UNIVERSITY OF GHANA

THE ROLE OF INFORMATION TECHNOLOGY IN CUSTOMS CLEARANCE: A STUDY OF THE CUSTOMS DIVISION OF THE GHANA REVENUE AUTHORITY

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DECLARATION

I hereby declare that this submission is my own work towards the award of masters in Management and Administration (M.A.) and that to the best of my knowledge this document contains no material previously published by another person nor material which has been accepted for the award of any other degree of the university, except where due acknowledgments have been duly made in the text.

…… ……

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CERTIFICATION

I hereby certify that this work was supervised in accordance with procedures laid down by the university

…… ……

PROF. DAN OFORI DATE

(SUPERVISOR)

DEDICATIONS

This work is dedicated to God Almighty for the opportunity to start and successfully complete this academic programme. I also to my parents Mr. Moses Y.B. Domi, my father and Madam Dora Dogbatse my mother, Mr. Wisdom Eli Domi (USA) and officers of the Customs Division for their immense support throughout this journey. Again, I dedicate this work to Assistant Commissioner Sheila Vigbedor and Mr. Christian Dadzie for all the immeasurable support and encouragements they gave me during this challenging academic journey. The final dedication goes to every member of my family and my beloved Delali Awo Adika. God bless you all.

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ABSTRACT

The study assesses the impact of information technology in ensuring efficiency in operations of the Customs Division. It is descriptive in nature and employs the quantitative research approach through the use of questionnaires. A sample size of fifty (50) and participants were chosen by random sampling methods. The study found that most of the activities rely on the use of IT and that these activities have been automated to make operations very effective and efficient. The study further found that ICT adoption has made the overall clearing process more efficient and increased revenue collection for the state. Further, the findings show that ICT is employed for almost all clearing activities at the ports. It was also revealed that it has led to the improvement in customs operations and has made document processing easier. The study revealed that IT adoption has positively affected clearing activities. The study thus found that with the introduction of IT to clearing activities, document processing has improved significantly in terms of time taken to clear goods. In spite of the positive effects of IT on the clearing processes of the Customs Service, there are challenges that every technology presents to users. The challenges include; difficulties in removing all forms of human interferences, intentionally delaying the processes, lack of proper infrastructure, lack of staff training, reluctance of regulatory agencies to adopt IT, and the unwillingness of some officials and agencies to adopt new ways of doing things. It is recommended that regular training and capacity building should be enforced for personnel; collaborations with other regulatory agencies and the properly resourcing the organization in terms of ICT infrastructure.

SECTION ONE

INTRODUCTION

1.1 Background of the Study

Over the last few decades, International Organisations such as the Organisation for Economic Co-operation and Development (OECD), World Bank, World Trade Organisation (WTO) and the World Customs Organization (WCO) have deliberated and made recommendations on the use of information technology to enhance the activities of customs administration. According to Lewis (2009) the important role of customs in the collection and taxes and excise duties make the use of Information and Communication Technology a necessity. In this regard, prudent use and management of Information and Communication Technology leads to positive impacts on the effectiveness of all customs operations and also results in the improvement in the national economy (Peterson, 2017). Petersone and Ketners (2016) Indicated that Information Technology is increasingly assuming a significant role of modern customs administration of countries all over the world in recent times. Decades ago, many developed countries realized the important benefits of the use of information technology in customs administration as this provided improved solutions and enhanced their operational efficiencies. Customized computer systems that were tailored to meet national needs were made available in most of these developed countries. Over time, these systems that were put in place have been enhanced simplified and standardized to meet international best practices.

Tax administration and other responsibilities of customs are generally difficult and unenviable tasks, nonetheless very important for revenue generation that is needed for growth and

improvement of the quality of life of citizens. Information Technology which leads to automation of systems which has become an important tool for achieving efficiency in tax administration (UNCTAD, 2006 cited in Gidisu, 2012). Efficiency of tax administration as defined by the United Nations Economic commission for Europe (UNECE) (2007) is the cost, tax clearance time and effectiveness of revenue collection. The drive for efficiency in customs administration is what called for the introduction of information technology led systems in the Ghana Customs. Ghana, therefore adopted the integrated tax and clearance process, ASYCUDA and UNCTAD developed automated systems for Customs data and management. This system was designed to handle all Customs operations regarding declaration, procedures of accounting, as well as trade related data which relied upon for statistical and economic benefits (UNECE, 2007).

Researchers such as Engman (2005), Gidisu (2012), Broni (2014) just to mention a few, have endeavored to identify the relationship between information technology (automation of customs systems) and the efficiency of customs operations and have identified the adoption of information technology as a predictor of efficiency of customs operations. Lewis (2009) mentioned that the costs that result from inefficient procedures and systems for trading, tax administration and other customs operations can be really huge. Thus, any system that saves money and scarce resources and as well as promote efficiency, would appear as a good policy. By accounts of the Organization for Economic Co-operation and Development (OECD) (2014), border-related costs such as the expense of supplying the required Customs documents and surcharges that come as results of delays during the importation of goods can be as high as 15% of the value of goods in trade. The adoption of Information Technology and the implementation of best practices in the Customs Administrations can thus lead to a reduction in these costs (Lewis, 2009; OECD, 2014).

However, despite the adoption of Information Technology, the Ghana Customs continue to experience challenges such as the delays in clearance and tax processing (Gidisu, 2012). It is evidenced from studies that information technology promotes the electronic transfer information that is needed for Customs to validate declarations to ensure accurate assessment of tax, increase time efficiency, reduced the costs of tax administration and improve the effectiveness of revenue collection (Zineldin, 2007; Vasudevan, 2007).

1.2 Statement of the Problem

Most developing countries have dumped into challenges in undertaking trade facilitation initiatives through clearance of goods (Moise, 2004). In Ghana, for instance, the Customs Division of the Ghana Revenue Authority (GRA) have not been able to achieve revenue targets as a result of challenges confronting the division during clearance. In view of that, problems that affect clearance of goods, classification of goods and revenue mobilization (CEPS, 2004). In an attempt to address this situation, the customs division of GRA has adopted the use of IT to facilitate the clearance of goods at the port. During clearance of goods, information about interested parties like freight forwarders (clearing agents), shipping line companies, insurance companies, banks, port authorities, and government agencies are essential. The documentations that is done in these operations most often bring to bear the issue of how adoption of Information Communication Technology affects the clearing of goods at the ports of Ghana (Ghana Ports and Harbours Authority, 2006). Lewis (2009) state that the adoption of Information Communication Technology with best practices in customs administrations have resulted in an enhancement of customs operations such as clearing of goods and the collection of applicable taxes and duties in many advanced countries. Insufficient customs automation which results in the manual processing of

documents consumes a lot of time. Also, on many occasions, manual interventions and face to face over the counter contact points between customs officers and traders/brokers, in addition to the payment of taxes and duties in cash, most often create avenues for corrupt practices which hinder revenue collection for the nation. The economy of Ghana is gradually becoming a service-based economy as evident from the 2013-2018 budgets. This sector accounted for more than 40% of GDP from 2012 and more than 60% in 2017 (The National Budget MoFEP, 2013; 2017). The implication for this is that a lot more people are getting involved in retail and international trading activities which have the likelihood of increasing revenue for the country. Justifiably so, this development is resulting into serious bottlenecks such as congestions and corruption which compounded the already difficult procedures and technical inefficiencies (Broni, 2014). Further, the situation undermined the efforts and Customs operations, resulting in Customs management challenges (Broni, 2014).

Over the past few years, governments have committed resources toward building appropriate systems and expanding the operations of Customs to remove the bottlenecks but there seems to be more problems to deal with. In spite of this, not much academic studies have been done on the role the use of Information Technology play in the operations of customs in Ghana. Few studies such as Asuliwonno (2011), examined the extent of automaton in Ghana's ports operation, impacts of GCNet on port efficiency, impact of Westblue – Single window and PAARS, customs practices and government trade policies. Although, studies have investigated clearance processes at the ports (Badu, 2007; Baffour, 2008), less has been done on the impact of IT on customs clearance at the port. However, the focus of this is to investigate the role of information technology (Automation of customs systems) in the clearance processes of Ghana Customs at the Tema Port.

1.3 Research Objectives

The main objective of the study is to assess the role information technology play in ensuring efficiency in the operations of the Customs Division. The specific objectives of the study are as follows:

1. Ascertain the nature of Information Technology as adopted in the operations of the Customs Division of GRA.
2. Assess how the adoption of information technology/Automation has affected the Customs Division at the various sea ports and Customs headquarters.
3. Examine the extent to which automation has affected the processing of documents at the Tema Habour.
4. To identify the challenges and constraints confronting Customs Division of GRA when using IT in the clearance process.

1.4 Research Question

The study seeks to address the following research questions:

1. How does Ghana Customs Division employ the use of information technology in their operations?
2. To what extent has the use of information technology in the operations of Customs affected clearance processes?
3. To what extent has the use of information technology affected the processing of Customs documents?

4. What are the challenges and constraints confronting Customs Division of GRA when using IT in the clearance process?

1.5 Significance of the Study

The Customs Division of the Ghana Revenue Authority is responsible for collection of import Duty, Import Vat, Export Duty, Petroleum Tax, Import Excise and other taxes. The customs division also ensures the protection of revenue by preventing smuggling. This is done by physically patrolling the borders and other strategic points, examination of goods. As a frontline institution at the country's borders, Customs Division also plays a key role in surmounting external aggression and maintains the territorial integrity of Ghana. The nature of the responsibilities and duties of the Customs call for systems such as the use of information technology for their operations that make their work less cumbersome.

