MANAGEMENT AND UTILISATION OF NON-INTRUSIVE INSPECTION TECHNOLOGY (NIIT) FOR IMPORTED CONSIGNMENTS BY CUSTOMS SERVICE IN NIGERIA

BY

Nafiu Abubakar SALIHU

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
FACULTY OF EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA – NIGERIA

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Nafiu Abubakar SALIHU
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A DISSERTATION SUBMITED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PATIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF M. Phil. DEGREE IN LIBRARY AND INFORMATION SCIENCE

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
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APRIL, 2017

DECLARATION

I declare that the work in this dissertation entitled MANAGEMENT AND UTILISATION OF NON-INTRUSIVE INSPECTION TECHNOLOGY (NIIT) FOR IMPORTED CONSIGNMENT BY CUSTOMS SERVICE IN NIGERIA has been carried out by me in the Department of Library and Information Science. The information derived from the literature has been dully acknowledged in the text and a list of references was provided. No part of this dissertation was previously presented for another degree at this or any other institution.

_____ _____

Nafiu Abubakar SALIHU Date

CERTIFICATION

This dissertation entitled MANAGEMENT AND UTILISATION OF NON-INTRUSIVE INSPECTION TECHNOLOGY (NIIT) FOR IMPORTED CONSIGNMENT BY CUSTOMS SERVICE IN NIGERIA meets the regulations governing the award of the M. Phil. Degree of Library and Information Science of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

_____ Date_____

Prof. Zakari Mohammed
Chairman, Supervisory Committee

_____ Date_____

Prof. Tijjani Abubakar
Member, Supervisory Committee

_____ Date_____

Dr. Mohammed Habibu
Head of Department

_____ Date_____

Prof. Sadiq Z. Abubakar
Dean, School of Postgraduate Studies

DEDICATION

This work is dedicated to my lovely parents (ALHAJI SALIHU ABUBAKAR AND HAJIYA SA'ADATU UMAR), my caring wife (AISHA ABUBAKAR TALBA) and to every well-meaning individual.

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ABSTRACT

This research work investigated the management and utilisation of non-intrusive inspection technology (NIIT) for inspection of consignment by custom service in Nigeria. The objectives were to identify the type of Non-Intrusive Inspection Technologies utilized for Information Management on Imported Consignments by customs service in Zone 'A' Lagos, to find out the level of adoption of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos; to examine the influence of Non-Intrusive Inspection Technologies in the Management of Information on Imported Consignments by Customs Service in Zone 'A' Lagos; and to determine the challenges associated with the Utilization of Non-Intrusive Inspection Technology for Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos. Descriptive Cross-Sectional Survey Design was adopted with 207 as the population. The instrument used for data collection was questionnaire. Frequency and percentages were used for the descriptive analysis of data while ANOVA and chi-square were used for inferential analysis. Technology acceptance Model (TAM) was used as a lence. The findings revealed that: among the three types of Non-Intrusive Inspection Technology that are being utilized by Customs Service in Zone 'A' Lagos, it is only Mobile Scanner that is very much utilized; the gadgets were found to be very useful in the Information Management by customs services in Lagos Zone 'A'; there is significant difference in the type of Non-Intrusive Inspection Technologies utilized by Nigeria Customs Service in Zone 'A' Lagos; there is significant influence in the Utilization of Non-Intrusive Inspection Technologies on the information management system on Imported Consignments by Customs Service in the Zone 'A" Lagos among other finding. Based on these findings, it was recommended that, government should provide all the necessary machines (Non-Intrusive Inspection Technologies) needed for scanning and scrutinizing all the imported consignments by customs service in Nigeria; Custom officers concerned with the utilization of the available gargets should always concentrate in generating and processing information using non-intrusive inspection technologies; appropriate penalty should be given to offenders by an appropriate authority in order to prevent the future offenders from committing same offence among other recommendations.

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LIST OF ABBREVIATIONS

ACG:	Assistant Comptroller General
ACV:	Agreement on Customs Valuation
AML:	Antimony Laundering
ASYCUDA:	Automated System of Customs Data
AWB:	Airway Bill
BL:	Bill of laden
BOOT:	Build-Own-Operate and Transfer
CEMA:	Customs and Excise Management Act
CET:	Common External Tariff
CFT:	Combating Financial Terrorism
CGC:	Comptroller General of Customs
CIO:	Check in Operator
CIPB:	Customs Immigration and Prisons Service Board
CIU :	Customs Intelligent Unit
CIW:	Check-in Work Station
CPC:	Customs Processing Centre
DBW :	Database Workstation
DI :	Destination Inspection
DVD:	Digital Versatile Disc
EI & I:	Enforcement Investigation and Inspection
EIR:	Equipment Interchange Report
FATS:	Finance Administration and Technical Service
FMF:	Federal Ministry of Finance
HRD:	Human Resources Development

HS:	Harmonized System Cord
ICT:	Information and Communication Technology
IMF:	International Monetary Fund
IPR:	Intellectual Property Rights
IT:	Information Technology
LFN:	Laws of Federation of Nigeria
NAFDAC:	National Agency for Food and Drug Administration and Control
NAQS:	Nigerian Agricultural Quarantine Service
NCS:	Nigeria Customs Service
NCSB:	Nigeria Customs Service Board
NCSIA:	Nigeria Customs Service Image Analyst
NESREA:	National Environmental Standard & Regulation Enforcement Agency
NFIU:	Financial Intelligent Unit
NPDB :	National Price Database
NSW:	National Single Window
NTH:	Nigeria Trade Hub
O/C:	Officer –in-Charge
OSIC:	One Stop Investment Commission
PAAR:	Pre-Arrival Assessment Report
PGAs :	Partner Government Agencies
PL:	Packing List
RAR:	Risk Assessment Report
RCK:	Recheck Officer
RIAWS:	Remote Image Analyst Work Stations

RO:	Receptionist Operator
SGD:	Single Goods Declaration
SLAs :	Service Levels Agreement
SON:	Standard Organisation of Nigeria
SSN:	Scanning Sequential Number
SSPs:	Scanning Service Providers
T&T :	Tariff and Trade
TIN:	Tax Identification Number
U. S. A.:	United State of America
UNODC :	United Nations Office on Drugs and Crime
UNTCTAD:	United Nations Conference on Trade and Development
VAT:	Value Added Tax
WCO:	World Customs Organization
WTO:	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

We live in a world that is rapidly evolving through technology. This evolution has led to a changing cultural ideology and how we function day to day. The influences of technology have become ubiquitous in almost every aspect of our current society, including revenue generation and also in our security systems. Technology today defines advancement, simpler and logical ways of achieving and managing pull of activities. Information and communication technology plays significant roles in security, science, detection and management of human and non human resources.

According Neankwo (2006) the importance of ICTs in the different sectors could be seen as the best way that could be used to assist individuals and organizations to adequately solve their need for effective service delivery. This is because the application of ICT greatly helps in the provision of efficient service to the target audience. Also Dike (2000) claimed that instant access to information from a multiplicity of source is one of the major importance of ICTs application to different sectors.

Now a days there are several information communication technology for various housekeeping, management and administrative functions of the different sectors electronic and digital media, computer aided electronic equipment, networks and internet has provided significant role in retrieval and dissemination of information and playing an vital role for modernization of work place for improve productivity and revenue generation.

Umebali and Nwankwo (2010) identified the following as importance to the use of ICTs

- To allow for easy integration of various activities in an organization.
- Increase in activities of organization and services.
- Increasing demand of library users.

- ICT It induces scientific, economic, technological, information and multicultural literacy and global awareness among members of the society.
- It develops effective communication, which leads to teaming, collaboration and interpersonal skills.
- Moreover, it induces personal, social and civic responsibility.
- It leads to high productivity which given the ability to plan and manage results.
- It also gives you a sense of using real-world tools with effective, relevant, and high quality results.

Thioune (2003) notes that for the past two decades most developed countries have witnessed significant changes that can be traced to ICTs in almost all sectors of the economy. These multi-dimensional changes have been observed in almost all aspects of life: economics, education, communication, and travel. In a technology driven society, getting information quickly is important for both sender and receiver. ICTs have made it possible to quickly find and distribute information.

Thoiune (2003) indicates that many initiatives have taken at the international level to support Africa's efforts to develop a communication infrastructure and these efforts are designed to enable African countries, including Nigeria, to find faster ways to achieve durable and sustainable development. Helmut (2011), cited by Akpore (2012), states that of the technological changes that have influenced our lives in recent years, information technology (IT) has had the greatest impact. Martin (1995) and Usman (2013) supports this

view by describing it as a society in which the quality of life, as well as prospects for social change and economic development, depends increasingly upon information and its exploitation. In such a society, living standards, patterns of work and leisure, the education system and marketplace are all influenced by advances in information and knowledge.

Hawkridge (1983) and Kerry (2014) asserted that information technology as a revolution has penetrated almost all fields of human activity, thus transforming economic and social life. UNDP (2001) asserts that even if sustainable economic growth facilitates the creation and diffusion of useful innovations, technology is not only the result of growth but can be used to support growth and development. ICTs are credited with the ability to transform, and deep and significant changes are expected from their widespread use in Africa. From this stand point Africans can take maximum advantage of the new technologies even if major challenges remain.

These challenges include adapting ICTs to local conditions and uses in developing countries, and allowing each country understand those innovations and adjust them to their own development needs. Therefore, development in Nigeria depends on the country's capacity to create wealth to significantly reduce poverty and to raise its capacity to create wealth at a sustainable level. ICTs have been the basis for human existence from time immemorial and this has driven man to continuously seek ways to improve the processing of information and communicating such information to one another irrespective of distance and on a real-time basis (Ndukwe, 2002 & Uche, 2015). Surviving in the information age depends on access to national and global information networks. ICTs are the bedrock for the survival and development of any nation in a rapidly changing global environment, and it challenges us to devise initiatives to address a host of issues such as reliable

infrastructure, skilled human resources, open government, and other essential issues of capacity building (Federal Republic of Nigeria, 2001). The availability of this new technology has been reshaping the material basis of the society as well as bringing about a profound restructuring of economic, political, and cultural relations among states; Nigeria is not an exception Marcelle (2010).

One simpler way to appreciate technology is in the area of automation of operations in organisations and in specifically management of large volume of activities in importation and exportation of goods. These agencies one of which is the Nigeria customs service hitherto, manually inspect and manage information on goods and other activities now due to technological advancement should be able to orderly process and deliver timely service in the aspects of revenue generation and drastically curtail smuggling activities. Thus, for Customs Service to optimize revenue and detect illegal goods or consignments from the imported and exported consignments, government procures and provides them with some X-ray cargo scanning machines that will help them to carry out their duties effectively.

Some developed countries like United State of America (U.S.A.) and China are using these scanning machines effectively and in accordance with the law, to assist them in revenue generation and trade facilitation. (Salihu, 2015), It is asserted that the Nigeria Customs Service is not effectively utilizing such gadgets or scanning machines at the Nigeria borders and other Customs formation.

These machines should be used to increase knowledge base of Nigeria customs service through information generated (Burch and Starter, 1974 and Thawwer 2013). The information should be the aggregation of processed data to provide knowledge or

intelligence. Thus, it has been observed that many goods are being illegally imported into the country through approved and non-approved routes. Some of the goods imported into the country include; clothes, guns and ammunitions, cars, drugs, furniture each from which the government generates huge amount of revenue inform of customs duties. One of the contemporary technologies used to detect/inspect such illegal goods, as well as legal ones through the routes is Non-Intrusive Inspection Technology (Cargo Scanning).

The "Cargo Scanning Machine/equipment is a technology that utilises X-ray or gamma-ray to expose all the contents of a container on a computer screen for the purpose of analysis and decision making" (White Crest Trans Global Service 2013), The technology is used at the customs approved routes such as, land borders, seaport and airport. These routes are where Non-Intrusive Inspection Technology (NIIT) is mounted and used for the screening of goods imported into the country. The NIIT helps to view all that is contained in the containers at the borders (Department of Homeland Security, 2006). Kennedy (2008) asserted that the essence of the technology is to enhance the security of the country in relation to the imported goods in to the country.

Ideally, every container that houses goods imported into the country should be examined. During the examination of a container, information is generated, especially on the nature of goods imported, the quantity of the goods, information about the genuineness of the goods imported, the company that produces the goods, and the country that produces the goods etc. On generating such information, it is documented for immediate and future uses. The information can easily be retrieved in some few moment, days or weeks after it had been generated, analyzed and disseminated to the relevant officers and offices of the customs for rating and necessary action.

Depending on the information generated during the scanning exercise at the borders and other approved route (seaport and airport) where customs operations are carried out, the amount of revenue to be generated from such approved route depends on the type of information disseminated. The more detailed information disseminated the higher the likely amount of income to be generated by the government. Information generated, retrieved and disseminated at the borders during the scanning of goods taking into the country help a lot in the detection and monitoring of dangerous weapons imported illegally into the country. Such weapons include guns, bombs, ammunitions, shells, and missiles to mention but few (Romero, 2014).

1.2 Statement of the Problem

Customs Service is among the security agencies that have been in existence globally. As a paramilitary organization, it was established in Nigeria in 1891with the responsibilities of collection of revenue (import and export), suppression of smuggling and trade facilitation as contained in section 4 Cap C45 of Customs and Excise Management Act (CEMA) 2004. This was put in place with the aim of controlling the import and export of consignments/goods. Thus, for Customs Service to optimize revenue and detect illegal goods or consignments from the imported and exported consignments, government procures and provides them with some X-ray cargo scanning machines that will help them to carry out their duties effectively.

Some developed countries like United State of America (U.S.A.) and China are using these scanning machines effectively and in accordance with the law, to assist in revenue generation and trade facilitation. (Salihu, 2015), Mujika (2014) asserted that the Nigeria Customs Service is not effectively utilizing such gadgets or scanning machines at

the Nigeria borders and other Customs formation. As a result it is alleged that explosive materials, arms and ammunition, illegal drugs and commodities are being concealed and imported to Nigeria day and night. The aftermath could affect the revenue generation and the lives and property of the general public. However, Non-Intrusive Inspection Technology has been put in place to avert the menace yet it continues to surface. Consequent upon this development, the researcher intended to study the management and utilisation of Non-Intrusive Inspection Technology on Imported Consignments by Customs Service in Zone 'A' Lagos. This is done to examine the types of Non-Intrusive Inspection Technology being utilized for information management, the extent to which utilization of Non-Intrusive Inspection Technologies influence the information management, the challenges of utilizing Non-Intrusive Inspection Technology for information management and the extent to which Customs Service manage information discovered using Non-Intrusive Inspection Technologies and to see whether the problems identified will be taken care of. This is done using a technology acceptance model construct of perceived usefulness.

1.3 Research Questions

1. What types of Non-Intrusive Inspection Technologies are being utilised for Information Management on Imported Consignments by Customs Service commands in Zone 'A' Lagos?
2. What is the level of adoption of Non-Intrusive Inspection Technologies in information management on imported consignments by Customs Service commands in Zone 'A' Lagos?

3. To what extent has the Utilization of Non-Intrusive Inspection Technologies influenced the Information system management on Imported Consignments by Customs Service in Zone ‘A’ Lagos?
4. What are the challenges associated with the utilization of Non-Intrusive Inspection Technologies for Information system management on Imported Consignments by Customs Service in Zone ‘A’ Lagos?

1.4 Objectives of the Study

The objectives of this study are to:

1. To identify the type of Non-Intrusive Inspection Technologies utilized for Information Management on Imported Consignments by customs service in Zone ‘A’ Lagos;
2. To find out the level of adoption of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone ‘A’ Lagos;
3. To examine the influence of Non-Intrusive Inspection Technologies in the Management of Information on Imported Consignments by Customs Service in Zone ‘A’ Lagos; and
4. To determine the challenges associated with the Utilization of Non-Intrusive Inspection Technology for Information Management on Imported Consignments by Customs Service in Zone ‘A’ Lagos.

1.5 Hypotheses

The researcher used the null hypotheses as follows:

1. There is no significant difference in the type of Non-Intrusive Inspection Technologies utilized among the Nigeria Customs Service commands in Zone 'A' Lagos.
2. There is no significant difference in the usefulness of Non-Intrusive Inspection Technologies in Information Management on Imported Consignments among Customs Service commands in Zone 'A' Lagos; and
3. The utilization of Non-Intrusive Technology by the Nigeria Customs Service commands in Zone 'A' Lagos has no significant influence on the Information Management in the Zone.

1.6 Significance of the Study

The research contributes significantly towards maintaining transparency in handling imported consignment by Nigeria Customs Service, increase in revenue and enhance security. This finding of the study would help in to reduce human efforts in inspecting/screening of goods that are imported into the country. It will give the authority of Nigerian customs service history of use of the technology and challenges faced and a blue print for improvement. It will tremendously reduce smuggling and false declaration (falsification of document) on imported goods by the importers. The research explains the need for the adoption and increase use of Non-Intrusive Inspection technology.

Moreover, this study would be of great benefit to the Nigerian government by providing reliable information on the utilization of Non-Intrusive Inspection Technology on imported consignments by customs Service and reveal the aspects that require

improvement and retraining. The study would also be beneficial to Nigerian citizens and researchers, by providing them with information on Nigerian Customs Service, particularly on the use of Non-Intrusive Technology on Imported Consignments. This study would help Nigeria Customs service to improve in the use of Non-Intrusive Inspection Technology same as China, USA and other developed countries as it identifies the extent of utilisation of the technology and the challenges encounter by officers in the discharge of their duties. The research would form a body of literature to other researchers to conduct relevant study.

1.7 Scope of the Study

This study covered the management and utilisation of Non-Intrusive Inspection Technology (NIIT) on imported consignments by Customs Service in Nigeria; it covers Zone 'A' Lagos, which comprised of Apapa Customs Command, Seme Border Customs Command, Murtala Muhammad International Air Port Command, Idi-Iroko Border Customs Command, PTML Customs Command and Tincan Island Port.

1.8 Limitations of the Study

Like any other social phenomenon, the researcher encountered certain challenges among which were hitches in reaching the officers primarily handling the inspection technology as some of them were away on field assignments. However, they were reached in their duty post via special delivery of copies of the questionnaire by the researcher. The researcher encountered rigors in cost of employing research assistants for coding and interpretation for data collected in order to categorize the types of non-intrusive inspection

technology that are available at various commands. All challenges were overcome through the researcher's effort.

1.9 Operational Definition of Terms:

The following terms are defined in the context of this work:

- **Customs Officers:** Refers to officers and men of the Nigeria customs service working at the scanning sites in various units such as; Scanner Manager, Image Analyst, Systems Operator, Check-in Operator, Recheck and Traffic Marshal.
- **Imported Consignments:** Goods, Merchandise, products, ware or commodities imported in to Nigeria through, ports, borders and other Customs formation.
- **Information and Communication Technology**: it refers to cargo scanning machine/computers, and any other telecommunication technology devices for information and records creation, processing, storage, retrieval, utilization and disposition in Nigeria Customs Service.
- **Information Management:** A process of acquiring, retrieving (of information,) analysing, keeping records of an organization, maintenance, storage, preservation, utilization and dissemination for the purpose of use.
- **Management:** This is the systematic process of organising; staffing, directing, marketing and controlling as well as utilization in order to achieve its objectives.
- **Non-Intrusive Inspection Technology (NIIT**): refers to technical equipment and machines such as X-ray or gamma-ray imaging type equipment that allow the inspection of cargo without the need to open the means of transport and unload the

cargo. Non-intrusive Inspection (Cargo scanning) is non-destructive methods of inspecting and identifying consignments (goods) in transportation systems.

- **Trade Facilitation**

  Trade Facilitation is the simplification, harmonization, standardization and modernization of trade procedures for the purpose of ensuring fast, transparent cargo clearance and reducing cost of doing business in International Trade.

