organizations assets, accuracy and reliability of record and operational adherence to management standards.

The Technical Assistance report for the Republic of Maldives (2000) recommend automation of valuation systems under WTO, based on valuation database with accurate information and a price analysis module, essential to screen price filed in import declaration using ASYCUDA++. The paper proposed that a valuation module be developed to capture desired information, detect valuation error or fraud and assist in decision-making process for valuation disputes linked to ASYCUDA++ (Asian Development Bank, 2000; Grainger, A, 2008). Thus, based on the literature, this study sought to assess whether the CIS of the Customer Department met the quality criteria such as data being relevant, complete, accurate, clear and timely for the betterment of its performance. In addition, the study established whether valuation systems were well-automated based on valuation database with accurate information and a price analysis module.

### 2.2.2 Contribution of Customs Information System to Time

Wilson (1997) argues that IS helps organization reduce inventory stockpiles as they enable delivery on time. In addition, IS can also accelerate decision-making process and speed transaction processing, saving customers time, offering them greater flexibility thus improving quality of service or products (Harris & Devonport, 2005). This is because business customers do not like to be kept waiting, in particular for service and products designed specifically to the customer's requirements. Therefore, the ability to deliver promptly depends upon fast and efficient handling of information about what to make and how to make it using computers and information networks to communicate (Wilson, 1997). Study findings indicated that e-procurement reduced the time required to conduct a transaction from an average across the sample of five days to two hours according Harris and Devonport.

### 2.2.3 Contribution of Customs Information System to Cost

Wilson (1997) argues that IS helps organization do work more cheaply than people and stored electronic files are more easily accessible than paper. In doing so, computers reduce costs of operation in terms of production materials, and procurement cost. Wilson asserts that delays in attending to business customers actually cost them money and loss of opportunities. According to Laudon and Laudon (2006) and Harris and Devonport (2005), with IS the company does not have to maintain overhead costs for large headquarters, which would amount to much more its extensive travel expenses. This is because with IS, a company can work with its staff from virtually any location since it would not have any operational headquarters and no formal branches because the company relies heavily on IS (emails and telephones) to keep up with its staff and conduct. Where it would necessitate hiring space and participants to be transported to the

venue for the conference, the company can hold video conference where each participant may stay in his/her office or even at home but still participates in the conference.

### 2.2.4 Contribution of Customs Information System to Operational Excellence

Walker, Craig, Hecker and Francis (2002) assert that automated information systems help organize firms' work activities to operate efficiently and so, enhance performance as they make it possible to manage a great deal of information required rapidly within the firm by business partners such as delivery firms and customers. Wyne and Chen (2002) and Zhu, Evans and Wuster (2001) affirms this by observing that analysis of business process helps to understand how business actually works and so how to make it better. Largely, therefore, performance of business firms depends on how well business process is designed and coordinated to allow for innovation and execution over rivals (Laudon & Laudon, 2006). Zhu, Wymer and Chen (2001) observed that business process can be a liability if based on out dated ways of working; a view possibly held by URA driving the organization to transform manual systems and later upgrade. This is value adding to business in search for excellence.

Laudon and Laudon (2006) quote the success story of Toyota Motor Corporation having surpassed world largest automakers using lean production systems that minimize waste while optimizing value. This is because Toyota production system consists of a set of finely tuned business process to monitor quality, efficiency and cost using information system to improve business performance. Toyota has based its business process and information systems around the principle of Just-In-Time delivery, quality, and continuous improvement. Information provided by the system helps management monitor trends and forecast demand and production requirements more accurately.

Furthermore, Croom and Johnston (2003) in their study noted that using e-procurement, process savings were achieved through a range of direct improvements in the process such as moving from paper-based systems to electronic Web-based systems. The system allowed users to input data once for transaction such as requisitioning supplies; electronic transmission of orders, electronic invoicing and payment; resulting in few transmission errors compared to fax or paper-based methods.

In the case of URA, whereas ASYCUDA++ had been implemented in Customs Department and transactions data was being collected and distributed, the level of performance achieved in terms of proactive usage and potential usage of data was not yet known. This is unlike the case of KIA motors where; data on complaints is collected, defects categorized, and potential problems and warranty predicted the percentage associated with specific items identified which helped to pinpoint source of problems and of vehicles likely to be affected up front in order to improve production (Laudon & Laudon, 2006).

There were questions on the extent to which ASYCUDA++ system had performed relating to adequacy of functionality, reliability of the system, consistency and comprehensiveness of data, accuracy of categorization and potential identification of defects/errors and level of integration internally, with other revenue collecting departments, especially in terms of the revenue collection efficiency. A key attribute of this study was a consideration of how the ASYCUDA++ had been able to improve quality problems in the Customs Department with reference to the success story of KIA and the supply chain, since little information was available about ASYCUDA++.

In addition, whereas literature available emphasized efficiency by implementing IS in general, the extent to which this had been achieved with the implementation of ASYCUDA++ needed to be established in terms of improving coordination, reducing process cost and time by aiding decision-making and promoting excellence. Furthermore, whereas it was evident in literature available that developed countries had invested heavily in IS and IT, developing countries were lagging behind with only isolated cases and investments fell far below levels of system integration already achieved by companies such as KIA motors, Toyota Corporation, UPS to mention a few, along the supply chain. This made efforts by firms in developing countries seem like a drop in the ocean and set level already achieved by developed countries far out of reach.

## 2.3 Customs Information System and Control in Organizations

Benefits of information system can be evaluated by their impact on improvement of internal controls (Sajady, Dastgir & Hashem (2008). Information systems are considered important organizational mechanisms that are critical for effective decision-making and management control in organizations. In managing an organization and implementing an internal control system, the role of an information system (IS) is crucial. An important question concerns the fit of IS with organizational requirements for information communication, control and effective usage of the system. Thus, this study sought to find out whether the CIS was an important mechanism that was critical for effective management control at the Customs Department and whether it was fitted with requirements for information communication, control and effective usage of the system.

Information technology is a key component in managing organizations and provides the means to integrate processes, enforce data integrity and better manage resources (Mabert et al. 2003). Gulledge and Chavusholu (2008) argue that other than decision support, information systems avail data to managers to enable them measure and control performances. Control involves establishing standards and objectives and allows comparison of actual performance against the expected set standards and objectives. In addition, it involves both preventive and corrective actions. In this study, the focus was to establish whether the CIS integrated processes, enforced data integrity and better managed resources and whether it availed data to the Customs Department managers to enable them measure and control performances.

Siriyama (2007) and Lawrie and Cobbald (2007) give three forms of control used by management to include pre-control; the form of control which is proactive and arises out of planning to prevent occurrence of unexpected outcomes. It also involves a lot of risk management. An example is when management set standards, targets and determine norms to be complied with and monitor fluctuations to take action to achieve target under a specific budget; change from the budget in actual achievement are used for getting back to budget (Barnejee, 1995). The second form of control is the concurrent controls, which involves identification of deviations and taking of corrective action as the activity is being undertaken or immediately after the occurrence of the activity. While the third form of control is the post control which is the most abused form of control and it takes place after the activity has occurred (Siriyama 2007; Lawrie & Cobbald 2004). The question that this study sought to address was the type of control the Customs Department employed that is, whether it was pre-control or concurrent controls or post control or a combination of these and the extent of their effectiveness.

### 2.3.1 Customs Information System and Standards

According to Wilson (1997), information on actual performance must be compared with planned performance and in the event of a variance appropriate action must be taken. In addition, to maintain efficiency, information on outputs must be compared with information on inputs, so that appropriate action can be taken to improve the ratio. Bocij et al (2006) asserts that, IS processes enhance the value of information in terms of completeness, relevance, accuracy, clarity and timeliness which factors affect its usefulness in decision-making and thus ability to respond to market needs. Performance of an organization is impacted by the value of information, which can be guaranteed by management exercising control on information.

One of the objectives for implementing ASYCUDA++ was to enhance control. Wilson (1997) and Croom and Johnston (2003) further asserts that once business database has been set up, it becomes an organizational resource requiring special policies and procedures to manage it and make sure that data remains accurate, reliable and readily available to those who need it. This can be achieved by establishing an information policy, which specifies organization rules for sharing, disseminating, acquiring, standardizing, classifying and inventorying information. The policy establishes procedure and accountabilities, identifies which users share information, where information can be distributed and who updates and maintains the system. Information systems employ telecommunication controls such as access passwords and validation to verify identity; put up measures to limit damage during failure and auditing of hardware, software and data as regular forms of controls available. However, with ASYCUDA++ the question is the extent to which these controls have been used to boost effective revenue performance.

### 2.3.2 Customs Information System and Inspection

Inspection is yet another dimension of control aimed at improving performance. According to Ranky (2003), automated inspection is part of total quality management and control (TQM/TQC) approach used in design, manufacturing, assembly and business involvement led by the theme of quality. Inspection, as part of the feedback control loop of the overall TQM/TQC process, involves the continual satisfaction of customer requirements at lowest cost by harnessing the efforts of everybody in the company. Quality control means establishing and maintaining specified quality standards of products. Statistically analyzed data, received from inspection sensors and systems, are one method and solution to improve any process, and stay within the established control limits. As such automated inspection methods represent an important, nevertheless not the only methods that lead to efficiency, or in other words process variation reduction, the ultimate goal of TQM.

Piao, Park and Lee (2009) observes that self-managing system tasks in an ubiquitous environment including fault detection, fault diagnosis and fault recovery have become of interest in distributed computing systems. IBM is developing a self-managing autonomic technology solution to help companies to transform their IT infrastructure into more resilient, responsive efficient and safe system that secure significant value through modern controls (IBM, 2006).

Ranky (2003) further observed that in such modern systems each process is fully monitored by sensors to minimize defective parts produced. The defect is immediately recognized by the sensors, the data are evaluated by the supervisory computer, and corrective action is instructed automatically at the responsible process, which created the

out-of-tolerance part in the first place. Inspecting at process level improves quality, as well as eliminates the delays, difficulties and cost related to part transportation and fixture for post-process inspection. In process (or in-cycle), probing provides a form of closed-loop process control that can enable machines to achieve their best accuracies. This is a concurrent control as the process goes on, however, this review is based on the manufacturing industries, and thus this study is to find out whether even in the service sector like in revenue collection the system can work in a similar manner.

Lung-Chuang (2008) observed that in some organizations, existing methods for tracking and managing the inspection utilize manual recording by paper-based documents. However, Lung-Chuang (2008) stated that information collected using such labor-intensive methods was unreliable and ineffective when managing inspection. Moreover, inputting, retrieving, analyzing and disseminating the result data instantaneously require a significant amount of time and effort. Therefore, an automated and user-friendly quality management system is necessary. When inspection and maintenance functions are performed manually, via paper and pen, overall efficiency is affected.

In a study undertaken by Croom and Johnston (2003) on procurement, it was established that major challenge for the control of the procurement of indirect supplies is the high incidence of off-process or "maverick" purchases by employees. Such activities include cash purchase of low value items reclaimed through expense systems. For example, in one of their case organizations, a large financial service provider, surveyed internal customers found that "ease of access and speed of use" were the most common reasons why employees preferred to reclaim travel expenses rather than pre-book through the

existing travel purchasing office. Introduction of e-procurement was found to have greatly enhanced control of the purchasing function.

Custom officials carry out concurrent inspection of both documents and physical goods, using selectivity criteria built in the CIS, in the former case and scanning or physical examination of goods based on perceived risk in the later case to analyze transactions declared for accuracy. In this way, variance between actual and planed performance is minimized. However, the extent of reliability and effectiveness of the control system in ASYCUDA++ needed to be established.

### 2.3.3 Customs Information System and Compliance

According to Economist Intelligence Unit (2006), compliance has become a core standalone function. In keeping with compliance's growing mandate, many firms have been beefing up staff and investing in sophisticated information technology (IT) in order to implement more robust compliance programmes. Firms are also spending more to build controls into their processes and systems, for example, by trying to improve compliance controls so that there is less discretion to make errors.

Ludwick (2006) observed that reporting is needed that is driven in real time by compliance work with a common way of scoring risk, driven by a varied data sets. The first step in this process then is identifying compliance risk. The second challenge is to organize the activity of compliance department in terms of information and processes so that it can be automated were possible and integrated so that risk reporting can be driven by the entire programme. Through well-integrated systems that supports clearly designed processes, a company can identify any potential problem area electronically. A

compliance system lends explanation to contingency theory (almost similar to TTF theory), which is characterized by interdependence when investigating a problem as a monitoring routine. One needs access to work flows and data in other parts of the compliance process to compare with the original rules requirement or established policy (Kerzner, 1987; Ludwick, 2006).

## 2.4 Customs Information System and Administrative Burden

There has been an emphasis in literature on the importance of information technology systems in reduced the administrative burden as shown in the following:

> Every day, a stream of freight trucks stretches back several kilometers from the Finnish-Russian border. Officials examine containers and check that the paperwork – dozens of different forms – is in order. The process is vital for security and to ensure Customs duties are paid, but it is an enormous burden on businesses, which could be relying on 'just-in-time' deliveries of raw materials. Advanced ICTs and data-handling processes could help significantly reduce the waiting times for these trucks.

Thus, opponents of manual inspection argue that manual inspection hinders the flow of goods (Economist Intelligence Unit, 2006). They point out that at best, manual inspection creates a series of additional costly steps for business communities - and at worst, results in further costs and delays when Customs authorities duplicate control functions and question the findings of inspectors. The extra cost is alleged to be especially burdensome for firms. With advances in information and control technology, the transactions costs in monitoring several suppliers and ensuring effective reconciliation need not be significantly more burdensome.

According to Wilson (1997), computers and electronic communication networks reduces customers administrative burden in the handling information through processing information more accurately. Administrative burdens are the cost to business of carrying out administrative activities that they would not carry out in the absence of regulation, but that they have to undertake in order to comply with it (Centre for Tax Policy and Administration, 2008). They are different from but a subsection of administrative costs, which are the costs to business of carrying out administrative activities in order to comply with regulations that impose information obligations (IOs). IOs require businesses to provide information to Government to demonstrate that, and how, they are complying with a given regulation.

Administrative costs include the administrative activities that businesses would choose to continue doing even in the absence of regulation (Centre for Tax Policy and Administration, 2008). According to Centre for Tax Policy and Administration (2008), proper compliance with the laws, including tax laws, requires businesses to undertake a range of administrative activities, generally using their own internal resources. Taken in their entirety and expressed in quantified terms as a "cost" using an agreed methodology, these activities constitute the administrative burden of businesses and citizens. Generally speaking, the administrative burden on a business resulting from the operation of tax regulations will be influenced by a number of factors: 1) the number of taxes it has to deal with; 2) the administrative design of those taxes; 3) the nature and size of its operations (including the size of its workforce); 4) the range of administrative activities it must undertake; and 5) the degree of support received from the revenue body. It can decide to do all of the required administrative activities internally and/or use external parties (e.g. payroll agencies and tax accountants) to help meet its tax obligations.

According to Slemrod and Whiting (2006), the size of administrative burdens resulting from government regulations has received considerable attention in recent years as governments strive to 1) improve the competitiveness of their economies; 2) encourage higher levels of compliance with complex and onerous regulations; and 3) alleviate the costs on business and citizens in complying with government regulations. The OECD's policy brief of January 2007 observed;

> Cutting red tape is a priority on the political agenda. Red tape is costly, not just in time and money spent filling out forms but also in terms of reduced productivity and innovation in business. This is particularly burdensome to smaller businesses and may even discourage people from starting up a new business. Governments have tried to cut red tape in recent years, making administrative regulations more cost efficient, and removing the administrative burden from many areas of activity. Now new concerns are emerging. Attention has shifted to removing barriers to trade, investment and entrepreneurship.

In relation to revenue/tax collecting bodies, the administrative burden is related to the compliance burden. The compliance burden is a well-known cost of administering a tax system. Research in this area goes back at least a century, with an extensive international literature on the measurement of these costs (Evans, 2003). The definition of compliance burden excludes psychological costs and deadweight losses that occur because of tax-induced changes in work, saving, and other form of economic behavior.

However, it has been emphasized that the fundamental economic role of computers in relation to administrative burden becomes clearer if one thinks about organizations and markets as information processors (Galbraith, 1977; Simon, 1976; Hayek, 1945). Most of our institutions emerged in an era of relatively high communications cost and limited

computational capability. Information technology, defined as computers as well as related digital communication technology, has the broad power to reduce the costs of coordination, communications, and information processing. This is in line with Andarias (2006) who observed that to succeed in today's daunting economic environment, companies will need to focus on developing and/or maintaining five critical capabilities essential to their ability to reduce costs today and in the future, one of these capabilities is administrative cost reduction. Fu, Farn and Caho (2006) argue that reducing administrative costs can allow an organization to be more efficient, effective, responsive, and profitable.

Technologies such as electronic data interchange, Internet-based information systems, and other inter-organizational information systems can significantly reduced the cost, time and other difficulties of interacting with various stakeholders such as the interaction between URA and the trading community. For example, firms can make transactions with stakeholders and receive confirmations electronically, eliminating paperwork and the delays and errors associated with manual processing of transactions (Johnston & Vitale, 1988). In support of these authors, Tat-Kei (2002) observed that the introduction of Information and Communications Technologies allows increase of efficiency in public organizations, as they reduce cost and time. He argues that the public sector is information intensive, so it needs more these technologies to process all the information that is the essence of its work than others. However, what was not known was whether the CIS can significantly reduce the cost, time and difficulties of interacting with various stakeholders at Customs Department. Thus, this study sought to fill this gap.

However, whoever intends to use information technologies to reduce administrative burden is cautioned about the need for well-integrated systems. For example, Ludwick (2006) and Boudreau and Robey (2005) observed that many information system implementations in organizations fail not because of the technology, but because of insufficient attention to issues related to organization culture, processes, practices, information politics, patterns of information sharing and hoarding. Similarly, Harris and Devonport (2005) add that a technology-focused problem-solving strategy is likely to overlook organization-wide symptoms that prevent institutions from successfully capitalizing on their use of technology. He continues that ultimately, this approach hampers an institution's ability to perform in-depth, timely and accurate analysis related to organizational effectiveness. Croom and Johnston (2000) and Harris and Devonport (2005) in the same light stated that in order to develop the technological infrastructures that can support and make best use of information systems, institutions that incorporate an organization-wide perspective (EPR) to address the obstacles before them would likely obtain greater benefits from these types of systems. This review raised the question of whether the CIS at URA Customs Department was well integrated with the URA organization culture, processes, practices, information politics, patterns of information sharing and hoarding, and problem-solving strategy. This study sought to fill this gap.

## 2.5 Summary of the Literature

The literature reviewed above suggested a significant relationship between IS and achievement of efficiency significant in accuracy, processing time, costs and operational excellence. Various cases in the automobile, courier company, airlines, banking, leisure, retail stores, manufacturing industries and supply chain suggested a direct influence between IS and efficient industries and organizations which have adopted and invested in

IS to improve their performance. The literature reviewed above was not clear on the contribution of IS to efficiency in a Customs setting. This study therefore intended to offer a basis for generalization of IS and Customs efficiency in a Customs setting of a developing and land locked country, Uganda.

Secondly, the literature review on the role of IS and the contribution to control was not clear in terms of enabling standards, inspections and compliance in Customs operations of developing countries. Similarly, the success of the developed countries in using an integrated Customs management IS was equally not well documented and accessed but the literature reviewed above generally suggested a direct link between IS and facilitation of management control. It may not necessarily be the case that IS would lead to improved management control. This study therefore covered this literature gap by documenting the influence of IS in facilitating control in Custom's Department of URA.

Last but not least, the literature on IS and their contribution to administrative burden offered overwhelming support for the role of IS in enabling organizations to reduce costs that arise as result of complying with tax/revenue obligation through improved speed, reduced expenses to customers, flexibility and accessibility although it was evident that this was mainly in developed countries. This suggested a need to expand research on the contribution of IS to ease administrative burden in Customs clearance of goods in developing countries that were landlocked.

# CHAPTER THREE

# METHODOLOGY

## 3.0 Introduction

This chapter presents the approach that was used to obtain and analyze data from the field on the CIS and its contribution to performance of the URA Customs Department. It includes the study design, the study population, sample size and selection, data collection methods, reliability and validity of the instrument, procedure for data collection measurement of variables and data analysis.

## 3.1 Research Design

This study used a case study design using both quantitative and qualitative approaches. A case study design was chosen because according to Amin (2005), it allows a researcher to focus on one case or a few cases for the researcher to be able to generate in-depth information on issues sought in the study. Denscombe (1998) and Amin (2005) assert that case study provides an in-depth study of a problem in a natural setting within limited time scale and allows the researcher to get closer to the whole. The quantitative approach was used because it allowed the researcher to solicit information that could be expressed numerically and the qualitative approach was used because it allowed the researcher to solicit narrative and descriptive information that could be expressed in textual format (Mugenda & Mugenda, 1999).This study evaluated the extent to which the ASYCUDA++ had achieved its intended objective.

Furthermore, quantitative approach emphasizes use of numerical and quantifiable data that are collected and statistically analyzed to explain, predict and control phenomena of interest while qualitative approach obtains detailed non-numerical information about

phenomenon under study, establishes patterns, trends and relationships from information gathered (Mugenda & Mugenda, 2003; Sekaran, 2003). The quantitative approach enabled measurement of the contribution of the CIS on the performance of the Customs Department while the qualitative approach was used to provide in-depth explanation on the contribution of the CIS on the performance.

### 3.2 Study Population

The study considered a total population of 131 respondents in Kampala URA Customs Department. This was made up of six (6) senior managers, 80 URA Customs' staff, 5 CIS core team, 5 IT team and 35 licensed Customs Agents.

### 3.3 Sample Size and Selection

The study used a sample of 114 subjects from the population of 131 elements. This was selected based on Krejcie and Morgan (1970 as cited in Amin, 2005) sample size determination table (see Table 1).

**Table 1: Table showing target population, sample size, and sampling techniques**

| Population categories | Population | Sample size | Sampling technique |
|---|---|---|---|
| **Senior Managers** | 6 | 6 | Purposive |
| **Customs Staff** | 80 | 66 | Stratified |
| **ASYCUDA++ Core Team** | 5 | 5 | Purposive |
| **IT Team** | 5 | 5 | Purposive |
| **Customs Agents- Authorized users (Trading Community)** | 35 | 32 | Stratified |
| **Total** | **131** | **114** | |

***Source: URA Human Resource Department and ASYCUDA Data Base***

## 3.4 Sampling Techniques and Procedure

Sampling techniques and procedures enabled the researcher to obtain accurate and reliable samples for obtaining data. In this study, both probability and non-probability sampling techniques were used.

### 3.4.1 Probability sampling techniques

Using probability sampling, respondents in the study population were selected based on chance. The researcher used stratified sampling under probability sampling, where the heterogeneous nature of the population was taken into consideration while selecting subjects (Amin, 2005 & Sekaran, 2003). This was to ensure that the selected sample comprised of representative categories of the homogeneous population in each stratum. The sample frame was made from lists of ASYCUDA++ account users obtained from the database. Stratified sampling was used to categories the population of users into job categories as, senior managers, Customs service staff, ASYCUDA++ Core Team, IT staff and Customs agents.

Probability sampling technique of simple random sampling using the lottery method was then used. This was because it allowed selection of subjects from a large population without bias (Denscombe, 1998). The procedure involved obtaining lists of staff in Customs Department URA who are CIS users, to include authorized external users who are licensed representatives of the trading community. Simple random sampling method involved each name of the subject being written on a tag and placed in a container where a tag was picked and the process repeated until the required number of subjects was obtained (Amin, 2005).

### 3.4.2 Non-probability sampling techniques

Probability sampling was complemented by a non-probability method of sampling, where subjects did not have a known chance of being selected (Amin, 2005; Sekaran, 2003). The non probability method of purposive sampling was used select respondents the researcher sought were knowledgeable about the CIS (data input, processes and output) and performance of the Customs Department in terms of efficiency, control and administrative burden basing on their experience, tenure and position at the URA.

## 3.5 Data Collection Methods

The researcher triangulated quantitative and qualitative data collection methods during data collection. Primary data were collected using a questionnaire survey and face-to-face interviews while secondary data were collected using documentary review. Results from the three methods were triangulated since results from one method help to inform those from the others while neutralizing any bias Amin (2005). Quantitative data was collected through questioning using close-ended structured questionnaires to gather views of respondents. The questionnaire was pre-tested and standardized before administering to respondents. Qualitative data was collected by interviewing respondents in a face-to-face interaction to exchange views. An interview is used to collect data that help to explain quantitative finds. Furthermore, documentary review was used to collect secondary data through evaluating company records, publications, web site analysis and internet among others.

## 3.6 Data Collection Instruments

Three types of data collection instruments were used in the study. These included questionnaires, interviews guides and documentary review checklist, which are briefly explained in the following subsections.

### 3.6.1 Questionnaire

A closed-ended questionnaire was used. This was used because Amin (2005) and Sekaran (2003) contend that questionnaires are efficient and convenient in collecting qualitative and quantitative data beneficial for triangulation of data. In addition, Mugenda and Mugenda (1999) observe that using questionnaires can have a wider circulation in a short time. The questionnaire was administered to customs service staff and customs agents. This was because they formed a bigger proportion of the sample and using a questionnaire made data collection from them easy within the time available.

### 3.6.2 Interview Guide

The choice of using the interview guide was that it gave the researcher an opportunity to probe respondents and obtain in-depth clarification on sensitive matters. In addition, due to proximity between researcher and interviewee, it allowed the researcher to observe body language of respondents to make sense of what the interviewees were saying. Data obtained during the interview supplemented that obtained through the questionnaire. This method was used with the ASYCUDA++ Project Team, executives of agents and senior managers who possessed important sensitive information on management strategies and performance of the CIS.

### 3.6.3 Documentary Review Checklist

Documentary review checklist was used to obtain already written information related to CIS and performance of the Customs Department to supplement information obtained using questionnaires and interview guide. Documentary review included reviewing Customs/Trade journals, Revenue reports, URA project documents, electronic data/databases, magazines, newsletter and URA-net in the organization to provide information on CIS and its data input, data processes, outputs and performance of the Customs Department in relation to efficiency, control and administrative burden.

## 3.7 Pre-testing (Validity and Reliability)

The researcher subjected the questionnaires to validity and reliability tests before rolling out to the entire selected subjects as discussed below. Advice was collected and changes made to the final tool.

### 3.7.1 Validity

In this study, experts reviewed the questions to see whether they were capable of capturing the intended responses. To achieve this, two lecturers conversant with the study topic were selected to comment on relevance of the questions in the instruments. In the final stages of developing the instruments, the researcher using comments on relevance of the questions, calculated the Content Validity Index (CVI) to ascertain if the instrument was appropriate in measuring the study variables based on expert judgment and recommended CVI of .70 and above (Amin, 2005). The CVI was obtained from the formula

CVI= (no of item declared relevant)/total number of items rated by judges) using the results in the following table.

| Expert | Relevant items | Not relevant items | Total |
|---|---|---|---|
| 1 | 69 | 32 | 101 |
| 2 | 77 | 24 | 101 |
| **Total** | **146** | **56** | **202** |

Thus, CVI = 146/202 = .72;

The CVI was 0.72 higher than .70, thus, the questionnaire was considered valid to collect the intended data (Amin, 2005).