This study aims at bringing to light the important effects Information Technology have on the operations of the customs. As such, the findings of this study will help inform the management of customs and the administrators of the automation systems of the usefulness of the use of information technology in the operations of the customs. Equally, the study will provide the necessary strategies for improving the efficiency of the operations of customs. It will help to bring to light the strengths and weaknesses of the use of information technology which will provide suggestions to management on ways in which programs and services can be tailored to meet customer satisfaction.

1.6 Scope of the Study

The study focuses mainly on the customs division of the Ghana Revenue Authority at the Customs Division headquarters, Tema Port and Airport in the Greater Accra region of Ghana, which happens to be the major point of entry and exit of cargo in Ghana. The content of the study shall focus primarily on the how information technology is used in the operations of Customs Division in facilitating revenue collection and the promotion of trade. It shall also focus on the relevance of information Technology in improving the operations and practices of Customs with more emphasis on clearance time, turnaround time, congestion, revenue collection and documentation among others. The study shall consider the case mainly from the post-introduction periods of the automation of the operations of customs, i.e. the period of 2003 to 2018.

1.7 Research Methodology

The study examines the role information technology plays in enhancing the clearance processes of the Customs Service in Ghana. It is descriptive in nature; thus, the descriptive research design was adopted. The target population for this study consisted of both managerial and non-managerial staff of the Customs Division at the Tema Harbour. The total population of staff and management of the Customs Division is about two thousand (2000). A sample size of fifty (50) was chosen for the study. In selecting the sample for the study, the simple random sampling technique was used. Primary data was collected with the help of a questionnaire, processed, analyzed with Statistical Package for Social Scientists (SPSS) analysis software version 20, and result presented in the form of bar charts, frequency tables, and pie charts.

1.8 Section Outline

The study is divided into Five Sections. Section one of the study deals with the background, problem statement of the study, objectives, research questions, significance, justification and scope. The second Section reviews the theoretical and empirical literature. It also has the conceptual framework of the study. Section Three outlines the methodology employed in carrying out the study. The methodology includes the research design, target population, sample size, sampling procedure, research instruments and analysis of data. Section Four presents and discusses the empirical results of the study. Section Five discusses the summary of the results, conclusions and recommendations of the study.

SECTION TWO

BRIEF LITERATURE REVIEW

2.1 Introduction

A good review of literature must review and refer to publications, articles and works that are recognized by expects in the chosen field, which must include those who support as well as those who oppose the ideas of the authors. Also, the arguments presented in the literature review make reasoned conclusion on the value of works done by others while differentiating between facts and opinions supported by valid evidence (Saunders, Lewis & Thornhill, 2000). The needs of customs and revenue authorities keep changing according to the increasing world trends which bring about new changes in administration and operations. As such countries which aim to realize economic development cannot fail to adapt to these new changes, especially those that has to do with the use of information technology. The introduction of the automation systems in the customs services of Ghana was as result of these changes. The aim of this section is to provide a context and justification for the study. It further outlines where the study fits into the current silo of capacity and enabling learning from theories and review works on the subject matter.

2.2 Theoretical Framework

There are several theories that attempt to justify the use and adoption of a phenomena such as information technology. Two basic ones are Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). TAM as propounded by Davis (1989) is one of the most popular research models that predicts the adoption and use of information systems

and technology by individuals and organisations. Its primary constructs are with regards to perceived usefulness and perceived ease of use. On the other hand, UTAUT is used to study the acceptance and use of Information Technology and Information System. The following are a discussion of these two theories and how they relate to the adoption and use of information technology.

2.2.1 Technology Acceptance Model (TAM)

To better understand the Technology Acceptance Model, it is important to note that there were theories that preceded the coming into being of the TAM. Notable among these theories are the Theory of Reasoned Action (TRA) which was developed to predict and understand human behavior and attitude. Fishbein and Ajzen (2010) mentioned that this theory critically evaluated behavior rather than the attitudes. The theory also implies that actual behavior could be determined by previous intentions with beliefs that a person has for the given behavior. The Theory of Planned Behavior (TPB) was the theory that was formulated to make up for the limitations that the TRA exhibited. According to Ajzen (2006) the TPB was developed to asertain the intentions of people to engage in behavior within a particular place and time, and describes all behaviors over a person capacity to apply their self-control. The above theories were modified by Fred Davis in 1986 to form the TAM which aims at predicting the acceptance and use; or the rejection of change in technology.

According to Marangunic and Granic (2015), the continuous upgrade and progress of technology, particularly Information and Communication Technology related applications, makes the choice on matters of acceptance and rejection. Among all the theories that explain the use of information technology, TAM stands out in explaining issues affecting the people's acceptance and use of

modern technology. The aim this theory is to describe factors that determine technology acceptance, information technology usage behaviour and to provide a penny-pinching theoretical explanatory model (Bertrand and Bouchard, 2008). Ducey (2013) explains that the TAM includes Perceived Ease of Use and Perceived Usefulness which determines the importance of technology acceptance and user behaviour.

Teo (2013) identified various factors that promote the use and acceptance of technology. He enumerates individual differences, social influences, beliefs, attitudes and situational influences as factors that promote the intention to use technology and promote the ability to accept or reject it. In addition, Teo (2013) posited that an individual's behaviour is influenced by an intention to perform the behaviour, in other words, the real performance of the behaviour is heralded by a person's behavioural intention to engage in the activity. In addition, certain factors are very important to the TAM. Most important among these factors is intention which can also be used to envisage and predict the eagerness and motivation to perform behaviour and a number of skills. Such intention is determined by three factors: the first is personal in nature which reflects human attitude, the second is a subjective norm which shows social influence and the third is called perceived behavioral control (Huda, Rini, Mardoni&Putra, 2012). Therefore, peoples' intention to adopt a particular skill can be anchored on the three important factors stated above.

2.2.2 Unified Theory of Acceptance and Use of Information Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) which was developed by Venkatesh, Morris, Davis, and Davis (2003), is applied to study individual technology acceptance and use across a variety of settings such as different user types, different organization types,

different types of technologies, different tasks, different times, and different locations. It is the most commonly used models of user acceptance within the current information systems literature

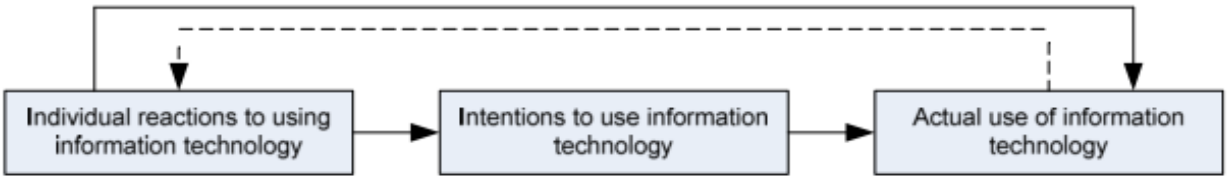
Algharibi and Arvanitis (2011) mentioned that understanding the needs of users during the processes of design and implementation of an interactive system, presents varying socio-technical challenges. On the one hand, indirect capture of user needs through traditional methods such as: task analysis might fail to effectively account for all significant factors that relate to the intended context of use of the proposed technology (Norman, 2002). Another school of thought suggests, a direct elicitation of requirements from actual users might not consider the potential of future adoption of interactive technologies within a specific context; because users might not be able to envision future tasks, organizational perspectives and technologies that are different from what they are mostly familiar with (Swanson, 1988).

2.3 User Acceptance and Information Technology Systems

According to Algharibi and Arvanitis (2011) it can be observed that the most adopted models when it comes to user adoption in technology are Technology Acceptance Model (TAM), TAM 2 and UTAUT in recent almost all information systems literature. However, the key constructs are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Particularly TAM issued in the information systems field, where the focus is on end- users' intentions and ways to influence those for an increased technology acceptance and use (Davis, 1986). It is also notable to observe that TAM aims at predicting a users' behavioral intention of use of technologies. TAM 2 on the other hand is updated version of TAM where there is and additional subject of Norm (SN) as a key construct instead of the Attitude (ATT) component (Venkatesh & Davis, 2000).

For the purpose of this project, adopting UTAUT will be very appropriate since it provides a more extended and unified model of user acceptance and the use of a particular technology (Venkatesh, et al., 2003). Its fundamental concepts that inform the decision to adopt the model in this work has to do with these three underling concepts; an individual's reactions to using information technology, the intentions to use information technology and the actual use of information as shown in figure below.

Figure1.Basic Concepts of User Acceptance Model



(Algharibi & Arvanitis, 2011).

The UTAUT model paints a much broader picture which aims to explain that technology acceptance, is based on eight technology acceptance theories or models. In particular, the UTAUT draws on the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model, the Theory of Planned Behavior (TPB), the combined TAM and TPB, the model of Personal Computer Utilization, the Innovation Diffusion Theory and the Social Cognitive Theory (Venkatesh et al. 2003). At the core, the UTAUT model uses behavioral intention as a predictor of the technology use behavior.

2.4 Information Communication Technology/Automation of Systems

Ndlovu (2015) states that Information Communication Technology is technology that supports activities that involves information. It involves the use of control systems or computer-based information system and underlying technologies that are used in organisation to transmit information. Laudon and Laudon (2014) defined information technology as electronic computerized aids that help in the compilation and systematization of data into useable information. IT also includes the collaboration of information technology and communication that is why the term IT and ICT are used interchangeably. These activities include the gathering, processing, storing and dissemination of data Doraisamy and Stalley (2016) states that over the past few decades, the business environment has changed considerably and it is believed that the next decades will see much more industrial disruption and transformation through the advancement of information technology and importance of behavioral competencies.