- **Utilisation:** The act of using Non-Intrusive Inspection Technology (Cargo X-ray Scanning Machine) at Customs formations to inspect consignments/goods coming into the country with the aims of detecting concealment, securing the nation, optimizing revenue and facilitating trade.
- **TAM**: Technology Acceptance Model explains why technology is accepted or rejected.
- **Perceived Usefulness**: The degree to which an individual believes that Using a particular system would enhance his or her job performance
- **Perceived ease of use:** The degree to which an individual believes that using a particular system would be free of physical and mental effort

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CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The researcher in this chapter reviewed some relevant literature which include; conceptual framework, concepts of Adoption, Utilization, Non-Intrusive Inspection, Management, Information Management, Technology Adoption, Historical background of Customs Service in Nigeria, challenges of using Non-Intrusive Inspection by customs service, procedure for scanning public containers, Image analysis, procedure for physical Verification of suspected containers, Image auditing, Destination Inspection, History background of Customs Service in Nigeria, Theoretical framework, Technology Acceptance Model among other relevant literature.

2.2 Historical Background of Customs Service in Nigeria

In 1891, the British colonial administration appointed Mr. T. A. Wall, as the Director-General of the Customs for the collection of Inland Revenue in Niger Coast Protectorate. Since then, Nigeria Customs Service has undergone a number of changes in nomenclature, structure and functions. Part of the changes involved the transfer of the then Customs and Excise Department from Ministry of Finance to Ministry of Internal Affairs in 1985.

In 1986, the Board of Customs and Excise was abolished and replaced with the Customs, Immigration and Prisons Services Board (CIPB) via Decree No. 14 of 11th January. However when the Department of Customs and Excise was returned to Ministry of Finance and recognized as a Paramilitary organization, the name was changed to Nigeria Customs Service with a new Board headed by the Minister of Finance. (Omale, M. 2014).

Customs Officers are law enforcement agents who enforce customs laws, on behalf of federal government, they are responsible for collecting taxes on goods coming into the country and preventing illegal goods from being brought in (Collins 2016).They are responsible for collecting taxes on goods coming into the country and preventing illegal goods from being brought in.

The Board is the Policy making organ of the Service, charged with the duty of controlling and managing the administration of Customs laws. The composition of Nigeria Customs Service Board is as follows;

- The Honorable Minister of Finance -Chairman
- The Comptroller-General -Deputy Chairman
- All serving Deputy Comptrollers General -Members
- Representative from Ministry of Finance -Member
- Representative from Ministry of Trade, Investment & Industry -Member
- Representative from Ministry of Transport -Member
- Representative from Federal Inland Revenue Service -Member
- Representative from National Universities Commission -Member
- Representative from Manufacturers' Association of Nigeria -Member
- Assistant Comptroller-General -Secretary
- Legal Adviser -Member

The Board is responsible for:

a. Formulating the general policy guidelines for the Nigeria Customs Service

b. Administering the CEMA.

In 2014, the Service with staff strength of over 19,000 officers and men was restructured from five to six departments each headed by a DCG. Recently, the Excise Free Trade Zone and Industrial Incentives (E, F&I, I) has been merged with T&T, thereby reverting the number of departments to six (6) (Amdii, 1991).

The different Departments are as follows:

i. Finance and Technical Services (FATS);

ii. Tariff and Trade (T&T);

iii. Strategic Research and Policy (SR&P);

iv. Enforcement, Investigation and Inspection (E, I & I);

v. Human Resources Development (HRD); and

vi. Excise and Industrial Incentives

In addition to the Departments, there are Units domiciled under the Comptroller-General's office saddled with specialized functions. These are;

Modernization/ICT Unit comprising sub-units including; Scanning, Software and Database, Helpdesk, Telecom Networking, Risk Management, PAAR/Ruling Centre, Implementation, Air Wing, Customs Intelligence Unit (CIU), Forensic, Public Relations, Protocol and Legal Unit.

For ease of administration, the Service is divided into four Zones. An Assistant Comptroller General heads each Zone while the Area Commands (26) are headed by Area Controllers. The Service is currently being administered by a Management Team headed by the Comptroller-General, Deputy Comptrollers-General (DCGs), 9 Assistant

Comptrollers-General (ACGs) and the Legal Adviser, who is a designate of Minister of Justice.

Statutory Mandate of Nigerian Customs Service

The Nigeria Customs Service by statutory legislation has the core functions as

- Collection of Revenue (Import and Excise) and accounting for it.
- Suppression of Smuggling
- Trade Facilitation

i. Revenue Collection

The Customs power to collect revenue is derived from CEMA Section 4 Cap C45 of LFN, 2004. In addition to its core functions, the NCS performs roles such as;

- Implementation of government fiscal measures.
- Generation of statistical data for planning purposes.
- Implementation of bilateral and multilateral agreements entered into by government.
- Performance of agency roles. (Nnadi & Ibok 2014).

ii. Suppression of Smuggling

The Nigeria Customs Service anti-smuggling operations cover land, sea and air frontiers. The land frontiers cover all approved and un-approved borders that can be used for smuggling activities. Officers of the Service engage smugglers through surveillance, general patrols, information patrols and baggage examination.

Water patrol is a core function of marine unit. Smugglers around sea or revering areas of the country carry out their smuggling activities through the nation's waterways. It is the duty of marine unit to prevent and suppress activities. The Air wing surveillance

complements the land and sea patrols by passing information of smuggling activities to officers at these frontiers (NCS Annual Report, 2014).

iii. Trade Facilitation

Trade Facilitation is the simplification, harmonization, standardization and modernization of trade procedures for the purpose of ensuring fast, transparent cargo clearance and reducing cost of doing business in International Trade.

Functions of Department and Units of Nigerian Customs Service

Nigerian Customs Service has different departments responsible for different task as presented below:

1. Comptroller – Generals' Office

The Office of the CGC is responsible for the overall management and direction of the Nigeria Customs Service. The CGC is the Chief Accounting officer of the Service and the Vice Chairman of the Nigeria Customs Service Board (NCSB). The office is structured into Units with their individual functions. The units include:

Office of ACG Headquarters

- Heads the Management Secretariat
- Performs other functions as may be directed by the CGC from time to time.

Office of Legal Adviser

- Gives legal advice to NCS in both Civil and Criminal matters.
- Handles all legal matters of the Service.

Office of ACG Modernizer

Co-ordinates and administers the automation of all Customs processes and procedures

Office of ACG Board

Serves as the Secretary to the Board

Custom Intelligent Unit

- Intelligence gathering and appropriate dissemination.
- Detection and prompt reporting of breaches of the Customs and Excise Laws (CEMA)
- Monitoring the conduct of officers and reporting it for appropriate action.
- Performing any other functions as may be directed by the CGC.

Anti-Money Laundering/Combating Financing Terrorism [AML/CFT]

- Co-ordinates currency declaration operations at all entry/exit points.
- Enforces compliance with the relevant provisions of the Money Laundering (Prohibition) Act, (2011) as amended in 2012.
- Liaises with the Nigeria Financial Intelligence Unit (NFIU) and other AML/CFT stakeholders.

a. Forensic Unit

- Coordinates the fight against Customs-related cyber crimes.
- Liaises with similar outfits in other Partner Government Agencies (PGAs).

b. Protocol Unit

Deals with protocol matters of NCS, including planning, organizing and facilitating official travels.

c. **Air Wing** Conducts regular air surveillance to complement the anti- smuggling activities of the Service.

d. **Public Relation Unit**

- Responsible for internal and external communication.
- Organizes sensitization programs.
- Manages the Service social media platforms.
- Facilitates stakeholders' engagement.

2. Finance, Administration and Technical Services (FATS)

- Responsible for the general administration of the Service.
- Manages the Service infrastructure, procurement and maintenance.
- Responsible for promotion, discipline and posting of Service personnel.

3. Tariff and Trade Department

- Administration of Common External Tariff (CET)
- Interpretation and dissemination of government Fiscal Policy
- Issues circulars and guidelines for field officers and stakeholders.
- Monitoring and supervision of Importation and Exportation of goods to ensure compliance with extant Laws and Regulations.
- Administration of WTO's Agreement on Customs Valuation [ACV].
- Issuance and renewal of Licenses and Permits.
- Attendance of Tariff Technical Committee meetings and implementation of decisions thereof.
- Processes and recommends to Federal Ministry of Finance (FMF) refund claims from the trading public.

- Offers Customs opinion and resolves disputes on matters relating to classification, Valuation and other trade enquiries.
- Tracking of imports, exports and transit goods.
- Admission of traders into the Fast Track Scheme.
- Post Clearance Audit.
- Enforcement of Excise laws and collection of revenue on excisable products
- Implementation of industrial incentives geared towards promoting local manufacturing and exportation in collaboration with other government agencies
- Monitoring and enforcement of Customs laws in relation to Free Trade Zones operations. (C.R.M. 2012).

4. Strategic Research and Policy [SR&P]

- Handles research and policy matters of the Service.
- Liaises with International Organizations (WCO, WTO, UNCTAD, UNDODC, D-8, WORLD BANK, IMF etc.).
- Co-ordinates Customs bilateral and multilateral trade relations.
- Organizes seminars, workshops and conferences.
- Deals with issues relating to Intellectual Property Rights (IPR), One Stop Investment Commission (OSIC) and environmental protection issues.
- Manages reference libraries and museum
- Supervises the Customs Liaison Office at the World Customs Organization (WCO) Headquarters Brussels.

5. Enforcement, Investigation and Inspection [E, I &I]

- Responsible for combating smuggling
- Undertakes inspection activities
- Investigates infractions on the CEMA and other wrongdoings
- Collaborates with other government agencies on Security matters.
- Organizes sporting activities of the Service
- Oversees activities of Anti-Corruption and Transparency Unit

6. Human Resources Development [HRD]

- Oversees the development of the capacity of officers and men of the Service through training and re-training.
- Development and review of training curriculum.
- Teaching and research.
- Collaboration with external resource persons in specialized training programme
- Collaborates with other Departments to organize promotion exercise.

Background to Non-Intrusive Inspection Technology (NIIT) and Pre-Arrival Assessment Report (PAAR)

In 2006, The Federal Government of Nigeria through the Ministry of Finance signed seven (7) year Build-Own-Operate and Transfer (B-O-O-T) Destination Inspection (DI) contracts with Scanning Service Providers (SSPs), namely: COTECNA, SGS and Global Scan Service. They the country were contracted to carry out inspection on all imported items to assess value, HS code, Risk Management and prevent unwholesome or prohibited goods from coming into.

In early 2009, as part of preparations towards taking over, the NCS adopted an internal transition plan to take over from the SSPs. This became necessary as the Scanning Service Providers (SSPs), were reluctant to harmonize and hand over their risk management systems as required by the terms of the contract. To perform this service effectively and efficiently, the PAAR software was designed and developed in-house by the Nigeria Customs Service in line with Nigeria Import Guidelines and International best practices.

In December 2013, NCS established a Ruling Centre at the NCS Headquarters, equipped with state of the art IT facilities. The centre was charged with responsibility of processing of trade documents and issuance of new Pre-Arrival Assessment Report (PAAR). **(**NCS annual report 2014**)**

Features of Pre-arrival Assessment Report (PAAR)

- Integrated Risk Management Platform shared by the Regulatory Agencies including NCS, NAFDAC, NESREA, NAQS and SON to ensure consistency.
- Web-based system, utilizing modern technologies in ensuring faster and more accurate service.
- Transparent processes to encourage compliant traders.
- Contingency plan for both online and offline mode.
- Effective 2-way communication with SMS notifications
- Dynamic environment where the outcomes of the reports are continuously fed back into the PAAR system for efficient profiling of emerging risks.

- Use of Tax Identification Number (TIN) for profiling of users (West blue consulting 2014).

Alternative Procedure for Scanning Public Containers

This procedure is similar to the general scanning procedure for community containers except that the Terminal Operator uses its transport to load containers for scanning and stack them back after scanning. Third party trucks are only allowed into the terminal when the agent/importer is ready to take delivery. CIW on receipt of completed SGD issues Confirmation Note to agents to enable them proceed to the Terminal Operator to book for containers to be scanned (CDIL, 2014).

Terminal Operator (TO) after processing the request from Agent/Importer to have containers scanned notifies NCS and loads container for scanning and returns same into stack after scanning.

Procedure for Scanning Inland Containers

Inland containers refer to containers on transfer from the main port to Customs Bonded Container depots on arrival pending the processing of clearing documents and duty payment. Equipment Interchange Report (EIR) issued by the Terminal Operator to the scanner site only accompanies these containers. Since there would be no declaration at the time, they are only scanned and images stored for analysis at a later date when a completed declaration and duty payment have been made to Customs. The scanning process is similar to that of community containers (CDIL, 2014).

Remote Image Analysis Workstation (RIAW)

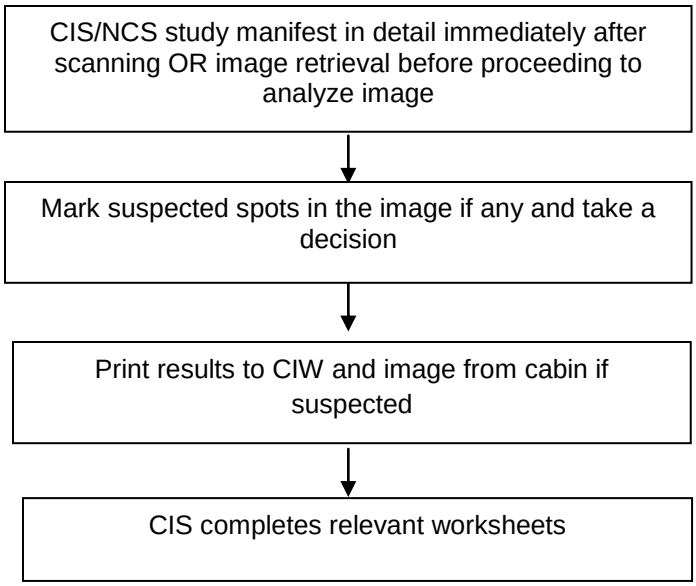
The Remote Image Analysis Workstations (RIAWs) established at the CPCs are to cater for inland containers scanned. Images so stored are backed-up on DVDs accompanied with the relevant data to be uploaded on separate standalone computers for recall and analysis when completed SGD becomes ready. NCS releasing officers at the bonded terminal shall study the Image Analysis Report and may decide to release consignment outright or conduct physical examination if container is suspected (CDIL, 2014).

Image Analysis

Image analysis is the process of finding out whether a content of the container as seen in the image conforms to the declaration captured on the SGD, RAR/paar and packing list. Various icons provided as part of the software programme enables this activity to be accomplished. During image analysis all suspected spots in the image are to be marked as such and image suspected, in the absence of which image is said to conform to declaration

with the decision dialogue box completed with relevant comments (CDIL, 2014). See the illustration in figure 2.1 of page 28

Figure 2.1: Process for Analyzing Image



(Cotecna 2012)

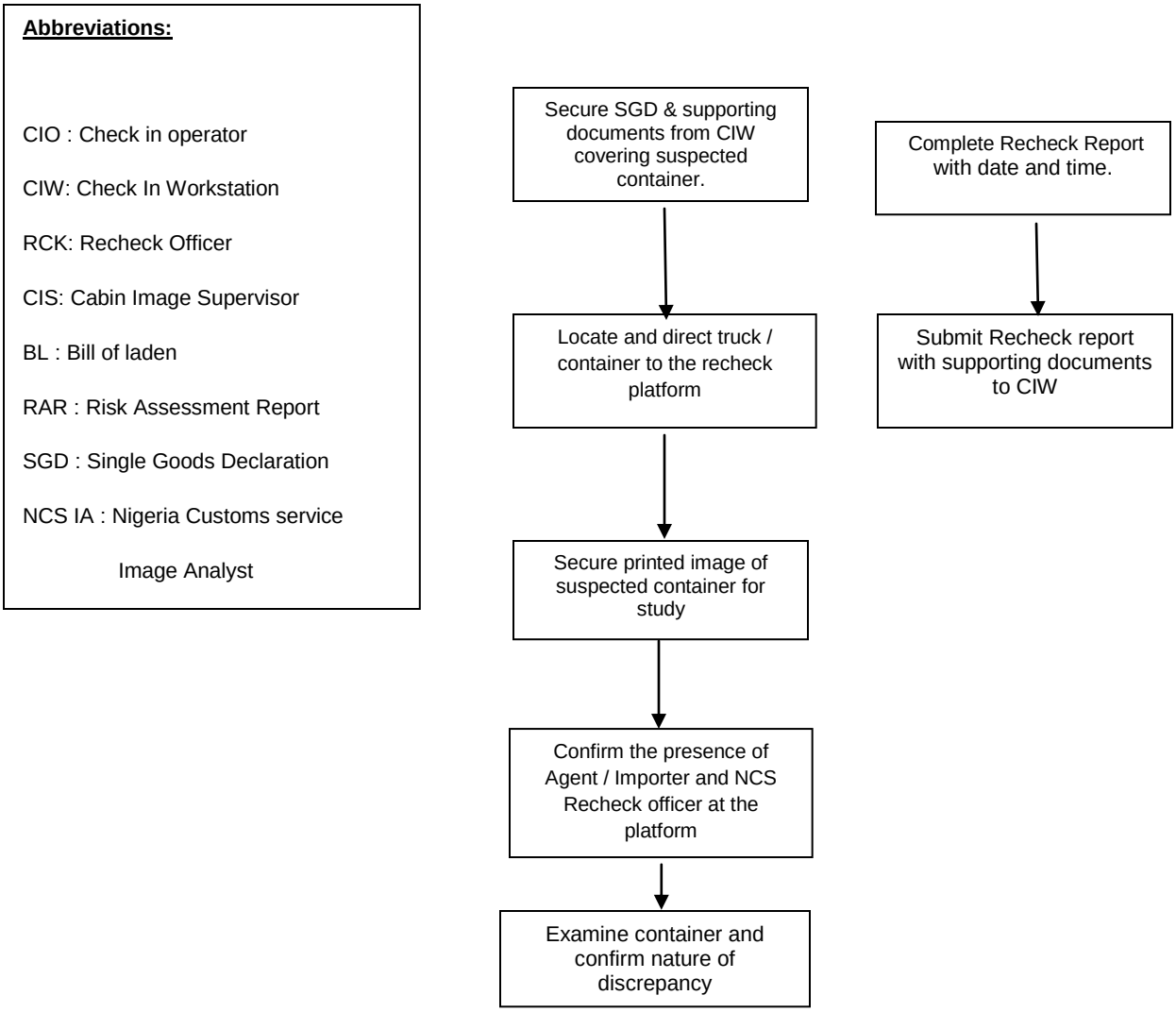
Figure 2.1 is the analysis Process for Analyzing Images. The first stage is the Check-in Station (CIS) where the manifest is studied in details immediately after scanning or image retrieval before proceeding to analyse image followed by the Marking of suspected spots in the image if any and take a decision up to the last point where the Check-in Station (CIS) completes relevant worksheets.

Procedure for Physical Verification of Suspected Containers

The scanner software allows image analysts to make marks and notes at suspected areas in the image for verification. A printed copy of the suspected image is therefore to guide recheck officers in the discharge of their duties at the platform.