### 3.7.2 Reliability

The questionnaire was piloted to 15 respondents and data collected were subjected to a reliability test. The reliability of the instrument was assessed using the Cronbach's Alpha coefficient to ascertain whether the instrument consistently measured what it was supposed to measure by comparing the alpha to .70 (Amin, 2005; Punch 2005). To achieve this, descriptive statistics (mean and standard deviations) for each of the questions in the instrument were computed. Then each question in the instrument was correlated with the rest of the questions using cronbach alpha reliability using Statistical Package for Social Sciences (SPSS) and the cronbach alpha coefficient was .768 as in Appendix 5. In addition, applying the cronbach alpha reliability using SPSS, the Cronbach alpha coefficients for each of the variables are shown in Table 2 extracted from Appendix 6.

**Table 2: Reliability of instrument**

| Variables | Alpha | No. of items |
|---|---|---|
| Efficiency | .844 | 19 |
| Control | .848 | 14 |
| Administrative burden | .714 | 36 |
| Custom information system | .942 | 44 |
| Capacity of users | .796 | 12 |

Thus, the Cronbach's Alpha coefficients as shown in Table 2 were higher than .70 in accordance with Amin's (2005) recommendation. The instrument was considered suitable for collecting data.

### 3.8 Procedure of Data Collection

Human Resource forms were filled to indicate that I was going to undertake a study. I informed the URA Commissioner Customs, Commissioner Compliance, Manager Custom Modernization Project, Manager Kampala and some staff before pre-testing the instrument. The researcher got an introductory letter from Uganda Management Institute upon approval of the proposal, which she presented to the management of URA to be allowed to conduct the research.

Once management consent was granted and a letter of authorization to collect data on CIS and the performance of the Customs Department was received by the researcher, it was used to introduce the researcher to respondents and to establish a rapport. The questionnaire was then hand delivered to respondents and collected after four days.

Self-administered questionnaires (SAQs) were used to collect quantitative data from the Customs service staff and Customs agents. SAQs were used for these category of respondents to save on time because their number was big to interview and because they could read and write in English and thus fill in the questionnaires by themselves without any assistance.

Face-to-face interviews were used to collect data from managers and some customs agents' leaders because they enabled the researcher to establish rapport with these categories of respondents and therefore gain their cooperation. They also allowed the researcher to clarify ambiguous answers and obtain in-depth information through probing.

Documentary review was used to collect data or written information related to CIS and performance of the Customs Department. This information was obtained by reviewing organizational documents such as project reports, management performance reports, accounting reports, organization strategy documents, memorandum of understanding, minutes of meetings and URA intranet as well as databases. This information supplemented information obtained using questionnaires and interview guide.

### 3.9 Measurement of Variables

Background information on respondents, which included gender, age, job category and length of service in the Customs Department, was measured using nominal and ordinal scales (Mugenda & Mugenda 1999; Amin, 2005). The independent, dependent and moderating variables were measured an ordinal scale using a Likert scale of 1 to 5 points (1 = strongly agree, 2 = Agree, 3 = Not sure, 4 = Disagree, and 5 = strongly disagree). Each respondent was asked to select the response that best described his/her reaction on

each of the items seeking his/her opinion concerning the use of the CIS. Using this scale facilitated the interpretation and analysis of the quantitative data. CIS, which was the independent variable, was operationalized into dimensions of input, processes and output while performance of the Customs Department, which was the dependent variable, was operationalized using dimensions of efficiency, control and administrative burden. Each of the dimensions was further operationalized into indicators. Items on each of the indicators were formulated as per the questionnaire to capture responses for ease of measurement.

### 3.10 Data Analysis

Data analysis involved cleaning, coding, categorizing and capturing of data into the computer, with consideration given to whether data being analyzed was qualitative or quantitative to bring order, structure and meaning to the mass of information gathered (Mugenda and Mugenda, 2003). Analysis enabled the researcher interpret the data and the use of a computer to analyze it saved time and increased accuracy.

#### 3.10.1 Quantitative Data Analysis

Each of the questionnaires collected was checked for completeness and a decision made to retain all questionnaires filled. The data was then entered in SPSS. According to American Psychological Association (APA), it is advisable that when presenting the results of statistical tests, the researcher should give descriptive statistics before the corresponding inferential statistics (Plonsky, 2007). Data was analyzed using frequency tables and percentages to establish respondents' view on each of the variables and Pearson's coefficient to establish the relationships between two variables (Mugenda & Mugenda, 2003). The Pearson's coefficient (r) was used to determine the strength of the

relationship between the CIS and performance in the Customs Department. The sign of Pearson's coefficient was used to determine the direction of relationship in the CIS and performance in the Customs Department. The significance of Pearson's coefficient was used to test the findings at 0.05 critical significance level.

The coefficient of determination ($r^2$), which is the square of the correlation, was used to assess the contribution of the CIS on performance in the Customs Department. This was expressed in percentage to determine the contribution of the CIS on performance in the Customs Department, that is, the amount of variation explained by the independent variable(s) (Amin, 2005).

### 3.10.2 Qualitative Data Analysis

This involved data reduction, data display, and conclusion drawing or verification. In qualitative analysis, several simultaneous activities engaged the attention of the researcher and these included collecting information from the field; coding, sorting information into categories, formatting the information into useful themes and relationships; and actually writing the qualitative narrative summary (Denscombe, 1998). This information was then triangulated with the quantitative data.

# CHAPTER FOUR

# PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

## 4.0 Introduction

In this chapter, findings on CIS and performance in Customs Department are presented, analyzed and interpreted. The chapter is presented in five sections. In the first, results on the background of respondents is analyzed and interpreted. This is followed by the second and third sections in which results on objective one and two respectively are analyzed and interpreted. Results on objective three are analyzed and interpreted in the fourth section. And the fifth dwells on analysis and interpretation of objective four results

## 4.1 Response Rate

In this study, the sample was 114 subjects and 106 responded to the questionnaires and 8 out 11 targeted for interviews were interviewed. The response rate was approximately 93% for the questionnaire and 73% for the interviews well above the recommended two-thirds (67%) response rate for any researcher to start analyzing data (Amin, 2005). The 93% and 73% response rate shows that there were non-responses and suggested reasons were refusal to respond, inability to respond and failure to make contact with respondents. Response rate gives perspective to the data and results and consequently the framework in which conclusions can be made (Basheka, 2009).

## 4.2 Background of respondents

This focused on gender, age, job category and length of service of respondents because these could compromise the study findings whereby information could be biased if the sample used in the analysis does reflect the distribution of respondents as per target population. Findings are presented in the following tables, which are then accompanied with an analysis and interpretation.

### 4.2.1 Age group of respondents

The following table presents findings about age group of respondents. Following the table is the analysis and interpretation.

**Table 3: Findings about age group of respondents**

| **Age group of respondents** | Number of respondents | Percent |
|---|---|---|
| 26-30 Yrs | 24 | 22.6 |
| 31-35 Yrs | 14 | 13.2 |
| 36-40 Yrs | 37 | 34.9 |
| 41 yrs and above | 29 | 27.4 |
| Total | 104 | 98.1 |
| Non-response | 2 | 1.9 |
| Total | 106 | 100.0 |

Findings show that most respondents (62.3%) were aged 36 years and above compared to those who were aged 26-35 years. This was because the study tried to target people who had worked for some time in that these would be in position to have acquired more knowledge about the objectives the study sought to answer.

### 4.2.2 Job category of respondents

The following table presents findings about job category of respondents. Following the table is the analysis and interpretation.

**Table 4: Findings about job category of respondents**

| **Job category of respondents** | Number of respondents | Percent |
|---|---|---|
| Senior management | 6 | 5.7 |
| Customs Staff | 71 | 67.0 |
| Project team | 6 | 5.7 |
| IT team | 3 | 2.8 |
| Licensed Customs clearing agent | 20 | 18.9 |
| Total | 106 | 100.0 |

Findings further show that most respondents 71 (67%) were Customs staff, this was because they were the majority system users from the population the study targeted. Thus,

information obtained was representative of the views of the category of people in the study population.

### 4.2.3 Length of service of respondents

The following table presents findings about length of service of respondents. Following the table is the analysis and interpretation.

**Table 5: Findings about the length of service of respondents**

| **Length of Service of respondents** | Number of respondents | Percent |
|---|---|---|
| 1 – 5 Years | 29 | 27.4 |
| 6 – 10 Years | 18 | 17.0 |
| 11 – 15 Years | 38 | 35.8 |
| 16 – 20 Years | 21 | 19.8 |
| Total | 106 | 100.0 |

It is shown that most respondents (55.6%) had worked for over 10 years compared to respondents who had worked 1 to 10 years. These findings show that the study used a representative sample from the population because URA Customs Department is composed of employees with the same length of service as shown in the findings. Thus, the information obtained about CIS and performance using these respondents reflected that of the populations, which had similar lengths of service.

## 4.3 Customs Information System and Efficiency in the Performance of the Customs Department of URA

According to APA and in line with UMI guidelines, it is advised that when presenting the results of statistical tests, the researcher should give descriptive statistics before the corresponding inferential statistics (Plonsky, 2007). In other words, a researcher should give means and/or percentages including others statistics (referring to a table or figure), before talking about the results of any statistical test performed. This helps in interpreting

the results of the statistical tests performed because if descriptive findings show that the CIS is poor, then you can relate this poor performance of the Customs Department is also poor. This advice was adopted and the descriptive statistics used included frequencies, percentages, means and standard deviation to describe the variables of the study. The following are the descriptive results on efficiency in the performance of the Customs Department.

### 4.3.1 Descriptive Findings about Efficiency in the Performance of the Customs Department of URA

Efficiency in the revenue performance of the Customs Department had the following 19 items. Therefore, computation of findings in form of frequencies, percentages, mean and standard deviation on items are presented in the following table 7 followed by an analysis and interpretation.

**Table 6: Findings about efficiency**

| **Items on accuracy** | **1 Strongly agree** | **2 Agree** | **3 Not sure** | **4 Disagree** | **5 Strongly disagree** | **Total** |
|---|---|---|---|---|---|---|
| 1. Revenue transaction information declared to customs is complete | 10 (9%) | 41 (39%) | 6 (6%) | 47 (44%) | 2 (2%) | 106 (100%) |
| 2. The Customs Department is in position to generate correct revenue related data | 14 (13%) | 74 (70%) | 4 (4%) | 14 (13%) | 0 (0%) | 106 (100%) |
| 3. Auto processing reduces duplication of transactions information | 27 (25%) | 64 (60%) | 8 (8%) | 5 (5%) | 2 (2%) | 106 (100%) |
| 4. User defined reports generated are accurate | 23 (22%) | 42 (40%) | 16 (15%) | 23 (22%) | 0 (0%) | 104 (100%) |
| **Items on processing time** | | | | | | |
| 1. Processing time for customs entries meet set standards | 9 (9%) | 45 (43%) | 11 (11%) | 36 (35%) | 3 (3%) | 104 (100%) |
| 2. Automating revenue payment enables generation of timely accounting reports | 27 (27%) | 68 (67%) | 3 (3%) | 3 (3%) | 0 (0%) | 101 (100%) |
| 3. Capturing data once at a single point saves time | 58 (56%) | 41 (39%) | 5 (5%) | 0 (0%) | 0 (0%) | 104 (100%) |
| 4. Automatic validation enables timely reconciliation of transactions | 46 (45%) | 47 (46%) | 6 (6%) | 3 (3%) | 0 (0%) | 102 (100%) |
| 5. I am satisfied with customs entry transaction process time | 5 (5%) | 43 (41%) | 16 (15%) | 34 (33%) | 6 (6%) | 104 (100%) |
| **Items on process cost** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. Using computerized system has reduced human resource costs associated in the customs clearance of goods | 15 (14%) | 59 (57%) | 19 (18%) | 11 (11%) | 0 (0%) | 104 (100%) |
| 2. Material costs e.g. of paper associated with customs clearance of goods have reduced | 16 (15%) | 56 (54%) | 20 (19%) | 10 (10%) | 2 (2%) | 104 (100%) |
| 3. Automating customs processes has enabled cutting cost | 10 (10%) | 64 (65%) | 19 (19%) | 5 (5%) | 0 (0%) | 98 (100%) |
| 4. Indirect costs incurred for customs clearance of goods have reduced | 5 (5%) | 53 (52%) | 25 (25%) | 16 (16%) | 3 (3%) | 102 (100%) |
| 5. Self declaration availed to the business community has reduced transaction processing costs | 17 (16%) | 56 (54%) | 23 (22%) | 8 (8%) | 0 (0%) | 104 (100%) |
| **Items on operational excellence** | | | | | | |
| 1. Automating processes has simplified the flow of transactions in customs operations so minimizing delays | 22 (21%) | 71 (68%) | 2 (2%) | 9 (9%) | 0 (0%) | 104 (100%) |
| 2. There is minimal wastage of material resources during customs operations | 14 (13%) | 63 (61%) | 17 (16%) | 10 (10%) | 0 (0%) | 104 (100%) |
| 3. Linking banks, traders, warehouses and transporters to customs stations has improved cost of collecting revenue | 32 (31%) | 61 (60%) | 7 (7%) | 2 (2%) | 0 (0%) | 102 (100%) |
| 4. The Customs Department is able to detect errors in advance | 9 (9%) | 48 (46%) | 10 (10%) | 34 (33%) | 3 (3%) | 104 (100%) |
| 5. The number of transactions processed in a given time has increased | 29 (28%) | 50 (49%) | 15 (15%) | 8 (8%) | 0 (0%) | 102 (100%) |
| **Total** | **20 (19%)** | **55 (53%)** | **12 (12%)** | **15 (15%)** | **1 (1%)** | **103 (100%)** |
| **Mean** | **2.24** | | | | | |
| **Standard deviation** | **0.96** | | | | | |

It can be observed from the total row that more respondents 55 (53%) agreed with efficiency compared to 20 (19%) who strongly agreed 12 (12%) who were neutral 15 (15%) who disagreed and 1 (1%) who strongly disagreed. Given that percentage of respondents who agreed and strongly agreed is 75 (72%), then the results show there is efficiency in the performance of the Customs Department. This is further confirmed by the mean score of 2.24. This shows that on average respondents agreed that there is efficiency in the performance of the Customs Department of the URA. The standard deviation (0.96) shows that the spread of distribution of the respondents is 1.28 (that is mean score – standard deviation) to 3.2 (that is mean score + standard deviation). This implies distribution of the respondents from the mean scores covers those who strongly

agreed, agreed and were not sure that there is efficiency in the performance of the Customs Department of the URA.

#### 4.2.1.1 Accuracy

When percentages of respondents who strongly agreed and agreed were summed into one category of respondents who concurred to each of the items, results show that over 60% of the respondents concurred with three out of four items (2, 3 and 4) about accuracy in Table 7. Thus, indicating that accuracy was in reduction of duplication of transactions information, generation of correct revenue related data and user defined reports. However, accuracy was wanting in completeness of revenue transaction information declared to customs, as nearly half of respondents 49 (46%) did not agree to item 1.

Interview findings provided more insight. For example, supporting findings from the questionnaire about accuracy in minimizing duplication, generation of correct revenue related data and user defined reports, interview findings revealed the following. From the interview with the customs agent and ASYCUDA core team member, it was established that the CIS has enabled Customs Department to have a dual mechanism to backup of information for future reference especially in case of loss of information. This was further supported by the customs agent and ASYCUDA core team member who revealed that the CIS has specific guidelines and configured codes for capturing, classifying and storing records, which helps to automatically compute data and reduce on the frequency of errors. However, interviews with customs agents, senior managers and ASYCUDA core team members revealed that there were still inaccuracies even when the CIS is used in compiling revenue related data that arise due to the human element. It can be interpreted that there is improvement in accuracy with each upgrade of the CIS seen in reduced

errors, however, this is dependent on the system design, how and what is input according to the senior manager and core team member. Findings further show that accuracy, there are other related factors there are other factors to consider, such as human intervention. In addition, a review of the ASYCUDA++ Project Document (2000) specifies functional and other capabilities of the system that are similar to positive findings on accuracy in the questionnaire and interviews in relation to customs performance using the CIS. Generally, it can be interpreted that an improvement in accuracy indicates improvement in efficiency in performance of the Customs Department.

#### 4.3.1.2 Processing time

Findings show that over 90% of the respondents concurred with three out of five items (2, 3 and 4) indicating that processing time decreased in automating revenue payment, capturing data, and automatic validation. However, findings further show that processing time was compromised in customs entry transaction processing as over a third of the respondent (38-39%) were opposed to items 1 and 5. Thus, from the findings it is shown that processing time is satisfactory. Interview findings provided more insight as shown in the following:

Like findings from the questionnaire, interview findings also showed that processing time is excellent though negatively affected by user delay to take action. For example, an interview with the customs agent, senior manager, ASYCUDA core team member and senior manager revealed that CIS enabled automatic and instant data input, which improved the time taken processing data including fast clearance of goods by URA. However, the senior manager said that processing time was still compromised since the system is not fully automated, for example, lodgment is manual. The senior manager

emphasized that although there was improvement in processing time, it depended on the risk reporting on transactions being cleared using the system set criteria. Review of database and ASYCUDA Project Team Report (2008) are comparable to findings from primary data. However, findings from Time Release Study Report (2008) show reservations in spite of improvements made, where the longest time taken was found to be 5 days in Kampala, contrary to half an hour-two days as configured in the system. Overall, it can be interpreted from both primary and secondary data that there is efficiency in processing time in performance of the Customs Department.

#### 4.3.1.3 Processing costs

It is further shown that approximately over 60% of the respondents were supportive of items 1, 2, 3, 4 and 5. Thus, it can be interpreted that to some extent there were reductions in human resources costs, materials costs, and transaction costs.

Findings from interview concurred with the above findings. An interview with customs agents and senior managers revealed that CIS reduced processing costs because money that would be spent on stationery and printed forms is saved given that information became electronically captured using templates, stored, accessed and retrieved. However, an interview with some senior managers revealed that processing costs would reduce further if all process were automated and further said that the processing costs depended on the level of transparency in declaration by URA agent when clearing goods with the aid of the CIS. Documentary review of ASYCUDA Project Team Report (Jan, 2008) give additional evidence confirming CIS has improved processing cost of materials by reducing; procurement of printed forms, errors in computation, and man power due to auto processing. It can be interpreted from both primary and secondary data that the CIS

enabled efficiency in cutting cost in customs performance in URA but also highlights possibility of abuse.

#### 4.3.1.4 Operational Excellence

Thus, from this analysis, it can be interpreted that operational excellence was satisfactory in the following areas where over 70% of the respondents gave a positive response to items 1, 2, 3 and 5. First, automating processes simplified the flow of transactions thus minimizing delays and wastage of material resources during customs operations. Second, linking banks, traders, warehouses and clearing and forwarding companies to customs stations has improved cost of collecting revenue, as there is minimum physical movement required. Lastly, there has been an increase in the number of transactions processed in a given time. However, the Customs Department still faced a challenge in detecting and minimizing errors in advance despite adoption of the CIS.

In support of these findings were interview findings. For example, an interview with customs agents revealed that the CIS enabled the Customs Department to ease work given that processing procuring prescribed forms was no longer cumbersome and computing taxes was done faster electronically. In addition, the customs agents said during the interview that the CIS enabled the Customs Department to reduce on queries resulting from errors. Furthermore, an interview with customs agent established that the CIS enabled the Customs Department to reduce on the loss of information/data. In addition, an interview with customs agents, senior managers and ASYCUDA core team member; revealed that the CIS enabled the Customs Department to; capture, store, access and utilize more data, improve the relationships between customs staff and the business community, reduce on the time taken to do work, and improved productivity. Positive

findings from primary data are supported by secondary data from URA performance management/accounting reports produced monthly/annually, and ASYCUDA Team Reports. Overall, these improvements can be interpreted as a demonstration of operational efficiency in performance in the Customs Department URA

### 4.3.2 Descriptive Findings about Custom Information System: ASYCUDA++

CIS had the following three dimensions: data input, processing, and output. Therefore, findings in form of frequencies, percentages, mean and standard deviation on items about CIS were computed and presented in the following table.

**Table 7: Findings about CIS**

| Items on data timing | Strongly agree | Agree | Not sure | Disagree | Strongly disagree | Total |
|---|---|---|---|---|---|---|
| 1. Up to date data is captured into the ASYCUDA++ whenever required to facilitate Customs clearance of goods | 29 (27%) | 57 (54%) | 5 (5%) | 10 (9%) | 5 (5%) | 106 (100%) |
| 2. Import/Export data from various sources is frequently input into the ASYCUDA++ for processing | 15 (14%) | 64 (60%) | 14 (13%) | 10 (9%) | 3 (3%) | 106 (100%) |
| 3. Large volumes of Customs data entries are processed quickly through ASYCUDA++ at various points | 26 (25%) | 59 (57%) | 5 (5%) | 11 (11%) | 3 (3%) | 104 (100%) |
| 4. Facts on goods declared to Customs have enabled building of a pool of data for timely decision-making | 15 (14%) | 59 (56%) | 12 (11%) | 17 (16%) | 3 (3%) | 106 (100%) |
| **Items on data content** | | | | | | |
| 1. Data declared for capturing in ASYCUDA ++ is correct | 2 (2%) | 43 (41%) | 28 (26%) | 31 (29%) | 2 (2%) | 106 (100%) |
| 2. Data captured in ASYCUDA++ is complete to enable registration and assessment of revenue | 7 (7%) | 60 (58%) | 12 (12%) | 23 (22%) | 2 (2%) | 104 (100%) |
| 3. Relevant data is captured in the system | 19 (18%) | 63 (59%) | 13 (12%) | 11 (10%) | 0 (0%) | 106 (100%) |
| 4. Source documents provide detailed data to input in the system (i.e. on cost of goods, freight, quantity, description of goods bought, importer, shipper etc) | 21 (20%) | 53 (51%) | 9 (9%) | 16 (15%) | 5 (5%) | 104 (100%) |
| 5. Source documents provide clean data to input in the ASYCUDA++ | 10 (10%) | 26 (25%) | 31 (30%) | 35 (34%) | 2 (2%) | 104 (100%) |
| **Items on data form** | | | | | | |
| 1. Details on goods for clearance through Customs are captured from reliable source documents | 7 (7%) | 41 (39%) | 24 (23%) | 34 (32%) | 0 (0%) | 106 (100%) |
| 2. Source documents provide organized data to input in the ASYCUDA++ | 15 (14%) | 44 (42%) | 27 (26%) | 18 (17%) | 0 (0%) | 104 (100%) |
| 3. Facts on goods for clearance are presented in a format that is appropriate to be captured | 10 (9%) | 62 (58%) | 18 (17%) | 13 (12%) | 3 (3%) | 106 (100%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4. Data is correctly input into ASYCUDA++ | 10 (9%) | 50 (47%) | 22 (21%) | 24 (23%) | 0 (0%) | 106 (100%) |
| **Items on data verification** | | | | | | |
| 1. Facts about goods being processed for clearance by Customs using ASYCUDA++can be crosschecked for correctness | 31 (32%) | 52 (54%) | 6 (6%) | 8 (8%) | 0 (0%) | 97 (100%) |
| 2. Using ASYCUDA++, risk can be identified during Customs clearance of goods | 15 (14%) | 81 (76%) | 7 (7%) | 0 (0%) | 3 (3%) | 106 (100%) |
| 3. Users are in position to carry out timely reconciliation of transaction in ASYCUDA++ | 24 (23%) | 72 (68%) | 4 (4%) | 3 (3%) | 3 (3%) | 106 (100%) |
| 4. ASYCUDA++ aids confirmation of outstanding bond guarantees / taxes in the system | 34 (32%) | 61 (58%) | 5 (5%) | 3 (3%) | 3 (3%) | 106 (100%) |
| 5. Transactions can be checked for completeness using the system | 39 (37%) | 49 (46%) | 8 (8%) | 10 (9%) | 0 (0%) | 106 (100%) |
| **Items on data classification** | | | | | | |
| 1. Description and naming of goods is enabled using ASYCUDA++ | 43 (41%) | 47 (44%) | 11 (10%) | 5 (5%) | 0 (0%) | 106 (100%) |
| 2. Users are in position to confirm tax rates applicable to goods using the system | 58 (55%) | 42 (40%) | 3 (3%) | 3 (3%) | 0 (0%) | 106 (100%) |
| 3. Users are in position to identify and confirm exempted goods | 39 (37%) | 56 (53%) | 9 (8%) | 2 (2%) | 0 (0%) | 106 (100%) |
| 4. Users are in position to administer preferential treatment to categories of goods based on rules of origin using codes | 30 (29%) | 58 (56%) | 7 (7%) | 6 (6%) | 3 (3%) | 104 (100%) |
| **Items on data computation** | | | | | | |
| 1. Users are in position to make revenue projections using data in ASYCUDA++ | 20 (19%) | 43 (41%) | 31 (29%) | 12 (11%) | 0 (0%) | 106 (100%) |
| 2. Data stored in ASYCUDA++ can be analyzed to show trends in international trade | 16 (15%) | 78 (74%) | 12 (11%) | 0 (0%) | 0 (0%) | 106 (100%) |
| 3. Revenue payable/paid can be assessed according to tax heads (Import duty, VAT, Withholding tax) | 62 (58%) | 44 (42%) | 0 (0%) | 0 (0%) | 0 (0%) | 106 (100%) |
| 4. Amount or revenue collected/outstanding can be calculated for further action | 47 (44%) | 49 (46%) | 8 (8%) | 2 (2%) | 0 (0%) | 106 (100%) |
| **Items on data selection** | | | | | | |
| 1. Transactions under process in the system are selected for action on a set criteria for ease of facilitation according to level of risk | 38 (36%) | 59 (56%) | 4 (4%) | 2 (2%) | 3 (3%) | 106 (100%) |
| 2. Declarations selected along set criteria are subjected to varying degree of scrutiny | 38 (36%) | 68 (64%) | 0 (0%) | 0 (0%) | 0 (0%) | 106 (100%) |
| 3. Risk profiles are built based on data accumulated using established criteria Profile | 23 (22%) | 69 (65%) | 11 (10%) | 3 (3%) | 0 (0%) | 106 (100%) |
| **Items on data summarizing** | | | | | | |
| 1. Users are in position to access required import/export trade related figures from the system | 29 (27%) | 70 (66%) | 2 (2%) | 5 (5%) | 0 (0%) | 106 (100%) |
| 2. Users can generate revenue related summary reports of revenue collected / collectable using ASYCUDA++ | 46 (43%) | 50 (47%) | 7 (7%) | 3 (3%) | 0 (0%) | 106 (100%) |
| 3. Summary reports of revenue outstanding can be extracted from ASYCUDA++ | 35 (33%) | 61 (58%) | 8 (8%) | 2 (2%) | 0 (0%) | 106 (100%) |
| 4. Stored data can be processed into accurate summary reports on import/export trade trends | 31 (29%) | 57 (54%) | 12 (11%) | 6 (6%) | 0 (0%) | 106 (100%) |
| **Items on information output** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. Users can access correct information for management reports and decision-making using ASYCUDA++ | 33 (31%) | 52 (49%) | 18 (17%) | 0 (0%) | 3 (3%) | 106 (100%) |
| 2. Customs Department can generate accurate warehousing bond guarantee related information | 30 (28%) | 59 (56%) | 12 (11%) | 5 (5%) | 0 (0%) | 106 (100%) |
| 3. Information on goods in transit from different entry points can be accessed using ASYCUDA++ countrywide in real time | 57 (54%) | 26 (25%) | 17 (16%) | 3 (3%) | 3 (3%) | 106 (100%) |
| 4. The system aids generation of correct information for revenue accounting to users | 30 (28%) | 54 (51%) | 19 (18%) | 3 (3%) | 0 (0%) | 106 (100%) |
| 5. The Department can avail information on goods selected for action based on level of risk analyzed using ASYCUDA++ | 33 (32%) | 56 (54%) | 12 (12%) | 3 (3%) | 0 (0%) | 104 (100%) |
| 6. The Customs Department of URA is in position to distribute information wherever it is required on time. | 26 (25%) | 59 (56%) | 9 (8%) | 12 (11%) | 0 (0%) | 106 (100%) |
| 7. Information from ASYCUDA++ is complete | 9 (8%) | 41 (39%) | 31 (29%) | 25 (24%) | 0 (0%) | 106 (100%) |
| 8. Information from ASYCUDA++ is relevant | 29 (27%) | 70 (66%) | 7 (7%) | 0 (0%) | 0 (0%) | 106 (100%) |
| **Items on feedback** | | | | | | |
| 1. Information on actual and planned revenue results is obtainable for comparison from ASYCUDA++ for decision-making | 26 (25%) | 54 (51%) | 20 (19%) | 3 (3%) | 3 (3%) | 106 (100%) |
| 2. Clients can access timely updates on progress of their transactions using ASYCUDA++ | 29 (28%) | 47 (45%) | 12 (12%) | 13 (13%) | 3 (3%) | 104 (100%) |
| 3. Corrective actions can be taken based on status of transactions results in ASYCUDA++ whenever needed | 22 (21%) | 59 (56%) | 16 (15%) | 6 (6%) | 3 (3%) | 106 (100%) |
| **Total** | **26 (25%)** | **58 (55%)** | **11 (10%)** | **8 (8%)** | **3 (3%)** | **106 (100%)** |
| **Mean** | **2.09** | | | | | |
| **Standard deviation** | **0.95** | | | | | |

More respondents 58 (55%) agreed with questions asked about CIS compared to 26 (25%) who strongly agreed 11 (10%) who were neutral and 8 (8%) who disagreed and 3 (3%) who strongly disagreed. Given that percentage of respondents who agreed and strongly agreed is 84 (80%), which shows the majority of respondent then the results show there is improvement in CIS in the Customs Department of the URA. This is further confirmed by the mean score of 2.09. On average, respondents agreed that there is improvement in CIS in the Customs Department of the URA. The standard deviation (1.03) shows that the spread of distribution of the respondents is 1.14 (that is mean score – standard deviation) to 3.04 (that is mean score + standard deviation). This implies

distribution of the respondents from the mean scores covers those who strongly agreed, agreed and were not sure that there is improvement in CIS in the Customs Department.