As major and new technologies for recording and processing information have been invented over the millennia new capabilities have appeared. One of the first computers used for information processing was the UNIVAC I installed at the U.S Bureau of the census in 1951 for administrative use and at General Electric in 1954 for commercial use. Starting in the late 1970s, personal computers brought some of the advantages of information technology to small businesses and to individuals. Early in the same decade the Internet began its expansion as the global network of networks. According to the Encyclopedia Britanica (2012), the invention of the World Wide Web (www) by Tim Berners-Lee in the year 1991 as a means to access the interlinked information stored in the computers connected by the Internet was installed to become the principal service delivered on the network. Further, the introduction of the Internet without any doubt has enabled

access to information and other resources; this has facilitated forming relationships among people and organisations on an unprecedented scale (Olumoye, 2013).

2.5 Importance of Information Technology to Organisations

The operations of the customs service invariably include a number of activities such as processing of information and documentations of cargo; which entails the value of the cargo, cargo destination, vessel that transported it and the point of origin (Agbesi, 2013). Information technology is important for all organisations to be able to address very critical operational issues. Like all organizations banks also needs access to IT systems that to be help them meet customer requirements (Pilarczyk, 2016). Information technology is very important for today's business environment. This is because, creation of a complete system architecture is a challenge. From a business point of view, it has to include all necessary information and objects needed to make it flexible for it to be able to adapt to all changing requirements. However, from the technology perspective, areas that needs to address includes the performance issues; architecture; availability; volume and security. Pilarczyk (2016) note that since globally, banks are responsible for the movement of trillions of dollars on a daily basis it has to be fully massively interconnected and independent, there needs to be a 24/7 continuous flow of information, rapid increase in the types of data entering into the system and have sophisticated security systems that deter crime. Information technology is what makes all these needs available to banks and as such the importance of IT in the banking sector cannot be overemphasized (IBM internal document, 2014, cited in Pilarczyk, 2016).

2.6 Conventions on Customs Reforms and Modernization

The World Customs Organization in their vision to play a leading role in the development, promotion and implementation of modem Customs procedures, in 1974 adopted convention called; the International Convention on the Simplification and Harmonization of Customs procedures (The Kyoto Convention) and was subsequently revised or amended in 1999. The revised conventions came into force in 2006 and it incorporates several key governing principles such as transparency and predictability of customs controls; Standardization and Simplification of the goods declaration and supporting documents among others. The need for modernization and reform has never been greater, since the original Kyoto Convention entered into force; there have been many developments which have changed the face of International trade and Customs administration around the world as pointed out by Pravion, (2007). The challenges of the 21st Century are placing massive demands on Customs administrations. Now, more than ever, there is a need for Customs administration to be more responsive. An understanding is required of issues such as globalization, the dynamics of international trade, the technicalities of the trade supply chain, emerging policy direction and the complexities of the global landscape."

The revised Convention is now the foundation for simple and efficient Customs procedures for the 21st century. Kyoto convention was designed to help contracting parties to achieve a modem Customs administration, to achieve improved facilitation and control, and to deliver a simpler, harmonized and more flexible approach. However, in noting that Customs administrations throughout the world perform a number of vitally important and crucial tasks on behalf of their Governments and contribute to national goals such as revenue collection, community protection, trade facilitation and protection of national security, the World Customs Organization (WCO)

acknowledged that integrity is a critical issue for all countries and for all Customs administration and that the presence of corruption can severely limit Customs capacity to effectively accomplish its mission. The WCO in 1993 adopted another convention called The Arusha Declaration on Customs Integrity and was later revised in 2003. This Convention seeks to deal with issues of corruptions and integrity among Customs official such as revenue leakage and fraud. Transparency, audit and investigation, automation, reform and modernization etc.

It is a non-binding instrument which provides a number of basic principles to promote integrity and combat corruption within Customs administration. Prior to the terrorist attacks of 11th September 2001, Customs controls related to national security issues or threats did not feature prominently on the policy priorities of the World Customs Organization. After 9/11, the WCO began to focus much more on its work on supply chain security. This transition culminated in 2005 with the adoption of the WCO Framework of Standards to secure and Facilitates Global Trade (SAFE Framework). This Framework is a non-binding instruments that contains supply chain security and facilitation standards for goods being traded internationally, enables integrated supply chain management for all modes of transport, strengthen networking arrangement between customs administration to improve their capability to detect high-risk consignment, promotes cooperation between customs and the business community through the Authorized Economic Operator (AEO) concept, and champion the seamless movement of goods through secure international trade supply chains (WCO, 2005).

2.7 Adoption of ICT by Customs

Cabello & Cabello (2008) state that customs refers to all the controls and duties of goods and people have to undergo when entering or going out of a country and also, those controls that goods and people undergo within the country. The customs in a country is established by the laws governing the country. According to Erceg (2016) customs has been always been involved in the history of any nation and as such have been recognized in special ways through economic, political, social and cultural proceedings. The customs of any country also reflect the level of development of any country on which its influence is derived from economic, social, legal development. Horvat (2011) noted that traditionally, customs have been regarded as the gate keepers of a countries borders in such a way that they serve as the channel of collection of customs duties and taxes.

Over the years, customs all over the world have been transformed as a result of globalization which has made the customs the center of globalization process (Erceg, 2016). The adoption of ICT in all customs processes has resulted in the automation of almost all areas of customs clearance processes; resulting in efficiency of services and the reduction or elimination of manual processes and validation of data that was generated by the use of manual processes (Sakhasia, 2017). The ICT usage in many countries have result in customs electronic systems such as the Automated Export system (AES) and Automated Import Systems (AIS), the New Computerized Transit system which aims at improving customs processes in Kenya (Sakhasia, 2017). Likewise, in Ghana, one of such modalities has been the introduction of the Ghana Communities Network Services (GCNet) and the Pre-Arrival Assessment Report System (PAARS). The need to streamline trade facilitation in order to maximize the free flow of imports and exports and revenue

collection has gained focal attention since Ghana became independent and more so in the face of Economic Recovery Programmes (ERP) under Structural Adjustment Programmes (SAP) over the last three to four decades (Killick, 2010).

Without doubt globalization has led to an unparalleled increase in the volume of international trade, leading to enormous pressure on port authorities to increase efficiency in their operations and also expand to keep up with the competition in the system (Caesar, 2010). The activities required at port level are sometimes crucial for international trade transactions. These include not only activities that depend on port infrastructure, like pilotage, towing and tug assistance, or cargo handling, but also activities related to customs requirements (Clark, Dollar and Micco 2004). However, at the points of entry and exit we witnessed serious bottlenecks such as long processing time, congestion and corruption which compound the already cumbersome clearing procedures and technological inefficiencies (Amanfu, 2010). With the introduction of the Ghana Community Networks Services (GCNet) as a single platform that ensures that all stakeholders involved in international trade lodge documents with a lone access point to fulfill all trade related regulatory requirements (De Wulf, 2004). It was established to remove constraints to legitimate trade facilitation and ensure that collection of trade-related revenue was not undermined. It became necessary due to the persistent challenges faced by stakeholders on the slow and unwieldy freight clearance practices (Agyemang, 2016).

2.8 Customs Reforms and Adoption of Information Technology

Automation has been considered critical part in most customs-related lending projects and it was incorporated in over 90% of the technical assistance projects with accustomed component funded

by the World Bank between 1994 and 2002. Also, ASYCUDA (Automatic System for customs Data), developed and maintained by UNCTAD, had been installed in over 80 developing countries as of 2005. According to WTO Trade Policy Reviews (2000-2005), most WTO countries, including least developed countries, have established customs automation systems, despite different degrees of development and coverage of the systems (World Bank, 2007).

According to Yasui and Engman (2005) it is misleading to assume a priori that all WTO members would be required to implement automation for government border procedures under prospective WTO disciplines on trade facilitation. Yasui and Engman (2005) further intimated that in spite of the fact that there is still no full understanding of the type and magnitude of the costs involved in implementing trade facilitation measures, it is generally assumed that substantial part of the costs is attributed to automation. According to OECD (2005) there is a general consensus that automation may efficiently serve both public and private interests because automation has the potential to facilitate trade while also helping to meet objectives related to the maintenance of national and social security. Smooth trade flows are paramount in many countries that are dependent on just-in-time delivery and global supply chain systems. Predictable border services, customs clearance time and trade transaction costs are important factors when companies consider investing or doing business in a country.

Yasui and Engman (2005) stated that from a public sector perspective, limited human resources and rapidly growing trade volumes have led to the recognition of automation as essential to safeguard and meet budgetary, health, environmental and other social goals. Heightened national security concerns relating to the international movement of cargo following the 9/11 terrorist attacks have also encouraged further use of automation and ICT at borders. Automation serves

other purposes than facilitating movement of goods and people; added benefits may include reduced levels of smuggling, corruption, increased productivity in customs operations, and improvements in valuation methods which may have the added benefit of increasing government revenue. (OECD, 2005). Transit goods can be effectively managed through the use of Arial Unmanned Vehicles AUV – Drones to effectively ensure that duties meant for the state are not evaded.