Where physical verification confirms the suspicion, a written report or entry into the Recheck Workstation is to be made. At this point, all documents including image analysis results and verification report are expected to retrace their routes through the CIW office to the NCS releasing team for necessary action and release of the container (CDIL, 2010). See the illustration figure 2.2 of page 30

Figure 2.2: Detail Process / Flow Chart for Conducting Physical Examination on Suspected Containers



(Cotecna 2010)

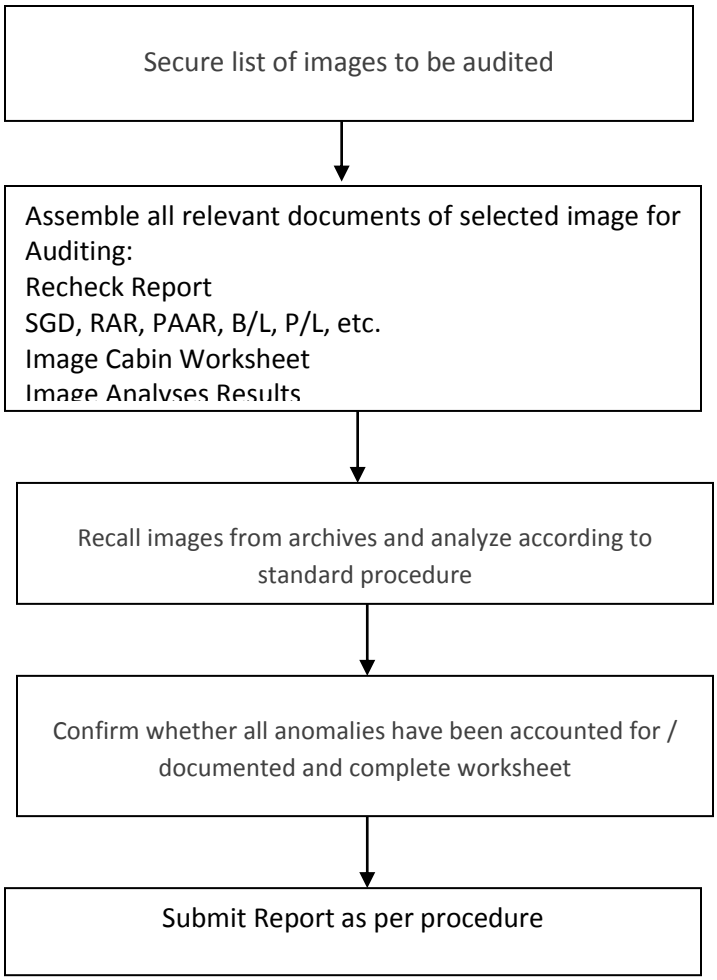
Figure 2.2 is a non-computerized Flow Chart for Conducting Physical Examination on Suspected Containers. This is done to ascertain physically content of the consignment in the presence of the agent/importer by Re-check officers in order to confirm the nature of discrepancy. The first stage is to Secure SGD & supporting documents from CIW covering suspected container, followed by the Locating and directing the truck / container to the

Recheck platform up to the last point where the officer submit Recheck report with supporting documents to Check-in Work (CIW) Station

Image Auditing

Image auditing is an internal control mechanism with the objective of providing feedback as an end result to management and image analysts on their performance and more importantly to inform and educate on how to improve analytical skills to achieve set objectives. It is also to serve as a tool for Management to reward hard work and significant discoveries in addition to forming objective basis to punish impropriety of any sort. The following procedure shall guide the Image Auditor in the discharge of his duties. Refer to the illustration in figure 2.3 of page 31.

Figure 2.3: Steps for Auditing Images of Scanned Consignment

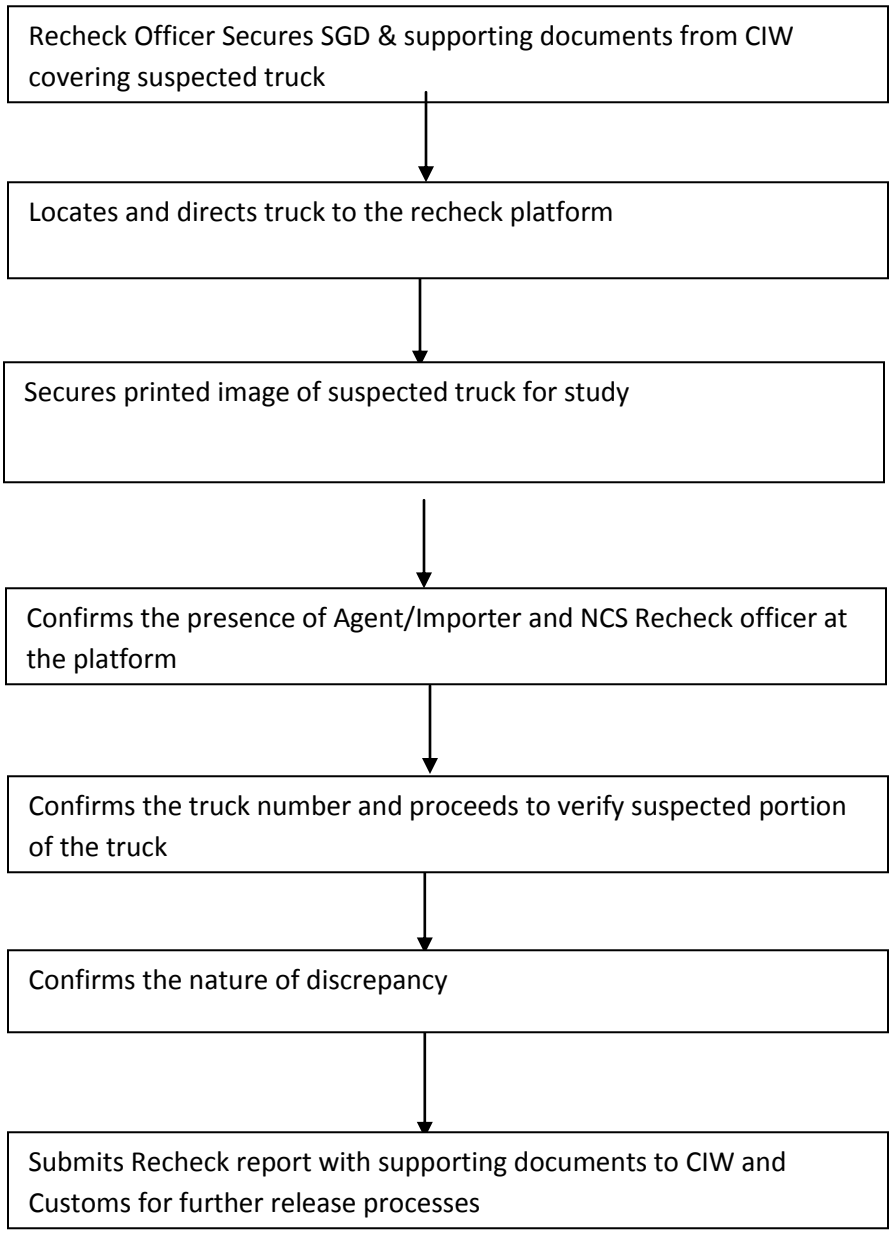


(Cotecna 2010)

Figure 2.3 steps for auditing images of scanned consignment. To commence scanning, a completed Customs Single Goods Declaration (SGD) with supporting documents such as Risk Assessment Report (RAR), Waybill (WB), Parking List (PL) and invoice etc. are expected to be delivered by the Agent/Importer to the Nigeria Customs Service (NCS) Officer-in-charge (0/C) of the scanning site. The NCS O/C then endorses the document authorizing the agent/Importer to carry his cargo to the scanner site for scanning and dispatches the documents to Check-in-Workstation (CIW).

CIW staff on receipt of completed SGD generates Scanning Sequential Number (SSN) and advises agent/importer to bring his truck for scanning. Relevant documents necessary for Image analysis at this point are to be scanned electronically into the scanner Database Workstation (DBW) located inside the Mobile. The arrival of the agent/Importer at the scanner entry gate with his truck marks the beginning of actual scanning process. The Check-In-Agent at the entry gate inspects vehicle and hands over the truck to the Receptionist Operator (RO) for positioning and scanning. Scanning can be done at this time in less than a minute and Image captured for analysis.**(**CDIL, 2014) refer to the illustration in figure 2.4 page 33.

Figure 2.4: Procedure for Physical Verification for Suspected Trucks



(Cotecna 2012)

Figure 2.4 depicts a situation where by a consignment is suspected to have concealment, a verification procedure is initiated from Recheck Officer where he Secures SGD & supporting documents from CIW covering suspected truck up to the last point of where the

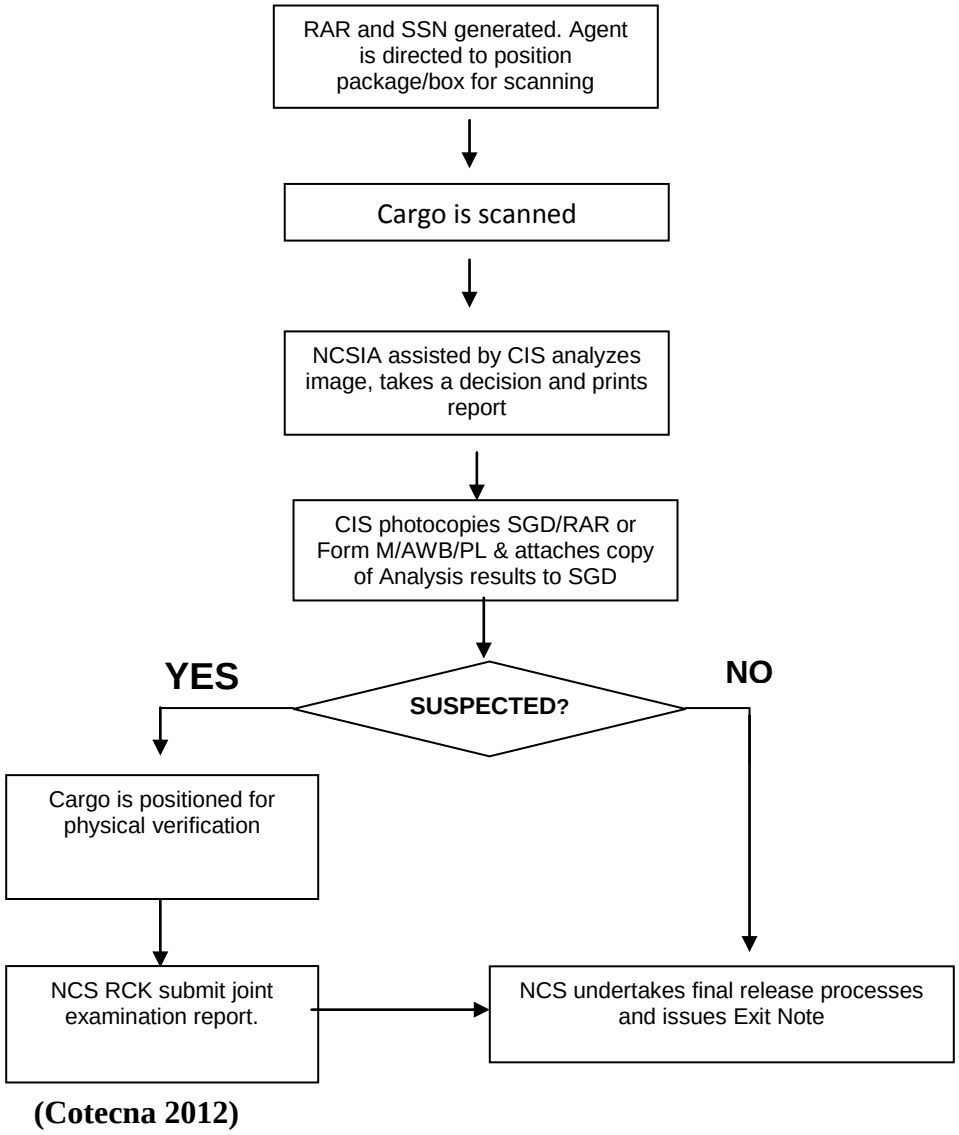
officer submits recheck report with supporting documents to CIW and Customs for further release processes.

Procedure for Scanning at the Airports

For scanning to begin, a completed Customs Single Goods declaration (SGD) with supporting documents such as Risk Assessment Report (RAR), /PAAR or registered Form 'M', Airway Bill (AWB), Packing list (PL) and invoice etc. are expected to be delivered by the Customs House Agents to the NCS Officer-in-charge of the scanning site who in turn should endorse the document authorizing the agent/importer to carry his cargo to the scanner area for scanning.

Cabin Image Supervisor on receipt of the completed SGD authorizes cargo to be placed on the conveyor of the Hi-scan for scanning to commence. Actual scanning is completed in less than a minute and image appears on screen for analysis to be done. Refer to the illustration in figure 2.5 on page 35

Figure 2.5: Scanning Procedure at the Airport



(Cotecna 2012)

2.3 Review Focus

Different concepts were considered as a key variables to this research work, some of the concepts reviewed are; concept of adoption, concept of utilization, concept of non-intrusive inspection, concept of management, concept of information management and so on. The conceptual framework is the schematic diagram which shows the variables included in the study. Arrows or line should be properly placed and connected between

boxes to show the relationship between the independent and dependent variables. All the independent and dependent variables should be clearly discussed and explained how these would influence the results of the study. For this reason, the conceptual framework of a study the system of concepts, assumptions, expectations, beliefs, and theories that supports and informs research is a key part of a design (Miles &Huberman, 1994; Robson, 2011). Miles and Huberman (1994) defined a conceptual framework as a visual or written product, one that "explains, either graphically or in narrative form, the main things to be studied the key factors, concepts, or variables and the presumed relationships among them." Here, the term is use in a broader sense, to refer to the actual ideas and beliefs that you hold about the phenomena studied, whether these are written down or not; this may also be called the "theoretical framework" or "idea context" for the study. A valuable guide to developing a conceptual framework and using this throughout the research process, with detailed analyses of four actual studies, is (Ravitch and Riggan, Reason &Rigor; 2011).

It is very clear, that this research will illustrate how Nigeria customs services have not fully incorporated the use of non-intrusive inspection technology in scanning the imported consignment. It will also encourage the use of technology and reduction of excessive use of manpower. Also the researcher will also portray how Nigeria is losing huge amount of income through corruption and diversion of fund toward achieving selfish interest.

2.4 Information Management

Information management in the customs service is of great significance. According to Ayeni, (2010) Information centers serves as a collection, preservation and dissemination center for information since the development of the society depends largely on accurate and adequate utilization of information. The Nigerian Customs Service manages information that emanates from consignment inspected using Non-Intrusive Inspection Technology through declarations with documents such as Manifest, Bill of lading, Single Goods Declaration (SGD) e.t.c and also disseminates information for strategic decision making.

Managing the information involves identifying what should be kept, how it should be organized, where it should be held and who should have access to it. The quality of this management will dictate the quality of the decisions being taken and ultimately the Customs' survival. With the growth in the use of ICTs to support information handling within organizations, the political nature of information has come into sharper focus. In this regard, information professionals including librarians have become highly powerful and respected in the management of organizations' information resources.

Today, information management has become a major issue in the 21st century in view of the fact that:

- Information whether stored on paper or magnetic tape or CD or even human brain becomes fundamental requisite for ensuring rationality; validity and coherence in decision making in the organization. For instance in the Nigerian Customs Service the information generated through the use of Non-Intrusive Inspection Technology

would determine whether a consignments should be released instantly after examination/scanning or reposition for physical examination when is suspected to have concealment, misclassification/valuation before releasing it to the owner. In such situation a fresh assessment of duty would be raised before consignment release to the owner.

- Records are also basic tools and instrument in the Customs through which functions and processes are effectively carried out if only they are well arranged, managed and made accessible to the members of the organization; and
- Modern administrative systems would increase efficiency and effectiveness of Customs service like other contemporary socio-economic, technological, political, educational systems etc. have become increasingly complex and sophisticated, the reason why information and records management should move along the same line. (Ayeni, 2010).

The basic goal of information management is to harness the information resources and information capabilities of the Customs in order to enable it to learn and adapt to its changing environment (Auster & Choo 1995). Therefore, information creation, acquisition, storage, analysis and use would provide the intellectual latticework that supports the growth and development of Nigerian Customs Service. The central actors in information management must be the Customs Officers themselves, working in partnership with a cast that includes information specialists and information technologists. Information management must address the Customs social and situational contexts of information use especially in the examination of Goods. Information is given meaning and purpose through the sharing of mental and affective energies among a group of Customs officers engaged in

solving problems or making sense of unclear situations like when a container or parcels of Goods is suspected to contain concealment or un-customed Goods. This implies that information acquisition is necessary because it is the skill of data fusion to actively acquire information (Ronne, 2012). Information Organization is the process of ordering, surrogating, or description of information and information objects which include contextual metadata to document structuring of information, creation of new documents which share specific role (Eric, 2010). As such, there must be proactive information service designed to educate information focused groups of Customs officers especially Scanner manages who use discretion as to whether Goods should be released or detained, as users on social, economic, and educational, issues, problems and opportunities of interest to them (Dagobers,2000). It requires systematic planning, collection, organization, and storage of information for its delivery to the target audience using different media and communication means.

Timothy (2013) conducted a study on information management technology application to administration and policy drafting in parliament in Botswana using two research questions to find out the possibility of acceptance and domestication. Technology Acceptance Model was used as a lence to guide the research. Questionnaire was used to collect data. The findings revealed that 23% of the parliamentarians indicated the possibility of using the management technology while 57% of them said it can be domesticated. The study concluded and recommended that in order to expedite quick use of the technology special training should be given to the parliamentarians and their assistants.

A research conducted by Pora (2012) on the importance of context in assessing flexible work arrangements showed that contextual management support and trust play a significant role in determining how employees perceive their flexible work arrangement and the subsequent outcomes of it. This means that the Customs Officers within the context of inspecting the consignment with the view of ascertaining the content and detecting concealments require the technology for their flexible work schedule.

However, the literature reviewed did not as matter of gap generally address information management peculiar to customs service and how information management techniques can be customized to improve information processing, reservation and use in the customs.

2.4.1 Adoption

The term Adoption is the process through which organizations or individuals decide to make full use of an innovation in their daily businesses (Rogers, 1983).As organizations introduce new technologies, full implementation and successful adoption will not be achieved unless the workforce accepts technologies (Manross & Rise, 1986), although the adoption of technological innovations occurs both within and outside of organizations (Rogers, 1995).

Rogers (1983) further defined adoption as "a decision to make full use of an innovation as the best course of action, and conversely, rejection is a decision not to adopt an available innovation". Furthermore, Rogers states that technology users go through five stages before they can adopt a new technology. The five **(5)** stages are: **(1)** Awareness, **(2)** Interest, **(3)** Evaluation, **(4)** Trial, and **(5)** Adoption. Rogers differentiates the adoption process from the diffusion process of innovation in that the diffusion process occurs within

society, as a group process; whereas, the adoption process pertains to an individual. In Nigeria customs service, the use of non-intrusive inspection technology was introduced since 2006 and the boarders and other customs formation have been using the technology.

Therefore, adoption of technology is influenced by the understanding and ability to afford and a mindset to give it a trial. However, the literature did not as a matter of gap address motivational factors as in the case of Nigerian Customs officers such as hazard or special allowance and ease of use, which the studies reviewed.

2.4.2 Utilisation

The act of using Non-Intrusive Inspection Technology (Cargo X-ray Scanning Machine) at Customs formations to inspect consignments/goods coming into the country with the aims of detecting concealment, securing the nation, optimizing revenue and facilitating trade. Hall (1978) and Burch (1989) outline several features that determines the utility of information such as novelty i.e. possessing the quality of being new, different and interesting, accurate that is clarity of information, free from bias and accurately reflects the meaning of data on which it is based, thus conveying an accurate picture to the recipient. Others include, timeliness i.e. availability of information when it is needed as a basis for a decision and lastly, relevance i.e. having bearing on the matter at hand. Consequently, the possession or awareness and use of appropriate information ensure organization effectiveness. The major function of information is to increase knowledge of the user or to reduce his level of uncertainty.

Line (1974) considers use a "what an individual actually uses. It is a result of information seeking, browsing or accidental discovery. Information has to be gathered, processed for it to be useful. Malima (1989) pointed out that no planning and

development can take place without information. He stressed that all information utilization leads to an increase in knowledge and understanding of a phenomenon. In the same vein, Robert (1975) noted that an individual who reads, view, listen or browse on an information resource is using those materials in the expected way. That is to say an expressed demand has been satisfied and use has taken place.

In a related study, Young (2008) carried out a study on using technology tools in the Public School Classroom. The purpose of the study was to determine the effect that computer technology use in the classroom had on students' grades, motivation, attitude and attendance. Teacher/student technology surveys were used to measure teacher use, student use, and overall use of technology in the classroom. The sample for this study consisted of teachers from the Kaiserslautern School District. Results of the study indicated that teachers' technology use, students' technology use, and overall technology use depended on how well the teacher used the technology in the classroom. For the most part, the use of technology was motivating for the students, but it had no significant positive effect on their grades and/or attendance, including "at risk" students.