#### 4.3.2.1 Data Input

**Data timing**

From analysis, it can be interpreted that data timing was satisfactory in items 1, 2, 3 and 4 where, over 70% of the respondents gave a positive response. Findings in particular show that for most respondents, up-to-date data was captured into the ASYCUDA++ whenever required to facilitate customs clearance of goods and import/export data from various sources was frequently input into the ASYCUDA++ for processing. Lastly, large volumes of Customs data entries were processed quickly through ASYCUDA++ at various points and facts on goods declared to customs enabled building of a pool of data for timely decision-making.

Interviews availed more details about data timing. For example one with a senior manager revealed the data input in ASYCUDA++ is timely and is always up-to-date. A customs agent in support said that as soon as declaration are made URA is able to know particulars of imports/exports, for either home use or in transit. Similarly, an ASYCUDA++ core team member said that timing of declaration is whenever there is an import/export. However, the senior manager also supports other interviewees but highlights that data timing is affected by manual lodgment because data is captured but if the entry is not physically lodged, it continues pending. This shows that CIS is not the cause of delays but because of it not being fully automated and depends on how fast human intervention is. A review of the ASYCUDA World Manual (2008) shows it is fully automated unlike ASYCUDA ++. Generally, it can be interpreted that data timing was satisfactory.

**Data content**

Findings show that data content was satisfactory in items 2, 3 and 4 where, over 65% of the respondents gave a positive response. In particular they show that for most respondents, relevant and complete data was captured in the system to enable registration and source documents provided detailed data to input in the system. However, data content was not satisfactory in the following areas where less than 65% of the respondents gave a positive response to items 1, and 5. This shows that data declared for capturing in ASYCUDA ++ was sometimes not correct for assessment of revenue and source documents did not sometimes provide clean data to input in the ASYCUDA++.

Interview findings concurred with findings from the questionnaire. For example, during the interviews with customs agents, ASYCUDA core team members and senior managers; it was established that although quality of data input is good in terms of cleanliness and facts, the challenges are with unreferenced information such as value of goods, incomplete and inaccuracies in data input. Overall, it can be interpreted that data quality is generally good although there is concern with data cleanliness and completeness in terms of content raising concern about reliability of data.

**Data form**

It is shown that data form was satisfactory although the percentage of respondents who gave a positive response to items 1 to 3 was 46-56%. This shows that details on goods for clearance through Customs were sometimes not captured from reliable source documents, source documents sometimes did not provide organized data to input in the ASYCUDA++, facts on goods for clearance were sometimes not presented in a format

that was appropriate to be captured and data was sometimes not correctly input into ASYCUDA++.

Interview findings also confirmed the questionnaire findings and even provided more clarity. Interview with senior managers and ASYCUDA core team members showed that an improvement in the data form is in aspects of the way it is organized. However, the interviews also revealed that data form is still wanting as far as reliability is concerned. The positive findings of the interview support findings from the questionnaire that indicated satisfaction with data form among some respondents while the negative interview findings support findings from the questionnaire that indicated dissatisfaction with data form among some respondents. From these findings, it can be deduced that despite having in place a CIS in the Customs Department, data form is still compromised.

#### 4.3.2.2 Data Processing

**Data verification**

From the analysis, it can be interpreted that data verification was satisfactory. This was because from all the five items in the table, over 80% of the respondents were in favor showing the CIS allowed transactions to be crosschecked for correctness, risk, timely reconciliation, outstanding bond guarantees/taxes and completeness. Thus, these findings show that data verification using ASYCUDA was satisfactory.

Despite this, an interview reveals that the extent to which verification will be effective depends on other factors such as nature of goods and honesty as shown in the following:

> Verifying depends on who is declaring and what customs expects, which is a challenge especially where goods declared are mixed items and some items are

> not standardized. I may use my discretion to give you a weight of which you will not be able to verify. Therefore, in some areas sometimes the requirements asked for are unrealistic (*Interview with Customs agent*).

Both findings from the questionnaire and interview revealed that verification by the CIS was satisfactory though there was the human element to consider especially in terms of integrity.

**Data classification**

It can be interpreted that over 80% of the respondents agreed data classification was satisfactory in the Customs Department. It is shown that because of the CIS, description and naming of goods was enabled, users were in position to; confirm tax rates applicable to goods, identify and confirm exempted goods and administer preferential treatment to categories of goods basing on country of manufacture using codes.

However, an interview finding revealed more insight in the data classification using ASYCUDA++ as shown in the following. A senior manager during the interview noted that classification is not easy because it depends on description. He went on to explain that if one had the right description he/she would get the correct classification. This is interpreted so because classification is supported by reference tables configured in the CIS.

**Data computation**

Findings show that the data computation was satisfactory in the Customs Department using the data in the CIS. This was because users were in position to make revenue projections, analyze trends in international trade, assess revenue payable/paid according

to tax heads, and calculate amount or revenue collected/outstanding for further action. An interview finding was supportive but with reservation. The senior manager revealed during the interview that assessment of taxes is satisfactory. However, he said it depends on the human element because if a person's input is based on a wrong code or classification then revenue assessment will be affected.

**Data selection**

Thus, from this analysis over 85% of the respondents agreed to all items, it can be interpreted that the data selection was satisfactory in the Customs Department. Findings show that using CIS, transactions under process in the system were selected for action on set criteria for ease of facilitation according to level of risk and subjected to varying degree of scrutiny and risk profiles were built based on data accumulated. This is further supported by a review of the database selectivity module under which performance is analyzed based on risk.

**Data summarizing**

From this analysis, over 80% respondents agreed on each of the four items on data summarizing. It can be interpreted that the data summarizing was satisfactory in the Customs Department. This was because users were in position to access required import/export trade related figures from the system and generate revenue related summary reports of revenue collected/collectable, extract summary reports of revenue outstanding and process stored data into accurate summary reports on import/export trade trends.

An interview finding was supportive of these findings as shown in the following. Accounting reports are more or less accurate because they are crosschecked with bank information/returns. Reconciliation of these records is on time. Management of reports generated is good because user reports are accurate. However, if you look at another angle accuracy of reports still depends on the human element that is, how and what data is input by users. What is missing is for management at the top level to regularly go through the reports to confirm what comes in, due to inflexibility in report extraction (*Interview with senior manager*). This is supported by ASYCUDA Team Reports (2008), which indicated the team is not in position to adjustments some system modules and functionality for better performance even, with the help of UNCTAD. Overall, data summarizing is satisfactory.

#### 4.3.2.3 Data Output

**Information output**

Thus, the following interpretation is drawn from the analysis of each item whereby over 70% concurred with the first six items. This shows that correct information for management reports and decision-making was accessed, accurate information was generated, information on goods in transit was accessed countrywide in real time, correct information for revenue accounting was generated, information on goods selected for action based on level of risk analyzed was availed, and relevant information was distributed wherever it was required on time. However, there were reservations about information output concerning completeness. Thus, from this analysis, it can be interpreted that despite incompleteness in information output as shown in item 8, information output was satisfactory.

Interview findings were supportive of the questionnaire findings. For example, interviews with senior managers and ASYCUDA core team member established that the CIS enabled the Customs Department to produce accurate revenue figures but challenge is unreferenced data input, wrong input and failure to intervene on time.

**Feedback**

From analysis, given that over 70% concurred with all the three items, it can be interpreted that the data feedback was satisfactory in the Customs Department. The study shows that because of the CIS, information on actual and planned revenue results was obtainable for decision-making, clients accessed timely updates on progress of their transactions and corrective actions were taken based on status of transactions results whenever needed.

Overall, it can be interpreted that CIS data input, processing and output are satisfactory in there functionality. Documentary review of ASYCUDA++ and ASYCUDA World systems give a comparative view of the technical capability, functionality, operational capacity, design and advantages of each system to mention a few (ASYCUDA++ Project Document, 2000 & ASYCUDA World Manual, 2008)

### 4.3.3 Testing hypothesis one: There is no relationship between Customs Information System (CIS) and efficiency in the performance of the Customs Department of URA

The alternative hypothesis was “The CIS significantly contributes to the efficiency in the performance of the Customs Department of URA”. To establish whether CIS significantly contributed to efficiency in the performance of the Customs Department, Pearson

correlation and regression statistics were computed. Findings are presented in the following table followed with an analysis and interpretation.

**Table 8: Correlation between (CIS) and efficiency in the performance**

| | Customs Information System | Efficiency in the performance |
|---|---|---|
| Customs Information System | *r* = 1.000<br>p = .<br>n = 106 | |
| Efficiency in the performance | ***r* = .658(**)**<br>**p = .000**<br>**n = 106** | *r* = 1.000<br>p = .<br>n = 106 |
| Square of coefficient (regression) | $r^2$ = .432 | |

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

There is a strong positive correlation *r* = .658 between CIS and efficiency in the performance of the Customs Department. These findings were subjected to a test of significance, which showed that significance of the correlation coefficient (p = .000) was less than the critical significance at 0.05. Because of this, the null hypothesis was rejected and the alternative accepted. This implies that there is a strong positive relationship between CIS and efficiency in the performance of the Customs Department. The strong nature of the relationship means that an improvement in the CIS will generate a big improvement in efficiency in performance of the Customs Department. The positive nature of the relationship implies that the change in the two variables is in the same direction, whereby an improvement in CIS is related to more efficiency in performance of the Customs Department and vice versa.

Since the correlation does not indicate the percentage change in efficiency in performance of the Customs Department accounted for by the Customs Information System, a regression analysis was used to compute the square of the correlation coefficient ($r^2$ =

.432). The square of the correlation coefficient was expressed in percentage to determine the contribution of the CIS on efficiency in performance of the Customs Department. This revealed that CIS accounts for 43.2% of the change in efficiency in performance.

Relating to accuracy, an interview threw more light on the nature of the relationship. For example, the following were observed:

> There are shortcomings in the current CIS, which have just come up because of developments outside URA. For example, by the time the current CIS was implemented, there were no mobile phones. This new form of communication was not incorporated in the current CIS. What is happening is that agents would like to get such information but they cannot get it because the system has no capability to send out information in real time notifications to clients. One has to go physically to URA to confirm. There is another way of doing it, for example one can call and is told of transaction but that it is not as efficient as sending an SMS to a client. The system is still weak in that area may be until we upgrade to a newer version (*Interview with senior manager*).

The following was established during an interview about CIS and processing time as the interviewees had this to say;

> Exactly, Customs system has an effect on process time. Not all activities in the clearance chain are automated. That is, there is human intervention and therefore there are delays, which are not deliberate. For example, as a taxpayer, you submit documents but you encounter delays when more information is needed or a Customs officer going through your documents needs to carry out more research to confirm the value of a particular item you have presented. In addition, the system does not provide instant feedback on progress of transaction to clients. However, in the majority of cases, the system has helped in improving the URA

response time because of the improvement in processing time (*Interview with senior manager*).

From the interview findings, the nature of the relationship between CIS and processing costs was explained as shown in the following:

> When you are using a system, it is a combination of a number of things (there is the system and the people side). You may find that the processing cost may go up because people may take long to understand how to go around certain things in the system (*Interview with Asycuda core team member*).

Interviews specifically established the following about the relationship between CIS and operational excellence:

> There are shortcomings at management (strategic) level. The challenge with the current system (ASYCUDA++) is that the extraction of reports is not user friendly. The information is available but accessing it the way management would have liked, is a problem and the reason is the technology. The version being used right now requires someone to know the details of the data stored in the system in order to extract it. Otherwise, the newer technology (Asycuda World), which is being proposed, is that you need to just open the interface and everything is there in clear description understandable by any person and then the person clicks and the rest just continues like that (i.e. it is self-driven) unlike ASYCUDA++ (*Interview with senior manager*).

## 4.4 CIS and Control in the Performance of the Customs Department of URA

Descriptive statistics for control were computed before testing hypothesis two. Findings are presented in the following sub section.

### 4.4.1 Descriptive Findings about Control in Performance of the Customs Department of URA

Frequencies, percentages, mean and standard deviation on three indicators of control were computed and these included standards, inspection and compliance. Findings about these indicators are presented in the following sub sections; 4.4.1.1, 4.4.1.2 and 4.4.1.3 respectively. Thirteen items were presented to the respondents about control in performance of the Customs Department. Findings are presented in the following table followed by an analysis and interpretation.

**Table 9: Findings about Control**

| **Items on Standards** | **1 Strongly agree** | **2 Agree** | **3 Not sure** | **4 Disagree** | **5 Strongly disagree** | **Total** |
|---|---|---|---|---|---|---|
| 1. Customs Department's performances targets are achievable | 9 (9%) | 52 (51%) | 24 (24%) | 17 (17%) | 0 (0%) | 102 (100%) |
| 2. The Customs Department is in position to compare actual performance against plan | 20 (20%) | 54 (53%) | 18 (18%) | 10 (10%) | 0 (0%) | 102 (100%) |
| 3. There is a mechanism for monitoring completeness of transactions for all goods manifested by Customs. | 28 (27%) | 49 (48%) | 12 (12%) | 13 (13%) | 0 (0%) | 102 (100%) |
| **Items about inspection** | | | | | | |
| 1. Officers can conduct automated inspection of declared transactions | 28 (27%) | 55 (53%) | 3 (3%) | 18 (17%) | 0 (0%) | 104 (100%) |
| 2. Transaction inspection has achieved continuous satisfaction of customer requirements at lowest cost | 2 (2%) | 35 (35%) | 50 (50%) | 13 (13%) | 0 (0%) | 100 (100%) |
| 3. Customs officials can identify miss-declarations and take corrective action while processing a transaction or immediately after a transaction | 18 (17%) | 69 (66%) | 8 (8%) | 9 (9%) | 0 (0%) | 104 (100%) |
| 4. There are adequate access controls to prevent vulnerability of data | 15 (14%) | 49 (47%) | 16 (15%) | 19 (18%) | 5 (5%) | 104 (100%) |
| 5. Customs Department uses system tasks to detect errors and take corrective action | 6 (6%) | 58 (57%) | 31 (30%) | 7 (7%) | 0 (0%) | 102 (100%) |
| **Items on compliance** | | | | | | |
| 1. Customs is able to enforce compliance using risk management principles | 15 (15%) | 82 (80%) | 2 (2%) | 2 (2%) | 2 (2%) | 103 (100%) |
| 2. There are reduced queries arising from post-clearance audits | 2 (2%) | 32 (31%) | 45 (44%) | 18 (17%) | 6 (6%) | 103 (100%) |
| 3. Post-clearance audit of transactions has enhanced compliance | 9 (9%) | 61 (59%) | 16 (16%) | 15 (15%) | 2 (2%) | 103 (100%) |
| 4. Customs Department is in position to | 14 | 77 | 7 | 5 | 0 | 103 |

| | | | | | | |
|---|---|---|---|---|---|---|
| enforce adherence to systems and procedures | (14%) | (75%) | (7%) | (5%) | (0%) | (100%) |
| 5. There is improvement in compliance with Customs law and regulations and procedures | 8 (8%) | 78 (76%) | 11 (11%) | 6 (6%) | 0 (0%) | 103 (100%) |
| **Total** | **13 (13%)** | **58 (56%)** | **19 (18%)** | **12 (12%)** | **1 (1%)** | **103 (100%)** |
| **Mean** | **2.32** | | | | | |
| **Standard deviation** | **.88** | | | | | |

More respondents 58 (56%) agreed with the statements being asked about control compared to 13 (13%) who strongly agreed 19 (18%) who were neutral 12 (12%) who disagreed and 1 (1%) who strongly disagreed. Given that the percentage of respondents who agreed and strongly agreed is 70%, which shows the majority of respondents, then the results show there is improvement in control in the Customs Department. This is confirmed by the mean score (2.32). Thus on average, respondents agreed that there is improvement in control in the Customs Department. The standard deviation (0.88) shows that the spread of distribution of the respondents is 1.44 (that is mean score – standard deviation) to 3.20 (that is mean score + standard deviation). This implies that the distribution of the respondents from the mean scores covers those who strongly agreed, agreed and were not sure that there is improvement in control in the Customs Department.

#### 4.4.1.1 Standards

Findings show that standards were satisfactory. This was because from all the three items in the table, over 60% of the respondents were of the view that targets were achievable, actual performance was compared against planned, and a mechanism for monitoring completeness of transactions was in place. Thus, from this analysis, it can be interpreted that the standards were satisfactory in the Customs Department.

Interviews provided more insight about the standards. For example, the ASYCUDA core team members, and customs agents, senior manager showed that; there are standards in terms of; MOUs with stakeholders, ICT and data policy in the organization as well as customs procedures.

Primary findings are confirmed by documentary review of the existing ICT Policy (2006) soft copy on Intranet. The policy gives guidelines on what, how, who, when to system users, Customs Procedure Manual (2010), MOUs signed by external users like agents and application forms for rights to access by staff and ASYCUDA Manual (2004) confirm existence of satisfactory standards. However, adhering to them has not been easy because of inflexibility and weaknesses in the system, integrity issues of users, non-compliance and inaccuracies.

#### 4.4.1.2 Inspection

Findings from the specific items (1, 3, 4, and 5) show that over 60% of respondents were of the view that automated inspection of declared transactions were conducted, miss declarations and errors were identified and corrective action taken while processing a transaction or immediately after a transaction, and adequate access controls to prevent vulnerability of data were in place. However, it was not clear whether inspection achieved continuous satisfaction of customer requirements at lowest cost as shown by 50% who were neutral. Thus, from this analysis, it can be interpreted that the inspection was satisfactory at the Customs Department.

Interviews provided more insight about inspection as shown in the following;

> ASYCUDA is wonderful as far as inspection is concerned but it relies on the integrity of the officers who do the inspection (*Interview with Customs agent*).
>
> Customs has officers inspecting the way things are supposed to be. However, manipulating the system is very easy if you have a wrong clearing agent and a wrong officer. For example, the customs officer will surely value, verify, and inspect and send documents across without goods. It all tickles down to integrity versus compliance or dumping versus validation (*Interview with Customs agent*).

Both customs agents emphasize that the inspection is good but can be compromised by users both within and outside the URA raising issues of integrity.

#### 4.4.1.3 Compliance

It is revealed as per the items 1, 3, 4 and 5 that over 60% of the respondents concurred that compliance was enforced and enhanced although it was not clear whether there were reduced queries arising from post clearance audits. Thus, from this analysis, it can be interpreted that the compliance was satisfactory in the Customs Department.

Interview findings shed more light regarding enforcing compliance using ASYCUDA. For example, an interview with ASYCUDA core team member established that compliance enforcement has improved because tax rates and processing mechanisms are configured in conformity with the Customs Management Act. It can be interpreted that legal and compliance is enforced. Despite this, interview with customs agents revealed there are still problems such as irregularities and lack of capacity to capture some information. In spite of the controls established, there are still weaknesses.

### 4.4.2 Testing Hypothesis Two: There is no relationship between Customs Information System (CIS) and control in the performance of the Customs Department of URA

The alternative hypothesis was "The CIS significantly contributes to control in the performance of the Customs Department of URA". In order to test the hypothesis, a Pearson correlation and regression analysis was conducted. Findings are presented in the following tabled followed with an analysis and interpretation.

**Table 10: Correlation between CIS and control in the performance**

| | Customs Information System | Control in performance |
|---|---|---|
| Customs Information System | r = 1.000<br>p = .<br>n = 106 | |
| Control in performance | **r = .711(**)**<br>**p = .000**<br>**n = 106** | r = 1.000<br>p = .<br>n = 106 |
| Square of coefficient (regression) | $r^2$ = .505 | |

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

There is a strong positive correlation ($r$ = .711) between CIS and control in Customs performance. These findings were subjected to a test of significance, which showed that significance of the correlation coefficient (p = .000) was less than the critical significance at 0.05. Because of this, the null hypothesis was rejected and the alternative hypothesis accepted. This implies that there is a strong positive relationship between CIS and control in Customs performance. The strong nature of the relationship means that an improvement in the CIS will generate a big improvement in control in performance of the Customs Department. The positive nature of the relationship implies that the change in the CIS is in the same direction with the change in control, whereby an improvement in CIS is related to better control in performance of the Customs Department and vice versa.

A regression analysis was used to compute the square of the correlation coefficient ($r^2$ = .505). The square of the correlation coefficient was expressed into percentage to determine the contribution of the CIS on control in performance of the Customs Department. This revealed that CIS accounts for 50.5% of improvement in control in performance of the Customs Department and vice versa.

## 4.5 CIS and Administrative Burden in the Performance of the Customs Department of URA

Descriptive statistics for administrative burden were computed before testing hypothesis three. Findings are presented in the following sub section 4.5.1.

### 4.5.1 Descriptive Findings about Administrative Burden in the Customs Department of URA

Frequencies, percentages, mean and standard deviation on items about administrative burden were computed. Findings are presented in the following table followed by an analysis and interpretation.

**Table 11: Findings about administrative burden**

| Items about administrative burden | Very low | Low | Moderate | High | Very high | Total |
|---|---|---|---|---|---|---|
| 1. Checking and assessing tax/revenue declarations | 32 (31%) | 7 (7%) | 24 (23%) | 23 (22%) | 18 (17%) | 104 (100%) |
| 2. Familiarizing with the tax/revenue information obligation | 40 (38%) | 0 (0%) | 23 (22%) | 24 (23%) | 19 (18%) | 106 (100%) |
| 3. Training members, respondents and stakeholders about the tax/revenue information obligations | 0 (0%) | 49 (46%) | 14 (13%) | 19 (18%) | 24 (23%) | 106 (100%) |
| 4. Retrieving relevant tax/revenue information from existing data | 32 (31%) | 10 (10%) | 19 (18%) | 25 (24%) | 18 (17%) | 104 (100%) |
| 5. Amending or adjusting tax/revenue data | 0 (0%) | 55 (53%) | 8 (8%) | 21 (20%) | 20 (19%) | 104 (100%) |
| 6. Producing new tax/revenue data e.g. capturing data, generating reports, etc. | 0 (0%) | 45 (43%) | 19 (18%) | 19 (18%) | 21 (20%) | 104 (100%) |
| 7. Designing tax/revenue information material | 0 (0%) | 0 (0%) | 85 (80%) | 0 (0%) | 21 (20%) | 106 (100%) |
| 8. Filling in tax/revenue forms and tables including recordkeeping | 0 (0%) | 63 (61%) | 17 (16%) | 0 (0%) | 24 (23%) | 104 (100%) |
| 9. Holding meetings about tax/revenue internal/external with an auditor, lawyer and other stakeholders | 0 (0%) | 61 (58%) | 0 (0%) | 24 (23%) | 21 (20%) | 106 (100%) |
| 10. Paying extra charges e.g. demurrage, storage, truck retention, inspection etc | 0 (0%) | 0 (0%) | 93 (88%) | 0 (0%) | 13 (12%) | 106 (100%) |
| 11. Filing the tax/revenue information | 0 (0%) | 73 (69%) | 0 (0%) | 11 (10%) | 22 (21%) | 106 (100%) |
| 12. Buying or using IT equipment & supplies | 0 (0%) | 60 (59%) | 0 (0%) | 22 (22%) | 20 (20%) | 102 (100%) |
| **Total** | **9 (8%)** | **35 (34 %)** | **25 (24%)** | **16 (15%)** | **20 (19%)** | **105 (100%)** |
| **Mean** | **3.03** | | | | | |
| **Standard deviation** | **1.27** | | | | | |

More respondents 35 (34%) were of the view that administrative burden was low compared to 9 (8%) with the view that administrative burden was very low 25 (24%) with the view that administrative burden was moderate and 16 (15%) with the view that administrative burden was high disagreed and 20 (19%) with the view that administrative burden was very high. Given that percentage of respondents who with the view that administrative burden was low and very low is 42%, which is not very large, then the results show there is a slight improvement in administrative burden in the Customs Department. This is confirmed by the mean score (3.03), which when rounded off it becomes 3, a coding used to represent "moderate". On average, respondents agreed that

there is a moderate improvement in administrative burden in the Customs Department. The standard deviation (1.27) shows that the spread of distribution of the respondents is 1.76 (that is mean score – standard deviation) to 4.27 (that is mean score + standard deviation). This implies distribution of the respondents from the mean scores covers those with the view that administrative burden in the Customs Department was very low through moderate to high. The percentage distribution on each of the items generally shows that the administrative burden resulting from tax administration by the URA is low among various stakeholders.