2.9 Impacts of Information Technology Adoption on Revenue Mobilization

The mobilization of revenue is a key determining factor of economic development of nations and links into national agenda on social wellbeing, poverty reduction and economic development of countries and citizens. The Ghana Customs Division is a mandatory element in the movement of goods across the borders of the country. The procedures applied to the movement of these goods significantly influence the role of national industry in international trade and their contribution to national economy. In the context of the international trade environment Ghana Customs plays a critical role not only in meeting the goals of the governments but also in ensuring effective controls that secure revenue compliance with national laws, ensuring security and protection of society. According to Holniker (2005), the adoption of information technology or automation of customs systems has resulted in a significant improvement in revenue mobilization for the country. In line with international trade, environment, the Ghana Customs plays important role not only in helping governments to attain its goals but also ensuring effective controls that secure revenue compliance with national laws, and ensuring security and protection of society (Gidisu, 2012). Hawley (1996) note that Modern trading practices and the adoption of information technology makes it essential for Ghana Revenue Authority administration to provide simple, predictable and efficient

procedures for the clearance of goods and the movement of people, and the at the same time tackling increasingly complicated national requirements for revenue mobilization.

The Ghana Customs Division of GRA procedure of clearance has been automated and implemented since 2002 (CEPS, 2004). According to Gidisu (2012), the system has two components namely the Ghana Community Network (GCNet) and the Ghana Customs Management Systems (GCMS). The GCMS provides CEPS with fully integrated computerized system for the management of Customs declarations and related activities. And the GCNET is the platform enabling the GCMS to share data with all the parties involved in the processing of trade document and Customs clearances.

Gidisu (2012) further noted that the adoption of information technology in the operations of customs division of the Ghana Revenue Authority has brought a lot of benefits to them. A few of these benefits include; Streamlining of clearance procedures, reduced rates of errors committed by Customs Officers, time saving, reduced human intervention, reduced corruption as result of limited contacts between Officers and importer/exporters, and increased revenue collection. Another important benefit of adoption of information technology by customs is the acquisition ofa scanner at the major sea port which is used in scanning containers and heavy trucks. This procedure helps customs to undertake a thorough inspection of goods important and making sure there of supply chain is secured by detecting dangerous commodity (www.gra.gov.gh).

2.10 Challenges and Constraints Associated with ICT Adoption

According to the world customs organisation (WCO) (2009), the adoption of information technology or automation of systems at the Tema Harbour does not only benefit the customs

service. Other organisations that benefit immensely from this include the shippers' council, shipping lines, port authority, oil marketing companies, custom house agents, freight terminals, banks among others. In spite of the wide adoption and use of information technology, certain challenges that come with it. The WCO (2009) noted that a few of these challenges include overcoming the human factor, institutional, attitudinal and infrastructural constraints. Also, ensuring high compliance among operators and declarants. There is also the challenge of overcoming reluctance of some regulatory agencies such as port cargo management systems and MDA internal systems.

SECTION THREE

METHODOLOGY

3.1 Introduction

Research methods are the ways and manner in which the researcher collects and analyses data in order to provide answers to a particular research problem. According to McMillan and Schumacher (2010), the research metrology is the systematic and purposeful, plans to yield data on a particular research problem. The aim of this chapter therefore is to outline the methodologies employed in the conduct of the study and explains the rationale for the various research methods that were employed. It explains the research design, target population, sampling techniques and sample size, data collection methods and instruments used data analysis and the ethical issues considered in the conduct of the study.

3.2 Research Design

The research design is the strategy that a researcher chooses in order to put together the different components of the study in a coherent and logical way, thereby, making sure that the research problem is effectively dealt with. As such, the design constitutes the blueprint for the collection, measurement, and analysis of data (USC Libraries, 2018). This study investigates the effects of information technology adoption on the clearance activities of the Customs Division of the Ghana Revenue Authority. This study is descriptive in nature. Its purpose is to describe how the use of information technology affects the clearance processes of the Customs Division of the Ghana Revenue Authority. Mcnaab (2008) states that the descriptive research helps the researcher to gain

answers to the questions of who, what, when, where and how associated with a particular research problem. It is also, suitable for obtaining information concerning the current status of phenomena and to describe what already exist with regards to variables or conditions in a situation.

3.3 Study Population

Boateng (2016) states that the population of the study is the members of a defined group who are relevant to the objectives of the research and within which a phenomenon is explored or determined. Alvi, (2016) also mentions that the population of a study is all the members of a selected group which meet particular criteria that is stated in the study. The target population for this study consists of both managerial and non-managerial staff of the customs division at the Customs headquarters, Tema Harbour, Airport and clearing houses (Agents). The total population of the officers and management of the Customs Division is above two thousand (2000). The study population therefore, is the entire officers (senior, junior and management staff) of the Customs Division which is about two thousand (2000).

3.4 Sampling Techniques and Sample Size

According to Boateng (2016) the process of selecting members from a particular population which serves as the basis for studying the whole population so that data can be obtained to address a research problem is known as sampling. Alvi, 2016 identified two main types sampling techniques, the probability sampling and the non-probability sampling techniques. Probability sampling gives all members of population/group equal chance of being selected, while in the non-probability sampling method, the selection is done on the basis of the subjective judgment of the researcher. The research adopted the simple random sampling techniquein selecting the sample for the study.

The sample size selection for the study was based on Glenn (1992) who cited Miaoulis and Michener (1976) that the determination of the right sample size for a study is based on three main criteria which include; the level of precision, the confidence level and the variability in the attributes being measured. Thus, in Glenn (1992), a simplified method for selecting the sample size for a precision level and confidence level is 95% is that for a population of more than two thousand 2000, the appropriate sample size to be selected should be fifty (50). Therefore, the sample size selected for this study was fifty (50) officers at the Customs Headquarters, Tema Harbour, Airport and Clearing House (Agents).

3.5 Data Collection

The study collected data from two main sources; the primary and secondary source of data. Primary source of data collection comprised soliciting information from officers concerning the adoption of Information Technology and how it affects the Customs clearing activities. The study also considered secondary data as well as information from the organisation's archives for data with respect to the use of information technology for customs clearance. Majority of the secondary data that was collected aided in enriching the review of literature for the study.

3.6 Data Collection Instrument

The study relied mainly on the use of survey questionnaire in the collection of primary data. The questionnaire was made of questions that are mostly closed ended. The close ended questions guaranteed that all the responses given were consistent with the topic under study. The questionnaire was divided into two main parts the first part required respondents to answer questions on personal details such as age, gender, education level, position at work and number of

years served in the customs service. The second parts of the questionnaire have various constructs that sought answers to the research questions of the study. The questions were based on a five-point Likert Scale which measures; '1=Strongly Agree'; '2= Agree'; '3= Neutral'; '4= Disagree'; and '5= Strongly Disagree'. The purpose for the scale was for the respondents to state how strongly they agreed or disagreed with each construct.

3.7 Reliability of Questionnaire

Absar, Azim, Balasundaram & Akhter (2010), posit that testing the reliability of a scale is vital as testing will specify whether the data instrument can produce results that are consistent, reliable and accurate. The Cronbach's alpha was relied on in measuring the reliability of the questionnaire items. According to Cronbach (1951), the value of the Cronbach's alpha varies from 0 to 1. The closer the reliability coefficient is to 1 the better with a value of 0.7 being required for the scale to be deemed reliable.

3.8 Data Analysis

Completed questionnaires from the field were processed and coded appropriately to make effective meaning out of the data obtained. The Statistical Package for Social Scientists (SPSS) analysis software version 2.0 was used to analyse the data and results were presented descriptively by using tables, percentages and chart. Information gathered was discussed with respect to the objectives of the research.

3.9 Ethical Considerations

Participants were debriefed about the study and assured of the privacy of their information and their identities so they can overcome their reservations about providing sensitive and confidential information. Participants were made to understand that that their contribution is voluntary and those they have full authority to withdraw from participating if they wanted to.

3.10 Profile of the Organization

As one of the three major divisions of the Ghana Revenue Authority (GRA), the Customs Division is charged with the collection of indirect taxes while s the Domestic Tax Revenue Division (DTRD) is tasked with the mobilization of domestic taxes and levies whiles the Support services Division (SSD) which is the third division is provides administrative and other specialized services to the GRA. The prime objective of the Customs Division of the GRA which is concerned with the collection of indirect taxes oversees the collection of import duty, import VAT, Export Duty, Petroleum Taxes, Import Excise and other levies. Importantly, the Division is also in charge of duties relating to border patrols and prevention of smuggling by physical examinations of goods and documents, inspection and searches conducted on warehouses and premises. The Division is also in charge of performing extra duties which includes the provision of security at the borders and the provision of administration and other support duties to the government related agencies. This is executed by allowing and prohibiting imports and exports while seeing to the enforcement of Laws concerning international trade facilitation, restriction on imports and exports, controlling of foreign exchange, security, safety and public health (GRA, 2019).

SECTION FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents a detailed interpretation of the survey results and related findings to the research on the role of Information Technology in the Customs clearance processes at the Customs Division headquarters at Tema Harbour. The previous chapters of the study addressed the background of the study, review of relevant literature and the methodology adopted for the study. This chapter is divided into two main parts, the first part is made of the presentation of data with the help of frequency tables and bar charts and their interpretations. The second part is the discussion of the findings of the study were discussed and linked with the other findings in the literature review. The analysis and findings of the study were presented in relation to the specific objectives set for the study.

4.2 Demographic Details of Respondents

In order to meet the set specific objectives of the study, a sample of 50 customs officers were selected from various departments at the customs offices at the Customs Division headquarters, Tema Harbour and Kotoka International Airport. A Total of fifty (50) questionnaires were administered to the group to answer questions that relates to the role of the adoption of Information Technology in the clearance processes of the Customs Service. The demographic details of the selected sample are presented in table 4.1 below.