Furthermore, Anthony (2008) critically investigated the technological shift in education with aim to understand what effects it is having on student learning, importantly, on teaching practices. The overarching questions were: How has the role of the teacher/educator changed as a result of new educational technology? What are some factors influencing teachers' use of technology in the classroom? Finally, how do teachers generally feel about educational technology? The purpose of the study was to investigate the change from the perspective of the teacher in order to better understand the benefits and potential consequences of educational technology. The results of the fieldwork

demonstrated a greater overall enthusiasm for educational technology than anticipated. Nevertheless, teachers still expressed concern over what technologies are being introduced, the degree to which they are incorporated, and the practicality of these resources.

Technology may be enhancing the learning experience of discovering information in new and creative ways, but it may also be unintentionally marginalizing our education system standards and the quality of our teachers. Educational technology is a double-edged sword. We must be careful with how we use it.

Brown (2011) in another study emphasized that due to the prevalence of technology in the classroom, the effectiveness of such programs has become a prevailing research topic amongst social scientists. Past research and provides an analysis of relevant studies conducted within the last ten years. Using Daft and Lengel‟ s media richness theory as a basis, the meta-analysis provides a comprehensive overview of the effect of technology enhanced learning (TEL) programs on K-12 students‟ overall academic performance and factors that can increase the effectiveness of such programs.

However, for information to be used effectively, it has to be systematically collected, organized and must be readily available for users on demand. The Non-intrusive inspection technology in Nigeria customs services is used in scanning imported consignments, the gap is, the Customs Service has yet identify the simplicity, quickness and reduce of excessive use of manpower, in daily screening of these imported consignments Hence mostly engage in physical examination (manual way of screening goods.

In conclusion, there is need for the Nigerian Customs Service officers to fully appreciate the significance of utilisation of technologies and exploit it to increase their

level of operations and get rid of doubt and reduce errors in generated information. That is the gap the study sought to address.

2.4.3 Information Retrieval

Information retrieval (IR) is the activity of obtaining information resources relevant to an information need from a collection of information resources. Searches can be based on metadata or on full-text (or other content-based) indexing (Maron, 2008). Artificial intelligence has two main applications in information retrieval: organization of application methods, and the design of classification methods. There is no shared terminology between the fields, making it difficult for the two areas to collaborate initially. Smith, (1976) in her article "Artificial Intelligence and Information Retrieval," predicts that as artificial intelligence and information retrieval continue to expand there will still be need to increase cognitive ability of the users to discern what has been retrieved from the original search.

In another study, Anton (2011) investigated interactive information organization, techniques and evaluation. The main aim of the study is to find out strategies on how to locate information on the World Wide Web as the main task of online search engines. The study looked at the web page on how users retrieved documents. The findings revealed that ordering of documents is ranked as simple and initiative. Existing evidence shows that users quit often to stop and do not value beyond the first screen of result or the top ten received documents. The study recommends that alternative techniques which can help the users to find the relevant information much more quickly. Therefore, it was of paramount importance for Customs officers information custodians to devise means for effective and

efficient way of retrieving information from any type of information system will be achieved as at when due without hitches.

Customs officers handling Non- Intrusive Inspection Technology especially image analyst retrieve information from the machine for decision making. This is done by understanding the machine language and patterns.

The studies reviewed did not as a matter of gap, emphasize that officers of the Nigerian customs service should be able to through knowledge acquired to retrieve information from the information system available (NIIT) so that clearance of goods at their disposal could be done effectively and without being in state of discombobulation.

2.4.4 Information Organisation

Information organization (IO) is defined in this literature as the process of ordering, surrogating, or description information and information objects. These three tasks have been identified by the as broad tasks that both identify tangible elements of information organization and have implications across areas of information research including retrieval, interaction, and personal information management. Information organization processes can involve the assignment of contextual metadata to documents, structuring of information objects via some document model, creation of new documents which serve specific roles, or creation of abstracted data structures including indexes, databases, and data-objects which serve the primary tasks of ordering, surrogating, and description. For instance in the Nigerian Customs the images captured via the Non Intrusive Inspection technology are organised and stored for further analysis especially if the importer or agent is not

convinced with the decision of the image analyst. Information technology (IT) plays a key role in information organization practices, influencing elements of creation and use of document derivatives in the Nigerian Customs Service (Vuorikari, 2007).

In this regard, Pomise, Jerome, Oyeronke and Ifeakchuku (2015) investigated management of theses and project in selected university libraries in Ogun state, Nigeria. The objectives of the study includes among others finding out the methods use in organizing projects sand theses, facilities use and challenges encountered when organizing the theses and project sin the selected libraries. The study used survey design, population comprise of staff of federal university of agriculture, Abeokuta, Tai Solarin University of Education and Convenient University Ota and questionnaire was used as instrument for data collection. The finding revealed that the methods of organizing these types of materials include indexing and classification among other various methods as is done in the Nigerian Customs to organise images of organic and non-organic substances. The study also discovered that the major problems hindering effective theses and project organization include insufficient skilled manpower and lack of funds among others. It was finally recommended that theses and projects should catalogue, classified and abstracted as well as that information could be retrieved with ease by both the staff and students so that teaching, research and learning will take it shape as enshrined in the universities vision and mission.

It is on the basis of this background that customs service should made effort using Non-Intrusive Inspection Technology to scan, concealment and finally retrieved,

organized, processed, stored and preserved information for effective discharge of their statutory functions.

2.4.5 Information Preservation

The information obtained from the NIIT from organic and non-organic substance are preserved using designed shelves and cabinets this is so because preservation is an aspect of the management of information. Its objective is to ensure that information resources of any kind or form survive in an accessible and useable form for as long as it is wanted (Popoola, 2003). Preservation is applied to safeguard the information resources from decay and deterioration. It is also the process in which all actions are taken to check and retard deterioration of information resources in the Nigerian Customs Service. Preservation is a pressing concern for Customs in all parts of the world. From time immemorial information professionals have seen the need to preserve their information resources. The preservation of information resources has engaged the thoughts and actions of many information professionals from the earliest times. They realized that there is need to preserve the world's memories.

For instance, Robert and Basil (2010) investigated on preserving information bearing materials in higher education institution in Nigeria. The objectives of the study were to find out the available policy use for preserving information in the institutions and equipment used in preserving the information bearing materials. The research design was survey, using staff of both DELSU and PTI as population for the study, and questionnaire and interview were used as instrument for data collection. The finding revealed among others that there is policy on how to preserve information bearing materials in the libraries

as well computers, scanners among other ICTs were used in preserving the information bearing materials. The study recommended that adherence to policy on how to preserved the information bearing materials should be complied with as well as professionals should be employed to manage the resources.

Therefore, the Nigeria customs service must devised better ways of preserving information apart from using shelves and cabinets. It must also identify relevant policy to protect and preserve its generation on consignments as well on smuggling and revenue generation for easy access, use and efficient decision-making.

2.4.6 Non-Intrusive Inspection Technology

Non-intrusive Inspection (NIIT) or Cargo X-ray Scanning: refers to non-destructive method of inspecting and identifying consignment (Goods) in transportation system. It is often used for scanning intermodal freight shipping containers**.** As of 2007, NII technology was being used in 17 of the 18 Asia Pacific Economic Cooperation (APEC) ports that were researched. Customs Administrations indicated that this technology has clearly helped them to increase security as well as enforce customs policies, provide trade assurance through the detection of illegal contraband, and ensure appropriate revenue collection. However, in contrast to radiation detection equipment and container security devices, which can automatically alert users when a security anomaly is found, the NIIT requires significant human operator involvement. Analyzing the images generated by NIIT equipment can require few minutes for a single container image. Depending upon the volume of containers selected for NII and the number of images reviewed, this undertaking can impact supply chain throughout and trade efficiency.

While cross-border smuggling has been a feature of international trade for centuries, there has been a major increase in recent years in the worldwide movement of containerized traffic. This has resulted in an increased opportunity for cross border trafficking of illicit drugs, explosives and other contraband (Padova 2010). The illicit drugs trade alone is estimated to be worth $400bn annually worldwide. Cigarette smuggling is a global problem. Within the EU it is estimated that 90bn illicit cigarettes are consumed each year. The resultant tax loss is conservatively estimated to be in the region of €16bn. In Nigeria, many items are being illegally imported day in day out.

Illegal trade in wildlife - specious and derivatives protected under the Convention on International Trade in Endangered Species (CITES) – is an area of smuggling often overlooked. This illegal trade is valued at between $10bn and $20bn annually on a global scale. Smuggling of counterfeit goods is also an increasing international problem. Intellectual Property crime is estimated to account for up to 7% of world trade. In the EU alone, this illegal activity is estimated to cost legitimate trade some €400bn each year.

Terrorist related smuggling continues to pose security threats on a global scale. Security and law enforcement agencies rate the detection of arms, explosives, chemicals, and dangerous goods, radioactive and nuclear materials high on their list of priorities.

On tightening security at boarder entry of consignment, Allison and Yi (2008) exploration on 100% Container Scanning: Security Policy Implications for Global Supply Chains was motivated by the August 3, 2007, President George Bush signing into law HR1 the "Implementing Recommendations of the 9/11 Commission Act of 2007." The 9/11 Act which requires 100% scanning of US-bound containers at foreign seaports by 2012

through the use of non-intrusive (NII) and radiation detection equipment. The study focuses on importer concerns relating to potential shipment delays, financial burdens, sourcing issues and contingency planning concerns in global supply chain operations. Using port statistics, field study data as well as industry insights, frameworks are developed to identify major stakeholder issues and quantify the financial costs and delay risks bourn across the entire supply chain.

Results of the cost analysis indicate that scanning configurations, particularly related to NII, greatly affect the-per box scanning cost. It is not economically feasible to scan only US-bound containers at half of the 600 ports with direct connections to the US. Analysis of truck congestion suggests that the ramp metering effect of the entry gate can help to abate congestion at the scanning area. Analysis on secondary inspection delays revealed that under a set of assumptions that reflect current operations, the risk of containers missing sailings could potentially increase to 1.5%, which may in turn require a 0.5% to 5% increase in safety stock. The study shows that cost and delay implications of 100% export US-bound container scanning may be less severe than industry anticipated. Supply chain disruptions due to scanning is best mitigated through earlier container dispatch, increased safety stock or increased scanning infrastructure and personnel at ports.

Similarly, Andreas (2015) aimed to identify and recommend vessels that are suitable for inspection according to the NII methodology, DNV-RP-G103. The theoretical guideline used during the analysis, DNV-RP-G103. The thesis also included a cost benefit assessment and discussion whether or not the methodology reduces the risks for tail production field that has been in service for over 30-years. The scope of the thesis includes all of the production vessels in one of the production trains, including the test separator. A

total number of six vessels, that historical has been opened for IVI during shutdowns where this is still the chosen inspection strategy, have been selected.

During the analysis the recommended practice (RP) was considered to be a very useful guideline. It uses flow diagrams combined with detailed text and case examples that are very useful and understandable throughout the analysis. However, during the work sections and text that should be improved were identified. These were (1) missing text and explanation to some of the flow chart boxes, (2) the RP states that it doesn't consider the impact of external degradation, but it has been found to be actively used in the RP in evaluation during high level decision process.

2.4.7 Concealment Techniques

The classic contraband concealment involves placing a "cover load" of expendable goods close to the container doors. This serves to hide the smuggled goods from any partial or cursory examination. Container scanners have had significant success in detecting concealments of smuggled goods in such circumstances. Smugglers have reacted accordingly by using shielding techniques in an effort to defeat the screening process. These can take the form of straightforward shielding using dense materials such as lead, steel, marble etc., or by concealing the smuggled goods within cargoes having similar shape, form or density to the contraband.

Vang (2015) conducted a study on Validation of a Magnetometry-Based Technology for Detecting Concealed Weapons in Vehicle Door Panels owing to the acts of insurgency that have become an increasing threat resulting in extensive measures being taken by the law enforcement authorities to mitigate their devastating effects on human life and

infrastructure. This thesis introduces a magnetometry-based information, and signal processing methodology for detecting concealed ferrous objects in vehicle body panels. From extensive literature research, it was observed that while magnetic sensors have been used in a variety of related applications, but they have not been extensively applied to the on-road detection of firearms and explosives concealed in vehicles. His study utilized an extensive experimental protocol for preliminary concept validation. The main idea behind the approach was that almost all concealed weapons and explosives are made up of a considerable amount of ferrous material, and hence produce a local distortion in the Earth's magnetic field. To analyze the data, a signal processing methodology was designed. To achieve the objective of accurately detecting concealed ferrous objects, simple measures such as magnetic field strength and its energy density were computed. These simple measures were then used in conjunction with more sophisticated statistical methods such as, normalized cross-correlation and Mahalanobis distance.

2.4.8 Types of Non-Intrusive Inspection Technology

Khan, Nicholas &Terpilak (2001), identified the following as the types of non-intrusive inspection technology:

i. Mobile scanner;

ii. Portal VACIS;

iii. Automated Empty Container Verification System (ACEVS);

iv. Radiation Scanner;

v. Mobile VACIS;

vi. Automated Vehicle and Container Identification;

vii. Gantry scanner;

viii. Hi-Scan scanner;

ix. Integrated Display (ICIS VIEWER);

x. Fixed scanner; and

xi. Cargo Container X-Ray Inspector.

Scanning systems are available in three formats (Eritr 2010); Fixed Systems, Mobile Scanners and Relocatable.

Fixed systems: as the term implies, are permanently constructed structures usually using linear accelerators having an energy source in the order of 8-9 MeV. They are relatively expensive and are usually deployed in large seaports having a large throughput of containerized traffic.

Mobile scanners: which are generally built on conventional truck chasses, have the advantages of lower cost and greater flexibility. They can be readily moved from one scanning location to another according to risk and traffic requirements. Until recently they have had an energy range of between 300keV and 4 MeV, but 6MeV energy systems are now available.

Relocatable systems: incorporate many of the advantages of the fixed systems including good reliability, high quality imaging and the capability to use dual-view format. They are available with energies of up to 6MeV and are significantly less expensive than fixed scanners.

Technology: is a word that is very broad. Its definition varies from a simple dictionary explanation to complex elaboration. Betz (1998: 9) defines technology as "the knowledge of the manipulation of nature for human purposes", whereas Joerges (1988:5) describes technology as "artificial things, and more practically modern machines: artificial things

that require engineering knowledge for their design and production and perform large amount of operations by themselves".

Standard Operating Procedure: Standard Operating Procedure is expected to guide and educate all operators at the sites to ensure uniformity in decision-making and provide quality service and satisfaction to the importing public using the facilities.

The scanning is taking place in different areas namely: A Seaports, B. Land borders and C. Airports etc.

Benefits of Non-intrusive Inspection Technology

Non-Intrusive Inspection (NII) scanning technology solutions make it possible to verify the contents of containers without the need for physical inspection. NIIT can assist in decongesting Customs border posts. Especially for port authorities the main benefits Include port decongestion and a faster turnaround of vessels. For national security authorities, NII technologies greatly improve the level of border protection and help in the fight against terrorism. For importers, scanning helps to reduce clearance time and avoids the inconvenience and risks linked to physical inspection. For exporters scanning services, in the framework of trade security agreements, contribute to facilitate the export process Moreover, the use of scanning solutions is fully in line with the requirements of prevailing regulations and guidelines such as the WCO 'SAFE Framework of Standard. The benefit in the area of Risk Management includes the following;

- Trade facilitation by combining risk management with technological tools that contribute to a reduction in the time required for imported goods to clear Customs
- Compliance with prevailing international regulations and guidelines

- Protection of government revenues by focusing on high-risk transactions, reducing opportunities for fraud, fiscal evasion and price discrimination
- Security enhancement at airports, seaports and borders, assisting with national security and the fight against international terrorisms' to Secure and Facilitate Global Trade or U.S. Regulations. (Cotecna 2015).

Salihu(2014) identified the following as part of the benefit of NIIT, increases customs revenue, efficient facilitation of trade, avoids the unpacking and repacking of goods, Detection of discrepancies between goods and declarations, Reduce smuggling and fraud, Increases compliance and Effective import verification and checkmate concealment.

2.4.9 Procedure for Scanning Public Containers

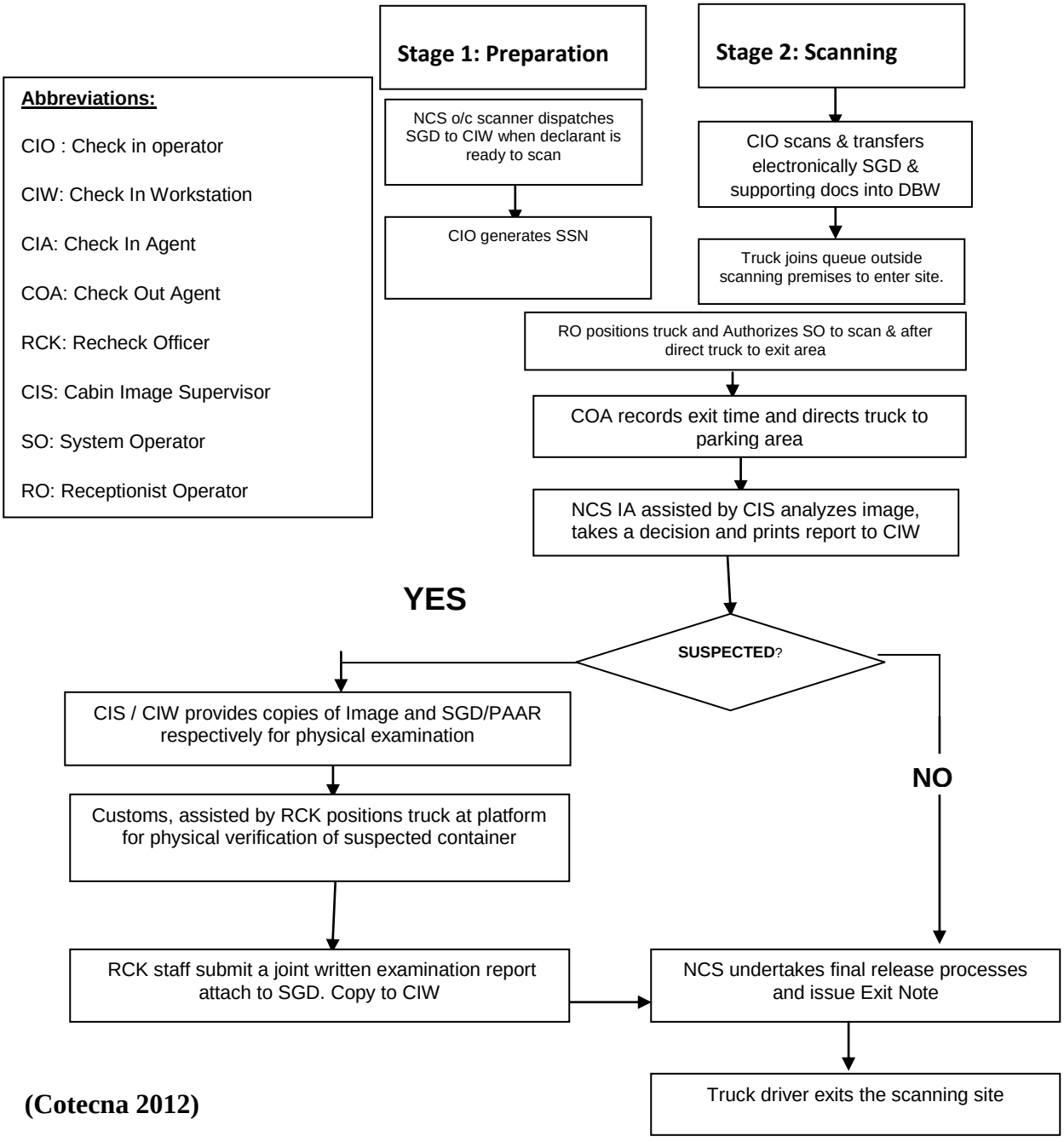
For scanning to begin, a completed Customs Single Goods Declaration (SGD) with supporting documents as the PAAR, Invoice, Packing list etc. is expected to by an agent/importer to the NCS Officer-In-Charge (O/C) at the scanner site. The O/C if satisfied authorizes the agent/importer to load container for scanning and thereafter releases SGD to Check-in-Workstation (CIW) office, (Mujika, 2014).