Interviews provided more insight about the administrative burden. For example, interviews with customs agents, senior managers and ASYCUDA core team members revealed that because of the CIS, there was a reduction in the administrative burden in terms of working time, costs, and frequency of activity. However, the interviews also established that at times the administrative burden increased or does not change at all in the above areas due to the capacity of the system failing to do certain things, failure of users to learn using the system and inflexibility of the system.

### 4.5.2 Testing Hypothesis Three: There is no relationship between Customs Information System (CIS) and administrative burden in the performance of the Customs Department of URA

The alternative hypothesis state, “The CIS significantly influences administrative burden in the performance of the Customs Department of URA”. To test whether CIS significantly influences administrative burden, a Pearson correlation and regression analysis was conducted. Findings are presented in the following table followed with an analysis and interpretation.

**Table 12: Correlation between CIS and administrative burden in the performance**

| | Customs Information System | Administrative burden |
|---|---|---|
| Customs Information System | r = 1.000<br>p = .<br>n = 88 | |
| Administrative burden | **r = -.104**<br>**p = .334**<br>**n = 88** | r = 1.000<br>p = .<br>n = 88 |

There is a very weak negative correlation (*r* = -.104) between CIS and administrative burden in the performance. These findings were subjected to a test of significance, which showed that significance of the correlation coefficient (p = .334) was greater than the critical significance at 0.05. Because of this, the null hypothesis was up held and the alternative hypothesis rejected. This implies CIS does not significantly influence the administrative burden in the performance.

## 4.6 Moderating Effect of the Capacity of Users on the Relationship between CIS, Efficiency, Control and Administrative Burden in the Performance of the Customs Department of URA

Descriptive statistics for capacity of users of the CIS were computed before testing hypothesis four. Findings are presented in the following subsection.

### 4.6.1 Descriptive Findings about Capacity of users

Frequencies, percentages, mean and standard deviation on two indicators of capacity of users were computed and these included training background and experience. Findings about these indicators are presented respectively.

#### 4.6.2.1 Descriptive Findings about Training Background

Three items were presented to the respondents about training background on performance. Findings are presented in the following table followed by an analysis and interpretation.

**Table 13: Findings about the training background of the CIS users**

| Items about training background | Strongly agree | Agree | Not sure | Disagree | Strongly disagree | Total |
|---|---|---|---|---|---|---|
| 1. Users have been trained to use ASCYUDA++ | 27 (25%) | 76 (72%) | 3 (3%) | 0 (0%) | 0 (0%) | 106 (100%) |
| 2. There is continuous training of ASCYUDA++ users | 17 (16%) | 62 (58%) | 9 (8%) | 16 (15%) | 2 (2%) | 106 (100%) |
| 3. I am satisfied with the training offered in ASCYUDA++ | 13 (12%) | 46 (43%) | 22 (21%) | 21 (20%) | 4 (4%) | 106 (100%) |
| **Items about experience** | | | | | | |
| 1. There is adequate number of staff with skills to execute Customs transactions using ASCYUDA++ | 17 (16%) | 53 (50%) | 17 (16%) | 19 (18%) | 0 (0%) | 106 (100%) |
| 2. Users of ASCYUDA++ know how to use the system to process Customs transactions | 14 (13%) | 77 (73%) | 8 (8%) | 7 (7%) | 0 (0%) | 106 (100%) |
| 3. Users in position to capture data correctly into the system from data sources | 6 (6%) | 50 (47%) | 15 (14%) | 35 (33%) | 0 (0%) | 106 (100%) |
| 4. Users are in position to assess taxes using ASYCUDA++ | 25 (24%) | 74 (70%) | 4 (4%) | 3 (3%) | 0 (0%) | 106 (100%) |
| 5. Users are in position to check correctness of declarations | 23 (22%) | 71 (67%) | 12 (11%) | 0 (0%) | 0 (0%) | 106 (100%) |
| 6. Users obtain summary reports on revenue for decision-making | 27 (26%) | 63 (61%) | 11 (11%) | 3 (3%) | 0 (0%) | 104 (100%) |
| 7. ASYCUDA++ is used correctly to classify declarations appropriately | 12 (12%) | 52 (50%) | 17 (16%) | 20 (19%) | 3 (3%) | 104 (100%) |
| 8. I am satisfied with using ASYCUDA++ in processing data | 16 (16%) | 48 (47%) | 20 (19%) | 17 (17%) | 2 (2%) | 103 (100%) |
| 9. I am satisfied with using ASYCUDA++ to clear goods | 27 (25%) | 66 (62%) | 6 (6%) | 7 (7%) | 0 (0%) | 106 (100%) |
| 10. The system is flexible and user friendly | 20 (19%) | 67 (63%) | 3 (3%) | 16 (15%) | 0 (0%) | 106 (100%) |
| **Total** | 19 (18%) | 61 (58%) | 11 (10%) | 12 (11%) | 3 (3%) | 106 (100%) |
| **Mean** | **2.23** | | | | | |
| **Standard deviation** | **0.97** | | | | | |

More respondents 61 (58%) agreed with training in the use of the CIS compared to 19 (18%) who strongly agreed, 11 (10%) who were neutral 12 (11%) who disagreed and 3 (3%) who strongly disagreed. Given that percentage of respondents who agreed and

strongly agreed is 76%, which shows the majority of respondents, then the results show there is improvement in training in the use of the CIS in the Customs Department. This is confirmed by the mean score of 2.23. On average, respondents agreed that there is improvement in training in the use of the CIS in the Customs Department. The standard deviation (0.97) shows that the spread of distribution of the respondents is 1.26 (that is mean score – standard deviation) to 3.20 (that is mean score + standard deviation). This implies distribution of the respondents from the mean scores covers those who strongly agreed, agreed and were not sure that there is improvement in training in the use of the CIS in the Customs Department.

Findings in particular show that most users have been trained to use ASCYUDA++, there is continuous training of ASCYUDA++ and users are satisfied with the training offered in ASCYUDA++. Thus, from this analysis, it can be interpreted that the training of users of the CIS in the Customs Department is satisfactory.

Interviews revealed more about training. For example, an interview with senior managers revealed that some users have been trained to use CIS, there is selective continuous training of users, some users are satisfied with the training offered in CIS and training offered is relevant. However, interview with customs agents and ASYCUDA core team members established that training levels and needs differed because they depended on the training time including individuals' background, capabilities and attitude.

#### 4.6.1.2 Descriptive Findings about Experience

More respondents (62; 59%) agreed with experience with the CIS compared to (19; 18%) who strongly agreed (11; 10%) who were neutral (13; 12%) who disagreed and (1, 1%) who strongly disagreed. Given that percentage of respondents who agreed and strongly

agreed is 77%, which shows the majority of respondents, then the results show there is improvement in experience with the CIS in the Customs Department. This is confirmed by the mean score of 2.20. Thus on average, respondents agreed that there is improvement in experience with the CIS in the Customs Department. The standard deviation (0.88) shows that the spread of distribution of the respondents is 1.29 (that is mean score – standard deviation) to 3.11 (that is mean score + standard deviation). This implies that the distribution of the respondents from the mean scores covers those who strongly agreed, agreed and were not sure that there is improvement in experience with the CIS in the Customs Department. It is shown that more respondents were of the view that there is adequate staff with skills/knowledge/ability in using CIS. From this analysis, it can be interpreted that users' experience with the CIS in the Customs Department is satisfactory.

### 4.6.2 Testing Hypothesis Four: The Capacity of Users Has no Significant Moderating Effect on the Relationship between CIS, Efficiency, Control and Administrative Burden in the Performance of the Customs Department of URA

The alternative hypothesis was "The capacity of users has a significant moderating effect on the relationship between CIS and the performance of the Customs Department of URA". A partial correlation was conducted to test the hypothesis. The effect of capacity of users was controlled using SPSS program during analysis. Findings are presented in the following table followed with an analysis and interpretation.

**Table 14: Correlation between CIS, efficiency, control and administrative burden while controlling capacity of users**

| Control variable | Independent variable | Dependent variables | | |
|---|---|---|---|---|
| | | Efficiency in performance | Control in performance | Administrative burden in performance |
| Capacity of users | Customs Information System | R = .460<br>p = .000<br>df = 103 | r = .468<br>p = .000<br>df = 103 | r = -.029<br>p = .791<br>df = 85 |

When capacity of users is controlled, there is a reduction in the strength of the correlation between CIS and efficiency in the performance (from *r* = .658 to .460), between CIS and control in the performance (*r* = .711 to .468), and between CIS and administrative burden in the performance (*r* = -.104 to -.029). Thus, capacity of users significantly increased the effect of the CIS on efficiency and control by 19.8% and 24.3% respectively but did not significantly contribute to the effect of the CIS on the administrative burden. These findings were subjected to a test of significance, which showed that significance of the correlation coefficient (p = .000) was less than the critical significance at 0.05 for the correlation between CIS and efficiency in the performance and between CIS and control in the performance. However, the correlation between CIS and administrative burden in the performance remained insignificant. Because of these, the null hypothesis was rejected and the alternative hypothesis accepted in relation to efficiency and control but the null hypothesis accepted and the alternative hypothesis rejected for administrative burden.

# CHAPTER FIVE

# SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

## 5.0 Introduction

Divided in four sections this chapter presents the summary, discussion, conclusion and recommendations. The summary provides the context which includes the objectives of the study, methodology and findings which are sequentially by three sections; discussion of the findings, conclusion and recommendations.

## 5.1 Summary

This study established a significant strong positive relationship between CIS and efficiency in the performance of the URA Customs Department, whereby, an improvement in CIS was related to increased efficiency in performance and vice versa. CIS accounted for 43.2% of variance in efficiency in performance.

There was a significant strong positive relationship between CIS and control in the performance, whereby an improvement in CIS was related to an improvement in control in performance of the Customs Department of URA. CIS accounted for 50.5% of variance in control in performance of the Customs Department of URA.

It was established that the administrative burden resulting from tax administration by the URA was low among various stakeholders. However, at times there was no change in administrative burden or it was even higher for some stakeholders due to the capacity of the system failing to do certain things, failure of users to learn using the system and inflexibility of the system.

It was further established that some users were trained to use CIS, there was selective continuous training of users, some users were satisfied with the training offered in CIS and training offered was relevant. However, training levels and needs differed because they depended on the training time including individuals' background, capabilities and attitude. In addition, it was found that there was adequate staff with skills/knowledge/ability in using CIS.

## 5.2 Discussion

### 5.2.1 CIS and Efficiency in the Performance of the Customs Department of URA

From the positive relationship between CIS and efficiency in the performance, the following are deduced. The satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback) enhanced efficiency. On other hand, unsatisfactory measures of the CIS (data form and data content) compromised efficiency. The implication of these findings is that objective no. 1 of improving efficiency of Customs Operations (ASYCUDA Project Report, 2000, p. 17) has been partially achieved. The findings relating to the positive nature of the relation established in this study support Yeates and Cadles (1996) and Laudon and Laudon (2006) who emphasized the contribution of IS on an organization's performance. Like Gulledge and Chavusholu (2008) and Bendoly and Schoenherr (2005), the findings of this study also show that if a firm, like URA, is able to use its IT, it will be able to implement corporate strategies to achieve corporate goals (URA Corporate Plan, 2006). In this study, findings support the observation by Harris and Devonport (2005), Bocij et al (2006) and Laudon and Laudon (2006) that automated IS and IT are some of the most important tools to improve performance.

Findings revealed that data timing as measure of the CIS data input was satisfactory. It was shown that data input was timely and up-to-date although sometimes the timing was negatively affected by CIS not being fully automated and delays in human action. The reason why data timing was satisfactory can be attributed to the fact that URA has control over system access as the means through which persons are required to declare goods imported or exported into or out of the country. In addition, URA control over coverage as far as ASYCUDA roll out and connectivity are concerned (URA ICT Policy, 2007; ASYCUDA Project Document, 2000; URA Data Standards Manual, 2008; URA Corporate Plan, 2006; EAC CMA, 2006). This may be explained in terms of reach and range (Prokopenko & North, 1996) in the following paragraph. Once data regarding a transaction is captured into the system, it is stored in URA central server to be distributed and accessed whenever and by whoever may rightfully require it (ICT Policy, 2007; URA Data Standards Manual, 2008).

According to Keen (1991), reach refers to who the organization can connect to, which involves internal location, intra-company locations, customers and suppliers with or without facility base. On the other hand, Keen (1991) said that range refers to the services that can be shared enabled by the information system, which include standard messages, access to stored data, independent transactions and cooperative transactions, in terms of IT management process. This kind of interconnection is viewed as an open system whose goal is to maximize system integration.

It was established in this study that data content as a measure of the CIS data input was unsatisfactory. This was because there were situations where data captured was incomplete, irrelevant, unclean and unreferenced. The implication of this is that some of

the data/information is not valuable or valid. One of the reasons why data captured in the URA's CIS was incomplete, irrelevant, unclean and unreferenced could be due information system failure. According to Laudon and Laudon (2006), an information system failure occurs when the information system either does not perform as expected or cannot be used in the way it was intended or is not operational at a specific time. Data captured can be incomplete, irrelevant, unclean and unreferenced when the information system either does not perform as expected or cannot be used in the way it was intended but not when the information system is not operational at a specific time. This is because data capture can only occur when the information system is operational and a system can be operational even when it does not perform as expected or cannot be used in the way it was intended. The reason why an information system does not perform as expected or cannot be used in the way it was intended may due to information system problem areas, which Laudon and Laudon (2006) categorized as data, cost, design, and/or operations. In this study, it cannot be data and cost to explain what is being discussed in this paragraph because data is what has been established as being incomplete, irrelevant, unclean and unreferenced for which reasons are being sought. In this study, the reason why cost cannot explain failure of an information system to perform as expected or to be used in the way it was intended is that the cost, which Laudon and Laudon (2006) refers to is that of implementing a system yet the URA CIS is already operational (that is, it is not at implementation stage).

This leaves design and operations as likely explanations why an information system does not perform as expected or cannot be used in the way it was intended. Regarding design, it is possible that the URA CIS was not configured or designed well to meet its objectives. In other words, this is a configuration management problem. Configuration

management is a field of management that focuses on establishing and maintaining consistency of a system's or product's performance and its functional and physical attributes with its requirements, design, and operational information throughout its life (Mette & Hass, 2003). According to Mette and Hass (2003), one of the ways to construct an information system is to base it upon organizational requirements, like its function aspect. From this observation, it can be deduced from the findings of this study that the function aspect of the URA CIS design for inputting data falls short of Customs Department's requirements and thus, it can be argued that it is possible that the URA CIS was not configured or designed well to meet its objectives. Regarding operations, this relates to the information system not running well (Laudon & Laudon, 2006). In such a state, the information system may accept any data such as incomplete, irrelevant, unclean and unreferenced data.

Another reason why data captured in the URA's CIS was incomplete, irrelevant, unclean and unreferenced can be due to inability of an organization (which in case is URA) to have control over data input, which according to Kiountouzis and Kokolakis (2008) refers to as "Unchecked user input". This reasoning is related to resource-based theory, which was adopted to guide this study because it emphasizes the importance of resources in determining organizational performance (Barney 1991). In addition is the argument underlying the Systems Theory that an organization does not function in isolation of the external environment (Tekavck, Peljhan, & Sevik, 2010). In light of this, Kiountouzis and Kokolakis (2008) argue that with any input (for example, whether complete or incomplete), the information system assumes that all user input is safe. Information systems that do not check user input can allow unintended data capture. According to Stair (1999), this arises when some of or all data field validation controls for data input

are lacking. Data field validation controls for data input ensure that the values entered in the fields are as per the organization business rules. The lack of these data field validation controls will mean invalid data getting into the system. Related to unchecked user input at URA Customs Department is the valuation data, which is the basis for revenue assessment (WCO GATT Valuation Guidelines, 2008; WCO Valuation Control-Handbook, 2007; EAC CMA, 2006). However, the problem of having no or limited control over external sources still goes back to the earlier problem related to an organization failing to design information system to meet its objectives, resulting into an information system failure already discussed in the previous two paragraphs.

It was established in this study that data form as a measure of the CIS data input was unsatisfactory. This was because although data captured was organized and formatted, some was unreliable. These findings support Kiountouzis and Kokolakis (2008) who observed that data form problems are associated with information inaccuracy or inconsistency, or information in certain fields being erroneous or ambiguous. Data organization is critical to optimal data use (Stair, 1999). Drawing from Stair (1999), observation about organized data and the findings of this study that data was organized, it can be deduced that it reflected URA's business operations and practices. However, given that some data form were unreliable and basing on Wright and Harmening's (2009) observation of unreliable data form, it can be argued in this study that there was a possibility of a flaw or weakness in a system's design, implementation, operation or management that was exploited to violate the system's utilization. Another reason why data form and content were unsatisfactory can be attributed to an organization failing to have control over some of external data sources, which has been already discussed.

In this study, the measures of the CIS data processing that included verification, classification, computation, selection and summarizing were satisfactory. One of the reasons why these were satisfactory can be attributed to Bharadwaj (2000) who said that the processing stage is where management typically exerts the greatest control over whatever quality of data that has been input into an information system. It also is the point at which management can derive the most value from data, assuming that powerful processing tools are available to obtain the intended results (Boynton, Zmud & Jacobs, 1992). The most frequent processing procedures available to management are basic activities such as segregating numbers into relevant groups and aggregating them (Beachboard, 2005). The goal of these processing activities is to turn a vast collection of facts into meaningful nuggets of information that can then be used for informed decision-making, corporate strategy, and other managerial functions (Beachboard, 2005).

Another reason why measures of the CIS data processing (verification, classification, computation, selection and summarizing) were satisfactory can be related to the application of knowledge while URA staff is process data. According Chu (2003), turning data into information is a process or a set of logically related tasks performed to achieve a defined outcome. This process of defining relationships between various data requires knowledge. Knowledge is the body or rules, guidelines, and procedures used to select, organize, and manipulate data to make it suitable for specific tasks. Consequently, information can be considered data made more useful through the application of knowledge. Thus, the argument is that it is because the URA staff processing data through the CIS have the knowledge to perform sets of logically related tasks to achieve a defined outcome such as making data more meaningful and useful.

For CIS output, data feedback and information were satisfactory. The reason why data feedback and information were satisfactory can be drawn from the earlier argument about the processing being a stage where management exerts the greatest control over whatever quality of data that has been input into an information system to derive the most value. Therefore, if management can sort data in meaningful and useful categories, then it will be able to output quality data to be used for feedback and information for management decision-making.

#### 5.2.1.1 Contribution of Customs Information System to Accuracy in Performance

In this study, it was established that accuracy was in reduction of duplication of transactions information, generation of correct revenue related data, and user defined reports. Despite the positives, there were shortcomings with the CIS accepting such as lack of completeness of revenue transaction information declared to Customs. The incompleteness in information was in the form of withholding/miss-declaring some information for personal interest or fraudulent acts on part of the business community, or error/omission on part of the URA or compromise between the business community and individual URA staff.

The reduction in duplication and enhancement of correctness in revenue data and user defined reports was due to the system's ability to allow users to have a soft and hard copy of data captured (that is, the system's ability to have dual mechanism in place), which enables users to store (backup data), update and retrieval data whenever needed. In addition to this, it is because of the system's configuration and capability guide action (Asycuda User Manual, 2001; Asycuda Project Document, 2000) and the system allowing connectivity with stakeholders. The finding regarding incompleteness and correctness of

information relates to the criteria by Jawadekar (2003), and Laudon and Laudon (2006) for value of information. Furthermore, the findings of the study support Overman (1992) who concluded that the potential advantages of an information system are greater information accuracy.

The reason why there was lack of completeness may be attributed to weak customs procedures to capture and process data. According to Corfmat (2003), he notes that customs procedures to capture and process data are generally weak in most countries. He goes further to say that even in developed countries the reconciliation process to match information on custom declaration with data from manifest is an area where improvements are only quite recent. Thus, in this study, it is argued that Uganda being a less developed country is prone to finding problems in using customs procedures to capture and process data. Corfmat (2003) further explains three main reasons for difficulties related to completeness, that is poor information exchange between customs and their clients, unclear responsibilities between customs and their clients for tallying and unloading of goods, and untimely reconciliation to write-off process of data on manifests.

There was a weak positive relationship between CIS and accuracy in the performance of the URA Customs Department, whereby an improvement in CIS was related to an improvement in accuracy in performance. CIS accounted for 15.7% of variance in accuracy in performance. The positive relationship between CIS and accuracy in the performance implies the following. The CIS in terms of data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback increased accuracy in reduction of duplication of transactions

information, generation of correct revenue related data and user defined reports. However, CIS in terms of data form and data content compromised accuracy in completeness of revenue transaction information. The positive relationship between CIS and accuracy in this study also demonstrate the importance of information quality criteria to the organization performance as noted by Smee, North and Jones (2001), Wilson (1997) and Barnejee (1997) who observed that organizations achieve data quality using information systems.

#### 5.2.1.2 Contribution of Customs Information System to Processing Time in Performance

There is a strong positive relationship between CIS and processing time in the performance, whereby an improvement in CIS was related to an improvement in processing time in performance of the Customs Department of URA. CIS accounted for 40.9% of variance in processing time. The positive relationship between CIS and processing time in the performance and the descriptive findings means the following. The satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information and data feedback) enhanced processing time in automating revenue payment, capturing data, and automatic validation. On the other hand, unsatisfactory measures of the CIS (data form and data content) compromised processing time for customs entry transaction processing.

These findings support Wilson (1997) who argued that IS enables an organization to delivery on time. Automation of revenue payment, capturing data and automatic validation, which were positively related to CIS are in line with Harris and Devonport's (2005) observation about responsiveness and flexibility of an organization in terms time

saving. The finding also concur with Wilson (1997) who observed that the ability to deliver promptly depends upon fast/efficient handling of information about what to make and how to make it using computers and information networks to communicate. Furthermore, the findings of the study support Overman (1992) who concluded that the potential advantages of an information system are faster information processing.

The reason why CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information and data feedback) enhanced revenue payment, capturing data and validation can be explained in relation to connectivity. Relating to enhancing payment, ASYCUDA in its configuration and modules enables the creation of a link customs and revenue collecting banks (Project Documents, 2000). According to the Project Document (2000), the configuration and modules in Asycuda allow the electronic transfer of payments from the banks handled directly by the server. As for enhancing capturing data, this can be attributed to the DTI centers, which according to ASYCUDA Project Document (2000) extend a link to the trading community to ease transaction processing by encouraging self-declaration. The reason was CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback) enhanced validation can be attributed to ability of Asycuda covering the entire country to enable sharing of information through electronic signals (Project Documents, 2000). These findings are supported by Laudon and Laudon (2006) who gives advantages of information systems in creating strategic linkages between business thus, B2B linkages; business and Customer, thus B2C linkages and Customers to Customer linkages(C2C) for timely and efficient business dealings.

According to Keen (2003), modern Customs administrations that have introduced self-assessment and a selectivity criteria (green, blue yellow and red channels) using CIS in a fully automated environment significantly reduce release time for consignments.

The reason why CIS (data form and data content) compromised processing time for customs entry transaction processing can be attributed to errors and omissions, which could have caused queries affecting process time. Errors and omissions explained earlier to be caused by a number of factors, which were mainly due to system design, information system problem, and limited ability of URA to have control over external data input

#### 5.2.1.3 Contribution of Customs Information System to Processing Costs

There was a weak negative relationship between CIS and processing costs in the performance, whereby an improvement in CIS was related to a reduction in processing costs in performance of the Customs Department of URA. CIS accounted for 6.6% of variance in processing costs. The implications of the negative relationship together with the descriptive findings is that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) contributed to reductions in human resources costs, materials costs, and transaction costs.

Wilson (1997) provides the reason why an information system contributes to reductions in human resources costs, materials costs, and transaction costs. In relation to reductions in human resources costs and materials costs Wilson (1997) argued that an IS helps an organization do work more cheaply than people and the reason why an IS leads to

reductions transaction costs, Wilson (1997) argued that an IS eases access to electronic files than paper files. Keen (2003), further supports this by stating that introducing self-assessment and risk based criteria in a fully automated environment significantly reduces delays by cutting down on clearance paperwork as recommended under the WCO Kyoto convention.

According to Shang and Seddon (2000), information technology can reduce costs by automating basic repetitive operations. Automating basic repetitive operations that Shang and Seddon (2000) refer to involve transaction costs that this study refers to in the paragraph of 5.2.1.3. Shang and Seddon (2000) referring to other researchers argued that reduction in these costs occur because information technology streamline processes and automate transactions to provide business benefits by substituting labor. When Shang and Seddon (2000) emphasized that information technology streamlines processes and automates transactions by substituting labor, they concur with this study's finding that CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) contributed to reduction in human resources costs.

Awazu and Desouza (2003) and Ball (2001) also provide another reason that can explain why in this study CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) contributed to reductions in human resources costs. They argued that this occurs because the information system enables automation of information and thus, reducing the need for large numbers of employees.

According to Al-Mashari and Al-Mudimigh (2003), human resources costs related to employee turnover, hiring, and absenteeism. Thus, taking into consideration this categorization of human costs, it can be argued from the negative relationship established by this study that CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) contributed to reductions in costs related to employee turnover, hiring, and absenteeism.

#### 5.2.1.4 Contribution of Customs Information System to Operational Excellence

It was established that operational excellence improved in terms of more data captured/stored/accessed/utilized, ability to recover lost information, reduced material resources wastage including working time and queries, and improved productivity and relationships between Customs staff and the business community. Basing on Beadles II, Lowery and Johns (2005), these findings can be categorized into benefits of the CIS at URA, which are administrative use of the CIS and its strategic use. The benefits arising from administrative use of the CIS include more data captured/stored/accessed/utilized, ability to recover lost information, and reduced working time and queries. The benefits arising from CIS strategic use are reduced material resources wastage, improved productivity and better relationships between Customs staff and the business community. Thus, the finding of this study relating to reduced working time, which has been categorized under administrative benefits concur with Kovach and Cathcart (1999) and Targowski and Deshpande (2001) who purported that the benefits of information system applications is to reduce time spent on administrative processes. On the other hand, findings on information system IS implementation as a strategy to achieve corporate goals relate to Gulledge and Chavusholu (2008) and Bendoly and Schoenherr (2005).