Table 4.1 Distribution of respondents' demographic details

Demographic details		No of Respondents	Percentage (%)
Gender of Resp	Male	39	78.0%
	Female	11	22.0%
Respondents' age	20-29	2	4%
	30-39	27	54%
	40-49	8	16%
	50-59	13	26%
	60 And Above	0	0%
Educational Background	Diploma	3	6%
	First degree	24	48%
	Masters	15	30%
	PHD	2	4%
	Others	6	12%
Position or Role in Organization	Project Planning	2	4%
	Accnts/Finance	2	4%
	ICT	5	10%
	Preventive/Operations	29	58%
	Communications	0	0%
	Admin	12	24%
	Others	0	0%
No of years worked	1-5	21	42%
	6-10	2	4%
	11-15	9	18%
	16-20	3	6%
	20 and above	15	30%
Total no of Respondents		**50**	**100%**

Source: Field Survey, (2019)

From Table 4.1, out of the fifty (50) respondents sampled, it was found that 39 (78%) of them were males while the remaining 11 (22%) were female. 2 (4%) of them were within the ages of 20-29; 27 (54%) were within the age group of 30-39; 8 (16%) falls within the ages of 40-49 and 13 (26%) of them were within 50-59 years of age. With their educational background, a majority representing 24 (48%) and 15 (30%) of the respondents were found to have first degree

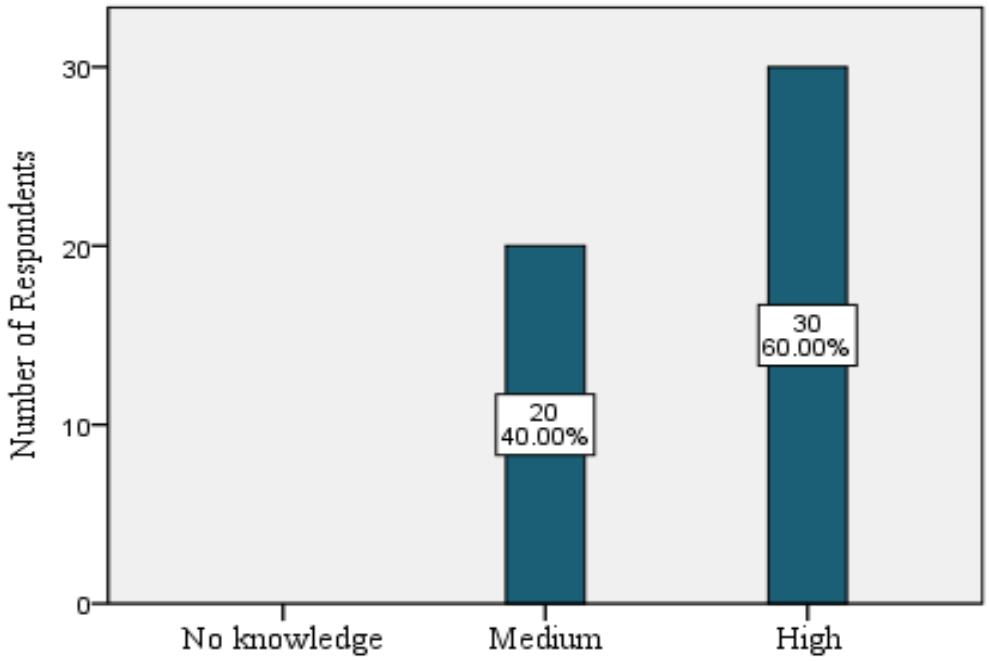
qualifications and Master's degree qualifications respectively. Other qualifications found include PHD, Diplomas and other qualifications. Of the various departments the officers were selected from, it was found that preventive/operations department had the most respondents of 29 (58%). This was followed by administrations, 12 (24%) and ICT 5 (10%). Finally, the study found that majority of the respondents had worked with the service for 1-5 years, 21 (42%); 20 years and above also were 15 (30%).

Given the relatively long years of work, the educational backgrounds and the positions held in the organization, it can be said that the demographic details of the respondents have a linkage with the employees' knowledge and perceptions of the adoption of information technology for clearing operations in the Customs service of Ghana. It is believed that the responses provided in relation to the subject matter of the study are a true representation of issues being considered in the in the study.

4.3 Respondents Level of ICT Knowledge

It was important to ascertain how knowledgeable the respondents were with the use of ICT. As this was important in understanding how the customs officers use ICT in their operations. From the study it was thus determined that ICT knowledge was relatively high among the customs officers at the Ports. It was clear that 30 (60%) of the respondents have very high ICT knowledge i.e. those respondents that had training in IT. The other 20 (40%) of them had fair level of ICT Knowledge.

Figure 4.1 Respondents level of ICT knowledge



Source: Field Survey, (2019)

4.4 How ICT is Adopted in the Customs Division of GRA.

To ascertain how ICT is adopted in the operations of customs, respondents were tasked to answer the questions of how ICT is employed for their operations. The responses were based on a five-point Likert scale where "1= Strongly Disagree"; "2= Disagree"; "3= Midpoint"; "4= Agree"; and "5= Strongly Agree". The responses were collected and the means were calculated and ranked.

Table 4.2 How the Customs employ ICT for their operations.

	Strongly Disagree	Disagree	Midpoint	Agree	Strongly Agree	Total score	Mean	Mean ranking
	Strongly Disagree	Disagree	Midpoint	Agree	Strongly Agree	Total Score	Mean	Mean Ranking
Invoicing and Accounting	5	3	9	23	10	180	3.60	6
For Cargo Manifest	2	3	6	22	17	199	3.98	2
Control & Clearance	2	3	7	21	17	198	3.96	3
Cargo Monitoring	1	2	8	23	16	201	4.02	1
Berthing & Docking	2	6	24	9	9	167	3.34	8
Sailing schedules/ manifest details	2	4	11	18	15	190	3.80	5
Safety and Security	2	8	16	17	7	169	3.38	7
Vessel/Aircraft Arrival Times	2	5	7	19	17	194	3.88	4

Source: Field Survey, (2019)

From Table 4. 2 above, it was evident that none of the mean scores calculated falls below the midpoint value of 3.0. This means that per the responses given the officers of the Customs Division of the Ghana Revenue Authority agree that ICT is employed for all the activities identified by the study. From the table it was revealed that the highest mean score found was 4.02 which corresponds with the 'Cargo monitoring' 'Cargo manifest' also follows with a mean score of 3.98. 'Control and Clearance' also was 3.96. The mean rankings in the table presents the various activities in the order of highest to the lowest. This means that per the responses, the least item in the table the use of ICT for Berthing and Docking Activities, with a mean score of 3.34. Please refer to Table 4.2 for further details.

4.5 Impacts of ICT on Customs Clearance Operations

With respect to how ICT affects customs clearance operations, the researcher tasked the officers to answer questions on how the use of ICT impacts positively the various activities at work. The responses were measured with a five-point Likert scale from "1= Strongly Disagree …. "5 = Strongly Agree. The means values were calculated on the responses and ranked.

Table 4.3 How the Use of ICT Affects Customs Clearance Operations

Items	Strongly Disagree	Disagree	Midpoint	Agree	Strongly Agree	Mean	Mean Ranking
Info about importers/exporters easily accessible	2	2	5	18	23	4.16	1
Easier communication with colleagues	1	7	6	18	18	3.90	7
Reports preparations less cumbersome	1	3	5	23	18	4.08	3
Clearing activities more efficient	2	1	5	26	16	4.06	4
Increased revenue collection	2	3	10	21	14	3.84	8
Improved tracking of criminal activities	1	4	15	16	14	3.76	9
Data sharing among clearing parties	1	2	5	24	18	4.12	2
Streamlined clearance procedures	2	4	7	20	17	3.92	6
Time saving, reduced human interactions	2	6	4	19	19	3.94	5

Source: Field Survey, (2019)

From Table 4.3 above, it was revealed that adoption of ICT affects positively the customs clearance operations as all the mean values calculated for the construct were above the midpoint value of 3.0. The most important item identified in the table was 'Information about importers and exporters easily accessible'. This construct had a mean score of 4.16 which was the highest ranked mean score. 'Data sharing among clearing parties' had the second highest ranked mean score of 4.12. 'Improved tracking of criminal activities' and 'Increased revenue collection' had the lowest ranked mean scores of 3.76 and 3.84 respectively. Please refer to Table 4.3 above for further details.

Table 4.4 How ICT has Affected Document Processing

Items		Number of respondents	Percent (%)
ICT has improved processing of documents	Yes	47	94%
	No	3	6%
Number of documents Processed in clearing	1-3	0	0%
	4-6	7	14%
	7-9	36	72%
	10-12	7	14%
	13-15	0	0%
How congested port is during documentation	Always Congested	5	10%
	Sometimes Congested	40	80%
	Never Congested	5	10%
How long it takes to clear goods	Within Hours	0	0%
	1-3 Days	42	84%
	4-6 Days	8	16%
	7-9 Days	0	0%
	10-12 Days	0	0%
	Others	0	0%

Source: Field Survey, (2019)

4.6 How ICT Adoption Affected Document Processing

With respect to Table 4.4, the study revealed that the adoption of ICT by the Customs Service has brought improvement in the processing of documents during the clearing process. Clearly, according to the table, 47 (94%) out of the 50 respondents indicated that truly there has been improvement in the way documents are processed with the adoption of ICT. Also, a greater number of the respondents, 40 (80%) of the respondents indicated that as result of ICT adoption for processing of documents, the ports are less congested as compared to when manual processes were involved. This has thus impacted on the number of days it takes for one to clear a container of goods at the ports, as indicated by all the percentages in the Table 4.4 above.