The Check-In-Workstation (CIW) staffs, on receipt of the completed SGD generate Scanning Sequential Number (SSN) and advise the importer/agent to bring container for scanning. The arrival of container at the entry gate marks the beginning of the actual scanning process.

Check-In-Agent (CIA) on arrival of container at the entry gate relays the details to CIW and Systems Operator (SO) or Cabin Image Supervisor (depending on the type of scanner in use) and direct truck driver towards the scanning tunnel/area and hands over to the Receptionist Operator (RO) to position for scanning.

The Receptionist Operator after positioning truck, escorts driver out of scanning zone and authorizes the System Operator to commence real scanning. Scanning can be done at this time taking less than a minute, image captured and then analyzed by NCS staff (image analyst). See the illustration in figure 2.6 page 57

Figure 2.6: Flowchart for Scanning Public Containers at the Nigerian Customs Services



(Cotecna 2012)

Figure 2.6 shows the Flowchart for Scanning Public Containers in the Nigerian Customs Services. The first stage is the preparation stage which entails two stages where Single Goods Declaration (SGD) is dispatched by officer in charge to Check-in Work Station

(CIW) when declarant is ready to scan after which the Check-in operator generate Scanning Serial Number (SSN). The second stage Check-in Operator (CIO) scans & transfers electronically SGD & supporting docs into DBW. The next stage the Truck joins queue outside scanning premises to enter site up to the last stage when the Truck driver exits the scanning site.

2.6 User's Attitude towards Technology Adoption

Prior Technology Adoption and Diffusion literature (see Rogers, 1983; Davis et al, 1989; Ajzen and Fishbein, 1980; Moore and Benbasat, 1991; Tan and Teo, 2000) argues that user attitude is the key determinant of technology adoption. However, factors such as innovation characteristics (e.g. Perceived Usefulness and Ease of Use, Compatibility, Reliability, Security), organizational and managerial characteristics (e.g., Leadership Characteristics, Fear of Loss of Autonomy, Fear of Security Breach), and facilitating conditions (e.g. availability of government support and availability of top management support) have been found as the key influential factors affecting users attitude towards adopting the proposed technological systems.

Attitude can be a very powerful enabler or a barrier towards the adoption of the new technology. Ajzen (1988) defines the term attitude "as a complex conundrum of feelings, desires and fears that create a state of readiness to act within a person." Moreover, Fazio (1990) defines an attitude as a learned association in memory between an object and a positive or negative evaluation of that object, and attitude strength refers to the power of the bond in this respect.

To assess the influence of users attitude and reaction towards accepting and adopting new technologies, several authors (e.g., Rogers, 1983; Davis, 1986; Ajzen and

Fishbein, 1975; Tan and Toe, 2000) have developed a corset of theoretical frameworks that can be used as a mediator to explain and predict the key factors (e.g., relative advantages of new technology, perceived compatibility and perceived complexity) influencing the technology adoption process. According to these studies, technology adoption is viewed as a consequence of a set of perceptions (attitude) to the technology. A review of diffusion of innovation frameworks and theories provides a body of literature that may aid the attempt to explore and understand key factors affecting workforce attitude towards the implementation and adoption of new technology.

This implies that the attitude of Nigeria Customs officers handling the Non-Intrusive Inspection must be understood and appropriate measure must be taken to ensure total acceptance and use of the technology for the interest of revenue generation and the overall security of the Nation at large. Therefore, factors such as motivation, simplification and increased awareness must be done in this regard.

Information

Information has been variously defined. A few examples may suffice. In Dictionary of behavioral science defines information as knowledge of a particular fact or circumstance gained through communication, research or instruction (Wolman, 1975).It is increase in knowledge obtained by the recipient by matching proper data elements to the variables of a problem (Burch and Starter, 1974). It is thus, the aggregation or processing of data to provide knowledge or intelligence. In another dimension, defines information as "that knowledge – or conceptual context which has to be perceived (Davies, 1986). However, information from the semantic view point (Hall, 1978). Information is what is derived from the data in the mind of the person receiving it. The information derived depends on the

relationship that the person generates in his mind between the sign (data) and the natural object or condition representing by that sign. This means that different people may derive different information from the same set of data.

On the other hand, information is defined as "data that have been put into a meaningful and useful context and communicated to a recipient who uses it to make decisions (Burch, 1989). It is in the recognized capacity of information to bring significant structural change within a society that makes it so critical in the development processes (Aboyade,1987). To produce the desired change in human behavior, the process by which information get transferred from one source to another certainly deserves the outmost attention.

2.7 Concept of Information Technology

Information is any form of communication that provides understandable and useful knowledge for the person receiving it Information technology is the use of computers to store and process facts and figures into a useful, organized, form. "Data" is the raw material: numbers and facts. "Information" is the raw material organized in a useful way. Numbers are data. A telephone book full of numbers is information. To emphasize the role of communications some people use the acronym ICT which stands for Information and Communication Technology.

According to Dario, Victor and Ana (2011) Information technology (IT) is a technology which uses computers to gather, process, store, protect, and transfer information. Today, it is common to use the term Information and communications technology (ICT) because it is unimaginable to work on a computer which is not connected to the network.

The computer consists of:

1. Hardware – physical computer parts, palpable and visible

2. Software – set of commands that are "understandable" to the computer; instructions to its palpable parts, giving orders what to do

Basic principle of computers: Data enters the computer through one or more input devices. The computer then processes the data and transmits the resulting data to output devices. Output devices can be human interfaces such as a screen or another electronic device such as a storage device or computer network.

ICTs is more than computers and telephony. It is embedded in virtually all industrial, commercial and services systems. Information and communications technology is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term is somewhat more common outside of the United States (Margret, 2016).

McGary (2013) asserted that advances in information and communication technology have been very rapid in the last two decades. Its influence has been very pervasive to the extent that there is hardly any field of human endeavor that has not been touched. Since the mid-70s, mankind has witnessed a phenomenal growth in the number and variety of information products, services, systems and sources. The catalyst for the growth has been rapid innovations in information and communication technology for creating processing, communicating and using information (Tiamiyu, 2012).

This technology rests on scanner machine, computer, computer components and telecommunications. Computer can be used for a number of different tasks. Use of the computer allows for a near perfect database management. It should be noted that data base management encompass information management. Extensive and comprehensive set of records collected can be organized electronically in a meaningful way for purposeful usage. There are software packages that can provide good records management services; they facilitate the creation and maintenance of records in a database. Gookin (2014) observed that database management through the use of computer has helped immensely in maintaining order file.

Destination Inspection:

In replacement of pre-shipment inspection, the Federal Government granted approval for Destination Inspection of Goods in 2006 by appointing Service Providers to achieve speedy clearance and just in time delivery of goods, and also liberalization of trade. Trade Liberalization does not mean that the Customs role is diminishing even if multilateral and regional Trade agreements result in revenue reductions, Value Added Tax [VAT], and other taxes still have to be assessed and imposed on imported goods as a means of both raising taxes and also leveling the playing field in trade competitiveness. Some measures for trade facilitation were put in place. They include:

Adoption of e-payment:-E-remittance, E-manifest , Direct Trade Input ,Risk Management; including Risk profiling, Border Security - Inter connectivity with other stakeholders Adoption of Ten Building Blocks for 21st Century Customs Simplified Customs procedures through this process:-Self-assessment, Payment of duty at Bank, Request of release.

Destination Inspection (DI)

For effective implementation of DI, NCS developed a scanner usage policy to provide a framework for scanning operations in customs. Highlights include:

- Creation of Scanner Centre of excellence at Apapa Port for benchmarking.
- Establishment of adequate Scanner Usage Capacity for Trade Facilitation and Security.
- Framework for appropriate funding of Scanner acquisition, operation and maintenance.
- Development of capacity for radiation protection certification.
- Establishment of centralized image inspection center.

National Single Window (NSW)

As each country presents its own unique trade environment, it was important to understand Nigeria's trade supply chain strengths, weaknesses and priorities, to ensure an effective organic development approach of Nigeria Single Window environment as opposed to a "copy and paste" IT driven approach. The success of this approach is well demonstrated by case studies from Senegal, Singapore and Thailand.

The aim of the programme therefore, was to establish the current baseline benchmarked to international standards, identify the areas requiring strengthening; build capacity and awareness in Customs and among key stakeholders in order to formulate a Master Plan and Road Map for the implementation of a National Single Window.

One major objective of the program me was institutional development, combined with empowerment of the workforce. Therefore to ensure effective knowledge transfer and the capacity development of NCS and other stakeholder workforce, experts in the

specialist areas of Single Window worked very closely with Work Group members in all aspects and phases of the study, to build a solid foundation for the future.**(**NCS annual report, 2014).

Customs Control

Customs Controls is based on risk management selectivity engine; **Green Lane:** Consignment is cleared and released. **Blue Lane:** Consignment is cleared and released but may need Post audit clearance later. **Yellow Lane**: Consignment undergoes a document check at Customs Processing Centre [CPC] and depending on findings routed to the Green Lane or one of the Red Lanes. **Light Red:** Consignment needs x-ray examination at scanning site and may be rerouted to Green Lane or Deep Red Lane.

Deep Red Lane: Consignment needs physical examination at terminal. Others will report findings and reroute to Green Lane indicating release from Customs control. **(**Mikuriya, k. 2012)

Furthermore, to facilitate trade and ensure compliance there is access to information on tariff and relevant organizations. Realizing that trade supply chains are vulnerable to illegal activities such as evasion and avoidance of duties from across borders, fiscal fraud, privacy and counterfeit of goods, NCS has taken some initiatives that have resulted to modest achievements.

2.8 Challenges of using Non-Intrusive Inspection Technology

Cargo/Container Scanning Faced with the challenge of intensifying inspection rates of containers and trucks (Salihu 2015), while ensuring minimum disruption and expense to

legitimate trade, Customs and other enforcement agencies have increasingly turned to X-ray and gamma scanners to screen import and export consignments.

Exposure to Radiation: The high detection sensitivity of radiation portal monitor allows 100% scanning of cargo with minimal impact on throughput. However, false positive alarms resulting from cargo that is naturally radioactive (e.g., certain ceramic materials, kitty litter) can slow-down the flow of commerce unless efficient means are provided for resolving these false positives. This also may affect user's health.

Maintenance: Each one of the Technologies used in our days bring us a manner to restrict the access to a system, allowing the entrance only to those persons who know a specific code, own a card or have determined physic marks. The more complex is the system, the most difficult is to be attacked, although it will be more expensive and will require more software and hardware resources. When a new authentication system is implanted, it is essential a judgment between simplicity, price and efficiency, as well as social acceptability. (CDL media document 2016).

Fixed radiation detection equipment such as first generation Radiation Portal Monitors pose challenges for Customs officers and port operations by generating high nuisance alarm rates "Nuisance" alarm rates and transshipments reduce the efficacy of current radiation detection technologies. A nuisance alarm occurs when the system correctly detects radiation in cargo but that radiation is due to a low level of naturally occurring radioactive material. Imported ceramic tiles, bananas and other legitimate cargo can emit low levels of radiation that first generation detectors cannot distinguish from a potentially hazardous radioactive threat. This limits the effectiveness of this programme

and reduces efficiency; as officers must take time to investigate these nuisance alarms. Advances irradiation detection technology are taking place, and Advanced Spectroscopic Portals (ASPs) are being developed and tested in efforts to provide isotope identification capabilities to fixed radiation detection processes.

The Advanced Spectroscopic Portals (ASPs) can identify the types of radiation rather than simply detecting radiation and could help to streamline gate operations by reducing the need for secondary radiation screening caused by nuisance alarms. A significant challenge for radiation detection deployed at entrance/exit gates lies with transshipped containers, which typically do not pass through checkpoint locations such as gates or weigh stations where most fixed scanning equipment is deployed. Different approaches including crane-mounted radiation detection equipment or mobile in-terminal equipment can help reduce any related security gaps.

Container intrusion detection is being slowed by lack of mandates, incentives and standard. The lack of mandates or incentives for shippers and other supply chain participants to use container Security devices or advanced electronic seals continue to limit the level of adoption of RFID-based Container Intrusion detection technology. Competing radio frequencies and protocols have caused some ports to postpone implementation of RFID infrastructure. Ports and terminals that have chosen to deploy RFID-based container intrusion detection infrastructure have done so primarily due to demand from shippers who want to offer supply chain benefits to their customers, or because of investment decisions and business relationships between terminal operators and technology solution providers.

Terminals also continue to watch for potential requirements from government entities of trading partner nations regarding the capability. (CDL Media document 2016).

Resistance to change by Stakeholders and Officers: Staff and officers of Nigeria Customs service are partially resisting the technology due to suspected corruption of diverting public fund to personal use as a result of using manpower in examining large consignments. Maintenance, Cost, Spare part, Near Computer illiteracy of both the Officers and Stakeholders Other Governmental Agencies attitude to automation and their reluctance to interface with NICIS/ASYCUDA, Lack of integrity of Importers/Agents through false declaration, Wrong addresses etc. (Salihu, 2014).

2.9 Theoretical Framework

There are many theories that discussed technology adoption such as: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB), but this research work will look at Technology Acceptance Model.

Technology Acceptance Model (TAM)

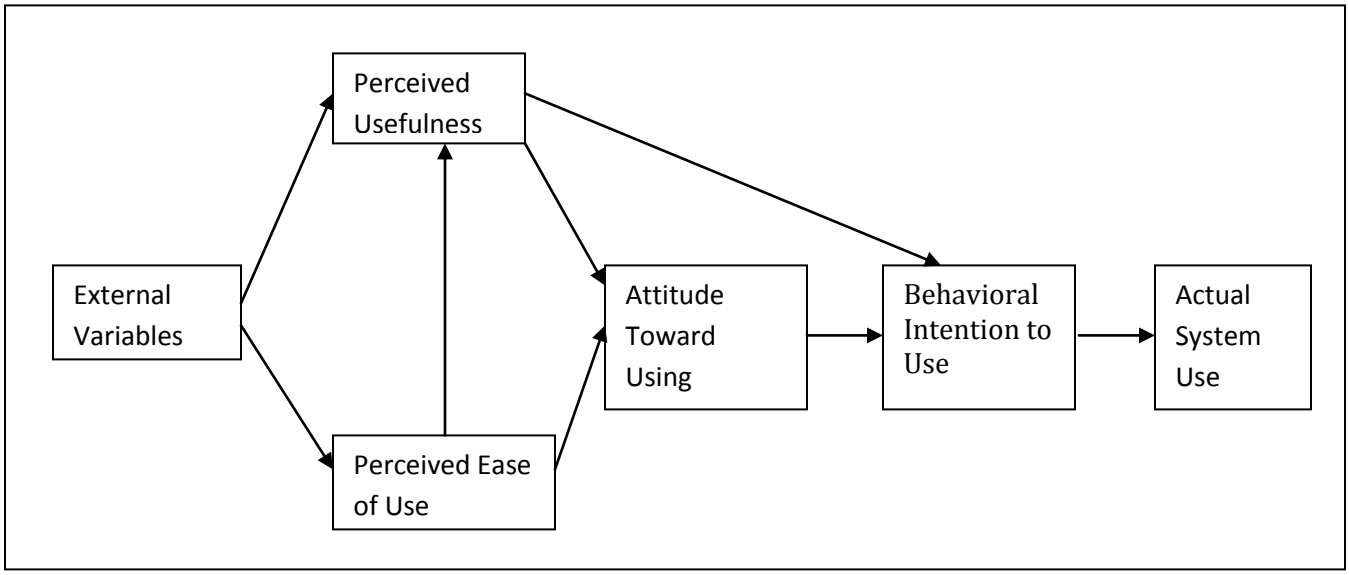
The Technology Acceptance Model (**TAM)** explains how a new technology and the various aspects of it are received and used by the user. Though many models have been proposed previously in the field of Information Systems to describe the relationship, it is this model, which has been widely acclaimed and used.

One of the most utilized models in studying information technology adoption and diffusion is the Technology Acceptance Model (TAM) (Davis, Brown, Jeffery, Grek, Rachet, and Gregore; 1989). Developed by Davis in 1989, its goal is to provide a basis for tracing the impact of external factors on user's attitudes and intention to accept new

technologies. The TAM is based on the Theory of Reasoned Action (TRA) (Fishbein, 1980), which is concerned with the behavior of technology users towards a new technology.

The TAM suggests that when users are presented with a new technology, there are two main factors that influence their attitude to use it, namely: Perceived Usefulness (**PU)** and Perceived Ease of Use (**PEOU)** of the technology. See the illustration in figure 2.7 on page 68.

Figure 2.7: Structure of Technology Acceptance Model



From figure 2.7, **Perceived usefulness (PU)** was defined by Davis et al (1989) as "the degree to which individuals believe that using a particular system would enhance their job performance." This implies that Nigerian customs service should realize the value involved in using technology such as non-intrusive inspection technology in order to reduce excessive utilization of man power while examining imported consignments.

Perceived Ease of Use (PEOU) refers to "the degree to which individuals believe that using a particular system would require no effort". According to Davis et al (1989),

PEOU and PU have the capability to determine the actual use (usage behavior) of the new technology. The technology mentioned above if adopted by customs service will ease the process of scanning/Inspecting goods; it will be faster, effective and will increase revenue generation.

Attitude to Use an Innovation Adoption and Usage of Innovation

The TAM has been used widely in many studies (e.g., Davis, 1989; Venkatesh, 1996; Adams, 1992; Segars and Grover, 1993; Succi and Walter, 1999; Matheson, 1991; Lu , 2003; King and He, 2006) with different domains and in different situations to predict the behavior intentions to use a technology as well as actual use of technology (Al-Gahtani, 2001). It has been found that the TAM's ability to explain attitudes towards using particular information system is better than other models (such as the TRA and TPB) (Mathieson, 1991). The most likely reason is that the two components of the TAM have received more empirical support than the TRA and TPB, and in addition, the model has the ability to consistently explain a significant amount of the variance in usage intention and behavior. For instance, the TAM was used in predicting the application of several information technologies such as microcomputer word processing software (Anandarajan, Mikharet, 2000), general information systems (Jackson, 1997), and computer spreadsheets (Mathieson, 1991). Although the TAM has been tested in many studies, and has proved to be a valid and reliable framework explaining acceptance and adoption of different technologies, there has been some disagreement over the exact variables affecting the acceptance of new technologies (Jackson, 1997).

Critics of the TAM argue that it ignores the importance of social and organizational factors such as the mandatory use of technology, and subjective norms and job

requirements, which have been found to have significant influence on IT usage behavior (Taylor and Todd, 1995).

Lucas and Spitler (1999) tested the TAM to predict and explain the use of a workstation that had three main applications: market data, office software, and mainframe access. Very little support was found for the TAM variables such as perceived usefulness (PU) and perceived ease of use (PEOU). Authors argued that neither PU nor PEOU of the TAM predicted the usage of the technologies. Thus, they added other variables such as subjected norms and job requirements, which were found to have provided a better explanation than PU and PEOU.

Moreover, in a study in which aspects of technology adoption were considered to be mandatory, Brown (2002) tested the TAM and TPB variables in a bank that had recently standardized its computer hardware and software across multiple sites and made the use of IT mandatory. The results showed that contrary to the majority of the TAM findings based in a voluntary usage context, the mandatory aspects of IT use plays a significant role in increasing the adoption rate of technology. For example, perceived ease of use was a stronger predictor of technology adoption than perceived usefulness when IT adoption was mandatory.