There was a strong positive relationship between CIS and operational excellence in the performance, whereby an improvement in CIS was related to an improvement in operational excellence in performance of the Customs Department of URA. CIS accounted for 40.0% of variance in operational excellence in performance of the Customs Department of URA.

Interpreting the positive relationship together with the descriptive findings, the following are construed. The satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced data captured stored/accessed/utilized, ability to recover lost information, material resources usage, working time and transactional flow, productivity and relationships between Customs staff and the business community. On other hand, unsatisfactory measures of the CIS (data form, data content, and information output) compromised detecting and minimizing errors in advance.

One of the reasons why in this study CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced operational excellence is related to Walker, Craig, Hecker and Francis's (2002) assertion. They assert that automated information systems help organize firms' activities to operate efficiently and so enhance performance. Like Croom and Johnston (2003), it was shown in this study that the CIS minimized delays and wastage of material resources, improved cost of collecting revenue and increased number of transactions processed.

Another reason that may explain why CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback)

enhanced operational excellence in this study is given by Laudon and Laudon (2006). They argue that performance of business firms depends on how well business processes are designed and coordinated. If the business processes are not automated or are poorly automated, performance of the organization is compromised, increasing waste while reducing value compared to where the processes are automated (URA, Customs Process Manual, 2010). This agrees with Zhu, Wymer and Chen (2001) who observed that business process can be a liability if they are based on out dated ways of working, and this highlights the task technology fit in relation to system design, tasks as activities, and technology.

Shang and Seddon (2000) provide a reason that may explain why in this study CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced operational excellence. They argued that this occurs because information technology raises outputs by automating basic repetitive operations and it streamlines processes to speed up processes and increase operation volumes.

Awazu and Desouza (2003) and Ball (2001) provide a reason that can explain why in this study CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced operational Excellency. They argued that this occurs because the information system enables automation of information and thus, allowing employees quickly access relevant information and data, conduct analysis, which help them make timely decisions and communication with others.

Another reason that may explain why in this study CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced operational excellence is given by Brown (2002). This is related to appropriate use of an information system. He argues that ideally, with an appropriate use of an information system, less people should be needed to perform specific organizational tasks and more time would be made available for them to concentrate on core functions. Similarly, Wyatt (2002) argue that by properly implementing an information system an organization should be able to reduce the amount of work for which a department is responsible, which would then leave people free to concentrate on performing more strategic roles for the organization.

### 5.2.2 CIS and Control in the Performance of the Customs Department of URA

The findings about the strong positive relationship between CIS and control in the performance are similar to Bloomfield and Coombs (1992), who also established that information systems lead to more effective internal control.

Thus, from the positive relationship between CIS and control in the performance, the following are deduced. The satisfactory measures of the CIS (data timing, verification, classification, computation, selection, summarizing, output and feedback) enhanced control. On other hand, unsatisfactory measures of the CIS (data form and data content) compromised control. This shows that the objective for implementing ASYCUDA in URA to enhance controls (ASYCUDA Project Report, 2000, p. 6) was partially achieved. This agrees with Bloomfield, Coombs and Owen (1994) who observed that internal control can provide reasonable, not absolute, assurance that the objectives of an organization will be met. He argued that this arises because effectiveness of an internal

control also depends on factors outside the enterprise. Bloomfield, Coombs and Owen (1994) reasoning support the earlier argument of this study that the problem of URA Custom's Department having no or limited control over external sources contributed to unsatisfactory data content and form, which were characterized with incomplete, irrelevant, unclean and unreferenced data. Tymon et al. (1998) emphasized that the organization's external environment is the source of uncertainty.

The findings of this study support Gulledge and Chavusholu (2008) who argued that information systems avail data to managers to enable them measure and control performances. Control in management means setting standards, measuring actual performance and taking corrective action to achieve organization's goals within available resources (Bloomfield, Coombs & Owen, 1994). From the current study findings and the available literature, the following can be deduced. In URA Customs Department, because of the adoption and utilization of the CIS, to some extent preventive and corrective actions have been enhanced. The findings of this study also show that to some extent, the CIS has enabled the URA Customs Department to improve on risk management.

According to Boudreau and Robey (2005), control precision describes the alignment between a particular control procedure and a given control objective or risk. Thus, basing on Boudreau and Robey (2005) observation, it is argued in this study that precision might be a factor that can be used to explain why in the URA Customs Department, satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback) enhanced control while unsatisfactory measures of the CIS (data form and data content) compromised control. The argument here is that the satisfactory measures of the CIS (data timing, data

verification, data classification, data computation, data selection, data summarizing, information output and data feedback), which enhanced control could be because these measures were well aligned with control objectives or risks. On the other hand, why unsatisfactory measures of the CIS (data form and data content) compromised control could be because these measures were not well aligned with control objectives or risks.

Kirsch (2002) defines control as a set of mechanisms designed in order to motivate individuals to attain desired objectives. Therefore, using this definition, the findings of this study show that satisfactory measures of the CIS (data timing, verification, classification, computation, selection, summarizing, information output and data feedback) enhanced Customs Department mechanisms designed to motivate individuals to attain desired objectives. On the other hand, unsatisfactory measures of the CIS (data form and data content) compromised URA Customs Department mechanisms designed to motivate individuals to attain desired objectives.

The reasoning in the above paragraph raises the issue of "fit", which both the Task Technology Fit (TTF) theory and contingency theory expound. According to Barley (1986), McGrath et al. (1993) and Orlikowski (1992), the Task Technology Fit (TTF) theory focuses on the extent technology functionality match task requirements and individual abilities. Similarly, the contingency theory posits that a management information technology should fit with formulation, implementation and control of strategy to enhance organizational performance (Nanni et al., 1992; Atkinson et al., 1997; Chenhall & Langfield-Smith, 1998; Baines & Langfield-Smith, 2003; Gerdin, 2005). This fit ensures the successful deployment of a company's technological capabilities in pursuit of its business strategy goals.

The argument of fit used to explain why some measures of the CIS enhance control while others compromised it is related to Bruns and McFarlan's (1987) concept of adaptability. The adaptability of management information system to organizational environment and changes is central to organizational performance. Bruns and McFarlan (1987) argue that the effective structuring of particular management information system depends on the appropriate co-alignment with particular environments. Briefly stated, firms experiencing changing external environments need different information-processing designs to support alternative decision-making needs and, hence, performance goals.

The discussion in the previous paragraphs is supported by Dent (1990), Langfield-Smith (1997), Samson et al (1991), and Simons (1987, 1990) who suggested that information systems have to be tailored explicitly to support the strategy of the business to lead to competitive advantage and superior performance. There is also evidence by (Govindarajan 1988; Govindarajan & Gupta 1985) that high organizational performance results from the matching of an organization's environment, strategy and internal structures and systems.

Finnegan and Longaigh (2002) emphasized that the effectiveness of internal control can be measured by how well the objectives are achieved and how effectively the risks are addressed. Basing on this observation, then it can be argued that the findings in the paragraph show that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback) enhanced URA Customs Department's effort to achieve its objectives and address risks in revenue administration. However, the unsatisfactory measures of the CIS

(data form and data content) compromised URA Customs Department's effort to achieve its objectives and address risks in revenue administration.

Finnegan and Longaigh (2002) observed that control exists to keep performance or a state of affairs within what is expected, allowed or accepted. However, given that there were satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback) and at the same time unsatisfactory measures of the CIS (data form and data content), then it can be argued that the CIS partially assisted the URA Customs Department to keep the state of affairs within what was expected, allowed or accepted.

According Karadal and Tümer (2003), controls help ensure that processes operate as designed and that risk responses (risk treatments) in risk management are carried out. Basing on this, it is argued in this study that because there were satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing, information output and data feedback) and at the same time unsatisfactory measures of the CIS (data form and data content), then the CIS to some extent helped the URA Customs Department to ensure that processes operated as designed and that risk responses (risk treatments) in risk management were carried out.

Another reason that can explain why CIS (data timing, verification, classification, computation, selection, summarizing, information output and data feedback) enhanced control in this study is provided by Alavi and Leidner (1999). According to Alavi and Leidner (1999), an information system allows real-time documentation, which enables performance control. Real-time documentation embeds and synchronizes an

organization's policies with its process, ensuring that tasks match policies so information system users have a single source for every task. It also automatically captures supporting information and documenting compliance for later review.

Centralization/decentralization of decision-making may also explain why CIS (data timing, verification, classification, computation, selection, summarizing, information output and data feedback) enhanced control. According to Chandler (2001), information technology may influence the centralization/decentralization of decision-making. For a simple example, an information system enables a mother company communicate timely with its branches spreads out across a region, hence decentralizing management at the mother company and centralization management at the branches to enhance control.

In addition, IT affects the nature of individual jobs and the formation and structure of work groups. There is a movement away from large scale, centralized organization to smaller working units. Processes of communication are increasingly limited to computer systems with the rapid transmission of information and immediate access to their national or international offices. Improvements in telecommunications mean for example that support staff need no longer be located within the main production unit. Changes brought by IT means that individuals might work more on their own, from their personal workstations or even from their own homes, or work more with machines than with other people. There are changes in the nature of supervision and the traditional hierarchal structure of jobs and responsibilities. Computer based information and decision support systems provide additional dimensions of structural design, which affect choices such as division of work, individual tasks and responsibility.

#### 5.2.2.1 Contribution of Customs Information System to Standards in performance

The study found out that there were standards in terms of Customs procedures and URA Data Standards Manual, policies and codes of conduct for staff and clients. In addition, it was established that targets were achievable and actual performance were compared against planned ones. However, adhering to standards was not easy because of weaknesses in the system as well integrity of users, non-compliance, inaccuracies, and system inflexibility.

There was a moderate positive relationship between CIS and standards in the performance, whereby an improvement in CIS was related to an improvement in standards in performance of the Customs Department of URA. CIS accounted for 33.2% of variance in standards in performance of the Customs Department of URA. The positive relationship between CIS and standards implied that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) contributed positively to the achievement of targets, realization of planned performance, and monitoring completeness of transactions. From these findings, it can be argued from the contingency theoretical approach that CIS was well adapted to the context (Donaldson 2001, Drazin and Van de Ven 1985, Luft & Shields 2003).

According Scott (1995) control standards provide a mechanism to align organizational goals and aspirations with employee's capabilities, activities and performance. Basing on Scott' s observation, then the findings of this study show that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced the mechanism to align organizational

goals and aspirations with employee's capabilities, activities and performance. On the other hand, unsatisfactory measures of the CIS (data form and data content) compromised the mechanism to align organizational goals and aspirations with employee's capabilities, activities and performance.

Control standards can also be viewed as the practices, procedures, policies and responsibility structures in an organization that help in managing risks and protecting information assets (Dhillon, 2001). In this line, the findings of this study show that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enhanced the practices, procedures, policies and responsibility structures in URA that help in managing risks and protecting its information assets. On the other hand, unsatisfactory measures of the CIS (data form and data content) compromised the practices, procedures, policies and responsibility structures in URA that help in managing risks and protecting its information assets.

Studies have shown that successful implementation of information systems requires a fit between three factors (Sajady, Dastgir & Hashem, 2008). A fit must be achieved with dominant view in the organization or perception of the situation. Second, the information system must fit when problems are normally solved. Finally, the information system must fit with the culture, which are the norms and value system that characterize the organization (Christiansen & Mouritsen, 1994). These three factors explained here relate to standards, which was a measure of control in this study. For example, a dominant view in the organization or perception of the situation can be a standard in itself. To that problems have been solved, one has to compare what is ground with standards. The

culture within the organization is also a standard. Basing on this explanation of the three factors it is argued that the findings of the study show that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) were aligned with the URA Customs standards. On the other hand, unsatisfactory measures of the CIS (data form and data content) were not aligned with the URA Customs standards. This argument is based on the Task Technology Fit theory (Barley, 1986; McGrath et al., 1993; Orlikowski, 1992) and Contingency theory (Nanni et al., 1992; Atkinson et al., 1997; Chenhall & Langfield-Smith, 1998; Baines & Langfield-Smith, 2003; Gerdin, 2005).

Findings of the study particularly showed that the URA Customs Department has tried to adhere to Wilson's (1997) advice that information on actual performance must be compared with planned performance to improve standards in performance and to maintain efficiency. This was because more respondents were of this view compared to a few who differed. In addition, findings of this study supported Bocij et al (2006) because it was also established that in the URA Customs Department, the CIS had to some extent enhanced the value of information in terms of completeness as was shown by the bigger percentage of respondents who answered in affirmative compared to the small percentage of respondents that answered negatively. Thus, basing on Bocij et al's (2006) argument, it can be construed that given that the URA Customs Department did not fully enhance the value of information in terms of completeness, this compromised its usefulness in decision-making and thus ability to respond to market needs since control requires taking an appropriate action.

#### 5.2.2.2 Contribution of Customs Information System to Inspection of Performance

The study established that inspection was satisfactory. This was because automated inspection of declared transactions were conducted, miss declarations and errors were identified and corrective action taken while processing a transaction or immediately after a transaction, and adequate access controls to prevent vulnerability of data were in place. However, inspection was sometimes compromised by users.

There was a strong positive relationship between CIS and inspection of the performance, whereby an improvement in CIS was related to an improvement in inspection of performance of the Customs Department of URA. CIS accounted for 42.4% of variance in inspection of performance of the Customs Department of URA. These findings are similar to Lung-Chuang (2008) who established that an automated and user-friendly quality management system improved inspection.

Thus, with reference to the positive relationship, it can be argued that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) contributed positively to inspection of declared transactions, identification and correction of miss declarations and errors while processing a transaction, and adequate access controls to prevent vulnerability of data.

The identification and correction of miss declarations and errors while processing a transaction is attributed to an in-build mechanism within the CIS based on specific rules to automatically designate not only the selectivity channel but also the section and persons who triggered the actions, where colors indicate varying levels of risk and

compliance (ASYCUDA Project Report, 2000). For example, i) the in-built mechanism: selects document and goods to either continue without inspection (that is green and blue channel) in which case post audit will be undertaken, or ii) selects only documents for physical inspection (yellow channel) or selects both documents and goods for physical inspection (red channel) in the Customs Department.

The adequate access controls to prevent vulnerability of data is due to the ability of the system to verify and authenticate requests for access by persons or validate transactions (Asycuda Project Report, 2000). Strength may be due to design capabilities to interface but also failure may be due to inadequacies in the design e.g. where information on accompanying documents cannot be downloaded for confirmation from RADDEx see control in chap 4 interviews on standards to explain accuracy and completeness of data.

This inspection of declarations by Customs Department of URA is at process level. Given that there was a positive relationship between CIS and inspection of performance that was established in this study, then the following is construed based on Ranky's (2003) observation. Because of adopting and utilizing the CIS at URA Customs Department, to some extent, inspecting at process level improved quality and eliminated delays and difficulties for the declarations selected along green and blue channels (Ranky, 2003).

Bakos and Treacy (2000) provide some of the reasons that might explain why in this study there was a positive relationship between CIS and inspection. He emphasizes that information technology (IT) provides potential benefits of effectiveness and efficiency in revenue/tax inspection because it enables an entity to:

- Consistently apply predefined business rules and perform complex calculations on large volumes of transactions.
- Enhance timeliness, availability, and accuracy of information
- Facilitate the additional analysis of information
- Enhance the ability to monitor the performance of the entity's activities and its policies and procedures.
- Reduce risk that controls will be circumvented
- Enhance ability to achieve effective segregation of duties by implementing security controls in applications, databases, and operating systems.

Another reason that can be used to explain why in this study CIS positively related to inspection is the abilities of an information technology identified by Peters, Broughton and Nightingale (1991). They emphasized that an information system will relate positively with inspection because such a system is essential for measuring, integrating, processing and presenting the findings for the assessment purposes.

#### 5.2.2.3 Contribution of Customs Information System to Compliance

It was established that there were improvements in compliance. Despite this, there are still problems such irregularities and lack of capacity to capture some information or even automate some processes/ functions.

There was a strong positive correlation relationship between CIS and compliance in the performance, whereby an improvement in CIS was related to an improvement in compliance in performance of the Customs Department of URA. CIS accounted for 47.5% of variance in compliance in performance of the Customs Department of URA.

Therefore, the descriptive and correlation findings show that satisfactory measures of the CIS (data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback) enforced and enhanced compliance.

The same explanation relating to in-build mechanism for selectivity applies to the findings about enhancement of compliance due to CIS adopting and utilization at URA Customs Department. The risk management criteria are based on risk profile data built according to levels of compliance for specific goods, origin, importers or a combination. The findings of this relating CIS to enhancement of compliance at the URA Customs Department support Ludwick (2006) observed that through well-integrated systems that supports clearly designed processes, a company can identify any potential problem area electronically.

### 5.2.3 CIS and Administrative Burden in the Performance of the Customs Department of URA

The finding relating to no change in administrative burden and higher for some stakeholders are due to information system design failures described earlier in section 5.2.1, which are related to poor interaction with the system, which Laudon and Laudon (2006) says may be due to excessive complicated or discouraging User Interface or relate to the design not being compatible with the organization's culture. For example, this study established that the system was burdensome to some people, especially relating to extraction of reports. It kept referring some URA staff from one function/module to another in an effort of extracting reports causing delays. This is an administrative burden relating to User Interface (Bariff1 and Lusk2, 2002).

The study established that CIS does not significantly influence the administrative burden in the performance. In other words, the findings showed no significant influence of the CIS on the cost to carrying out administrative activities that the URA staff and the trading community resulting from URA regulation for compliance (Centre for Tax Policy and Administration, 2008). This finding contradicts Johnston and Vitale (1988) and Tat-Kei (2002) whose studies established that technologies such as electronic data interchange, Internet-based information systems, and other inter-organizational information systems can significantly reduced the cost, time and other difficulties of interacting with various stakeholders. The findings are also contrary to Dos Santos, Peffers and Mauer (1993) who emphasized that advanced ICTs and data-handling processes could help significantly reduce the times for doing business.

The reason for the insignificant relationship between CIS and administrative burden established in this study may be due to poor integration of the information technology. This reasoning is supported by Brown and Magill (1994) who observed that using ICTs will certainly help revenue organizations/states reduce the cost burden on administrations – and hence on tax-payers – but only if their integration in public processes is well organized. They further emphasized that if the integration is done well, revenue organizations/states will be the net winners, with better satisfied citizens and businesses benefiting from a lighter administrative burden. Thus, it is possible that the administrative burden was not significantly affected because CIS was not well integrated in the Customs Department and across the URA departments and other stakeholder organizations.

Another reason the can explain the insignificant relationship between CIS and the administrative burden in this study is less appreciation by the trading community of the

compliance costs in developing countries as a result of manual or cumbersome procedures. According to Walsh (2003), custom administration in most developed countries understand that the cost imposed on traders are inefficient procedures are just as real a cost to them as are trade taxes themselves. He goes further to say that however, for the developing countries, there is less appreciation of the scope and significance of compliance costs involved in custom clearance of goods. Thus, it is possible that in Uganda, because the trading community less appreciates the scope and significance of compliance costs, then CIS cannot significantly affect the administrative burden felt at URA customs department and trading community.

### 5.2.4 Moderating Effect of the Capacity of Users on the Relationship between CIS, Efficiency, Control and Administrative Burden in the Performance of the Customs Department of URA

The findings about differences in training levels and needs at URA including having adequate staff with skills/knowledge/ability in using CIS support Ahwere-Bafo and Liston-Heyes (2006) who stated that the success of a newly developed or acquired IT technology will depend on the information system capability of its end-users (ISC) which in turn depends on a plethora of factors. Their argument was based on several views of others writers such World Bank, Freeman and Soete, Henderson, Enos, Kluzer, to mention some.

It was established that the capacity of users had a significant moderating effect on the how CIS related to efficiency and control but it did not have a significant effect on the how CIS related to administrative burden. For example, when capacity of users was

controlled, there was a significant reduction in the strength of the relationship between CIS and efficiency in the performance and between CIS and control in the performance.

## 5.3 Conclusions

### 5.3.1 Effect of the CIS on the efficiency in performance of the URA Customs Department of URA

Findings revealed a significant effect of the CIS on the efficiency in performance of the URA Customs Department. The system has reduced duplication of transactions information and generated correct revenue related data and user defined reports. In addition, the system reduced processing time in automating revenue payment, capturing data, and automatic validation and it reduced human resources costs, materials costs, and transaction costs. The CIS achieved these because it simplified the flow of transactions, linked Customs to clients and stakeholders (such as banks, traders, warehouses and clearing and forwarding companies), and increased the number of transactions processed in a given time. All these were a result of the CIS' capability in the following functions: data timing, data verification, data classification, data computation, data selection, data summarizing and data feedback. However, the CIS failed to contribute satisfactorily to completeness of revenue transaction information declared to Customs, processing time in Customs entry transaction processing, and detection and minimization of errors in advance. This is attributed to factors external to system's capability that affects the data form and data content input.

Lesson learnt is that information technology is important in supporting the organizational performance such as efficiency. Through this study, it was observed CIS could improve work speed, productivity, and time. However, before the IS/IT is implemented, it is worth

considering the CIS antecedent factors that influence on organizational performance. Antecedent factors consist of six aspects, which are social factors, attitudes, support conditions, system complexity, long-term consequences and habits. User attitudes along with social factors and other situational factors will influence the intensity of the use of technology and ultimately will increase the usage of technology.

### 5.2.2 Effect of the CIS on the control in performance of the URA Customs Department

Findings revealed a significant effect of the CIS on the control in performance of the URA Customs Department. The system enabled achievement of targets, comparison of actual to planned performance, monitoring of completeness of transactions, automated inspection of declared transactions, identification and correction of miss declarations and errors, prevention of data vulnerability, and enforcement and enhancement of compliance. These achievement targets were attributed to CIS' capability in the functions of data timing, verification, classification, computation, selection, summarizing, information and data feedback.

Lessons learnt are that technology can be used to explain organizational behavior and attitudes in organizations such compliance and inspection, as was the case in this study. Technology can also be used to explain the nature of jobs and values, which in this study was in form standards. It was evident in this study, that technology (CIS) certainly has its place among the key elements, which shape an organization.

### 5.3.3 Effect of the CIS on administrative burden in performance of the URA Customs Department

Findings revealed an insignificant effect of the CIS on the administrative burden in performance of the URA Customs Department. Specifically, it was established that the administrative burden resulting from tax administration by the URA was low among various stakeholders but this was not because of the influence of the CIS.

### 5.3.4 Moderating effect of capacity of users on the relationship between CIS, efficiency, control and administrative burden in the performance of the Customs Department of URA

The capacity of users had a significant moderating effect on the relationship between CIS, efficiency and control but not on the administrative burden. This was because administrative burden was explained that its scope and significance were not yet appreciated among developing countries like Uganda.

Lessons learnt are that there must be a fit between IT and capacity of users to enhance organizational performance. IT will not be of use if users lack competencies, capabilities, knowledge and skills. Thus, it is always important to consider these while introducing an IT in an organization in respect to the intended goal(s).

## 5.4 Recommendations

### 5.4.1 Effect of the CIS on the efficiency in performance of the URA Customs Department of URA

Relating to data input, the URA Customs Department should quicken entry lodgment process (i.e. a process of delivering hard copies to Customs to start processing). This can

be achieved through URA Customs Department fully automating its CIS using newer technologies and reduce on human intervention with the CIS or demand for hard copies. URA Customs Department should ensure that data declared for capturing in ASYCUDA ++ is correct to enable registration and correct assessment of revenue and that source documents provide clean data to input in the ASYCUDA++. This can be achieved by configuring the CIS to capture all data and have adequate inbuilt data controls and reference tables for of all data including valuation data, to reduce on discretion during valuation of goods. URA Customs Department should ensure that source documents provide organized data to input in the ASYCUDA++. This can be achieved by conducting workshops, seminars and conferences to sensitize people to provide organized and reliable data in generally acceptable standard and harmonized formats. In addition, training of the data source providers can also be carried out in how to provide organized and reliable data in standard and harmonized formats.

In addition, URA Customs Department should ensure that facts on goods for clearance are presented in a format that is appropriate to be captured. This can be achieved by sensitizing and training system users on all elements of data that is require including the format in which it is presented. Furthermore, URA Customs Department should ensure review and redesign the CIS so that it can filter and capture relevant data using software tools to aid in the discovery (and sometimes removal) of vulnerabilities in the system. Although these tools can provide URA with a good overview of possible vulnerabilities present, they cannot replace human judgment entirely. This is because relying solely on software's may yield false positives and a limited-scope view of the problems present in the system. Thus, to reducing the chance of a vulnerability of the system can be achieved through constant vigilance, including careful system maintenance (e.g. applying software

patches) and best practices in deployment (e.g. to review and improve data input validation controls). These data input controls can be implemented in two ways. URA can have checks build in the data form; so that an operator is given a message, the instant invalid data is entered. This is generally done for simple rules. For complex rules, the same checks can to be placed in the database design itself, which automatically checks the conditions. Furthermore, all stakeholders applying for connectivity or rights for their staff to interface with the system, minimum requirements (both Customs knowledge and computer skill) need to be put in place and enforced for one to qualify.

Relating to data processing, URA Customs Department should improve verification. This can be achieved through sensitizing system users on integrity in relation data declared using the CIS. Furthermore, URA Customs Department should improve data classification. This can be achieved through continuously reviewing and updating whenever there are changes in description of goods. In addition, URA Customs Department should enhance the risk management reporting. This can be achieved by constantly monitoring and updating the risk reporting system (selectivity of the CIS). Lastly, URA Customs Department should improve data summarizing. This can be achieved by management at the top level regularly checking reports to confirm what has been imported, exported and declared. URA Customs Department should redesign the system to ease access to reports and summarized data at the user interface. This can be achieved by making the system more flexible and user friendly using the most recent technologies that are more resilient, enabling interaction of different system modules.

Finally, instead of reviewing and redesigning the CIS as suggested earlier by this study, URA can adopt a newer version (ASYCUDA World) that developers have come-up-with.

This is because it is robust and intelligent with a more user-friendly interface as was further suggested.

### 5.3.2 Effect of the CIS on the control in performance of the URA Customs Department

To improve control in the performance of the Customs Department, apart from redesigning the system, it is recommended that all data captured should have in-build reference tables. These would enable improvement of data captured. In addition, the CIS reference data bases should always be updated to control the quality of data and risk profiling.

### 5.4.3 Effect of the CIS on administrative burden in performance of the URA Customs Department

In relation to administrative burden, no recommendation has been made. This was because there was no significant contribution of the CIS to the administrative burden.