4.7 Challenges and Constraints of ICT Adoption in Customs Clearance

With respect to the challenges and constrains associated with the adoption of ICT in customs clearance activities, the results show that there are few challenges with ICT adoption at the Customs division. Out of 6 challenges identified, the responses show that three of these challenges are more prevalent than the others. From Table 4.4 the results show that the highest ranked item was ‘Removing all human interferences’ with a mean score of 3.84. The second was IT infrastructure not put in place’ with a mean of 3.42. This was followed by ‘No proper training for officials to use IT infrastructure’ with a mean of 3.14. Three items had a mean ranking below 3.0 implying that per the responses, these items were not regarded as prevalent challenges and constraints with the adoption ICT for customs clearance activities. For example, from the table, ‘Officials are not willing to adopt new ways of doing things’ had a mean score of 2.06 and was ranked as the least mean score.

Table 4.5 Challenges and Constraints of ICT Adoption at the Ports

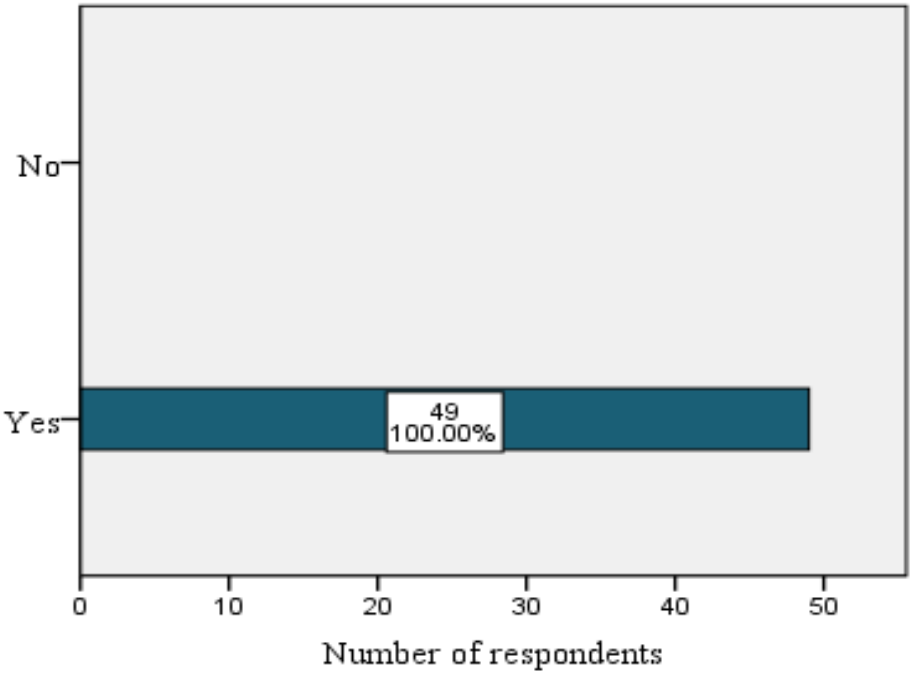
Items	Strongly Disagree	Disagree	Midpoint	Agree	Strongly Agree	Mean	Mean Ranking
Reluctance of Regulatory Agencies	7	14	9	16	4	2.92	4
Removing All Human Interferences	2	5	4	27	12	3.84	1
IT Infrastructure Not Put in Place	4	5	13	22	6	3.42	2
Officials Are Not Knowledgeable	6	16	12	15	1	2.78	5
No Proper Training of Officials to Use It	4	10	15	17	4	3.14	3
Officials Are Unwilling to Adopt New Ways	16	22	5	7	0	2.06	6

Source: Field Survey, (2019)

4.8 Challenges and Constraints can be Overcome

The researcher wanted to ascertain whether the challenges and constraints identified with the adoption of IT in the Customs Services can be overcome from the respondents' points of view. The respondents were thus asked to respond yes or no to the question of whether challenges can be overcome. It was evident that all the sampled participants of the study indicated 'yes', that the challenges can be overcome.

Figure 4.2 Challenges and Constraints can be oercome



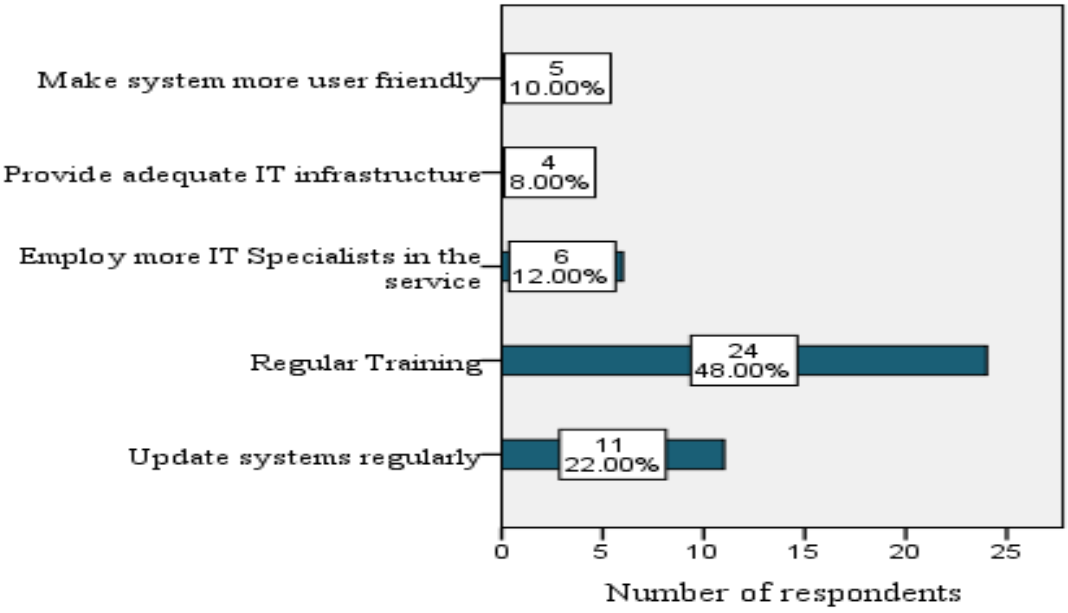
Source: Field Survey, (2019)

4.9 How Challenges and Constraints Can Be Overcome to Make System More Efficient

The respondents were further tasked to indicate how the identified challenges can overcome to make the system more efficient. This part of the questions was however left open for the respondents to indicate in their own views how they think the custom service can overcome the challenges that were identified. The responses were then grouped under five major themes. These themes include 'regular update of ICT systems of the service' 'regular refresher courses and IT training for personnel', 'recruitment of IT specialists into the service', 'provision of adequate IT infrastructure for the service' and making system user friendly'. Amongst these, the most important theme that runs through all the responses was 'regular training of personnel'. 24 (48%) of the respondents indicated that regular training being conducted for personnel will make them more efficient and even become abreast with new systems that are introduced. This was followed

by 'regular update of IT systems' with 11 (22%) of responses and 'recruitment of IT specialists into the service with 6 (12%) of the responses. See Figure 4.3 below for further details.

Figure 4.3 How Challenges can be overcome to improve system.



Source: Field Survey, (2019)

4.10 Reliability Analysis

In checking for the reliability of the questionnaire used, the Cronbach's Alpha was relied upon. The Cronbach's Alpha was performed for three of the questionnaire items in SPSS version 20. The purpose for the reliability test was to ascertain whether the data collection instrument can produce results that are consistent and reliable. The alpha value for all the items were found to range from 0.772 to 0.940. This was found consistent with Cronbach (1951) who stated that the value of Cronbach's alpha varies from 0 to 1. However, the closer the value is to 1, the better, with 0.7 being essential for the scale to be regarded reliable.

Table 4.6 Reliability analysis table

Items	Number of items	Cronbach's Alpha
How IT is employed	8	0.875
Effects on clearing process	9	0.940
Challenges and constraints	6	0.772

Source: field survey, (2019)

4.11 Discussion of Results

The first objective of the study was to ascertain the nature of Information Technology as used in the operations of the Customs Division of the GRA. The study found with respect to the first objective that ICT is employed for all activities in the clearing processes of the Customs Service. From the results *(Table 4.2)*, majority of the respondents indicated that customs activities such as cargo monitoring, cargo manifest, controlling shipments and clearing of imported goods, Vessel/aircraft arrival times, invoicing and accounting activities, sailing schedules and manifest details are all executed with the help of Information Technology. All the identified activities are very important processes involved in clearing of imported and exported goods. Without the adoption of modern technology, these processes would have been very cumbersome, resulting in a lot of inefficiencies in Customs' operations.

Many researchers and authors have identified that the adoption and application of ICT to all customs clearing processes has improved customs clearing processes. Typical examples include

Sakhasia, (2017) and Agyeman (2016) who noted that the adoption of ICT in all customs clearing processes have resulted in efficiency and the elimination of manual processes and validation of data that was generated by the use of manual processes. ICT adoption at the ports of Ghana has led to innovations such as the GCNet and Westblue. This finding is thus consistent with other researchers who mentioned that Customs Service of Ghana adopts ICT for all processes of clearing operations at the ports and borders.

The second objective of the study was to assess how adoption of Information Technology/Automation affects customs clearance processes at the ports. The study revealed that the adoption of ICT at the ports in Ghana has positive impacts on clearing operations of the Customs Service. It was evident from the responses given by the personnel of the service that the most positive effect of ICT on customs clearing was the availability of information about importers and exporters. This construct had a mean value of 4.16 which falls above the score of 4.0 which represents 'agree' on the Likert scale that was employed for the study. This indicates that majority of the respondents either 'agreed' or 'strongly agreed' with the statement that adoption of ICT in their operations provide quick information about their clients (importers and exporters). The second most important effect identified was 'easier data sharing among clearing parties. This construct was scored a mean value of 4.12 which was also found in the region of 'agree' and 'strongly agree' on the respondents' scale. The clearing process involves a lot of stakeholders and a lot of documents to be processed by different agencies. Therefore, the availability of data/information for all the agencies to process documents is paramount to successful clearing of goods for exports or imports. With manual processes, transfer/sharing of information between the parties is always cumbersome. However, employing Information Technology enables the seamless transfer or sharing of information for the success of the clearing process.