This pattern is unusual when adoption is voluntary. One of the conclusions reached in this study was that organizations that mandate the use of IT should have a greater adoption rate of IT. However, users must be motivated to adopt the purposed technology (Brown et al, 2002). The authors suggest that there are a number of techniques such as training and managerial support, good communication from management, and IT testimonials that support positive attitudes toward the IT adoption.

2.10 Summary of the Review

Background to Non-Intrusive Inspection Technology (NIIT) History, functions and department under Nigerian Customs Service was discussed. Furthermore, Procedure for Scanning Inland Containers, Procedure for Scanning at the Airports, Conceptual Framework where different concepts considered as a key variables to this research work, some of the concepts reviewed are; concept of adoption, concept of utilization, concept of non-intrusive inspection, concept of management, concept of information management and so on. The conceptual framework which is the schematic diagram that shows the variables included in the study. In addition, the researcher reviewed other relevant concepts such as, information technology, information retrieval, Types of Non-Intrusive Inspection Technology, concealment techniques, User's Attitude towards Technology Adoption, Benefits of Non-intrusive Inspection Technology, Challenges of using Non-Intrusive Inspection Technology and Technology Acceptance Model as theoretical framework.

The researcher however noted discrepancies in the literature reviewed especially in the areas of utilisation and management of information generated through the use of Non-Intrusive Inspection Technology. Similarly, studies on NIIT are scare especially as it relates to developing countries.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the method and procedures to be used in collection and analysis of data. It is organized under the following sub-headings:

3.2 Research Methodology adopted for the Study

3.3 Population of the Study

3.4 Sample size and Sampling Technique

3.5 Instrument for Data Collection

3.6 .1 Validity of Instrument

3.6.2 Pilot Study

3.6.3 Reliability of the Instrument

3.7 Procedure for Data Collection

3.8 Procedure for Data Analysis

3.2 Research Methodology adopted for the Study

Quantitative research method is a research method that deals with numbers and anything that is measurable in a systematic way of investigation of phenomena and their relationships It is used to answer questions on relationships within measurable variables with an intention to explain, predict and control a phenomena (Leedy; 1993).

A Descriptive Cross-sectional Survey design was adopted to study the Non-Intrusive Inspection Technology Utilization for Information management on Imported Consignments by Customs Service in Zone 'A' Lagos. According to Sulaiman (2007), a

survey design is descriptive in nature. It is used to obtain information concerning the current position of phenomena.

A descriptive cross-sectional survey design was adopted for this study. Because it allowed the researcher to have an insight into the thinking, thoughts and opinions of the respondents under study. Cherry (2015) asserted that survey research method could be used to collect information on a wide range of things including facts, personal attitude, past experience, etc. from the respondents. Survey method gives the researcher the opportunity to gain insight into the members of the population (Brewer,2015).

3.3 Population of the Study

The population of the study comprised of all the customs officers across the Zone 'A' Lagos, includes; Apapa Customs Command, Seme Border Customs Command, Murtala Muhammad International Air Port Command, Idi-Iroko Border Customs Command, Tincan Island Port Customs Command and PTML Customs Command. In all there are a total of 207 officers working in these commands. See table 3.1 below:

Table 3.1 Population of the Study

S/N	Name of Commands	No. of Officers
1	Apapa	53
2	Tincan Island	44
3	Murtala Mohammed International Airport	30
4	Idi-Iroko	35
5	Seme Border	25
6	PTML Command	20
Total		**207**

Source: Department of Human Resources and Development, Nigerian Customs Service, Abuja, Nigeria2015.

Although, each command has the following designated officers: Scanner Managers, Deputy Scanner Manager, Image Analyst, Recheck Operator, Traffic Marshal, Check-in Operator and System Operator. All these officers are involved in managing the information in the commands.

3.4 Sample Size and Sampling Technique

In view of the fact that the population of the study is fairly small (207), the researcher decided to make it the sample size for the study. Thus, the population is the sample size. This is based on the recommendation of Ubah and Shu'aibu (2014) who recommended the use of total population as the sample size when the population figure is fairly small.

3.5 Instrument for Data Collection

The research instrument used for this study was questionnaire. The questionnaire contains close-ended questions, designed by the researcher with the support of his supervisors and experts. The corrections made were incorporated into the instrument to strengthen its capacity. The questionnaire contains 45 items. Sambo (2005) and Osuala (2005) maintained that questionnaire is more economical for the reasons of time and funds and are directly associated with survey research method. The questionnaire was designed essentially for data collection on Non-Intrusive Inspection Technology Utilisation on Imported Consignments for Information Management by Customs Service in Zone 'A' Lagos. Yes or No responses, five (5) points scale of Very Useful (VU), Useful (UF),

Really Useful (RU), Not Useful (NU) and Undecided (UD) was used. Another five points scale of Not at all Influential (NI), Slightly Influential (SI), Some How Influential (SHI), Moderately Influential (MI), Extremely Influential (EI) was also used. The questionnaire responded to has four different parts upon which were designed using the variables of the study as a guide. The questionnaire is comprised of two sections A which solicited information on respondents' bio data and B asked questions on research questions raised in the research.

3.5.1 Validity of the Instrument

The supervisors, colleagues and senior lecturers in the Department of Library and Information Science, Ahmadu Bello University, Zaria validated the instrument developed for this study. This was done to scrutinize the face and content validity of the instrument of the study. According to Ibrahim (2013), validation of research instrument by experts in a particular field where the research is being carried out is an effective way of validating such instrument. The corrections made were incorporated in the instrument to strengthen its usefulness.

3.5.2 Pilot Study

A pilot study was carried out using 10 Customs officers outside the Lagos Zone. The exercise was conducted in Onne Port-Her Court Customs Command, Nigeria. Pilot testing is usually done on a much smaller scale than the main study but under the same or similar conditions to determine the construct and content validity of the instrument. Mbachu(2010) and Adigun (2011) opined that, it helped the researcher to find out how the respondents react to the instrument and specifically, determined the clarity of the instrument and finally establishes the appropriateness of the instrument.

3.5.3 Reliability of the Instrument

After conducting the pilot study, the data collected was analysed to see whether the instrument prepared for the study was reliable or not. This is to test the internal consistency of the instrument using Split-half method where Spearman Brown Formula was used. The statistical package for social sciences (SPSS) was used in analysing the data. The pilot study result was found to be 0.76, which shows that, the instrument designed is highly reliable. This was confirmed considering Spiegel (1992)*;* who said an instrument is considered reliable if it's reliability coefficient lies between 0 and 1, and that the closer the calculated reliability coefficient to zero, the less reliable is the instrument, and the closer the calculated reliability co-efficient to 1, the more reliable is the instrument. This therefore confirmed that the instruments designed for this study were highly reliable.

3.6 Method of Data Collection

The researcher used three research assistants. The research assistants were trained on how to administer the instrument so as to explain the content of the questionnaire in detail to the respondents. Thus, the researcher in collaboration with research assistant administered the instrument in the study area within the period of three weeks.

3.7 Method of Data Analysis

The data collected from the research questions were analysed using descriptive statistics (frequency tables and percentages) in order to obtain the answers. An inferential statistical tool of ANOVA and Chi-square were used for confirming the ordinal data collected from the hypotheses formulated. The choice of ANOVA and chi-squire was due to the fact that the researcher tried to test significant difference, influence, usefulness and

the types of non-intrusive inspection technology used by customs service using the data generated since the data was categorical and ordinal in nature and as well the researcher has one group of respondents referred to customs officers.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presented the data collected, analysed and discussed under the following sub-headings:

4.2 Response Rate

4.3 Data presentation, Analysis and Discussion

4.2 Response Rate

The researcher distributed two hundred and seven (207) copies of the questionnaire to respondents and recovered two hundred and three 203(98.1%) duly completed and valid for further analysis and computation.

4.2.1 Distribution of Respondents by Command

The researcher is interested to know the distribution of respondents according to their commands; this is with the view to discover the actual customs officers in the commands under study.

Table 4.1: Distribution of Respondents by Commands in Zone 'A' Lagos

S/N	Name of Command	Number of Customs Officers	Frequency	Percentage
1.	Apapa	52	52	25.6%
2.	Tincan Island	43	43	21.1%
3.	Murtala Muhammed International Airport	30	30	14.7%
4.	Idi-Iroko	34	34	16.7%
5.	Seme Border	24	24	11.8%
6.	PTML Command	20	20	9.8%
Total		**203**	**203**	**100%**

Table 4.1 revealed that Apapa command was the command with the highest staff thereby having the highest number of respondents. The command has 52 respondents (25.6%) of the total respondents. Followed by Tincan Island with 43 respondents (21.1%), followed by Idi-Iroko with 34 respondents 16.7%, Murtala Muhammed International Airport Command with 30 respondents (14.7%), Seme Border with 24 respondents (11.8%) and the last in the hierarchy is PTML Command has 20 respondents (9.8%). Despite all the challenges of inadequate customs officers in the Zone A commands, Apapa

command was found to be a command with up to 52 respondents in charge of non-intrusive machines. This is so because, the distribution was based on the responsibilities and services attached to the commands, this means the bigger the command the higher number of respondents it has and smaller the command is the less number of respondents it has.

4.3 Descriptive Statistical Analysis

This section discussed the descriptive statistical data collected using the research questions. The discussion was done as follows:

4.3.1: Types of Non-Intrusive Inspection Technologies utilised for Information Management on Imported Consignments

Basically, it is expected that all commands should have the appropriate and relevant Non-Intrusive Inspection Technologies as contained in the instrument used to collect data depending on the responsibility assigned to the commands. However, from analysis of the data collected it has been discovered that all commands studied, do not have almost all the listed items. The result of the analysis by command is contained in table 4.2

Table 4.2 Types of Non-Intrusive Inspection Technologies available and being Utilised by the commands of Customs Service in Zone 'A' Lagos.

NIIT Available	**Customs Commands**					
	Apapa	Tincan Island	Murtala Muhammed International Airport	Idi-Iroko	Seme Border	PTML Command
Automated Empty Container Verification System (ACEVS)	x	x	x	x	x	x
Automated Vehicle and Container Identification	x	x	x	x	x	x
Cargo Container X-Ray Inspector	x	x	x	x	x	x
Fixed Scanner	√	√	√	√	x	x
Gantry Scanner	x	x	x	x	x	x
Hi-Scan Scanner	x	√	√	√	√	√
Integrated Display (ICIS VIEWER)	x	x	x	x	x	x
Mobile Scanner	√	√	√	√	√	x
Mobile VACIS	x	x	x	x	x	x
Portal VACIS	x	x	x	x	x	x
Radiation Scanner	x	x	x	x	x	x

Key:

√ **= Yes**

X**= No**

Table 4.2 showed that, Fixed Scanner is being utilized byApapa, Tincan Island, Murtala Muhammed International Airport and Idi-Iroko Commands, Hi-Scan Scanner is being utilised by Tincan Island, Murtala Muhammed International Airport and Idi-Iroko, Seme and PTML Commands, while Mobile Scanner is being utilized byApapa, Tincan Island, Murtala Muhammed International Airport, Idi-Iroko and Seme Border Commands. It was however revealed that, Non-Intrusive Inspection Technologies such as; Automated Empty Container Verification System (ACEVS), Automated Vehicle and Container Identification, Cargo Container X-Ray Inspector, Gantry Scanner, Integrated Display (ICIS VIEWER), Mobile VACIS, Portal VACIS and Radiation Scanner are not available for utilisation by all the commands under study. The absence of these technologies have great consequences on the ability of the command to effectively maintain the consignment imported into the country as well as their ability to generate revenue for this country. Therefore, there is need to increase its visibility and use across the stations

4.3.2: Usefulness of Non-Intrusive Inspection Technologies in Information Management

For the researcher to determine how useful the Non-Intrusive Inspection Technologies in Information Management are by customs services in Lagos Zone 'A' the data collected was presented in table 3.1 using frequency and percentages.

S/N	Usefulness	Responses and Percentages									
		VU		UF		RU		NU		UD	
		F	%	F	%	F	%	F	%	F	%
1.	For scanning goods	163	80%	20	10%	14	7%	4	2%	2	1%
2.	For detecting concealment	141	69%	47	23%	8	4%	7	4%	0	0%
3.	For information Transfer/Dissemination	108	53%	80	40%	10	5%	2	1%	3	1%
4.	For revenue generation monitoring	41	20%	140	69%	10	5%	8	4%	4	2%
5	For security	74	36%	47	23%	80	40%	0	0%	2	1%
6	For information generation	87	43%	88	43%	24	12%	4	2%	0	0%
7	For information Organization	58	29%	93	46%	45	22%	3	1%	4	2%
8	For information retrieval	112	55%	48	24%	32	16%	8	4%	3	1%
9	For information preservation	59	29%	91	45%	47	24%	3	1%	3	1%
10	For information storage	91	45%	74	36%	32	16%	4	2%	2	19%
11	For information access	87	43%	94	46%	22	11%	0	0%	0	0%
12	For information processing	83	41%	102	50%	10	5%	4	2%	4	2%

Table 4.3:Usefulness of non-intrusive technologies in information management

Key: VU= Very Useful, UF= Useful, RU= Relatively Useful, NU= Not Useful, UD=Undecided

Table 4.3 showed that, based on the respondents views, the gadgets were found to be very relevant in the Information Management by customs services in Lagos Zone 'A', this was due to the fact that the responses revealed that the Non-Intrusive Inspection Technologies in Information Management is very useful for scanning goods with 80% responses, for detecting concealment with 69% responses, for information transfer/dissemination among other responses. However, effort should made to ensure effective use of Non-Intrusive Inspection Technologies in customs services in Lagos Zone 'A', and by extension in other Customs service Zones.

4.3.3: Extent of Utilization of Non-Intrusive Inspection Technologies influenced the Information system management on Imported Consignments

In order to ascertain the Influence of Non-Intrusive Inspection Technologies in Information Management by customs services in Lagos Zone 'A', the responses of the subjects were presented in frequency and percentages in table 4.4

Table 4.4: extent of utilisation of non-intrusive inspection technologies influence on information system management of imported consignment

S/N	Influence	Responses and Percentages									
		NI		SI		SHI		MI		EI	
		F	%	F	%	F	%	F	%	F	%
1.	Eases scanning of concealment	2	1%	4	2%	14	7%	20	10%	163	80%
2.	Detects concealment	0	0%	7	4%	8	4%	47	23%	141	69%
3.	Facilitates information Transfer	3	1%	2	1%	10	5%	80	40%	108	53%
4.	Eases revenue generation monitoring	4	2%	8	4%	10	5%	140	69%	41	20%
5	Ensure absolute security	2	1%	0	0%	80	40%	47	23%	74	36%
6	Facilitates information generation	0	0%	4	2%	24	12%	88	43%	87	43%
7	Facilitates information Organization	4	2%	3	1%	45	22%	93	46%	58	29%
8	Facilitates information retrieval	3	1%	8	4%	32	16%	48	24%	112	55%
9	Ensures to information preservation	3	1%	3	1%	47	24%	91	45%	59	29%
10	Facilitates information storage	2	19%	4	2%	32	16%	74	36%	91	45%
11	Facilitates information access	0	0%	0	0%	22	11%	94	46%	87	43%
12	Facilitates information processing	4	2%	4	2%	10	5%	102	50%	83	41%

Key: Not at all Influential (NI), Slightly Influential (SI), Some How Influential (SHI), Moderately Influential (MI), Extremely Influential (EI).

Table 4.4 showed that, Non-Intrusive Inspection Technologies is extremely influential in Information Management by customs services in Lagos Zone 'A' by easing a scanning with response rate of 80%,detecting concealment scanning with response rate of 69%, it simplify an information processing with response rate of 50% among other responses. Hence, the Non-Intrusive Inspection Technologies was found to be extremely influential in Information Management by customs services in Lagos Zone 'A'. Thus, the availability and the appropriate utilization of Non-Intrusive Inspection Technologies will greatly contribute in successful service delivery by customs services in Lagos Zone 'A'. In addition, non-availability and inappropriate utilization of the gadgets will affect the customs service negatively. There is need for creation of awareness, training and retraining of the officers.

4.3.4: Challenges associated with the utilization of Non-Intrusive Inspection Technologies for Information system management on Imported Consignments

In order to determine the Challenges of Non-Intrusive Inspection Technologies Utilization for Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos, the respondent's views were presented according to the commands. Hence, the result is presented in table 4.5

Table 4.5: challenges associated with the utilisation of NIIT for information system management on imported consignment

Challenges	**Customs Commands**					
	Apapa	Tincan Island	Murtala Muhammed International Airport	Idi-Iroko	Seme Border	PTML Command
Stakeholders' negative attitudes to automation and reluctance to interface with NICIS/ASYCUDA	√	√	√	√	√	√
Inadequate provision of Non-Intrusive Inspection Technologies by government	√	√	√	√	√	√
Appropriate penalty is not given to defaulter imported a consignment with an unlawful goods or commodity.	√	√	√	√	√	√
Non-Intrusive Inspection Technologies are Costly	√	√	√	√	x	√
Non Resistance to change by Stakeholders and Officers	√	√	√	√	√	√
Poor Maintenance culture	√	√	√	√	√	√
Scarcity of genuine Spare parts	x	√	√	√	√	x
Poor Computer literacy of both the Officers and Stakeholders	*	x	x	x	√	x
Lack of integrity of Importers/Agents through false declaration, Wrong addresses etc	√	√	√	x	√	√
There is Inefficient/Insufficient technologies in Terminals	√	x	√	√	√	√

Key:

√ = **Yes**

X= **No**

Table 4.5 showed that, the challenges exist in the utilization of Non-Intrusive Inspection Technologies for Information Management on Imported Consignments by

Customs Service in Zone 'A' Lagos. The challenges include; Stakeholders' negative attitudes to automation and reluctance to interface with NICIS/ASYCUDA, Inadequate provision of Non-Intrusive Inspection Technologies by government, Non resistance to change by stakeholders and officers among other challenges. Even though, the problem of Poor Computer literacy of both the Officers and Stakeholders is not rampant in the Zone as it is shown by the respondent's views that only Seme Border is bedeviled with this problem. This implies that if the challenges continue to exist, the information management in the customs commands will be affected negatively.

4.3.5: Mean and Standard deviation on the Type of Non-Intrusive Inspection Technologies Adopted and Utilized by Nigeria Customs Service in Zone 'A' Lagos

In order to further describe the result concerning the respondents views on the Type of Non-Intrusive Inspection Technologies Adopted and Utilized by Nigeria Customs Service in Zone 'A' Lagos, mean and standard deviation were presented in table 4.6

Table 4.6: Standard deviation of type of NIIT adopted and utilised by customs

N	Mean	Std. Deviation	Minimum	Maximum
203	1.2208	0.41486	1.00	2.00

Table 4.6 showed that the mean score of 1.2208 is compared with the minimum of 1.00 and maximum of 2.00, and the mean score was found to be more than half of maximum value of 2.00. Hence, the result revealed the existence of significance difference in the type of Non-Intrusive Inspection Technologies utilised by Nigeria Customs Service in the various commands in Zone 'A' Lagos.

Table 4.7: Mean and Standard deviation on the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos.

In order to further describe the result concerning the respondents views on the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos, mean and standard deviation were presented in table 4.7

Table 4.7: Standard deviation on usefulness of NIIT to information management on Imported consignment

N	Mean	Std. Deviation	Minimum	Maximum
203	4.2403	0.85968	1.00	5.00

Table 4.7 showed that the mean score of 4.2403 is compared with the minimum of 1.00 and maximum of 5.00, and the mean score was found to be more than half of maximum value of 5.00. Therefore, the result revealed the existence of significant difference in the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos.

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Table 4.8: Mean and Standard deviation on the influence of Non-Intrusive Inspection Technologies utilization on Information Management by Customs Service in Zone 'A' Lagos.