### 5.4.4 Moderating effect of capacity of users on the relationship between CIS, efficiency, control and administrative burden in the performance of the Customs Department of URA

In relation to the moderator effect of capacity of users on the contribution of CIS on the performance of the URA Customs Department, URA can conduct training, workshops and seminars to equip users with competencies, skills, and abilities in using the CIS and to change their attitude towards using the CIS. In addition, recruitment should be well conducted to ensure that the URA and stakeholders have people in place who have minimum requirement in operating the CIS.

## 5.5 Suggestions for Further Research

This study was limited to Kampala and had time constraints. It would have required enormous resources – financial, human and time to undertake an in-depth study that would have taken the research across the country collecting information on Customs Department. This was not possible. Therefore, there is a strong case for further study to appraise CIS in URA. Future researchers should be encouraged to consider this topic and follow up with research. It will not only help URA but tax bodies in the region will benefit.

The recommended area of focus for further research is the CIS and administrative burden. This is because in this study while administrative burden adhered to the measurements recommended for this construct, which were supposed to be expressed in actual figure in term of time, cost and frequency one spent performing an activity, most respondents seemed not willing to reveal their costs. Therefore, the suggestion is for any other person conducting a study about administrative burden to measure it using an ordinal scale or any other apart from a ratio or interval scale.

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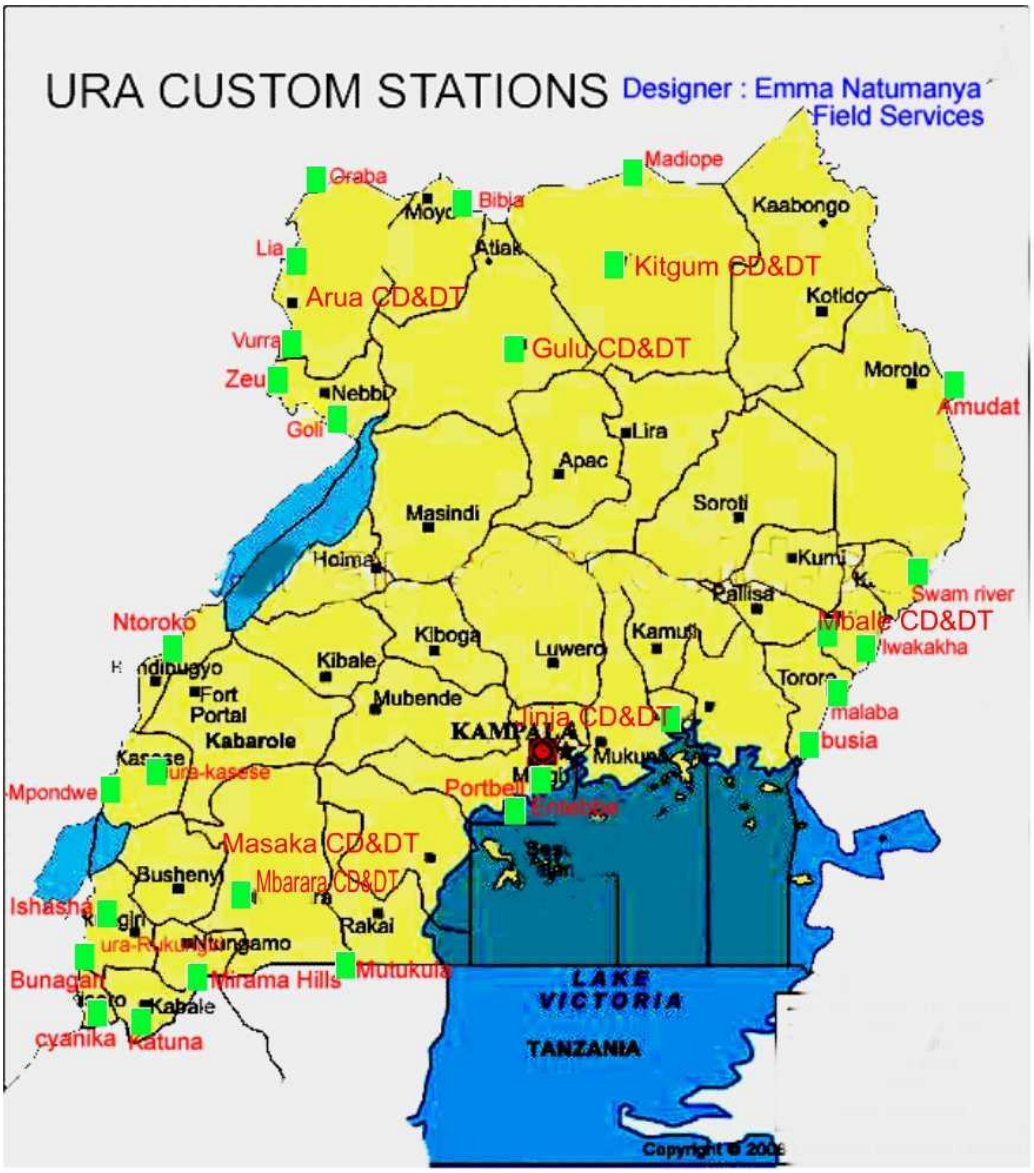
# APPENDICES

## Appendix 1: Map showing Kampala URA Customs station in relation to other Customs stations




**Adopted from Customs Modernisation Project**

**Appendix 2: Questionnaire for staff and agents**

**Introduction**

I am a student from Uganda Management Institute and currently collecting data for compilation of my dissertation as partial requirement for the award of Masters in Management Studies in Project Planning and Management. I am here to conduct a research. The research I am conducting relates to the contribution of ASCYUDA++ on the performance of the Customs department of URA. You have been selected to share with us you experiences and knowledge as a person who possesses the knowledge and experience to make this study successful. Information given will be treated with confidentiality and you do not need to indicate your identity anywhere on the questionnaire

**Section I: Background information**

1. Gender: Male ☐ Female ☐
2. Age group: (years)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 20-25 Years | 26-30 Yrs | 31-35 Yrs | 36-40 Yrs | 41 and above |

3. Your job category :

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Senior management | Field service staff | Project team | IT team | Licensed Customs clearing agent |

4. Length of Service

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 1 – 5 Years | 6 – 10 Years | 11 – 15 Years | 16 – 20 Years | 21Yrs and above |

**Section II: Performance**

| Strongly agree | Agree | Not sure | Disagree | Strongly disagree | | | | |
|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | | | | |
| **Efficiency in performance of the Customs Department** | | | | | | | | |
| **Accuracy** | | | | | | | | |
| 1. Revenue transaction information declared to Customs is complete | 1 | 2 | 3 | 4 | 5 | | | |
| 2. The Customs Department is in position to generate correct revenue related data | 1 | 2 | 3 | 4 | 5 | | | |
| 3. Auto processing reduces duplication of transactions information | 1 | 2 | 3 | 4 | 5 | | | |
| 4. User defined reports generated are accurate | 1 | 2 | 3 | 4 | 5 | | | |
| **Processing time** | | | | | | | | |
| 5. Processing time for Customs entries meet set standards (i.e. 30minutes, one hour and two days for green, yellow and red lane entries respectively) | 1 | 2 | 3 | 4 | 5 | | | |
| 6. Automating revenue payment enables generation of timely accounting reports | 1 | 2 | 3 | 4 | 5 | | | |
| 7. Capturing data once at a single point saves time | 1 | 2 | 3 | 4 | 5 | | | |
| 8. Automatic validation enables timely reconciliation of transactions | 1 | 2 | 3 | 4 | 5 | | | |
| 9. I am satisfied with Customs entry transaction process time | 1 | 2 | 3 | 4 | 5 | | | |
| **Processing costs** | | | | | | | | |
| 10. Using computerized system has reduced human resource costs associated in the Customs clearance of goods. | 1 | 2 | 3 | 4 | 5 | | | |
| 11. Material costs (e.g. of paper) associated with Customs clearance of goods have reduced | 1 | 2 | 3 | 4 | 5 | | | |
| 12. Automating Customs processes has enabled cutting cost | 1 | 2 | 3 | 4 | 5 | | | |
| 13. Indirect costs incurred for (e.g. demurrage, inspection, licenses, permits vehicle\container retention, , etc) Customs clearance of goods have reduced | 1 | 2 | 3 | 4 | 5 | | | |
| 14. Self declaration availed to the business community has reduced transaction processing costs | 1 | 2 | 3 | 4 | 5 | | | |
| **Operational excellence** | | | | | | | | |
| 15. Automating processes has simplified the flow of transactions in Customs operations so minimizing delays | 1 | 2 | 3 | 4 | 5 | | | |
| 16. There is minimal wastage of material resources during Customs operations | 1 | 2 | 3 | 4 | 5 | | | |
| 17. Linking banks, traders, warehouses and transporters to Customs stations has improved cost of collecting revenue | 1 | 2 | 3 | 4 | 5 | | | |
| 18. The Customs Department is able to detect errors in advance | 1 | 2 | 3 | 4 | 5 | | | |
| 19. The number of transactions processed in a given time has increased | 1 | 2 | 3 | 4 | 5 | | | |
| **Control in performance of the Customs Department** | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| ***Standards*** | | | | | |
| 20. Customs Department's performances targets are achievable | 1 | 2 | 3 | 4 | 5 |
| 21. The Customs Department is in position to compare actual performance against plan. | 1 | 2 | 3 | 4 | 5 |
| 22. There is a mechanism for monitoring completeness of transactions for all goods manifested by Customs. | 1 | 2 | 3 | 4 | 5 |
| ***Inspection*** | | | | | |
| 23. Officers can conduct automated inspection of declared transactions | 1 | 2 | 3 | 4 | 5 |
| 24. Transaction inspection has achieved continuous satisfaction of customer requirements at lowest cost. | 1 | 2 | 3 | 4 | 5 |
| 25. Customs officials are in position to deter revenue loss at any one time | 1 | 2 | 3 | 4 | 5 |
| 26. Customs officials can identify miss-declarations and take corrective action while processing a transaction or immediately after a transaction. | 1 | 2 | 3 | 4 | 5 |
| 27. There are adequate access controls to prevent vulnerability of data. | 1 | 2 | 3 | 4 | 5 |
| 28. Customs Department uses system tasks to detect errors and take corrective action. | 1 | 2 | 3 | 4 | 5 |
| ***Compliance*** | | | | | |
| 29. Customs is able to enforce compliance using risk management principles | 1 | 2 | 3 | 4 | 5 |
| 30. There are reduced queries arising from post clearance audits | 1 | 2 | 3 | 4 | 5 |
| 31. Post clearance audit of transactions has enhanced compliance | 1 | 2 | 3 | 4 | 5 |
| 32. Customs Department is in position to enforce adherence to systems and procedures. | 1 | 2 | 3 | 4 | 5 |
| 33. There is improvement in compliance with Customs law and regulations and procedures | 1 | 2 | 3 | 4 | 5 |

**Administrative burden**

Whether you are ***a tax/revenue officer*** or ***business person*** there are certain actions you perform in order that you fulfill your tax/revenue obligation, which require performing a **number of times, consuming your time, and cost you money**. You are therefore requested to estimate the required information on the following where applicable.

| **Actions performed to fulfill tax/revenue obligation which is a product of Time, cost and frequency** | **1 Very Low** | **2 Low** | **3 Moderate** | **4 High** | **5 Very High** |
|---|---|---|---|---|---|
| 34. Assessing tax/revenue declarations (including assistance to inspection by public authorities e.g UNBS) | | | | | |
| 35. Familiarizing with the tax/revenue information obligation | | | | | |
| 36. Training members, employees and stake holders about the tax/revenue information obligations | | | | | |
| 37. Retrieving relevant tax/revenue information from existing data (e.g. to account for revenue outstanding, tariff reference, etc) | | | | | |
| 38. Amending or adjusting tax/revenue data | | | | | |
| 39. Producing new tax/revenue data e.g. capturing data, generating reports, etc. | | | | | |
| 40. Designing tax/revenue information material (e.g. leaflet conception, Notices etc) | | | | | |
| 41. Filling in tax/revenue forms and tables (including recordkeeping) | | | | | |
| 42. Holding meetings about tax/revenue (internal/external with an auditor, lawyer and other stakeholders) | | | | | |
| 43. Paying extra charges e.g. demurrage, storage, truck retention, inspection etc | | | | | |
| 44. Filing the tax/revenue information | | | | | |
| 45. Using (IT) equipment & supplies (e.g. computers, routers, printer, telephone, network supply) to be specifically used to fulfill tax/revenue information obligations | | | | | |

**Section III: Customs Information System: ASCYUDA ++**

**Indicate the extent to which you agree with the following observations and experiences with regard to ASYCUDA++ using the guidelines provided below.**

| **Strongly agree** | **Agree** | **Not sure** | **Disagree** | **Strongly disagree** |
|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Data Input refers to data time, data form and data content** | | | | | | |
| ***DataTime*** | | | | | | |
| 46. Up to date data is captured into the ASYCUDA++ whenever required to facilitate Customs clearance of goods | 1 | 2 | 3 | 4 | 5 |
| 47. Import/Export data from various source is frequently input into the ASYCUDA++ for processing | 1 | 2 | 3 | 4 | 5 |
| 48. Large volumes of Customs data entries are processed quickly through ASYCUDA++ at various points | 1 | 2 | 3 | 4 | 5 |
| 49. Facts on goods declared to Customs have enabled building of a pool of data for timely decision-making | 1 | 2 | 3 | 4 | 5 |
| ***Data Content*** | | | | | |
| 50. Data declared for capturing in ASYCUDA ++ is correct | 1 | 2 | 3 | 4 | 5 |
| 51. Data captured in ASYCUDA++ is complete to enable registration and assessment of revenue | 1 | 2 | 3 | 4 | 5 |
| 52. Relevant data is captured in the system | 1 | 2 | 3 | 4 | 5 |
| 53. Source documents provide detailed data to input in the system (i.e. on cost of goods, freight, quantity, description of goods bought, importer, shipper etc) | 1 | 2 | 3 | 4 | 5 |
| 54. Source documents provide clean data to input in the ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| ***Data Form*** | | | | | |
| 55. Details on goods for clearance through Customs are captured from reliable source documents | 1 | 2 | 3 | 4 | 5 |
| 56. Source documents provide organized data to input in the ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 57. Facts on goods for clearance are presented in a format that is appropriate to be captured | 1 | 2 | 3 | 4 | 5 |
| 58. Data is correctly input into ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| **Data Processing refers to verification, classification, computation selection and summarizing of data using ASYCUDA++** | | | | | |
| ***Verification*** | | | | | |
| 59. Facts about goods being processed for clearance by Customs using ASYCUDA++can be crosschecked for correctness | 1 | 2 | 3 | 4 | 5 |
| 60. Using ASYCUDA++, risk can be identified during Customs clearance of goods | 1 | 2 | 3 | 4 | 5 |
| 61. Users are in position to carry out timely reconciliation of transaction in ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 62. ASYCUDA++ aids confirmation of outstanding bond guarantees / taxes in the system | 1 | 2 | 3 | 4 | 5 |
| 63. Transactions can be checked for completeness using the system | 1 | 2 | 3 | 4 | 5 |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| ***Classification*** | | | | | |
| 64. Description and naming of goods is enabled using ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 65. Users are in position to confirm tax rates applicable to goods using the system | 1 | 2 | 3 | 4 | 5 |
| 66. Users are in position to identify and confirm exempted goods | 1 | 2 | 3 | 4 | 5 |
| 67. Users are in position to administer preferential treatment to categories of goods based on rules of origin using codes | 1 | 2 | 3 | 4 | 5 |
| ***Computation*** | | | | | |
| 68. Users are in position to make revenue projections using data in ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 69. Data stored in ASYCUDA++ can be analyzed to show trends in international trade | 1 | 2 | 3 | 4 | 5 |
| 70. Revenue payable/paid can be assessed according to tax heads (Import duty, VAT, Withholding tax) | 1 | 2 | 3 | 4 | 5 |
| 71. Amount or revenue collected/outstanding can be calculated for further action | 1 | 2 | 3 | 4 | 5 |
| ***Selection*** | | | | | |
| 72. Using ASYCUDA++ Customs transactions under process can be chosen for action on a set criteria for ease of facilitation according to level of risk | 1 | 2 | 3 | 4 | 5 |
| 73. Declarations selected along set criteria are subjected to varying degree of scrutiny | 1 | 2 | 3 | 4 | 5 |
| 74. Risk profiles are built based on data accumulated using established criteria Profile | 1 | 2 | 3 | 4 | 5 |
| ***Summarizing*** | | | | | |
| 75. Users are in position to access required import/export trade related figures from the system | 1 | 2 | 3 | 4 | 5 |
| 76. Users can generate revenue related summary reports of revenue collected / collectable using ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 77. Summary reports of revenue outstanding can be extracted from ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 78. Stored data can be processed into accurate summary reports on import/export trade trends | 1 | 2 | 3 | 4 | 5 |
| **Output refers to processed information from the system and feedback** | | | | | |
| ***Information*** | | | | | |
| 79. Users can access correct information for management reports and decision-making using ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 80. Customs Department can generate accurate warehousing bond guarantee related information | 1 | 2 | 3 | 4 | 5 |
| 81. Information on goods in transit from different entry points can be accessed using ASYCUDA++ countrywide in real time | 1 | 2 | 3 | 4 | 5 |
| 82. The system aids generation of correct information for revenue accounting to users | 1 | 2 | 3 | 4 | 5 |
| 83. The Department can avail information on goods selected for action based on level of risk analyzed using ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| 84. The Customs Department of URA is in position to distribute information wherever it is required on time. | 1 | 2 | 3 | 4 | 5 |
| 85. Information from ASYCUDA++ is complete | 1 | 2 | 3 | 4 | 5 |
| 86. Information from ASYCUDA++ is relevant | 1 | 2 | 3 | 4 | 5 |
| ***Feedback*** | | | | | |
| 87. Information on actual and planned revenue results is obtainable for comparison from ASYCUDA++ for decision-making | 1 | 2 | 3 | 4 | 5 |
| 88. Clients can access timely updates on progress of their transactions using ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 89. Corrective actions can be taken based on status of transactions results in ASYCUDA++ whenever needed | 1 | 2 | 3 | 4 | 5 |

**Section IV: Moderating Variable**

| | | | | | |
|---|---|---|---|---|---|
| **Capacity of users** | | | | | |
| ***Training background*** | | | | | |
| 90. Users have been trained to use ASCYUDA++ | 1 | 2 | 3 | 4 | 5 |
| 91. There is continuous training of ASCYUDA++ users | 1 | 2 | 3 | 4 | 5 |
| 92. I am satisfied with the training offered in ASCYUDA++ | 1 | 2 | 3 | 4 | 5 |
| ***Experience*** | | | | | |
| 93. There is adequate number of staff to execute Customs transactions using ASCYUDA++ | 1 | 2 | 3 | 4 | 5 |
| 94. Users of ASCYUDA++ know how to use the system to process Customs transactions. | 1 | 2 | 3 | 4 | 5 |
| 95. Users capture data correctly into the system from data sources | 1 | 2 | 3 | 4 | 5 |
| 96. Users are in position to assess taxes using ASYCUDA++ | 1 | 2 | 3 | 4 | 5 |
| 97. Users are in position to check correctness of declarations | 1 | 2 | 3 | 4 | 5 |
| 98. Users obtain summary reports on revenue for decision-making | 1 | 2 | 3 | 4 | 5 |
| 99. ASYCUDA++ is used correctly to classify declarations appropriately. | 1 | 2 | 3 | 4 | 5 |
| 100. I am satisfied with the number of equipment available for use in processing data | 1 | 2 | 3 | 4 | 5 |
| 101. I am satisfied with using ASYCUDA++ to clear goods | 1 | 2 | 3 | 4 | 5 |

**Appendix 3: Interview guide for senior managers, ASYCUDA++ Project team, IT staff and agent executives**

**Introduction**

I am a student from Uganda Management Institute, currently collecting data for compilation of my dissertation as partial requirement for the award of Masters in Management Studies in Project Planning and Management. I am here to conduct an interview for a maximum of 15minutes. The interview I am conducting relates to the contribution of ASCYUDA++ on the performance of the Customs department of URA. You have been selected to share with us your experiences and knowledge as a key person who possesses the key knowledge and experience to make this study successful. The interview I am conducting is basically aimed at obtaining qualitative information to complement the quantitative information which I am also collecting from the Customs staff. Information given will be treated with confidentiality.

**Thank you very much and let us begin now.**

**SECTION I**

**Dependant Variable: Performance**

***Efficiency***

1. In respect to the old information system, how has the new information system of Customs operations impacted Customs performance in regard to:
   i. Accuracy of out put
   ii. Processing time
   iii. Processing costs
   iv. Operational excellence
2. In your view to what extent are clients satisfied with the level of :
   i. Accuracy so far achieved in as far as revenue collection activities are concerned
   ii. Process time
   iii. Processing cost
   iv. Operational excellence
3. What have been the major short comings using ASYCUDA++ in as far as the following are concerned :
   i. Accuracy
   ii. Process time

iii. Process cost Training
iv. Operational excellence

***Control***

4. In respect to the old information system, how has the new information system impacted on control of revenue leakage in terms of adherence to:-
   i. Revenue policies,
   ii. Procedures,
   iii. Inspection of documents
   iv. Inspections of goods
   v. Systems compliance
   vi. Legal Compliance
5. What standards do you have in place in regard to:
   i. processing time,
   ii. cost and
   iii. security of data
6. Using the information system, how effective have these standards been in as meeting set objectives?
7. What major challenge does Customs Information System controls face in relation to revenue collection?

***Administrative Burden***

8. In respect to the old information system, how has the new information system of the Customs department impacted on:
   i. Costs spent in performing an action to meet a tax obligation
   ii. Time spent in performing an action to meet a tax obligation
   iii. Frequency in performing an action to meet a tax obligation
9. What challenges are encountered using the information system in respect to the administrative burden?
10. Using the information system, what additional plans do you have in place to reduce the administrative burden to the trading community?

**SECTION II:**

**Independent Variable: *Customs Information System – ASYCUDA++***

**Input:** ***Data***

11. What type of data is input into the system? Please explain why.
12. How would you describe the quality of data that is input in and output from the ASYCUDA++ System?
13. How confident are you with data sources where data input in ASYCUDA++ is obtained?
14. Please comment on the following attributes of data from data sources
    i. Time
    ii. Content
    iii. Form

***Data Processing***

15. How effective is data processing in terms of checking correctness, completeness and accuracy of:
    i. Classification
    ii. Assessment of taxes paid or payable
    iii. Accounting reports generated
    iv. Management reports generated

**Section III Moderating Variable:** ***Capacity of users***

16. In term of people what is your comment on the following:
    i. What are the strengths of the ASYCUDA++ users in terms of
        a. Training
        b. Experience
    ii. What are the weaknesses of the ASYCUDA++ users in terms of
        a. Training
        b. Experience
    iii. How often do you conduct ASYCUDA++related training?
    iv. How would you evaluate training conducted in terms of developing knowledge, skills and attitude of users?
    v. To what extent are you satisfied with the information output from the system? Why?