Other effects identified include easier preparation of reports; efficiency of the overall clearing process; time saving and reduction of all human interventions; easier communication with work colleague and increased revenue collection for the state. Without the use of modern technology, all the processes would have been but very cumbersome, leading to difficult or costly international trade transactions and loss of a significant amount of revenue for the state. The OECD (2005) noted that Goods and predictable border services, shorter Customs clearance time and lower trade transactions restrictions are important factors traders/ companies consider when investing in a country. As such, the adoption of effective modern technology at the ports will only go a long way to attract more foreign direct investments into the country. These findings are consistent with the findings and assertion of other researchers like Yashui and Engman (2005); Gidisu (2012), who all found important positive relationships between the adoption of ICT at the ports and improvements in clearing operations of the Customs Division of the Ghana Revenue Authority.

The third objective of the study was to examine the extent to which ICT adoption/automation has affected the processing of documents at the ports. The study found that, more than 90% of the respondent indicated that with the adoption of ICT at the ports, processing of documents for clearing goods at the port has improved. What this means is that with the adoption of ICT, time taken to process documents has reduced significantly. Congestions that are were once witnessed at the ports are now barely present. It also takes between 1- 6 days to clear a container of goods.

According to Broni (2014), Ports were mostly congested many years before the introduction of information technology to the processes at the ports. However, the congestion problems still persisted or may have appeared worse even years after the introduction of Information technology. This is at variance with this current study which found that congestion have reduced drastically.

Broni (2014) however explained that the congestion at the ports currently may be attributed to increased containerization with very little handling equipment or it may be because of certain customs procedures at the ports which require every container to be opened and unstuffed for examination and stuffed back again as some scanners may not function properly all the time. Again, according to Broni (2014) it took between mostly 4-12 days to clear goods at the port years before the introduction of the modern technology at the ports. However currently, goods are cleared within hours to few days at the port. It appears this finding of Broni (2014) and the current study are in agreement on the number of days taken to clear goods at the port as the two studies agree that things have improved over the years. It is clear that though the two studies disagree at some points, in general, both agree that processing of documents have improved as a result of the introduction of Information Technology in Customs operations at the ports.

The fourth and final objective was to identify challenges that are faced at the ports as a result of the adoption of information technology. The study found that there are challenges to the adoption of information technology. However, the major challenges found were the problems of removing all human interventions in the clearing process, lack of proper IT infrastructure and lack of proper training of personnel to easily adapt to the current technologies being employed at the ports. Other challenges identified include the reluctance of regulatory agencies to employ modern technologies, officials having less knowledge and their unwillingness to adopt new ways of doing things.

With regard to how the challenges can be overcome, the respondents revealed that regular training of Customs officers is very important to overcoming the challenges ICT adoption pose to clearing of goods at the ports, as this was agreed upon by 24 (48%) of the respondents. Another 11 (22%) of the respondents indicated that regular updates of the information technology systems in the

clearance process and at the ports was another way of overcoming challenges at the ports. Other solutions recommended by the personnel include recruitment of IT specialists (Officers) and provision of proper IT infrastructure to enhance the operations of Customs.

SECTION FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Section Overview

The previous chapter of the study provided the presentation and analysis of the data gathered from the respondents on the role of ICT adoption in the clearing processes of Customs Division of the Ghana Revenue Authority at the various ports of entry into Ghana in Accra. This chapter however summarizes the principal findings, draws conclusions on the study and makes recommendations for further studies.

5.2 Summary of the Findings

Data for the study was collected from Customs offices at the Customs Division headquarters, Tema port and Kotoka International Airport in Accra. Overall, 50 respondents were sampled from various departments that related to clearing of goods and exports at the various ports. The profile of the sample was discussed and the analyses of their responses were also discussed based on the research objectives. The following are a summary of the various findings that were discussed in accordance with the objectives set for the study.

5.2.1 IT Employed in the Clearing Operations of the Customs Division

Information Technology is employed for various activities in the import clearing and export process. Without the use of Information Technology, most of the clearing activities done today at the ports would have been very cumbersome and time consuming. Activities such as cargo

monitoring, cargo manifest, safety and security of the territorial boundary, fighting fraud (money laundry), determining sailing schedules and manifest details were all identified to rely heavily on the use of ICT. These activities were hitherto done manually, which brought about a lot of delays and difficult and costly transactions. However, Information Technology has automated these activities making the Ghana Customs more effective and efficient in their operations but for which more improvement is needed.

5.2.2 Effects of IT Adoption on Customs Clearing Processes

The study revealed with respect to this objective that ICT adoption has positively affected clearing activities. Per the responses, given, ICT adoption makes information about exporters and importers readily available. So even before there is a transaction, parties involved in the clearing process may have a lot of information about themselves. There is also the opportunity to share data easily among parties in the clearing process as result of ICT adoption at the ports. Majority of the respondents indicated that IT has improved the clearing process by providing other benefits such as easier preparation of reports, time saving, and reduction of human interference in the process; being a human institution, some personnel may have personal interests in some clearing transactions to the detriment of the state. Thus, reduction of human interference enables smooth process and leaves all parties satisfied. The study further found that ICT adoption has made the overall clearing process more efficient and increased revenue collection for the state.

5.2.3 Effects of ICT on Customs Documents Processing

The clearing activities of the Customs Service involves a log of document processing. In all, for a container of goods to be cleared, there are about an average of 7 – 9 separate documents that need to process by Customs officials. Which when done manually, may lead to a lot of congestions and

delays. The study found that with the adoption of Information Technology the processing of documents has improved significantly. Even though there are occasional congestions, the average time taken to clear a container of goods has reduced from 4 -12 days years before introduction of IT to within hours to 4 days currently with the introduction of IT. The study thus found that with the introduction of IT to clearing activities, document processing has improved significantly in terms of time taken to clear goods.

5.2.4 Challenges and Constraints to IT Adoption in the Clearing Processes

In spite of the positive effects of IT on the clearing processes of the Customs Service, there are challenges and constraints that every technology presents to users. The study identified certain challenges that the use of IT presents to the clearing of goods at the ports. According to the study, the basic challenge faced with the use of technology is the attempts to remove all forms of human interferences. With the introduction of new technologies, it is not always easy for everybody to adapt to it. Therefore, when attempts are made to remove all forms of human interference, there are people who might intentionally delay the processes either because of inadequate knowledge or personal interests. The second challenge identified was the lack of adequate IT infrastructure. The use of IT systems for clearing activities require very fast computers, electricity power and high-speed internet facilities as a lot of data needs processing on daily basis. Lack of proper infrastructure thus becomes a big challenge to the processes involved in clearing of goods. In addition to the fore mentioned challenges, the need to properly train officials to use IT was another challenge. Even if all IT systems are properly installed and there no well-trained officials to operate them it will be major constraint to the efforts to adopt IT in its processes and no meaningful purpose will be served in the customs operations. Other challenges the study identified include the

reluctance of regulatory agencies to adopt IT, and the unwillingness of some officials and agencies to adopt new ways of doing things.

5.3 Conclusion

The study was carried out primarily to assess how the adoption of Information Communication Technology affects the clearing processes of the Customs Division of the Ghana Revenue Authority at the Ports. It has been established from the literature review that the adoption of IT for all Customs clearing processes is imperative for efficiency of their operations and the increased revenue collection for the state. Specifically, the study focused on ascertaining how IT is adopted in the Customs Service, the effects of IT on customs clearing process; the effects of IT on document processing and the challenges and constraints faced as results of IT adoption.

The study found that the almost all-important activities in the clearing process such as cargo manifest, cargo monitoring, safety and security, fighting fraud (money laundry), determining sailing schedules and manifest details, berthing and docking schedules, control and clearance of containers, vessel schedule and arrival times and invoicing and accounting activities are dependent on IT; without which these activities would have been cumbersome and long processes.

The study also found that IT adoption at Customs affects the clearing operations positively. For example, it was found that IT makes information about the Customs to easily access information about the other parties involved in the clearing goods. Provided importers/traders to present and monitor their clearing documents in real time and also raise appeals where the feel dissatisfied. It also presents opportunity to share data with other agents easily, reduces delays that were hitherto common at the ports. It was revealed that the adoption of Information Technology has improved

the overall efficiency of the clearing process, saves time and reduces all negative forms of human interferences in the clearing process.

Document processing is very important in the clearing process. An average of 7-9 documents needs to be processed in order to clear a container of goods at the ports. With manual processing of documents, congestions and delays arise however; the use of Information technology has improved the speed with which documents are processed at the ports. This has reduced the number of days taken to clear goods from 4-12 days averagely to within hours and 4 days. Overall it was found that IT adoption has significantly improved document processing at the ports.

Overall, the study found that the adoption of IT to positively affect the operations of the customs. However, some challenges and constraints were identified with the use of IT for clearing processes. It was found that the most basic challenge associated with the use of IT is the attempts to remove all forms of human interferences from the clearing process, lack of proper IT infrastructure, inadequate training of personnel to use IT, reluctance of regulatory agencies to employ IT for their operations and the unwillingness of some officials to adopt new ways of doing things were other challenges the study identified.