In order to further describe the result concerning the respondents views on the influence of Non-Intrusive Inspection Technologies utilization on Information Management by Customs Service in Zone 'A' Lagos, mean and standard deviation were presented in table 4.8

Table 4.8: influence of NIIT utilisation on information Management

N	Mean	Std. Deviation	Minimum	Maximum
203	4.2403	0.85968	1.00	5.00

Table 4.8 showed that the mean score of 4.2403 is compared with the minimum of 1.00 and maximum of 5.00, and the mean score was found to be more than half of maximum value of 5.00. However, the result revealed the existence of significant difference in the influence of Non-Intrusive Inspection Technologies utilization on Information Management by Customs Service in Zone 'A' Lagos.

4.4 Inferential Statistical Analysis

This section presented the analysis on the hypotheses formulated. The researcher analysed the data collected from the respondents using analysis of variance and chi-square statistical tool through the use of Statistical Package for Social Sciences (SPSS). The results of the analyses and their interpretations were presented as follows:

Hypothesis One: There is no significant difference in the type of Non-Intrusive Inspection Technologies utilised among Nigeria Customs Service in their commands in Zone 'A' Lagos.

This section presented the descriptive statistics of the hypothesis one computed. Table 4.9 contained the breakdown of the statistics.

Table 4.9: Descriptive Statistics of Analysis of Variance on the Types of Non-Intrusive Inspection Technologies Adopted and Utilized by Nigeria Customs Service in Zone 'A' Lagos

	N	Mean	Std. Deviation	Minimum	Maximum
ACEVS	203	1.0000	.00000	1.00	1.00
AVCI	203	1.0000	.00000	1.00	1.00
CCXI	203	1.0000	.00000	1.00	1.00
Fixed scanner	203	1.7833	.41305	1.00	2.00
Ganty_Scanner	203	1.0000	.00000	1.00	1.00
Hi_scanner	203	1.7438	.43759	1.00	2.00
ICIS_VIEWER	203	1.0000	.00000	1.00	1.00
Mobile_scanner	203	1.9015	.29876	1.00	2.00
Mobile_VACIS	203	1.0000	.00000	1.00	1.00
Portal_VACIS	203	1.0000	.00000	1.00	1.00
Radiation_scanner	203	1.0000	.00000	1.00	1.00
Commands	203	2.9754	1.66632	1.00	6.00

Table 4.9 presented the descriptive statistics of the hypothesis one computed. The total number of respondents used represented by N was 203. The types of non-intrusive inspection technologies utilised by Nigeria Customs Service were presented in the first column. While the various means and standard deviations of the technologies were presented in the table 4.9. Table 4.9a presented the summary of the hypothesis one computed.

Table 4.9a: Analysis of Variance on the Types of Non-Intrusive Inspection Technologies Adopted and Utilized by Nigeria Customs Service in Zone 'A' Lagos

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
A	Between Groups	20.454	5	4.091	1.887	.098
	Within Groups	427.182	197	2.168		
	Total	447.635	202			
B	Between Groups	56.722	5	11.344	7.934	.000
	Within Groups	281.682	197	1.430		
	Total	338.404	202			
C	Between Groups	15.993	5	3.199	1.293	.268
	Within Groups	487.435	197	2.474		
	Total	503.429	202			
D	Between Groups	24.914	5	4.983	2.719	.021
	Within Groups	361.008	197	1.833		
	Total	385.921	202			
E	Between Groups	37.020	5	7.404	5.763	.000
	Within Groups	253.099	197	1.285		
	Total	290.118	202			
F	Between Groups	19.929	5	3.986	1.959	.086
	Within Groups	400.741	197	2.034		
	Total	420.670	202			
G	Between Groups	27.019	5	5.404	3.358	.006
	Within Groups	316.981	197	1.609		
	Total	344.000	202			
H	Between Groups	56.406	5	11.281	6.706	.000
	Within Groups	331.416	197	1.682		
	Total	387.823	202			
I	Between Groups	5.891	5	1.178	.661	.654
	Within Groups	351.272	197	1.783		
	Total	357.163	202			
J	Between Groups	7.406	5	1.481	.791	.557
	Within Groups	368.860	197	1.872		
	Total	376.266	202			
K	Between Groups	18.371	5	3.674	1.836	.107
	Within Groups	394.171	197	2.001		
	Total	412.542	202			

The table 4.9a showed that, the ANOVA calculated variables between and within groups indicated simple disparity with the same degree of freedom of 5 and 197as wells significant differences of 0.098 and 0.557 tested at 0.05 alpha significant levels. The result reveals that, there is significance difference in the type of Non-Intrusive Inspection Technologies utilised by Nigeria Customs Service in the various commands in Zone 'A' Lagos. This means that the hypothesis, which stated that, there is no significance difference in the type of Non-Intrusive Inspection Technologies utilised by Nigeria Customs Service in Zone 'A' Lagos is rejected. The implication of this finding is that all the custom officers in various commands have different utilisation of Non-Intrusive Inspection Technologies in the management of their information. In order to find out where the difference is a post hoc scheffe test was carried out (See Appendix).

Hypothesis Two: There is no significant difference in the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments among Customs Service in Zone 'A' Lagos.

This section presented the descriptive statistics of the hypothesis two computed. Table 4.10 contained the breakdown of the statistics.

Table 4.10: Descriptive Statistics of Analysis of Variance on the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos.

	N	Mean	Std. Deviation	Minimum	Maximum
Scanning goods	203	4.6700	.77359	1.00	5.00
Detecting concealment	203	4.6010	.70599	2.00	5.00
Information_transfer_dessemination	203	4.4286	.75686	1.00	5.00
Revenue_generation_monitoring	203	4.0148	.76739	1.00	5.00
Security	203	3.9409	.92085	1.00	5.00
Information_generation	203	4.2709	.74495	2.00	5.00
Information_organisation	203	3.9803	.86150	1.00	5.00
Information_retrieval	203	4.2709	.96498	1.00	5.00
Information_preservation	203	3.9852	.84711	1.00	5.00

Table 4.10 presented the descriptive statistics of the hypothesis two computed. The total number of respondents used represented by N was 203. The differences in the usefulness of non-intrusive inspection technologies to information management on imported consignments by customs service in Zone 'A' Lagos was presented in the first column. While the various means and standard deviations of the technologies were presented in the table 4.10a. Table 4.10a presented the summary of the hypothesis two computed.

Table 4.10a: Analysis of Variance on the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
	Between Groups	20.478	5	4.096	2.606	.026
A	Within Groups	309.552	197	1.571		
	Total	330.030	202			
	Between Groups	80.180	5	16.036	154.102	.000
B	Within Groups	20.500	197	.104		
	Total	100.680	202			
	Between Groups	88.448	5	17.690	127.806	.000
C	Within Groups	27.267	197	.138		
	Total	115.714	202			
	Between Groups	97.249	5	19.450	176.520	.000
D	Within Groups	21.706	197	.110		
	Total	118.956	202			
	Between Groups	149.880	5	29.976	275.807	.000
E	Within Groups	21.411	197	.109		
	Total	171.291	202			
	Between Groups	97.054	5	19.411	254.166	.000
F	Within Groups	15.045	197	.076		
	Total	112.099	202			
	Between Groups	126.250	5	25.250	210.135	.000
G	Within Groups	23.672	197	.120		
	Total	149.921	202			
	Between Groups	169.574	5	33.915	360.658	.000
H	Within Groups	18.525	197	.094		
	Total	188.099	202			
	Between Groups	121.528	5	24.306	204.378	.000
I	Within Groups	23.428	197	.119		
	Total	144.956	202			

Table 4.10a showed that, the ANOVA calculated variables between and within groups indicated non disparity with the same degree of freedom of 5 and 197 as wells non significant differences of 0.000 and 0.026 tested at 0.05 alpha significant levels. The result

here reveals that, there is no significant difference in the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos. Hence, the hypothesis number two which stated that, there is no significant difference in the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos was retained.

Hypothesis Three: The utilization of Non-Intrusive Technology by the Nigeria Customs Service in Zone 'A' Lagos has no significant influence on the Information Management in the Zone.

This section presented the descriptive statistics of the hypothesis three computed. Table 4.11 contained the breakdown of the statistics.

Table 4.11: Descriptive Statistics of Chi-square Analysis on the influence of Non-Intrusive Inspection Technologies utilization on Information Management by Customs Service in Zone 'A' Lagos.

	N	Mean	Std. Deviation	Minimum	Maximum
ACEVS	203	1.0000	.00000	1.00	1.00
AVCI	203	1.0000	.00000	1.00	1.00
CCXI	203	1.0000	.00000	1.00	1.00
Fixed scanner	203	1.7833	.41305	1.00	2.00
Ganty_Scanner	203	1.0000	.00000	1.00	1.00
Hi_scanner	203	1.7438	.43759	1.00	2.00
ICIS_VIEWER	203	1.0000	.00000	1.00	1.00
Mobile_scanner	203	1.9015	.29876	1.00	2.00
Mobile_VACIS	203	1.0000	.00000	1.00	1.00
Portal_VACIS	203	1.0000	.00000	1.00	1.00
Radiation_scanner	203	1.0000	.00000	1.00	1.00
Commands	203	2.9754	1.66632	1.00	6.00

Table 4.11 presented the descriptive statistics of the hypothesis three computed. The total number of respondents used represented by N was 203. The types of non-

intrusive technology utilised by the Nigeria Customs Service in Zone ‘A’ Lagos and its influence on the Information Management were presented in the first column. While the various means and standard deviations of the technologies were presented in the table 4.11a. Table 4.11a presented the summary of the hypothesis three computed.

Table 4.11a: Chi-squire Analysis on the influence of Non-Intrusive Inspection Technologies utilization on Information Management by Customs Service in Zone 'A' Lagos

N	χ^{2cal}	DF	A	χ^{2crit}	p-value	Decision
203	27.320	4	0.05	7.81	0.00	Rejected

Table 4.11a shows that, the chi-squire calculated at 27.320 is greater than the chi-squire critical of 7.81 with 4 degree of freedom and 0.05 alpha significant level. The result here reveals that, there is significant difference in the influence of Non-Intrusive Inspection Technologies utilization on Information Management by Customs Service in Zone 'A' Lagos. However, the hypothesis number three which stated that, the utilization of Non-Intrusive Technology by the Nigeria Customs Service in Zone 'A' Lagos has no significant influence on the Information Management in the Zone is therefore rejected.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarized the entire research; it provided the conclusions and recommendations based on the research findings as follows:

5.2 Summary of the Study

The study examined the management and utilisation of Non-Intrusive Inspection Technology Utilization on Imported Consignments by Customs Service in Zone 'A' Lagos. The study was conducted bases on five chapters each pointed to the essence of the research. Four research questions, four objectives and three hypotheses were formulated; descriptive survey design was adopted with 207 population and the sample size of 207. Descriptive results were presented in frequencies and percentages while inferential results were found using chi-squire statistical tool. The findings of the study revealed that, there is significance difference in the type of Non-Intrusive Inspection Technologies utilized by Nigeria Customs Service in Zone 'A' Lagos; there is significance influence in the Utilization of Non-Intrusive Inspection Technologies on the Management of Information on Imported Consignments by Customs Service in the Zone 'A" Lagos and there is significant difference in the usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos.

5.3 Summary of Major Findings

The following major findings were discovered in this research:

1. Fixed Scanner is being utilized by Apapa, Tincan Island, Murtala Muhammed International Airport and Idi-Iroko Commands, Hi-Scan Scanner is being utilised by Murtala Muhammed International Airport. while Mobile Scanner is being utilized by Apapa, Tincan Island, Idi-Iroko and Seme Border Commands. It was also revealed that, the Automated Empty Container Verification System (ACEVS), Automated Vehicle and Container Identification, Cargo Container X-Ray Inspector, Gantry Scanner, Integrated Display (ICIS VIEWER), Mobile VACIS, Portal VACIS and Radiation Scanner are not being utilized by all the commands under the study. The construct of perceived usefulness was not fully realized because not all of the technologies were found in the commands.
2. The gadgets were found to be very relevant in the Information Management by Customs Service in Lagos Zone 'A', this was due to the fact that the responses revealed that the Non-Intrusive Inspection Technologies in Information Management is very relevant for Scanning Goods with 80% responses, for Detecting Concealment with 69% responses, for Information Transfer/Dissemination among other responses.
3. Non-Intrusive Inspection Technologies is extremely influential in Information Management by Customs Services in Lagos Zone 'A' by Easing a Examination with response rate of 80%,Detecting Concealment with response rate of 69%, it simplify an information processing with response rate of 50% among other responses. There is significant difference in the type of Non-Intrusive Inspection

Technologies utilized by Nigeria Customs Service in Zone 'A' Lagos (84.537>7.81); Hence, the Non-Intrusive Inspection Technologies were found to be extremely influential in Information Management by Customs Services in Lagos Zone 'A'.

4. The challenges exist in the utilization of Non-Intrusive Inspection Technologies for Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos. The challenges include; Stakeholders' negative attitudes to automation and reluctance to interface with NICIS/ASYCUDA, Inadequate provision of Non-Intrusive Inspection Technologies by government, resistance to change by stakeholders and officers among other challenges.

5.5 Conclusion

Based on the findings in this study and the interpretation of tables, it was concluded that significance difference exist in the type of Non-Intrusive Inspection Technologies utilized by Nigeria Customs Service in Zone 'A' Lagos; there is significance influence in the Utilization of Non-Intrusive Inspection Technologies on the Management of Information on Imported Consignments by Customs Service in the Zone 'A" Lagos and there is significant difference usefulness of Non-Intrusive Inspection Technologies to Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos. The challenges encounter; include Stakeholders' negative attitudes to automation and reluctance to interface with NICIS/ASYCUDA. The construct of perceived usefulness was not fully realized because not all of the technologies were found in the commands. Recommendations were made in accordance with the findings.

5.6 Recommendations

Based on the research findings and what have been concluded, the following recommendations were made to help in effective use of Non-Intrusive Inspection Technology on Imported Consignments for Information Management by Customs Service in Nigeria:

1. Government should provide additional machines (Non-Intrusive Inspection Technologies) with cutting edge Technology for scanning and scrutinizing all the imported consignments by customs service in Nigeria. It is however advice to open more scanning sites in addition to the existing ones, so as to have proper manning of seaport, border and airport security and revenue wise. These will go a long way in strengthening national security, war against smugglers, contraband detection, increase in revenue and making Nigeria a safe nation, free from explosives, weapons of mass destruction and other hazardous substance capable of harming life and environment;
2. Customs officers concerned with the utilization of the available gargets should always concentrate in generating and processing information using non-intrusive inspection technologies;
3. There is need for the customs officers concerned to manage all the information discovered through the use of Non-Intrusive Inspection Technologies; and
4. Appropriate penalty should be given to offenders by an appropriate authority in order to prevent the future offenders from committing same offence. Awareness, training and retraining of officers should be carried out at appropriate periods to ensure compliance and optimum utilisation of the technology

5.4 Contribution to the Body of Knowledge

Based on the findings of the study, the following contributions were made:

1. Non-Intrusive Inspection Technologies is extremely influential in Information Management by customs services in Lagos Zone 'A' by easing a scanning with response rate of 80%,detecting concealment scanning with response rate of 69%, it simplify an information processing with response rate of 50% among other responses. Hence, the Non-Intrusive Inspection Technologies was found to be extremely influential in Information Management by customs services in Lagos Zone 'A'.
2. The challenges exist in the utilization of Non-Intrusive Inspection Technologies for Information Management on Imported Consignments by Customs Service in Zone 'A' Lagos. The challenges include; Stakeholders' negative attitudes to automation and reluctance to interface with NICIS/ASYCUDA, Inadequate provision of Non-Intrusive Inspection Technologies by government, Non-resistance to change by stakeholders and officers among other challenges.
3. Management and utilisation of Non-intrusive Inspection Technology Information Management in Zone 'C' Porthacourt.

5.7 Suggestions for Further Research

The following are the suggestions for further research:

1. Non-Intrusive Inspection Technologies utilization for Information Management on Imported Consignments by Customs Service in Zone 'B' Nigeria

2. Assessment of Utilization and Management of information by Customs Service in the National Headquarters Abuja, Nigeria

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APPENDIX I

Department of Library and
Information Science,
Ahmadu Bello University,
Zaria.

04-04-2016

Dear respondent,

QUESTIONAIREON "MANAGEMENT AND UTILISATION OF NON-INTRUSIVE INSPECTION TECHNOLOGY ON IMPORTED CONSIGMENTS BY CUSTOMS SERVICES IN NIGERIA"

I am an MPHIL/PhD student conducting research on the above subject matter in the Department of Library and information science.

This research is very essentially for Nigeria, Customs Service and academic purposes. Kindly respond to the questions in this interview. All the information given will be used strictly for the research purpose.

Your contribution is highly needed in conducting this research.

Thank you very much for your time and cooperation

Yours sincerely,

Nafiu Salihu Abubakar.

Questionnaire for the study of "Management and Utilisation of Non-Intrusive Inspection Technology on Imported Consignments by Customs Services in Nigeria"

Section (A): Bio-data

1. Station: Apapa Customs Command [ ]

   Seme boarder[ ]

   Murtala Muh'd International Airport Command [ ] Idi -Iroko Border customs Command [ ]

   Tincan Island Port Customs Command [ ]

   PTML Customs Command [ ]

Section (B)

NIIT Available	Customs Commands					
	Apapa	Tincan Island	Murtala Muhammed International Airport	Idi-Iroko	Seme Border	PTML Command
Automated Empty Container Verification System (ACEVS)						
Automated Vehicle and Container Identification						
Cargo Container X-Ray Inspector						
Fixed Scanner						
Gantry Scanner						
Hi-Scan Scanner						
Integrated Display (ICIS VIEWER)						
Mobile Scanner						
Mobile VACIS						
Portal VACIS						
Radiation Scanner						

Key:

√ = **Yes**

X= **No**

S/N	Relevance	Responses and Percentages									
		VU		UF		RU		NU		UD	
1.	For scanning goods										
2.	For detecting concealment										
3.	For information Transfer/Dissemination										
4.	For revenue generation monitoring										
5	For security										
6	For information generation										
7	For information Organization										
8	For information retrieval										
9	For information preservation										
10	For information storage										
11	For information access										
12	For information processing										

Key: VU= Very Useful, UF= Useful, RU= Relatively Useful, NU= Not Useful, UD= Undecided,

S/N	Influence	Responses and Percentages				
		NI	SI	SHI	MI	EI
1.	Eases scanning of concealment					
2.	Detects concealment					
3.	Facilitates information Transfer					
4.	Eases revenue generation monitoring					
5	Ensure absolute security					
6	Facilitates information generation					
7	Facilitates information Organization					
8	Facilitates information retrieval					
9	Ensures to information preservation					
10	Facilitates information storage					
11	Facilitates information access					
12	Facilitates information processing					

Key:

Not at all Influential (NI), Slightly Influential (SI), Some How Influential (SHI), Moderately Influential (MI), Extremely Influential (EI).