**Appendix 4: Documentary Review Guide**

**Documents reviewed: ……**

**Date of review…….**

**Date of Production …….**

**Location of Document ……..**

**DEPENDENT VARIABLE (Performance of Custom's Department)**

**Efficiency**

- Accuracy
- Processing Time
- Processing Cost
- Operational excellence

**Control**

- Standards
- Inspection
- Compliance

**Administrative Burden**

- Costs spent on performing an action to meet tax obligation
- Time spent in performing an action to meet tax obligation
- Frequency in performing an action to meet tax obligation

**INDEPENDENT VARIABLE (Custom Information System)**

**Input**

- Data

**Processing**

- Verification
- Classification
- Computation
- Summarizing

**Output**

- Information

  Feedback

**Moderating Variable: Capacity of users**

- Training background
- Experience

**Appendix 5: Reliability of Questionnaire**

| Item Statistics | | | |
|---|---|---|---|
| | Mean | Std. Deviation | N |
| Revenue transaction information declared to Customs is complete | 3.08 | 1.24 | 12 |
| The Customs Department is in position to generate correct revenue related data | 2.17 | 0.94 | 12 |
| Auto processing reduces duplication of transactions information | 2.00 | 0.74 | 12 |
| User defined reports generated are accurate | 2.42 | 1.16 | 12 |
| Processing time for Customs entries meet set standards (i.e. 30 minutes, one hour and two days for green, yellow and red lane entries respectively) | 2.92 | 1.08 | 12 |
| Automating revenue payment enables generation of timely accounting reports | 1.92 | 0.90 | 12 |
| Capturing data once at a single point saves time | 1.33 | 0.49 | 12 |
| Automatic validation enables timely reconciliation of transactions | 1.92 | 0.90 | 12 |
| I am satisfied with Customs entry transaction process time | 2.92 | 1.16 | 12 |
| Using computerized system has reduced human resource costs associated in the Customs clearance of goods | 2.25 | 0.97 | 12 |
| Material costs (e.g. of paper) associated with Customs clearance of goods have reduced | 2.33 | 0.89 | 12 |
| Automating Customs processes has enabled cutting cost | 2.17 | 0.83 | 12 |
| Indirect costs incurred for (e.g. demurrage, inspection, licenses, permits vehicle\container retention, , etc) Customs clearance of goods have reduced | 2.50 | 0.90 | 12 |
| Self declaration availed to the business community has reduced transaction processing costs | 2.33 | 1.07 | 12 |
| Automating processes has simplified the flow of transactions in Customs operations so minimizing delays | 1.50 | 0.52 | 12 |
| There is minimal wastage of material resources during Customs operations | 2.42 | 1.00 | 12 |
| Linking banks, traders, warehouses and transporters to Customs stations has improved cost of collecting revenue | 1.83 | 0.58 | 12 |
| The Customs Department is able to detect and minimize errors in advance | 2.67 | 1.07 | 12 |
| The number of transactions processed in a given time has increased | 1.75 | 0.75 | 12 |
| Customs Department's performances targets are achievable | 2.67 | 0.89 | 12 |
| The Customs Department is in position to compare actual performance against plan | 2.33 | 0.89 | 12 |
| There is a mechanism for monitoring completeness of transactions for all goods manifested by Customs. | 2.25 | 1.14 | 12 |
| Officers can conduct automated inspection of declared transactions | 2.00 | 1.04 | 12 |
| Transaction inspection has achieved continuous satisfaction of customer requirements at lowest cost | 2.83 | 0.72 | 12 |

| | | | |
|---|---|---|---|
| Customs officials can identify miss-declarations and take corrective action while processing a transaction or immediately after a transaction | 2.08 | 0.79 | 12 |
| There are adequate access controls to prevent vulnerability of data | 2.92 | 1.16 | 12 |
| Customs Department uses system tasks to detect errors and take corrective action | 2.42 | 0.90 | 12 |
| Customs is able to enforce compliance using risk management principles | 1.75 | 0.45 | 12 |
| There are reduced queries arising from post clearance audits | 3.17 | 0.72 | 12 |
| Post clearance audit of transactions has enhanced compliance | 2.58 | 1.00 | 12 |
| Customs Department is in position to enforce adherence to systems and procedures | 2.00 | 0.74 | 12 |
| There is improvement in compliance with Customs law and regulations and procedures | 2.33 | 0.98 | 12 |
| Checking and assessing tax/revenue declarations (including assistance to inspection by public authorities e.g UNBS) | 17.92 | 36.69 | 12 |
| oblige1b | 6.33 | 13.17 | 12 |
| oblige1c | 0.00 | 0.00 | 12 |
| Familiarizing with the tax/revenue information obligation | 12.83 | 35.58 | 12 |
| oblige2b | 17.33 | 34.86 | 12 |
| oblige2c | 0.00 | 0.00 | 12 |
| Training members, employees and stake holders about the tax/revenue information obligations | 3.83 | 8.70 | 12 |
| oblige3b | 17.50 | 36.63 | 12 |
| oblige3c | 0.00 | 0.00 | 12 |
| Retrieving relevant tax/revenue information from existing data (e.g. to account for revenue outstanding, tariff reference, etc) | 5.50 | 7.90 | 12 |
| oblige4b | 12.58 | 18.88 | 12 |
| oblige4c | 0.00 | 0.00 | 12 |
| Amending or adjusting tax/revenue data | 7.75 | 14.09 | 12 |
| oblige5b | 4.25 | 6.89 | 12 |
| oblige5c | 0.00 | 0.00 | 12 |
| Producing new tax/revenue data e.g. capturing data, generating reports, etc. | 2.42 | 4.21 | 12 |
| oblige6b | 20.50 | 33.54 | 12 |
| oblige6c | 0.00 | 0.00 | 12 |
| Designing tax/revenue information material (e.g. leaflet conception, Notices etc) | 0.25 | 0.45 | 12 |
| oblige7b | 10.28 | 23.24 | 12 |
| oblige7c | 0.00 | 0.00 | 12 |
| Filling in tax/revenue forms and tables (including recordkeeping) | 2.08 | 5.68 | 12 |
| oblige8b | 13.25 | 34.68 | 12 |
| oblige8c | 0.00 | 0.00 | 12 |
| Holding meetings about tax/revenue (internal/external with an auditor, lawyer and other stakeholders) | 0.33 | 0.49 | 12 |
| oblige9b | 22.75 | 46.22 | 12 |
| oblige9c | 0.00 | 0.00 | 12 |

| | | | |
|---|---|---|---|
| Paying extra charges e.g. demurrage, storage, truck retention, inspection etc | 0.50 | 1.73 | 12 |
| oblige10b | 0.83 | 2.89 | 12 |
| oblige10c | 0.00 | 0.00 | 12 |
| Filing the tax/revenue information | 0.08 | 0.29 | 12 |
| oblige11b | 0.08 | 0.29 | 12 |
| oblige11c | 0.00 | 0.00 | 12 |
| Buying or using (IT) equipment & supplies (e.g. computers, routers, printer, telephone, network supply) to be specifically used to fulfill tax/revenue information obligations | 18.42 | 31.16 | 12 |
| oblige12b | 12.50 | 19.49 | 12 |
| oblige12c | 0.00 | 0.00 | 12 |
| Up to date data is captured into the ASYCUDA++ whenever required to facilitate Customs clearance of goods | 2.00 | 1.04 | 12 |
| Import/Export data from various source is frequently input into the ASYCUDA++ for processing | 2.42 | 1.31 | 12 |
| Large volumes of Customs data entries are processed quickly through ASYCUDA++ at various points | 2.08 | 1.31 | 12 |
| Facts on goods declared to Customs have enabled building of a pool of data for timely decision making | 2.58 | 1.38 | 12 |
| Data declared for capturing in ASYCUDA ++ is correct | 3.08 | 0.90 | 12 |
| Data captured in ASYCUDA++ is complete to enable registration and assessment of revenue | 2.58 | 1.00 | 12 |
| Relevant data is captured in the system | 2.08 | 0.90 | 12 |
| Source documents provide detailed data to input in the system (i.e. on cost of goods, freight, quantity, description of goods bought, importer, shipper etc) | 2.50 | 1.31 | 12 |
| Source documents provide clean data to input in the ASYCUDA++ | 2.83 | 1.11 | 12 |
| Details on goods for clearance through Customs are captured from reliable source documents | 2.83 | 0.94 | 12 |
| Source documents provide organized data to input in the ASYCUDA++ | 2.42 | 0.79 | 12 |
| Facts on goods for clearance are presented in a format that is appropriate to be captured | 2.25 | 0.75 | 12 |
| Data is correctly input into ASYCUDA++ | 2.50 | 0.90 | 12 |
| Facts about goods being processed for clearance by Customs using ASYCUDA++can be crosschecked for correctness | 1.83 | 0.83 | 12 |
| Using ASYCUDA++, risk can be identified during Customs clearance of goods | 1.75 | 0.45 | 12 |
| Users are in position to carry out timely reconciliation of transaction in ASYCUDA++ | 1.83 | 0.83 | 12 |
| ASYCUDA++ aids confirmation of outstanding bond guarantees / taxes in the system | 2.00 | 0.85 | 12 |
| Transactions can be checked for completeness using the system | 2.08 | 1.08 | 12 |
| Description and naming of goods is enabled using ASYCUDA++ | 1.75 | 0.87 | 12 |
| Users are in position to confirm tax rates applicable to goods using the system | 1.67 | 0.89 | 12 |

| | | | |
|---|---|---|---|
| Users are in position to identify and confirm exempted goods | 1.58 | 0.67 | 12 |
| Users are in position to administer preferential treatment to categories of goods based on rules of origin using codes | 1.83 | 0.83 | 12 |
| Users are in position to make revenue projections using data in ASYCUDA++ | 2.08 | 1.00 | 12 |
| Data stored in ASYCUDA++ can be analyzed to show trends in international trade | 1.92 | 0.51 | 12 |
| Revenue payable/paid can be assessed according to tax heads (Import duty, VAT, Withholding tax) | 1.33 | 0.49 | 12 |
| Amount or revenue collected/outstanding can be calculated for further action | 1.42 | 0.51 | 12 |
| Transactions under process in the system are selected for action on a set criteria for ease of facilitation according to level of risk | 1.50 | 0.52 | 12 |
| Declarations selected along set criteria are subjected to varying degree of scrutiny | 1.50 | 0.52 | 12 |
| Risk profiles are built based on data accumulated using established criteria Profile | 2.00 | 0.85 | 12 |
| Users are in position to access required import/export trade related figures from the system | 1.58 | 0.51 | 12 |
| Users can generate revenue related summary reports of revenue collected / collectable using ASYCUDA++ | 1.42 | 0.51 | 12 |
| Summary reports of revenue outstanding can be extracted from ASYCUDA++ | 1.58 | 0.51 | 12 |
| Stored data can be processed into accurate summary reports on import/export trade trends | 1.92 | 1.08 | 12 |
| Users can access correct information for management reports and decision making using ASYCUDA++ | 1.67 | 0.65 | 12 |
| Customs Department can generate accurate warehousing bond guarantee related information | 1.75 | 0.97 | 12 |
| Information on goods in transit from different entry points can be accessed using ASYCUDA++ countrywide in real time | 2.08 | 1.31 | 12 |
| The system aids generation of correct information for revenue accounting to users | 2.25 | 0.87 | 12 |
| The Department can avail information on goods selected for action based on level of risk analyzed using ASYCUDA++ | 1.75 | 0.87 | 12 |
| The Customs Department of URA is in position to distribute information wherever it is required on time. | 2.00 | 0.85 | 12 |
| Information from ASYCUDA++ is complete | 2.92 | 1.00 | 12 |
| Information from ASYCUDA++ is relevant | 1.67 | 0.65 | 12 |
| Information on actual and planned revenue results is obtainable for comparison from ASYCUDA++ for decision making | 2.08 | 0.79 | 12 |
| Clients can access timely updates on progress of their transactions using ASYCUDA++ | 2.00 | 1.13 | 12 |
| Corrective actions can be taken based on status of transactions results in ASYCUDA++ whenever needed | 2.00 | 1.04 | 12 |
| Users have been trained to use ASCYUDA++ | 1.67 | 0.49 | 12 |
| There is continuous training of ASCYUDA++ users | 2.08 | 1.00 | 12 |
| I am satisfied with the training offered in ASCYUDA++ | 2.50 | 1.17 | 12 |
| There is adequate number of staff to execute Customs | 2.17 | 0.94 | 12 |

| | | | |
|---|---|---|---|
| transactions using ASCYUDA++ | | | |
| Users of ASCYUDA++ know how to use the system to process Customs transactions. | 2.00 | 0.74 | 12 |
| Users capture data correctly into the system from data sources | 2.83 | 0.94 | 12 |
| Users are in position to assess taxes using ASYCUDA++ | 1.75 | 0.45 | 12 |
| Users are in position to check correctness of declarations | 1.83 | 0.39 | 12 |
| Users obtain summary reports on revenue for decision making | 1.92 | 0.51 | 12 |
| ASYCUDA++ is used correctly to classify declarations appropriately. | 2.25 | 0.97 | 12 |
| I am satisfied with the number of equipment available for use in processing data | 2.25 | 0.75 | 12 |
| I am satisfied with using ASYCUDA++ to clear goods | 1.75 | 0.87 | 12 |
| The system is flexible and user friendly | 2.00 | 1.04 | 12 |

| Scale Statistics | | | |
|---|---|---|---|
| Mean | Variance | Std. Deviation | N of Items |
| 399.78 | 52891.61 | 229.98 | 125 |

| Item-Total Statistics | | | | |
|---|---|---|---|---|
| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
| Revenue transaction information declared to Customs is complete | 396.70 | 52579.228 | 0.547 | 0.767 |
| The Customs Department is in position to generate correct revenue related data | 397.61 | 52645.140 | 0.571 | 0.767 |
| Auto processing reduces duplication of transactions information | 397.78 | 52858.523 | 0.096 | 0.768 |
| User defined reports generated are accurate | 397.36 | 52604.224 | 0.535 | 0.767 |
| Processing time for Customs entries meet set standards (i.e. 30 minutes, one hour and two days for green, yellow and red lane entries respectively) | 396.86 | 52935.308 | -0.090 | 0.769 |

| | | | | |
|---|---|---|---|---|
| Automating revenue payment enables generation of timely accounting reports | 397.86 | 52880.893 | 0.024 | 0.768 |
| Capturing data once at a single point saves time | 398.45 | 52847.514 | 0.194 | 0.768 |
| Automatic validation enables timely reconciliation of transactions | 397.86 | 52824.100 | 0.161 | 0.768 |
| I am satisfied with Customs entry transaction process time | 396.86 | 52805.010 | 0.159 | 0.768 |
| Using computerized system has reduced human resource costs associated in the Customs clearance of goods | 397.53 | 52602.178 | 0.652 | 0.767 |
| Material costs (e.g. of paper) associated with Customs clearance of goods have reduced | 397.45 | 52652.540 | 0.585 | 0.767 |
| Automating Customs processes has enabled cutting cost | 397.61 | 52580.412 | 0.811 | 0.767 |
| Indirect costs incurred for (e.g. demurrage, inspection, licenses, permits vehicle\container retention, , etc) Customs clearance of goods have reduced | 397.28 | 52682.192 | 0.502 | 0.768 |
| Self declaration availed to the business community has reduced transaction processing costs | 397.45 | 52770.969 | 0.242 | 0.768 |
| Automating processes has | 398.28 | 52854.010 | 0.155 | 0.768 |

| | | | | |
|---|---|---|---|---|
| simplified the flow of transactions in Customs operations so minimizing delays | | | | |
| There is minimal wastage of material resources during Customs operations | 397.36 | 52857.679 | 0.072 | 0.768 |
| Linking banks, traders, warehouses and transporters to Customs stations has improved cost of collecting revenue | 397.95 | 53007.663 | -0.438 | 0.769 |
| The Customs Department is able to detect and minimize errors in advance | 397.11 | 52953.536 | -0.128 | 0.769 |
| The number of transactions processed in a given time has increased | 398.03 | 52917.393 | -0.076 | 0.769 |
| Customs Department's performances targets are achievable | 397.11 | 52810.925 | 0.196 | 0.768 |
| The Customs Department is in position to compare actual performance against plan | 397.45 | 52980.903 | -0.220 | 0.769 |
| There is a mechanism for monitoring completeness of transactions for all goods manifested by Customs. | 397.53 | 52805.698 | 0.162 | 0.768 |
| Officers can conduct automated inspection of declared transactions | 397.78 | 52904.341 | -0.029 | 0.769 |
| Transaction inspection has achieved | 396.95 | 52926.209 | -0.106 | 0.769 |

| | | | | |
|---|---|---|---|---|
| continuous satisfaction of customer requirements at lowest cost | | | | |
| Customs officials can identify miss-declarations and take corrective action while processing a transaction or immediately after a transaction | 397.70 | 52876.631 | 0.039 | 0.768 |
| There are adequate access controls to prevent vulnerability of data | 396.86 | 52965.555 | -0.140 | 0.769 |
| Customs Department uses system tasks to detect errors and take corrective action | 397.36 | 53065.679 | -0.422 | 0.769 |
| Customs is able to enforce compliance using risk management principles | 398.03 | 52923.393 | -0.154 | 0.769 |
| There are reduced queries arising from post clearance audits | 396.61 | 52890.049 | 0.003 | 0.769 |
| Post clearance audit of transactions has enhanced compliance | 397.20 | 52783.235 | 0.235 | 0.768 |
| Customs Department is in position to enforce adherence to systems and procedures | 397.78 | 52889.614 | 0.004 | 0.769 |
| There is improvement in compliance with Customs law and regulations and procedures | 397.45 | 53011.150 | -0.266 | 0.769 |

| | | | | |
|---|---|---|---|---|
| Checking and assessing tax/revenue declarations (including assistance to inspection by public authorities e.g UNBS) | 381.86 | 40644.551 | 0.737 | 0.730 |
| oblige1b | 393.45 | 53043.412 | -0.054 | 0.772 |
| oblige1c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Familiarizing with the tax/revenue information obligation | 386.95 | 41038.260 | 0.735 | 0.730 |
| oblige2b | 382.45 | 55471.820 | -0.231 | 0.802 |
| oblige2c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Training members, employees and stake holders about the tax/revenue information obligations | 395.95 | 49750.107 | 0.790 | 0.755 |
| oblige3b | 382.28 | 49236.941 | 0.142 | 0.778 |
| oblige3c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Retrieving relevant tax/revenue information from existing data (e.g. to account for revenue outstanding, tariff reference, etc) | 394.28 | 50456.992 | 0.668 | 0.758 |
| oblige4b | 387.20 | 50168.784 | 0.280 | 0.763 |
| oblige4c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Amending or adjusting tax/revenue data | 392.03 | 48344.098 | 0.702 | 0.750 |
| oblige5b | 395.53 | 52677.160 | 0.053 | 0.768 |
| oblige5c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Producing new tax/revenue data e.g. capturing data, generating reports, etc. | 397.36 | 52572.646 | 0.156 | 0.767 |
| oblige6b | 379.28 | 46041.864 | 0.398 | 0.757 |
| oblige6c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Designing tax/revenue information | 399.53 | 52793.048 | 0.475 | 0.768 |

| | | | | |
|---|---|---|---|---|
| material (e.g. leaflet conception, Notices etc) | | | | |
| oblige7b | 389.50 | 46401.157 | 0.594 | 0.747 |
| oblige7c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Filling in tax/revenue forms and tables (including recordkeeping) | 397.70 | 52570.297 | 0.111 | 0.768 |
| oblige8b | 386.53 | 41382.898 | 0.730 | 0.731 |
| oblige8c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Holding meetings about tax/revenue (internal/external with an auditor, lawyer and other stakeholders) | 399.45 | 52747.696 | 0.635 | 0.768 |
| oblige9b | 377.03 | 37388.353 | 0.748 | 0.727 |
| oblige9c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Paying extra charges e.g. demurrage, storage, truck retention, inspection etc | 399.28 | 52790.737 | 0.123 | 0.768 |
| oblige10b | 398.95 | 52726.820 | 0.118 | 0.768 |
| oblige10c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Filing the tax/revenue information | 399.70 | 52919.657 | -0.212 | 0.769 |
| oblige11b | 399.70 | 52919.657 | -0.212 | 0.769 |
| oblige11c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Buying or using (IT) equipment & supplies (e.g. computers, routers, printer, telephone, network supply) to be specifically used to fulfill tax/revenue information obligations | 381.36 | 45306.857 | 0.499 | 0.750 |
| oblige12b | 387.28 | 50091.014 | 0.278 | 0.763 |
| oblige12c | 399.78 | 52891.614 | 0.000 | 0.768 |
| Up to date data is captured into the ASYCUDA++ whenever required | 397.78 | 52823.250 | 0.140 | 0.768 |

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| to facilitate Customs clearance of goods | | | | |
| Import/Export data from various source is frequently input into the ASYCUDA++ for processing | 397.36 | 52939.068 | -0.081 | 0.769 |
| Large volumes of Customs data entries are processed quickly through ASYCUDA++ at various points | 397.70 | 52956.566 | -0.110 | 0.769 |
| Facts on goods declared to Customs have enabled building of a pool of data for timely decision making | 397.20 | 52932.871 | -0.068 | 0.769 |
| Data declared for capturing in ASYCUDA ++ is correct | 396.70 | 52754.813 | 0.329 | 0.768 |
| Data captured in ASYCUDA++ is complete to enable registration and assessment of revenue | 397.20 | 52786.326 | 0.228 | 0.768 |
| Relevant data is captured in the system | 397.70 | 52897.955 | -0.017 | 0.769 |
| Source documents provide detailed data to input in the system (i.e. on cost of goods, freight, quantity, description of goods bought, importer, shipper etc) | 397.28 | 52745.399 | 0.239 | 0.768 |
| Source documents provide clean data to input in the ASYCUDA++ | 396.95 | 52825.663 | 0.126 | 0.768 |
| Details on goods for clearance through | 396.95 | 52763.300 | 0.296 | 0.768 |

| | | | | |
|---|---|---|---|---|
| Customs are captured from reliable source documents | | | | |
| Source documents provide organized data to input in the ASYCUDA++ | 397.36 | 52849.497 | 0.114 | 0.768 |
| Facts on goods for clearance are presented in a format that is appropriate to be captured | 397.53 | 52818.724 | 0.209 | 0.768 |
| Data is correctly input into ASYCUDA++ | 397.28 | 52941.464 | -0.122 | 0.769 |
| Facts about goods being processed for clearance by Customs using ASYCUDA++can be crosschecked for correctness | 397.95 | 52975.300 | -0.220 | 0.769 |
| Using ASYCUDA++, risk can be identified during Customs clearance of goods | 398.03 | 52842.120 | 0.237 | 0.768 |
| Users are in position to carry out timely reconciliation of transaction in ASYCUDA++ | 397.95 | 52788.390 | 0.267 | 0.768 |
| ASYCUDA++ aids confirmation of outstanding bond guarantees / taxes in the system | 397.78 | 52794.886 | 0.245 | 0.768 |
| Transactions can be checked for completeness using the system | 397.70 | 52691.773 | 0.399 | 0.768 |
| Description and naming of goods is enabled using ASYCUDA++ | 398.03 | 52966.120 | -0.189 | 0.769 |
| Users are in position to confirm | 398.11 | 52946.380 | -0.136 | 0.769 |

| | | | | |
|---|---|---|---|---|
| tax rates applicable to goods using the system | | | | |
| Users are in position to identify and confirm exempted goods | 398.20 | 52756.013 | 0.440 | 0.768 |
| Users are in position to administer preferential treatment to categories of goods based on rules of origin using codes | 397.95 | 52872.754 | 0.047 | 0.768 |
| Users are in position to make revenue projections using data in ASYCUDA++ | 397.70 | 52919.773 | -0.064 | 0.769 |
| Data stored in ASYCUDA++ can be analyzed to show trends in international trade | 397.86 | 52836.464 | 0.232 | 0.768 |
| Revenue payable/paid can be assessed according to tax heads (Import duty, VAT, Withholding tax) | 398.45 | 52804.241 | 0.385 | 0.768 |
| Amount or revenue collected/outstanding can be calculated for further action | 398.36 | 52763.497 | 0.540 | 0.768 |
| Transactions under process in the system are selected for action on a set criteria for ease of facilitation according to level of risk | 398.28 | 52805.828 | 0.356 | 0.768 |
| Declarations selected along set criteria are subjected to varying degree of scrutiny | 398.28 | 52864.374 | 0.112 | 0.768 |
| Risk profiles are built based on data | 397.78 | 52825.861 | 0.166 | 0.768 |

| | | | | |
|---|---|---|---|---|
| accumulated using established criteria Profile | | | | |
| Users are in position to access required import/export trade related figures from the system | 398.20 | 52790.260 | 0.427 | 0.768 |
| Users can generate revenue related summary reports of revenue collected / collectable using ASYCUDA++ | 398.36 | 52846.588 | 0.189 | 0.768 |
| Summary reports of revenue outstanding can be extracted from ASYCUDA++ | 398.20 | 52853.962 | 0.158 | 0.768 |
| Stored data can be processed into accurate summary reports on import/export trade trends | 397.86 | 53011.010 | -0.242 | 0.769 |
| Users can access correct information for management reports and decision making using ASYCUDA++ | 398.11 | 52931.652 | -0.135 | 0.769 |
| Customs Department can generate accurate warehousing bond guarantee related information | 398.03 | 52920.549 | -0.067 | 0.769 |
| Information on goods in transit from different entry points can be accessed using ASYCUDA++ countrywide in real time | 397.70 | 52988.813 | -0.164 | 0.769 |
| The system aids generation of correct information for revenue accounting to users | 397.53 | 52930.425 | -0.099 | 0.769 |

| | | | | |
|---|---|---|---|---|
| The Department can avail information on goods selected for action based on level of risk analyzed using ASYCUDA++ | 398.03 | 52886.847 | 0.010 | 0.768 |
| The Customs Department of URA is in position to distribute information wherever it is required on time. | 397.78 | 52852.523 | 0.098 | 0.768 |
| Information from ASYCUDA++ is complete | 396.86 | 53008.282 | -0.256 | 0.769 |
| Information from ASYCUDA++ is relevant | 398.11 | 52839.289 | 0.173 | 0.768 |
| Information on actual and planned revenue results is obtainable for comparison from ASYCUDA++ for decision making | 397.70 | 52962.500 | -0.196 | 0.769 |
| Clients can access timely updates on progress of their transactions using ASYCUDA++ | 397.78 | 52998.406 | -0.208 | 0.769 |
| Corrective actions can be taken based on status of transactions results in ASYCUDA++ whenever needed | 397.78 | 52937.679 | -0.098 | 0.769 |
| Users have been trained to use ASCYUDA++ | 398.11 | 52816.198 | 0.332 | 0.768 |
| There is continuous training of ASCYUDA++ users | 397.70 | 52963.293 | -0.158 | 0.769 |
| I am satisfied with the training offered in ASCYUDA++ | 397.28 | 52964.737 | -0.139 | 0.769 |
| There is adequate number of staff to | 397.61 | 52819.074 | 0.166 | 0.768 |

| | | | | |
|---|---|---|---|---|
| execute Customs transactions using ASCYUDA++ | | | | |
| Users of ASCYUDA++ know how to use the system to process Customs transactions. | 397.78 | 52892.043 | -0.003 | 0.769 |
| Users capture data correctly into the system from data sources | 396.95 | 52748.027 | 0.331 | 0.768 |
| Users are in position to assess taxes using ASYCUDA++ | 398.03 | 52888.847 | 0.012 | 0.768 |
| Users are in position to check correctness of declarations | 397.95 | 52820.572 | 0.396 | 0.768 |
| Users obtain summary reports on revenue for decision making | 397.86 | 52808.282 | 0.351 | 0.768 |
| ASYCUDA++ is used correctly to classify declarations appropriately. | 397.53 | 52844.062 | 0.105 | 0.768 |
| I am satisfied with the number of equipment available for use in processing data | 397.53 | 52849.698 | 0.119 | 0.768 |
| I am satisfied with using ASYCUDA++ to clear goods | 398.03 | 52926.549 | -0.090 | 0.769 |
| The system is flexible and user friendly | 397.78 | 52775.795 | 0.239 | 0.768 |

| Reliability Statistics | |
|---|---|
| Cronbach's Alpha | N of Items |
| 0.768 | 125 |