5.4 Recommendations

In line with the findings of this study, the following recommendations are made so as to further enhance the use of IT in the clearing operations of Customs Service

Regular training and capacity building for all stakeholders:

Capacity building, should as a matter of policy be made available to all stakeholders in the clearing process. Suitable training of all supervisors and personnel who are responsible for carrying out clearing activities should be made a constant practice. Also, regular review and update of features and systems used for clearing operations should be done to match modern trends and international trade standards. This is because, based on the data collected, majority of the respondents alluded to the fact that a major setback in their desire to deliver world class services was inadequate training of personnel to use modern technology properly. Therefore, it is of utmost importance that Customs Service and Port authorities put resources together to build capacity of staff and facilities.

Collaboration with other regulatory agencies:

The respondents indicated that the unwillingness of other regulatory agencies to adopt ICT and modern technology possess challenge to their operations. Customs personnel do not operation in isolation at the various ports within the country. Stakeholders such as the Port Authorities, police service among others should be given the needed orientations so as to be on the level with the Customs in terms of ICT usage. This will enable them to gain an understanding of the ICT based operations such as the GCNet and Westblue so as to coordinate properly with Ghana Customs. This can help prevent delays and criminal activities at the ports.

Improving ICT infrastructure for the Customs Service:

The study found that inadequate IT infrastructure is a constraint to the clearing operations of the Customs personnel. Adequately resourcing the IT department of the Customs Service is paramount to delivering good services. It is recommended that efforts should be made to provide needed IT

resources such very fast and modern computers and other accessories for personnel so as to enhance their operations. In addition, the provision of high-speed internet facilities and the recruitment well trained IT persons to manage IT departments should be considered as very important to the operations of the Customs Service.

Government Policy introductions:

Governments interventions by trade policies must be done in direct and early consultation with Customs to enable the Service adjust its systems to aid continuity and easy processing of clearing documents through customs procedures.

5.5 Limitations

A major limitation with the study was that the researcher had difficulty in having face to face interviews with the respondents because most of the respondents complained of having tight schedules and thus were not willing to give interviews. The researcher thus had to rely solely on the responses collected from the questionnaire for the analysis.

Another limitation was that the study did not extend to other stakeholders such as the Port Authorities, the GCNet, Westblue and other agencies/service providers at the ports. This was because the researcher had to combine the research work with regular academic activities and work. It would have been appropriate to sample the views of other stakeholders on the subject matter so as to have a full grasp of the real situation with the adoption of ICT for clearing operations. The research found that time allocated for the study was inadequate hence the study could only be carried with the Customs Division. Thus, this study and its findings are only limited

to the situations at the Customs Division and may not be representative of the ports where the study was conducted.

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APPENDIX

QUESTIONAIRE

Dear Sir/Madam,

Invitation to take part in a research on the Impacts of Information Technology on the Clearance Processes of Customs Division of The Ghana Revenue Authority.

I write to kindly ask for your assistance as a staff of the Customs Division of the Ghana Revenue Authority to complete the attached questionnaire. I am carrying out a Master's Programme in **MA Management & Administration** at the University of Ghana under the supervision of **Prof Dan Ofori**

The aim of this research is to determine the importance of the adoption of Information Technology in the clearance processes of the Division. Hence, your knowledge and experience will be exceedingly useful for this research in explaining the impacts of information technology on customs clearances processes.

The questionnaire will take 10 to 15 minutes. All your responses will be treated with strict confidentiality and used only for academic purposes. Your views are valuable for the success of this research. After the research, the researcher is willing to share a summary of the outcomes with the Division and anyone who shows interest.

Thank you in advance for your assistance.

Yours sincerely

Sign

Domi Samuel

Section A: Demographic Details of Respondents

Please answer the questions by ticking {such as "✓"} or checking {such as "☒"}.

Q1. Please indicate your Gender

Male ☐; Female ☐

Q2. Please indicate your Age

Under 20 ☐; 20 - 29 ☐; 30 - 39 ☐ 40 - 49 ☐ 50 - 59 ☐ 60+☐

Q3. Please indicate your academic qualification

HND ☐; BSc ☐; MSc/Mphil ☐; PhD ☐; Others ☐

Q4. Please indicate your role/position with the Division

Project planning ☐; Account/finance ☐; ICT ☐ Preventive/operations ☐ Communication ☐ Administration and logs ☐ Others ☐

Q5. Please indicate the number of years you have worked with the Customs Division of GRA.

0-2yrs☐; 3-5yrs ☐; 6-10yrs☐; 11-15yrs☐; 16-20yrs☐; Over 20yrs☐

Q6. Please indicate your knowledge level on the use of information Technology and clearance process of the customs.

No knowledge ☐; Medium ☐; High ☐

Section B: How the Customs Division uses information technology for activities

Please indicate your level of agreement with the following statements regarding how information technology is used in the clearing activities of the division. Tick "✓" the numbers that best suits your level agreement**. Scale: 1= 'strongly'; 'disagree'; 2= 'disagree'; 3= 'neutral'; 4= 'agree'; 5= 'strongly agree'**

No.	How customs division adopts IT for clearance activities	Level of Agreement
		SD<<<---------- >>>SA
1	The Customs Division employs the use of IT for invoicing and accounting activities	☐1; ☐2; ☐3; ☐4; ☐5
2	IT is employed for Passenger/Cargo manifest transfer	☐1; ☐2; ☐3; ☐4; ☐5
3	IT is employed for Customs control and clearance	☐1; ☐2; ☐3; ☐4; ☐5
4	The Division employs IT for container & Cargo monitoring activities	☐1; ☐2; ☐3; ☐4; ☐5
5	IT is employed for controlling berthing and docking activities.	☐1; ☐2; ☐3; ☐4; ☐5
6	IT is used for designing Sailing Schedules/Manifest details	☐1; ☐2; ☐3; ☐4; ☐5
7	Customs Division employs IT for safety and security activities.	☐1; ☐2; ☐3; ☐4; ☐5
8	IT is employed to determine the estimated and Actual arrival times of vessels/Aircraft/Transit vehicle.	☐1; ☐2; ☐3; ☐4; ☐5

Section C: How the adoption of IT affects clearance process of customs

Please indicate your level of agreement with the following statements regarding how information technology affects clearing activities of the division. Tick "✓" the numbers that best suits your level agreement**. Scale: 1= 'strongly'; 'disagree'; 2= 'disagree'; 3= 'neutral'; 4= 'agree'; 5= 'strongly agree'**

No.	EFFECTS OF IT ADOPTION	Level of Agreement
		SD<<<---------->>>SA
1	The adoption of IT has made access to information about exporters and importers easier.	☐1; ☐2; ☐3; ☐4; ☐5
2	Communication with work colleagues and customers has become easier	☐1; ☐2; ☐3; ☐4; ☐5
3	IT adoption has made report preparation less cumbersome.	☐1; ☐2; ☐3; ☐4; ☐5
4	Customs clearing activities has become more efficient.	☐1; ☐2; ☐3; ☐4; ☐5
5	IT adoption has resulted in increased revenue collection for the state.	☐1; ☐2; ☐3; ☐4; ☐5
6	IT has improved tracking of criminal activities	☐1; ☐2; ☐3; ☐4; ☐5
7	IT adoption has enabled important data to be shared between Customs and all other parties involved in clearing of goods.	☐1; ☐2; ☐3; ☐4; ☐5

8	Clearance procedures have been streamlined as result of IT usage	☐1; ☐2; ☐3; ☐4; ☐5
9	IT usage has resulted in time savings and reduced human interference	☐1; ☐2; ☐3; ☐4; ☐5

10 Has the adoption of ICT improved the processing of documents at the Harbour?

Yes [ ] No [ ]

11 On the average how many documents are required to clear goods at the port? a) 1-3 [ ]
b) 4-6 [ ] c) 7-9 [ ] d) 10-12 [ ] e) 13-15 [ ]

12 How would you describe the nature of congestion at the port during the processing of documents?

(a) Always congested [ ] (b) Sometimes congested [ ] (c) Never congested [ ]

13 If Yes to (10), please indicate on the average how long it takes to clear a container of goods from the Port

14) Within hours [ ] 2) 1-3 days [ ] 3) 4-6 days [ ] 4) 7-9 days [ ] 5) 10-12 days [ ] 6) others (please specify) …….

Section D: Challenges and constraints associated with the adoption of IT by customs

Please indicate your level of agreement with the following statements regarding challenges and constraints associated with IT adoption by the division. Tick "✓" the numbers that best suits your level agreement**. Scale: 1= 'strongly'; 'disagree'; 2= 'disagree'; 3= 'neutral'; 4= 'agree'; 5= 'strongly agree'**

No.	CHALLENGES AND CONSTRAINTS	Level of Agreement
		SD<<<----------->>>SA
1	There is reluctance of regulatory agencies to adopt IT	☐1; ☐2; ☐3; ☐4; ☐5
2	There are challenges of removing all levels of human interference	☐1; ☐2; ☐3; ☐4; ☐5
3	Appropriate IT infrastructures are not readily put in place to enhance operations	☐1; ☐2; ☐3; ☐4; ☐5
4	Customs officials are not always knowledgeable about IT usage.	☐1; ☐2; ☐3; ☐4; ☐5
5	Officials are not properly trained to use Certain IT infrastructure	☐1; ☐2; ☐3; ☐4; ☐5
6	Customs officials and institutions are unwilling to adopt new ways of undertaking clearing activities	☐1; ☐2; ☐3; ☐4; ☐5

10. Do you think these challenges can be overcome?

Yes ☐ No ☐

11. In your view, **how best do you think Customs can improve the IT systems for effective clearance process?**

1……

2……

3……

3……

5……

END OF QUESTIONNAIRE