Challenges	**Customs Commands**					
	Apapa	Tincan Island	Murtala Muhammed International Airport	Idi-Iroko	Seme Border	PTML Command
Stakeholders' negative attitudes to automation and reluctance to interface with NICIS/ASYCUDA						
Inadequate provision of Non-Intrusive Inspection Technologies by government						
Appropriate penalty is not given to defaulter imported a consignment with an unlawful goods or commodity.						
Non-Intrusive Inspection Technologies are Costly						
Non Resistance to change by Stakeholders and Officers						
Poor Maintenance culture						
Scarcity of genuine Spare parts						
Poor Computer literacy of both the Officers and Stakeholders						
Lack of integrity of Importers/Agents through false declaration, Wrong addresses etc						
There is Inefficient/Insufficient technologies in Terminals						

Key:

√ = **Yes**

X= **No**

Appendix

Post Hoc Tests

Multiple Comparisons

Scheffe

Dependent Variable	(I) Comamands	(J) Comamands	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
A	Barrack A	Tincan island	.60420	.25838	.365	-.2643	1.4727
		MMIA	.55769	.28739	.585	-.4084	1.5238
		Idi iroko	-.17760	.27647	.995	-1.1069	.7517
		Seme border	.05769	.30934	1.000	-.9821	1.0975
		PTML Command	-.14231	.32982	.999	-1.2510	.9664
	Tincan island	Barrack A	-.60420	.25838	.365	-1.4727	.2643
		MMIA	-.04651	.29819	1.000	-1.0489	.9559
		Idi iroko	-.78181	.28768	.199	-1.7488	.1852
		Seme border	-.54651	.31940	.711	-1.6202	.5271
		PTML Command	-.74651	.33928	.438	-1.8870	.3940
	MMIA	Barrack A	-.55769	.28739	.585	-1.5238	.4084
		Tincan island	.04651	.29819	1.000	-.9559	1.0489
		Idi iroko	-.73529	.31400	.363	-1.7908	.3202
		Seme border	-.50000	.34329	.831	-1.6540	.6540
		PTML Command	-.70000	.36186	.588	-1.9164	.5164

		Barrack A	.17760	.27647	.995	-.7517	1.1069
		Tincan island	.78181	.28768	.199	-.1852	1.7488
	Idi iroko	MMIA	.73529	.31400	.363	-.3202	1.7908
		Seme border	.23529	.33420	.992	-.8881	1.3587
		PTML Command	.03529	.35324	1.000	-1.1521	1.2227
		Barrack A	-.05769	.30934	1.000	-1.0975	.9821
		Tincan island	.54651	.31940	.711	-.5271	1.6202
	Seme border	MMIA	.50000	.34329	.831	-.6540	1.6540
		Idi iroko	-.23529	.33420	.992	-1.3587	.8881
		PTML Command	-.20000	.37952	.998	-1.4758	1.0758
		Barrack A	.14231	.32982	.999	-.9664	1.2510
		Tincan island	.74651	.33928	.438	-.3940	1.8870
	PTML Command	MMIA	.70000	.36186	.588	-.5164	1.9164
		Idi iroko	-.03529	.35324	1.000	-1.2227	1.1521
		Seme border	.20000	.37952	.998	-1.0758	1.4758
		Tincan island	.00000	.06649	1.000	-.2235	.2235
		MMIA	.00000	.07396	1.000	-.2486	.2486
	Barrack A	Idi iroko	.50000*	.07115	.000	.2608	.7392
		Seme border	1.00000*	.07961	.000	.7324	1.2676
		PTML Command	2.00000*	.08488	.000	1.7147	2.2853
B		Barrack A	.00000	.06649	1.000	-.2235	.2235
		MMIA	.00000	.07674	1.000	-.2580	.2580
	Tincan island	Idi iroko	.50000*	.07403	.000	.2511	.7489
		Seme border	1.00000*	.08219	.000	.7237	1.2763
		PTML Command	2.00000*	.08731	.000	1.7065	2.2935

		Barrack A	.00000	.07396	1.000	-.2486	.2486
		Tincan island	.00000	.07674	1.000	-.2580	.2580
	MMIA	Idi iroko	.50000*	.08080	.000	.2284	.7716
		Seme border	1.00000*	.08834	.000	.7030	1.2970
		PTML Command	2.00000*	.09312	.000	1.6870	2.3130
		Barrack A	-.50000*	.07115	.000	-.7392	-.2608
		Tincan island	-.50000*	.07403	.000	-.7489	-.2511
	Idi iroko	MMIA	-.50000*	.08080	.000	-.7716	-.2284
		Seme border	.50000*	.08600	.000	.2109	.7891
		PTML Command	1.50000*	.09090	.000	1.1944	1.8056
		Barrack A	-1.00000*	.07961	.000	-1.2676	-.7324
		Tincan island	-1.00000*	.08219	.000	-1.2763	-.7237
	Seme border	MMIA	-1.00000*	.08834	.000	-1.2970	-.7030
		Idi iroko	-.50000*	.08600	.000	-.7891	-.2109
		PTML Command	1.00000*	.09767	.000	.6717	1.3283
		Barrack A	-2.00000*	.08488	.000	-2.2853	-1.7147
		Tincan island	-2.00000*	.08731	.000	-2.2935	-1.7065
	PTML Command	MMIA	-2.00000*	.09312	.000	-2.3130	-1.6870
		Idi iroko	-1.50000*	.09090	.000	-1.8056	-1.1944
		Seme border	-1.00000*	.09767	.000	-1.3283	-.6717
		Tincan island	.00000	.07668	1.000	-.2578	.2578
		MMIA	.53333*	.08530	.000	.2466	.8201
	Barrack A	Idi iroko	1.00000*	.08205	.000	.7242	1.2758
C		Seme border	1.00000*	.09181	.000	.6914	1.3086
		PTML Command	2.10000*	.09789	.000	1.7709	2.4291
	Tincan island	Barrack A	.00000	.07668	1.000	-.2578	.2578
		MMIA	.53333*	.08850	.000	.2358	.8308

		Idi iroko	1.00000*	.08538	.000	.7130	1.2870
		Seme border	1.00000*	.09479	.000	.6814	1.3186
		PTML Command	2.10000*	.10069	.000	1.7615	2.4385
		Barrack A	-.53333*	.08530	.000	-.8201	-.2466
		Tincan island	-.53333*	.08850	.000	-.8308	-.2358
	MMIA	Idi iroko	.46667*	.09319	.000	.1534	.7799
		Seme border	.46667*	.10189	.001	.1242	.8092
		PTML Command	1.56667*	.10740	.000	1.2057	1.9277
		Barrack A	-1.00000*	.08205	.000	-1.2758	-.7242
		Tincan island	-1.00000*	.08538	.000	-1.2870	-.7130
	Idi iroko	MMIA	-.46667*	.09319	.000	-.7799	-.1534
		Seme border	.00000	.09919	1.000	-.3334	.3334
		PTML Command	1.10000*	.10484	.000	.7476	1.4524
		Barrack A	-1.00000*	.09181	.000	-1.3086	-.6914
		Tincan island	-1.00000*	.09479	.000	-1.3186	-.6814
	Seme border	MMIA	-.46667*	.10189	.001	-.8092	-.1242
		Idi iroko	.00000	.09919	1.000	-.3334	.3334
		PTML Command	1.10000*	.11264	.000	.7214	1.4786
		Barrack A	-2.10000*	.09789	.000	-2.4291	-1.7709
		Tincan island	-2.10000*	.10069	.000	-2.4385	-1.7615
	PTML Command	MMIA	-1.56667*	.10740	.000	-1.9277	-1.2057
		Idi iroko	-1.10000*	.10484	.000	-1.4524	-.7476
		Seme border	-1.10000*	.11264	.000	-1.4786	-.7214
		Tincan island	.78846*	.06842	.000	.5585	1.0185
		MMIA	.78846*	.07610	.000	.5326	1.0443
D	Barrack A	Idi iroko	.78846*	.07321	.000	.5424	1.0346
		Seme border	.87179*	.08191	.000	.5964	1.1471

		PTML Command	2.58846*	.08734	.000	2.2949	2.8821
		Barrack A	-.78846*	.06842	.000	-1.0185	-.5585
		MMIA	.00000	.07896	1.000	-.2654	.2654
	Tincan island	Idi iroko	.00000	.07618	1.000	-.2561	.2561
		Seme border	.08333	.08458	.964	-.2010	.3676
		PTML Command	1.80000*	.08984	.000	1.4980	2.1020
		Barrack A	-.78846*	.07610	.000	-1.0443	-.5326
		Tincan island	.00000	.07896	1.000	-.2654	.2654
	MMIA	Idi iroko	.00000	.08315	1.000	-.2795	.2795
		Seme border	.08333	.09091	.974	-.2222	.3889
		PTML Command	1.80000*	.09582	.000	1.4779	2.1221
		Barrack A	-.78846*	.07321	.000	-1.0346	-.5424
		Tincan island	.00000	.07618	1.000	-.2561	.2561
	Idi iroko	MMIA	.00000	.08315	1.000	-.2795	.2795
		Seme border	.08333	.08850	.971	-.2141	.3808
		PTML Command	1.80000*	.09354	.000	1.4856	2.1144
		Barrack A	-.87179*	.08191	.000	-1.1471	-.5964
		Tincan island	-.08333	.08458	.964	-.3676	.2010
	Seme border	MMIA	-.08333	.09091	.974	-.3889	.2222
		Idi iroko	-.08333	.08850	.971	-.3808	.2141
		PTML Command	1.71667*	.10050	.000	1.3788	2.0545
		Barrack A	-2.58846*	.08734	.000	-2.8821	-2.2949
		Tincan island	-1.80000*	.08984	.000	-2.1020	-1.4980
	PTML Command	MMIA	-1.80000*	.09582	.000	-2.1221	-1.4779
		Idi iroko	-1.80000*	.09354	.000	-2.1144	-1.4856
		Seme border	-1.71667*	.10050	.000	-2.0545	-1.3788
E	Barrack A	Tincan island	.48837*	.06795	.000	.2599	.7168

		MMIA	1.13333*	.07558	.000	.8793	1.3874
		Idi iroko	2.00000*	.07271	.000	1.7556	2.2444
		Seme border	2.00000*	.08135	.000	1.7265	2.2735
		PTML Command	2.20000*	.08674	.000	1.9084	2.4916
		Barrack A	-.48837*	.06795	.000	-.7168	-.2599
		MMIA	.64496*	.07842	.000	.3813	.9086
	Tincan island	Idi iroko	1.51163*	.07566	.000	1.2573	1.7660
		Seme border	1.51163*	.08400	.000	1.2293	1.7940
		PTML Command	1.71163*	.08923	.000	1.4117	2.0116
		Barrack A	-1.13333*	.07558	.000	-1.3874	-.8793
		Tincan island	-.64496*	.07842	.000	-.9086	-.3813
	MMIA	Idi iroko	.86667*	.08258	.000	.5891	1.1443
		Seme border	.86667*	.09028	.000	.5632	1.1702
		PTML Command	1.06667*	.09517	.000	.7468	1.3866
		Barrack A	-2.00000*	.07271	.000	-2.2444	-1.7556
		Tincan island	-1.51163*	.07566	.000	-1.7660	-1.2573
	Idi iroko	MMIA	-.86667*	.08258	.000	-1.1443	-.5891
		Seme border	.00000	.08789	1.000	-.2955	.2955
		PTML Command	.20000	.09290	.465	-.1123	.5123
		Barrack A	-2.00000*	.08135	.000	-2.2735	-1.7265
		Tincan island	-1.51163*	.08400	.000	-1.7940	-1.2293
	Seme border	MMIA	-.86667*	.09028	.000	-1.1702	-.5632
		Idi iroko	.00000	.08789	1.000	-.2955	.2955
		PTML Command	.20000	.09981	.549	-.1355	.5355
		Barrack A	-2.20000*	.08674	.000	-2.4916	-1.9084
	PTML Command	Tincan island	-1.71163*	.08923	.000	-2.0116	-1.4117
		MMIA	-1.06667*	.09517	.000	-1.3866	-.7468

		Idi iroko	-.20000	.09290	.465	-.5123	.1123
		Seme border	-.20000	.09981	.549	-.5355	.1355
		Tincan island	.18605	.05696	.063	-.0054	.3775
		MMIA	1.00000*	.06336	.000	.7870	1.2130
	Barrack A	Idi iroko	1.00000*	.06095	.000	.7951	1.2049
		Seme border	1.33333*	.06820	.000	1.1041	1.5626
		PTML Command	2.20000*	.07271	.000	1.9556	2.4444
		Barrack A	-.18605	.05696	.063	-.3775	.0054
		MMIA	.81395*	.06574	.000	.5930	1.0349
	Tincan island	Idi iroko	.81395*	.06342	.000	.6008	1.0271
		Seme border	1.14729*	.07041	.000	.9106	1.3840
		PTML Command	2.01395*	.07480	.000	1.7625	2.2654
		Barrack A	-1.00000*	.06336	.000	-1.2130	-.7870
		Tincan island	-.81395*	.06574	.000	-1.0349	-.5930
F	MMIA	Idi iroko	.00000	.06922	1.000	-.2327	.2327
		Seme border	.33333*	.07568	.002	.0789	.5877
		PTML Command	1.20000*	.07978	.000	.9318	1.4682
		Barrack A	-1.00000*	.06095	.000	-1.2049	-.7951
		Tincan island	-.81395*	.06342	.000	-1.0271	-.6008
	Idi iroko	MMIA	.00000	.06922	1.000	-.2327	.2327
		Seme border	.33333*	.07368	.001	.0857	.5810
		PTML Command	1.20000*	.07788	.000	.9382	1.4618
		Barrack A	-1.33333*	.06820	.000	-1.5626	-1.1041
		Tincan island	-1.14729*	.07041	.000	-1.3840	-.9106
	Seme border	MMIA	-.33333*	.07568	.002	-.5877	-.0789
		Idi iroko	-.33333*	.07368	.001	-.5810	-.0857
		PTML Command	.86667*	.08367	.000	.5854	1.1479

G	PTML Command	Barrack A	-2.20000*	.07271	.000	-2.4444	-1.9556
		Tincan island	-2.01395*	.07480	.000	-2.2654	-1.7625
		MMIA	-1.20000*	.07978	.000	-1.4682	-.9318
		Idi iroko	-1.20000*	.07788	.000	-1.4618	-.9382
		Seme border	-.86667*	.08367	.000	-1.1479	-.5854
	Barrack A	Tincan island	.86047*	.07145	.000	.6203	1.1006
		MMIA	1.00000*	.07947	.000	.7328	1.2672
		Idi iroko	1.20588*	.07645	.000	.9489	1.4629
		Seme border	2.00000*	.08554	.000	1.7125	2.2875
		PTML Command	2.55000*	.09121	.000	2.2434	2.8566
	Tincan island	Barrack A	-.86047*	.07145	.000	-1.1006	-.6203
		MMIA	.13953	.08246	.721	-.1377	.4167
		Idi iroko	.34542*	.07955	.003	.0780	.6128
		Seme border	1.13953*	.08832	.000	.8426	1.4364
		PTML Command	1.68953*	.09382	.000	1.3742	2.0049
	MMIA	Barrack A	-1.00000*	.07947	.000	-1.2672	-.7328
		Tincan island	-.13953	.08246	.721	-.4167	.1377
		Idi iroko	.20588	.08683	.349	-.0860	.4978
		Seme border	1.00000*	.09493	.000	.6809	1.3191
		PTML Command	1.55000*	.10007	.000	1.2136	1.8864
	Idi iroko	Barrack A	-1.20588*	.07645	.000	-1.4629	-.9489
		Tincan island	-.34542*	.07955	.003	-.6128	-.0780
		MMIA	-.20588	.08683	.349	-.4978	.0860
		Seme border	.79412*	.09242	.000	.4835	1.1048
		PTML Command	1.34412*	.09768	.000	1.0158	1.6725
	Seme border	Barrack A	-2.00000*	.08554	.000	-2.2875	-1.7125
		Tincan island	-1.13953*	.08832	.000	-1.4364	-.8426

		MMIA	-1.00000*	.09493	.000	-1.3191	-.6809
		Idi iroko	-.79412*	.09242	.000	-1.1048	-.4835
		PTML Command	.55000*	.10495	.000	.1972	.9028
		Barrack A	-2.55000*	.09121	.000	-2.8566	-2.2434
		Tincan island	-1.68953*	.09382	.000	-2.0049	-1.3742
	PTML Command	MMIA	-1.55000*	.10007	.000	-1.8864	-1.2136
		Idi iroko	-1.34412*	.09768	.000	-1.6725	-1.0158
		Seme border	-.55000*	.10495	.000	-.9028	-.1972
		Tincan island	.00000	.06321	1.000	-.2125	.2125
		MMIA	.43333*	.07031	.000	.1970	.6697
	Barrack A	Idi iroko	1.00000*	.06763	.000	.7727	1.2273
		Seme border	1.95833*	.07567	.000	1.7040	2.2127
		PTML Command	2.70000*	.08069	.000	2.4288	2.9712
		Barrack A	.00000	.06321	1.000	-.2125	.2125
		MMIA	.43333*	.07295	.000	.1881	.6785
	Tincan island	Idi iroko	1.00000*	.07037	.000	.7634	1.2366
		Seme border	1.95833*	.07813	.000	1.6957	2.2210
H		PTML Command	2.70000*	.08300	.000	2.4210	2.9790
		Barrack A	-.43333*	.07031	.000	-.6697	-.1970
		Tincan island	-.43333*	.07295	.000	-.6785	-.1881
	MMIA	Idi iroko	.56667*	.07681	.000	.3085	.8249
		Seme border	1.52500*	.08398	.000	1.2427	1.8073
		PTML Command	2.26667*	.08852	.000	1.9691	2.5642
		Barrack A	-1.00000*	.06763	.000	-1.2273	-.7727
		Tincan island	-1.00000*	.07037	.000	-1.2366	-.7634
	Idi iroko	MMIA	-.56667*	.07681	.000	-.8249	-.3085
		Seme border	.95833*	.08176	.000	.6835	1.2332

		PTML Command	1.70000*	.08641	.000	1.4095	1.9905
		Barrack A	-1.95833*	.07567	.000	-2.2127	-1.7040
		Tincan island	-1.95833*	.07813	.000	-2.2210	-1.6957
	Seme border	MMIA	-1.52500*	.08398	.000	-1.8073	-1.2427
		Idi iroko	-.95833*	.08176	.000	-1.2332	-.6835
		PTML Command	.74167*	.09284	.000	.4296	1.0538
		Barrack A	-2.70000*	.08069	.000	-2.9712	-2.4288
		Tincan island	-2.70000*	.08300	.000	-2.9790	-2.4210
	PTML Command	MMIA	-2.26667*	.08852	.000	-2.5642	-1.9691
		Idi iroko	-1.70000*	.08641	.000	-1.9905	-1.4095
		Seme border	-.74167*	.09284	.000	-1.0538	-.4296
		Tincan island	.83721*	.07108	.000	.5983	1.0762
		MMIA	1.00000*	.07906	.000	.7342	1.2658
	Barrack A	Idi iroko	1.26471*	.07606	.000	1.0090	1.5204
		Seme border	2.00000*	.08510	.000	1.7139	2.2861
		PTML Command	2.45000*	.09074	.000	2.1450	2.7550
		Barrack A	-.83721*	.07108	.000	-1.0762	-.5983
		MMIA	.16279	.08204	.560	-.1130	.4386
I	Tincan island	Idi iroko	.42750*	.07914	.000	.1615	.6935
		Seme border	1.16279*	.08787	.000	.8674	1.4582
		PTML Command	1.61279*	.09334	.000	1.2990	1.9265
		Barrack A	-1.00000*	.07906	.000	-1.2658	-.7342
		Tincan island	-.16279	.08204	.560	-.4386	.1130
	MMIA	Idi iroko	.26471	.08638	.100	-.0257	.5551
		Seme border	1.00000*	.09444	.000	.6825	1.3175

		PTML Command	1.45000*	.09955	.000	1.1154	1.7846
		Barrack A	-1.26471*	.07606	.000	-1.5204	-1.0090
		Tincan island	-.42750*	.07914	.000	-.6935	-.1615
	Idi iroko	MMIA	-.26471	.08638	.100	-.5551	.0257
		Seme border	.73529*	.09194	.000	.4262	1.0444
		PTML Command	1.18529*	.09718	.000	.8586	1.5120
		Barrack A	-2.00000*	.08510	.000	-2.2861	-1.7139
		Tincan island	-1.16279*	.08787	.000	-1.4582	-.8674
	Seme border	MMIA	-1.00000*	.09444	.000	-1.3175	-.6825
		Idi iroko	-.73529*	.09194	.000	-1.0444	-.4262
		PTML Command	.45000*	.10441	.003	.0990	.8010
		Barrack A	-2.45000*	.09074	.000	-2.7550	-2.1450
		Tincan island	-1.61279*	.09334	.000	-1.9265	-1.2990
	PTML Command	MMIA	-1.45000*	.09955	.000	-1.7846	-1.1154
		Idi iroko	-1.18529*	.09718	.000	-1.5120	-.8586
		Seme border	-.45000*	.10441	.003	-.8010	-.0990

*. The mean difference is significant at the 0.05 level.