**Appendix 6: Reliability of the variables in the questionnaire**

**Reliability of efficiency variable**

| Item Statistics | | | |
|---|---|---|---|
| | Mean | Std. Deviation | N |
| Revenue transaction information declared to Customs is complete | 3.08 | 1.24 | 12 |
| The Customs Department is in position to generate correct revenue related data | 2.17 | 0.94 | 12 |
| Auto processing reduces duplication of transactions information | 2.00 | 0.74 | 12 |
| User defined reports generated are accurate | 2.42 | 1.16 | 12 |
| Processing time for Customs entries meet set standards (i.e. 30 minutes, one hour and two days for green, yellow and red lane entries respectively) | 2.92 | 1.08 | 12 |
| Automating revenue payment enables generation of timely accounting reports | 1.92 | 0.90 | 12 |
| Capturing data once at a single point saves time | 1.33 | 0.49 | 12 |
| Automatic validation enables timely reconciliation of transactions | 1.92 | 0.90 | 12 |
| I am satisfied with Customs entry transaction process time | 2.92 | 1.16 | 12 |
| Using computerized system has reduced human resource costs associated in the Customs clearance of goods | 2.25 | 0.97 | 12 |
| Material costs (e.g. of paper) associated with Customs clearance of goods have reduced | 2.33 | 0.89 | 12 |
| Automating Customs processes has enabled cutting cost | 2.17 | 0.83 | 12 |
| Indirect costs incurred for (e.g. demurrage, inspection, licenses, permits vehicle\container retention, , etc) Customs clearance of goods have reduced | 2.50 | 0.90 | 12 |
| Self declaration availed to the business community has reduced transaction processing costs | 2.33 | 1.07 | 12 |
| Automating processes has simplified the flow of transactions in Customs operations so minimizing delays | 1.50 | 0.52 | 12 |
| There is minimal wastage of material resources during Customs operations | 2.42 | 1.00 | 12 |
| Linking banks, traders, warehouses and transporters to Customs stations has improved cost of collecting revenue | 1.83 | 0.58 | 12 |
| The Customs Department is able to detect and minimize errors in advance | 2.67 | 1.07 | 12 |
| The number of transactions processed in a given time has increased | 1.75 | 0.75 | 12 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 42.42 | 82.083 | 9.060 | 19 |

| Item-Total Statistics | | | | |
|---|---|---|---|---|
| | Scale | Scale | Corrected | Cronbach |

| | Mean if Item Deleted | Variance if Item Deleted | Item-Total Correlation | 's Alpha if Item Deleted |
|---|---|---|---|---|
| Revenue transaction information declared to Customs is complete | 39.33 | 66.79 | 0.68 | 0.82 |
| The Customs Department is in position to generate correct revenue related data | 40.25 | 70.75 | 0.66 | 0.83 |
| Auto processing reduces duplication of transactions information | 40.42 | 77.36 | 0.32 | 0.84 |
| User defined reports generated are accurate | 40.00 | 72.36 | 0.42 | 0.84 |
| Processing time for Customs entries meet set standards (i.e. 30 minutes, one hour and two days for green, yellow and red lane entries respectively) | 39.50 | 80.45 | 0.02 | 0.86 |
| Automating revenue payment enables generation of timely accounting reports | 40.50 | 70.45 | 0.72 | 0.82 |
| Capturing data once at a single point saves time | 41.08 | 76.08 | 0.67 | 0.83 |
| Automatic validation enables timely reconciliation of transactions | 40.50 | 69.36 | 0.79 | 0.82 |
| I am satisfied with Customs entry transaction process time | 39.50 | 73.91 | 0.34 | 0.84 |
| Using computerized system has reduced human resource costs associated in the Customs clearance of goods | 40.17 | 70.33 | 0.67 | 0.83 |
| Material costs (e.g. of paper) associated with Customs clearance of goods have reduced | 40.08 | 72.27 | 0.60 | 0.83 |
| Automating Customs processes has enabled cutting cost | 40.25 | 72.57 | 0.62 | 0.83 |
| Indirect costs incurred for (e.g. demurrage, inspection, licenses, permits vehicle\container retention, , etc) Customs clearance of goods have reduced | 39.92 | 72.45 | 0.57 | 0.83 |
| Self declaration availed to the business community has reduced transaction processing costs | 40.08 | 75.36 | 0.30 | 0.84 |
| Automating processes has simplified the flow of transactions in Customs operations so minimizing delays | 40.92 | 76.99 | 0.53 | 0.84 |
| There is minimal wastage of material resources during Customs operations | 40.00 | 75.82 | 0.30 | 0.84 |
| Linking banks, traders, warehouses and transporters to Customs stations has improved cost of collecting revenue | 40.58 | 82.81 | -0.10 | 0.85 |
| The Customs Department is able to detect and minimize errors in advance | 39.75 | 74.75 | 0.33 | 0.84 |
| The number of transactions processed in a | 40.67 | 80.97 | 0.04 | 0.85 |

| | | | | |
|---|---|---|---|---|
| given time has increased | | | | |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .844 | 19 |

**Reliability of control variable**

| Item Statistics | | | |
|---|---|---|---|
| | Mean | Std. Deviation | N |
| Customs Department's performances targets are achievable | 2.71 | 0.83 | 14 |
| The Customs Department is in position to compare actual performance against plan | 2.29 | 0.83 | 14 |
| There is a mechanism for monitoring completeness of transactions for all goods manifested by Customs. | 2.29 | 1.07 | 14 |
| Officers can conduct automated inspection of declared transactions | 2.14 | 1.10 | 14 |
| Transaction inspection has achieved continuous satisfaction of customer requirements at lowest cost | 2.86 | 0.77 | 14 |
| Customs officials can identify miss-declarations and take corrective action while processing a transaction or immediately after a transaction | 2.00 | 0.78 | 14 |
| There are adequate access controls to prevent vulnerability of data | 2.79 | 1.19 | 14 |
| Customs Department uses system tasks to detect errors and take corrective action | 2.43 | 0.85 | 14 |
| Customs is able to enforce compliance using risk management principles | 1.79 | 0.43 | 14 |
| There are reduced queries arising from post clearance audits | 3.43 | 0.94 | 14 |
| Post clearance audit of transactions has enhanced compliance | 2.50 | 0.94 | 14 |
| Customs Department is in position to enforce adherence to systems and procedures | 2.07 | 0.73 | 14 |
| There is improvement in compliance with Customs law and regulations and procedures | 2.29 | 0.91 | 14 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 31.57 | 47.802 | 6.914 | 13 |

| Item-Total Statistics |
|---|

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| Customs Department's performances targets are achievable | 28.86 | 45.82 | 0.12 | 0.86 |
| The Customs Department is in position to compare actual performance against plan | 29.29 | 44.84 | 0.21 | 0.86 |
| There is a mechanism for monitoring completeness of transactions for all goods manifested by Customs. | 29.29 | 36.68 | 0.77 | 0.82 |
| Officers can conduct automated inspection of declared transactions | 29.43 | 36.11 | 0.79 | 0.81 |
| Transaction inspection has achieved continuous satisfaction of customer requirements at lowest cost | 28.71 | 42.22 | 0.50 | 0.84 |
| Customs officials can identify miss-declarations and take corrective action while processing a transaction or immediately after a transaction | 29.57 | 41.34 | 0.58 | 0.83 |
| There are adequate access controls to prevent vulnerability of data | 28.79 | 36.95 | 0.65 | 0.83 |
| Customs Department uses system tasks to detect errors and take corrective action | 29.14 | 39.36 | 0.72 | 0.82 |
| Customs is able to enforce compliance using risk management principles | 29.79 | 44.95 | 0.47 | 0.84 |
| There are reduced queries arising from post clearance audits | 28.14 | 46.29 | 0.05 | 0.87 |
| Post clearance audit of transactions has enhanced compliance | 29.07 | 40.23 | 0.56 | 0.83 |
| Customs Department is in position to enforce adherence to systems and procedures | 29.50 | 40.58 | 0.72 | 0.83 |
| There is improvement in compliance with Customs law and regulations and procedures | 29.29 | 40.84 | 0.53 | 0.84 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .848 | 13 |

**Reliability of administrative burden variable**

| Item Statistics |
|---|

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Checking and assessing tax/revenue declarations (including assistance to inspection by public authorities e.g. UNBS) | 15.20 | 33.07 | 15 |
| oblige1b | 9.07 | 14.53 | 15 |
| oblige1c | 1333.33 | 3518.66 | 15 |
| Familiarizing with the tax/revenue information obligation | 10.67 | 31.86 | 15 |
| oblige2b | 16.53 | 31.48 | 15 |
| oblige2c | 4000 | 15491.93 | 15 |
| Training members, employees and stake holders about the tax/revenue information obligations | 3.33 | 7.83 | 15 |
| oblige3b | 18 | 35.03 | 15 |
| oblige3c | 0 | 0 | 15 |
| Retrieving relevant tax/revenue information from existing data (e.g. to account for revenue outstanding, tariff reference, etc) | 5.13 | 7.35 | 15 |
| oblige4b | 11.13 | 17.30 | 15 |
| oblige4c | 0 | 0 | 15 |
| Amending or adjusting tax/revenue data | 7.20 | 12.96 | 15 |
| oblige5b | 4.07 | 6.50 | 15 |
| oblige5c | 2000 | 7745.97 | 15 |
| Producing new tax/revenue data e.g. capturing data, generating reports, etc. | 2.13 | 3.83 | 15 |
| oblige6b | 17.40 | 30.59 | 15 |
| oblige6c | 2000 | 7745.97 | 15 |
| Designing tax/revenue information material (e.g. leaflet conception, Notices etc) | 1.54 | 5.12 | 15 |
| oblige7b | 9.22 | 20.97 | 15 |
| oblige7c | 2666.67 | 10327.96 | 15 |
| Filling in tax/revenue forms and tables (including recordkeeping) | 1.73 | 5.09 | 15 |
| oblige8b | 11.27 | 31.09 | 15 |
| oblige8c | 333.33 | 1290.99 | 15 |
| Holding meetings about tax/revenue (internal/external with an auditor, lawyer and other stakeholders) | 0.60 | 0.91 | 15 |
| oblige9b | 27 | 48.78 | 15 |
| oblige9c | 3666.67 | 10768.12 | 15 |
| Paying extra charges e.g. demurrage, storage, truck retention, inspection etc | 1.13 | 2.90 | 15 |
| oblige10b | 3.67 | 8.55 | 15 |
| oblige10c | 8200 | 26077.36 | 15 |
| Filing the tax/revenue information | 0.80 | 2.57 | 15 |

| | | | |
|---|---|---|---|
| oblige11b | 26.07 | 92.70 | 15 |
| oblige11c | 1000 | 3872.98 | 15 |
| Buying or using (IT) equipment & supplies (e.g. computers, routers, printer, telephone, network supply) to be specifically used to fulfill tax/revenue information obligations | 14.87 | 28.59 | 15 |
| oblige12b | 16.67 | 29.14 | 15 |
| oblige12c | 22333.33 | 60204.02 | 15 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 47767.7573 | 16068395751.541 | 126761.17604 | 36 |

| Item-Total Statistics | | | | |
|---|---|---|---|---|
| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
| Checking and assessing tax/revenue declarations (including assistance to inspection by public authorities e.g UNBS) | 47752.56 | 16069226503.52 | -0.10 | 0.71 |
| oblige1b | 47758.69 | 16066261945.36 | 0.58 | 0.71 |
| oblige1c | 46434.42 | 15197263153.45 | 0.99 | 0.70 |
| Familiarizing with the tax/revenue information obligation | 47757.09 | 16069167880.89 | -0.10 | 0.71 |
| oblige2b | 47751.22 | 16067910679.00 | 0.06 | 0.71 |
| oblige2c | 43767.76 | 13260950814.40 | 0.72 | 0.67 |
| Training members, employees and stake holders about the tax/revenue information obligations | 47764.42 | 16068502685.90 | -0.05 | 0.71 |
| oblige3b | 47749.76 | 16066772131.04 | 0.18 | 0.71 |
| oblige3c | 47767.76 | 16068395751.54 | 0.00 | 0.71 |
| Retrieving relevant tax/revenue information from existing data (e.g. to account for revenue outstanding, tariff reference, etc) | 47762.62 | 16068296773.94 | 0.05 | 0.71 |
| oblige4b | 47756.62 | 16068620196.47 | -0.05 | 0.71 |
| oblige4c | 47767.76 | 16068395751.54 | 0.00 | 0.71 |
| Amending or adjusting tax/revenue data | 47760.56 | 16068262249.54 | 0.04 | 0.71 |
| oblige5b | 47763.69 | 16068234166.29 | 0.10 | 0.71 |
| oblige5c | 45767.76 | 14604673282.97 | 0.75 | 0.69 |
| Producing new tax/revenue data e.g. | 47765.62 | 16068479840.64 | -0.09 | 0.71 |

| | | | | |
|---|---|---|---|---|
| capturing data, generating reports, etc. | | | | |
| oblige6b | 47750.36 | 16069498627.04 | -0.14 | 0.71 |
| oblige6c | 45767.76 | 15001577568.68 | 0.53 | 0.70 |
| Designing tax/revenue information material (e.g. leaflet conception, Notices etc) | 47766.22 | 16067400467.87 | 0.77 | 0.71 |
| oblige7b | 47758.54 | 16068466553.58 | -0.01 | 0.71 |
| oblige7c | 45101.09 | 14143432460.11 | 0.74 | 0.68 |
| Filling in tax/revenue forms and tables (including recordkeeping) | 47766.02 | 16068527778.68 | -0.10 | 0.71 |
| oblige8b | 47756.49 | 16069091457.59 | -0.09 | 0.71 |
| oblige8c | 47434.42 | 15882259387.73 | 0.57 | 0.71 |
| Holding meetings about tax/revenue (internal/external with an auditor, lawyer and other stakeholders) | 47767.16 | 16068195334.77 | 0.87 | 0.71 |
| oblige9b | 47740.76 | 16065122659.07 | 0.26 | 0.71 |
| oblige9c | 44101.09 | 13589309082.97 | 0.94 | 0.67 |
| Paying extra charges e.g. demurrage, storage, truck retention, inspection etc | 47766.62 | 16067890960.50 | 0.69 | 0.71 |
| oblige10b | 47764.09 | 16066574926.30 | 0.84 | 0.71 |
| oblige10c | 39567.76 | 11824176487.54 | 0.63 | 0.66 |
| Filing the tax/revenue information | 47766.96 | 16067857108.15 | 0.83 | 0.71 |
| oblige11b | 47741.69 | 16053365622.48 | 0.64 | 0.71 |
| oblige11c | 46767.76 | 15519986660.11 | 0.55 | 0.70 |
| Buying or using (IT) equipment & supplies (e.g. computers, routers, printer, telephone, network supply) to be specifically used to fulfill tax/revenue information obligations | 47752.89 | 16069802997.51 | -0.19 | 0.71 |
| oblige12b | 47751.09 | 16065657004.85 | 0.37 | 0.71 |
| oblige12c | 25434.42 | 4464087947.73 | 0.99 | 0.73 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .714 | 36 |

**Reliability of custom information system variable**

| Item Statistics | | | |
|---|---|---|---|
| | Mean | Std. Deviation | N |
| Up to date data is captured into the ASYCUDA++ whenever | 1.86 | 1.03 | 14 |

| | | | |
|---|---|---|---|
| required to facilitate Customs clearance of goods | | | |
| Import/Export data from various source is frequently input into the ASYCUDA++ for processing | 2.36 | 1.22 | 14 |
| Large volumes of Customs data entries are processed quickly through ASYCUDA++ at various points | 2.14 | 1.35 | 14 |
| Facts on goods declared to Customs have enabled building of a pool of data for timely decision-making | 2.57 | 1.28 | 14 |
| Data declared for capturing in ASYCUDA ++ is correct | 3.07 | 0.83 | 14 |
| Data captured in ASYCUDA++ is complete to enable registration and assessment of revenue | 2.57 | 0.94 | 14 |
| Relevant data is captured in the system | 2.07 | 0.83 | 14 |
| Source documents provide detailed data to input in the system (i.e. on cost of goods, freight, quantity, description of goods bought, importer, shipper etc) | 2.43 | 1.28 | 14 |
| Source documents provide clean data to input in the ASYCUDA++ | 2.93 | 1.07 | 14 |
| Details on goods for clearance through Customs are captured from reliable source documents | 2.79 | 0.89 | 14 |
| Source documents provide organized data to input in the ASYCUDA++ | 2.57 | 0.85 | 14 |
| Facts on goods for clearance are presented in a format that is appropriate to be captured | 2.50 | 1.02 | 14 |
| Data is correctly input into ASYCUDA++ | 2.43 | 0.85 | 14 |
| Facts about goods being processed for clearance by Customs using ASYCUDA++can be crosschecked for correctness | 1.93 | 1 | 14 |
| Using ASYCUDA++, risk can be identified during Customs clearance of goods | 2 | 0.96 | 14 |
| Users are in position to carry out timely reconciliation of transaction in ASYCUDA++ | 2.07 | 1.14 | 14 |
| ASYCUDA++ aids confirmation of outstanding bond guarantees / taxes in the system | 2.21 | 1.12 | 14 |
| Transactions can be checked for completeness using the system | 2.07 | 1 | 14 |
| Description and naming of goods is enabled using ASYCUDA++ | 1.71 | 0.83 | 14 |
| Users are in position to confirm tax rates applicable to goods using the system | 1.64 | 0.84 | 14 |
| Users are in position to identify and confirm exempted goods | 1.64 | 0.63 | 14 |
| Users are in position to administer preferential treatment to categories of goods based on rules of origin using codes | 2.21 | 1.25 | 14 |
| Users are in position to make revenue projections using data in ASYCUDA++ | 2.29 | 1.07 | 14 |
| Data stored in ASYCUDA++ can be analyzed to show trends in international trade | 2 | 0.55 | 14 |
| Revenue payable/paid can be assessed according to tax heads (Import duty, VAT, Withholding tax) | 1.36 | 0.50 | 14 |
| Amount or revenue collected/outstanding can be calculated for further action | 1.57 | 0.65 | 14 |
| Transactions under process in the system are selected for action on a set criteria for ease of facilitation according to level of risk | 1.79 | 1.05 | 14 |
| Declarations selected along set criteria are subjected to varying | 1.50 | 0.52 | 14 |

| | | | |
|---|---|---|---|
| degree of scrutiny | | | |
| Risk profiles are built based on data accumulated using established criteria Profile | 2.07 | 0.83 | 14 |
| Users are in position to access required import/export trade related figures from the system | 1.79 | 0.80 | 14 |
| Users can generate revenue related summary reports of revenue collected / collectable using ASYCUDA++ | 1.50 | 0.65 | 14 |
| Summary reports of revenue outstanding can be extracted from ASYCUDA++ | 1.71 | 0.61 | 14 |
| Stored data can be processed into accurate summary reports on import/export trade trends | 2.07 | 1.07 | 14 |
| Users can access correct information for management reports and decision-making using ASYCUDA++ | 2 | 1.11 | 14 |
| Customs Department can generate accurate warehousing bond guarantee related information | 1.86 | 0.95 | 14 |
| Information on goods in transit from different entry points can be accessed using ASYCUDA++ countrywide in real time | 2.21 | 1.25 | 14 |
| The system aids generation of correct information for revenue accounting to users | 2.29 | 0.83 | 14 |
| The Department can avail information on goods selected for action based on level of risk analyzed using ASYCUDA++ | 1.86 | 0.86 | 14 |
| The Customs Department of URA is in position to distribute information wherever it is required on time. | 2.21 | 0.97 | 14 |
| Information from ASYCUDA++ is complete | 3 | 0.96 | 14 |
| Information from ASYCUDA++ is relevant | 1.71 | 0.61 | 14 |
| Information on actual and planned revenue results is obtainable for comparison from ASYCUDA++ for decision-making | 2.36 | 1.08 | 14 |
| Clients can access timely updates on progress of their transactions using ASYCUDA++ | 2.36 | 1.39 | 14 |
| Corrective actions can be taken based on status of transactions results in ASYCUDA++ whenever needed | 2.29 | 1.27 | 14 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 93.57 | 531.341 | 23.051 | 44 |

| Item-Total Statistics | | | | |
|---|---|---|---|---|
| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
| Up to date data is captured into the ASYCUDA++ whenever required to | 91.71 | 507.91 | 0.48 | 0.94 |

| | | | | |
|---|---|---|---|---|
| facilitate Customs clearance of goods | | | | |
| Import/Export data from various source is frequently input into the ASYCUDA++ for processing | 91.21 | 498.18 | 0.58 | 0.94 |
| Large volumes of Customs data entries are processed quickly through ASYCUDA++ at various points | 91.43 | 490.57 | 0.65 | 0.94 |
| Facts on goods declared to Customs have enabled building of a pool of data for timely decision-making | 91.00 | 499.85 | 0.52 | 0.94 |
| Data declared for capturing in ASYCUDA ++ is correct | 90.50 | 514.12 | 0.44 | 0.94 |
| Data captured in ASYCUDA++ is complete to enable registration and assessment of revenue | 91.00 | 512.31 | 0.43 | 0.94 |
| Relevant data is captured in the system | 91.50 | 526.73 | 0.10 | 0.94 |
| Source documents provide detailed data to input in the system (i.e. on cost of goods, freight, quantity, description of goods bought, importer, shipper etc) | 91.14 | 503.05 | 0.46 | 0.94 |
| Source documents provide clean data to input in the ASYCUDA++ | 90.64 | 505.32 | 0.52 | 0.94 |
| Details on goods for clearance through Customs are captured from reliable source documents | 90.79 | 529.10 | 0.04 | 0.94 |
| Source documents provide organized data to input in the ASYCUDA++ | 91.00 | 516.77 | 0.36 | 0.94 |
| Facts on goods for clearance are presented in a format that is appropriate to be captured | 91.07 | 514.23 | 0.35 | 0.94 |
| Data is correctly input into ASYCUDA++ | 91.14 | 519.36 | 0.29 | 0.94 |
| Facts about goods being processed for clearance by Customs using ASYCUDA++can be crosschecked for correctness | 91.64 | 501.02 | 0.66 | 0.94 |
| Using ASYCUDA++, risk can be identified during Customs clearance of goods | 91.57 | 506.73 | 0.55 | 0.94 |
| Users are in position to carry out timely reconciliation of transaction in ASYCUDA++ | 91.50 | 487.19 | 0.85 | 0.94 |
| ASYCUDA++ aids confirmation of outstanding bond guarantees / taxes in the system | 91.36 | 491.94 | 0.77 | 0.94 |
| Transactions can be checked for completeness using the system | 91.50 | 507.65 | 0.50 | 0.94 |
| Description and naming of goods is enabled using ASYCUDA++ | 91.86 | 509.52 | 0.57 | 0.94 |
| Users are in position to confirm tax rates applicable to goods using the system | 91.93 | 508.84 | 0.57 | 0.94 |
| Users are in position to identify and confirm | 91.93 | 520.07 | 0.38 | 0.94 |

| | | | | |
|---|---|---|---|---|
| exempted goods | | | | |
| Users are in position to administer preferential treatment to categories of goods based on rules of origin using codes | 91.36 | 510.40 | 0.34 | 0.94 |
| Users are in position to make revenue projections using data in ASYCUDA++ | 91.29 | 512.53 | 0.37 | 0.94 |
| Data stored in ASYCUDA++ can be analyzed to show trends in international trade | 91.57 | 518.57 | 0.49 | 0.94 |
| Revenue payable/paid can be assessed according to tax heads (Import duty, VAT, Withholding tax) | 92.21 | 523.26 | 0.34 | 0.94 |
| Amount or revenue collected/outstanding can be calculated for further action | 92.00 | 511.08 | 0.68 | 0.94 |
| Transactions under process in the system are selected for action on a set criteria for ease of facilitation according to level of risk | 91.79 | 501.26 | 0.62 | 0.94 |
| Declarations selected along set criteria are subjected to varying degree of scrutiny | 92.07 | 524.07 | 0.29 | 0.94 |
| Risk profiles are built based on data accumulated using established criteria Profile | 91.50 | 502.58 | 0.76 | 0.94 |
| Users are in position to access required import/export trade related figures from the system | 91.79 | 516.34 | 0.39 | 0.94 |
| Users can generate revenue related summary reports of revenue collected / collectable using ASYCUDA++ | 92.07 | 523.46 | 0.25 | 0.94 |
| Summary reports of revenue outstanding can be extracted from ASYCUDA++ | 91.86 | 521.21 | 0.35 | 0.94 |
| Stored data can be processed into accurate summary reports on import/export trade trends | 91.50 | 502.73 | 0.57 | 0.94 |
| Users can access correct information for management reports and decision-making using ASYCUDA++ | 91.57 | 498.11 | 0.65 | 0.94 |
| Customs Department can generate accurate warehousing bond guarantee related information | 91.71 | 499.76 | 0.72 | 0.94 |
| Information on goods in transit from different entry points can be accessed using ASYCUDA++ countrywide in real time | 91.36 | 500.25 | 0.53 | 0.94 |
| The system aids generation of correct information for revenue accounting to users | 91.29 | 507.60 | 0.62 | 0.94 |
| The Department can avail information on goods selected for action based on level of risk analyzed using ASYCUDA++ | 91.71 | 497.76 | 0.85 | 0.94 |
| The Customs Department of URA is in position to distribute information wherever | 91.36 | 494.55 | 0.83 | 0.94 |

| | | | | |
|---|---|---|---|---|
| it is required on time. | | | | |
| Information from ASYCUDA++ is complete | 90.57 | 516.42 | 0.32 | 0.94 |
| Information from ASYCUDA++ is relevant | 91.86 | 523.67 | 0.26 | 0.94 |
| Information on actual and planned revenue results is obtainable for comparison from ASYCUDA++ for decision-making | 91.21 | 513.26 | 0.35 | 0.94 |
| Clients can access timely updates on progress of their transactions using ASYCUDA++ | 91.21 | 483.72 | 0.75 | 0.94 |
| Corrective actions can be taken based on status of transactions results in ASYCUDA++ whenever needed | 91.29 | 485.30 | 0.80 | 0.94 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .942 | 44 |

Reliability of capacity of users

| Item Statistics | | | |
|---|---|---|---|
| | Mean | Std. Deviation | N |
| Users have been trained to use ASCYUDA++ | 1.71 | 0.47 | 14 |
| There is continuous training of ASCYUDA++ users | 2.07 | 0.92 | 14 |
| I am satisfied with the training offered in ASCYUDA++ | 2.57 | 1.09 | 14 |
| There is adequate number of staff to execute Customs transactions using ASCYUDA++ | 2.14 | 0.86 | 14 |
| Users of ASCYUDA++ know how to use the system to process Customs transactions. | 2.00 | 0.68 | 14 |
| Users capture data correctly into the system from data sources | 2.71 | 0.91 | 14 |
| Users are in position to assess taxes using ASYCUDA++ | 1.79 | 0.43 | 14 |
| Users are in position to check correctness of declarations | 1.79 | 0.43 | 14 |
| Users obtain summary reports on revenue for decision-making | 2.07 | 1.00 | 14 |
| ASYCUDA++ is used correctly to classify declarations appropriately. | 2.50 | 1.16 | 14 |
| I am satisfied with the number of equipment available for use in processing data | 2.21 | 0.80 | 14 |
| I am satisfied with using ASYCUDA++ to clear goods | 1.86 | 0.86 | 14 |

**Scale Statistics**

| Mean | Varianc | Std. | N of |
|---|---|---|---|

| | e | Deviation | Items |
|---|---|---|---|
| 25.43 | 31.033 | 5.571 | 12 |

| Item-Total Statistics | | | | |
|---|---|---|---|---|
| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
| Users have been trained to use ASCYUDA++ | 23.71 | 27.45 | 0.68 | 0.77 |
| There is continuous training of ASCYUDA++ users | 23.36 | 26.71 | 0.37 | 0.79 |
| I am satisfied with the training offered in ASCYUDA++ | 22.86 | 22.44 | 0.72 | 0.75 |
| There is adequate number of staff to execute Customs transactions using ASCYUDA++ | 23.29 | 27.60 | 0.30 | 0.80 |
| Users of ASCYUDA++ know how to use the system to process Customs transactions. | 23.43 | 28.73 | 0.25 | 0.80 |
| Users capture data correctly into the system from data sources | 22.71 | 28.22 | 0.20 | 0.81 |
| Users are in position to assess taxes using ASYCUDA++ | 23.64 | 29.63 | 0.26 | 0.80 |
| Users are in position to check correctness of declarations | 23.64 | 27.79 | 0.68 | 0.78 |
| Users obtain summary reports on revenue for decision-making | 23.36 | 25.94 | 0.40 | 0.79 |
| ASYCUDA++ is used correctly to classify declarations appropriately. | 22.93 | 21.61 | 0.75 | 0.74 |
| I am satisfied with the number of equipment available for use in processing data | 23.21 | 27.87 | 0.30 | 0.79 |
| I am satisfied with using ASYCUDA++ to clear goods | 23.57 | 24.73 | 0.65 | 0.76 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .796 | 12 |