THE ROLE OF DIGITALIZATION ON CUSTOM OPERATIONS AND TRADE FACILITATION; EVIDENCE FROM ETHIOPIAN CUSTOM COMMISSION

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DECLARATION

I, AMANUEL GOBEZE, the under-signed, hereby declare that the work *the role of digitalization on custom operations and trade facilitation*. this is my own original work and that I have not previously in its entirety or in part submitted at any university for a degree.

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The undersigned certifies that he has read and hereby recommends for acceptance by the Addis Ababa University a thesis entitled: **THE ROLE OF DIGITALIZATION ON CUSTOM OPERATIONS AND TRADE FACILITATION** under my guidance and supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the award of Master of Arts in Logistics and Supply Chain Management.

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LIST OF ACRONYMS OR ABBREVIATIONS

African Continental Free Trade Area

3DP: 3D Printing

CEN: Customs Enforcement Networks

COMESA: Common Market Eastern Africa

ECC: Ethiopian Customs Commission

E-CMS: Electronic Customs Management System

EDI: Electronic Data Interchange

ETSW: Ethiopian Trade Single Window

IOT: Internet of Things

IT: Information Technology

LPI: Logistics Performance Index

OECD: Organization for Economic Co-operation and Development

OSBPS: One Stop Border Ports

RKC: Revised Kyoto Convention

TFA: Trade Facilitation Agreement

UNCTAD: United Nations Conference on Trade and Development

VR: Virtual Reality

WCO: World Customs Organization

WEF: World Economic Forum

WTO: World Trade Organization

ABSTRACT

Ethiopian customs commission digitalization practices implemented by the actively modernizing cross-border operations by transitioning manual work flows into integrated electronic systems. Today in globalization each and every day activity is integrated with digitalization. The country also has technological advancement and applied digitalization to achieve economic development. The objective of this research study was to examine the role of digitalization on customs operation and trade facilitation from Ethiopian customs commission. This study examines how digitization affects trade facilitation and customs operations at the Ethiopian Customs Commission. The study uses some points related to digitalization of current states, currently uses key digital tools and systems, and also evaluates the effectiveness and efficiency of digitalization. Finally see some digitalization challenges this research study is on Ethiopia customs commission at the Head office and future research study considers other customs commissions of the country. According to the study's findings, digitalization plays a crucial role in customs operations to facilitate the country's trade, although there are now operational issues related to culture and infrastructure. As a result, digitalization plays a crucial and significant part in ensuring their efficacy and efficiency. The study comes to the conclusion that, although while digitalization is a valuable instrument for enhancing trade and customs facilitation, implementation issues must be resolved in order to properly operationalize the usage of efficient digital systems. Encourage employees and improving technology infrastructure.

***Keywords**: Digitalization, Ethiopian Customs Commission (ECC), Trade Facilitation, Customs Operations, Electronic Customs Management System (e-CMS), Electronic Single Window (e-SW)*

CHAPTER ONE

INTRODUCTION

1.1 Background

The digitalization issues have become transformation is the utilization of digital technologies to change business processes, culture, and customer experiences in order to meet changing business and market requirements without merely digitalization of the original paper-based process (digitalization). This study is the role of digitalization using digital information to automate customs processes, improve customer services, and drive new business practices.

The role of digitalization on customs operations and trade facilitation, particularly within the context of the Ethiopian Customs Commission is an important area. This study aims to explore the impact of digital transformation on efficiency, transparency, and overall trade performance use the descriptive research methods. The digitalization is not just a technology upgrade but also a shift toward faster, more transparent, and more predictable customs processes (Digital Ethiopia Strategy, 2025).

(Ololena Volkova, 2025) indicated that on the background of unstable worldwide trade and rising significance of digital technologies in public administration, customs procedures modernization gains a strategic importance for many economies. In recent years, with the acceleration of the global trade and the complexity of the proliferation of international supply chains, national customs systems' demands have increased.

The global landscape of international trade is increasingly shaped by technological advancements. Digitalization has emerged as a pivotal force, transforming traditional customs processes and offering unprecedented opportunities for enhanced efficiency and trade facilitation. Globally, customs administrations are embracing digital solutions such as electronic data interchange (EDI), automated risk management systems, and single window platforms to streamline procedures, reduce processing times, and combat illicit trade. The World Customs Organization (WCO) actively promotes the adoption of digital tools and standards to faster a more predictable, transparent, and secure global trading environment. (WCO & WTO, 2022)

World Economic Forum and Deloitte (2022) demonstrates in Africa, the push for digitalization

in customs is gaining momentum, driven by initiatives like the African Continental Free Trade Area (AfCFTA), which emphasizes the need for harmonized and efficient customs procedures to unlock intra-African trade potential. Many African nations are investing in customs modernization programs, often with support from international organizations, to implement electronic systems for declarations, payments, and clearance. However, challenges such as inadequate infrastructure, limited technical capacity, and resistance to change often hinder the full realization of these digital ambitions.

In Ethiopia, the government has recognized the importance of digitalization across various sectors, including customs. The efforts have been made to introduce electronic systems within the Ethiopian Customs Commission (ECC) to improve revenue collection, enhance trade competitiveness, and reduce bureaucratic hurdles (Ethiopian Customs Commission, 2022).The platforms like e-CMS, electronic payment system, & automated risk management While previous studies in Ethiopia have highlighted the potential benefits of e-customs initiatives, such as reduced clearance times and improved data accuracy, but also pointed out persistent challenges related to system integration, user training, and infrastructure reliability (Ethiopian Customs Commission, 2022).

While digital Ethiopia strategy, (2025) contained that the digital Ethiopia mandate has completely changed the technical environment of the Ethiopian Customs Commission (ECC). The Electronic Single Window (e-SW) and the Electronic Customs Management System (e-CMS), an automated customs clearance system, are the main parts of the current operations. The e-SW connects government agencies through a single interface with customs.

Technological change has been the primary driver of social development, productivity improvements and inclusive growth. The world is, once again, at the dawn of the next technological change. Countries are at different stages and have different opportunities available to them in this new paradigm. Digitalization critical first step is to ensure the approach selected for digital transformation is treated as a means to a country's national development vision and priorities. Ethiopia's digital economy is at an early stage of development with few private sector players offering digital services and some government driven digitalization initiatives. While these initiatives and services solve important challenges, they cut across multiple stakeholders and require a coordinated effort to maximize their impact (Digital Ethiopia Strategy, 2025).

This research focuses specifically on the Ethiopian Customs Commission, examining the practical implications of its digitalization roles with efforts with on trade facilitation. While global and continental trends underscore the importance of digital customs, and national studies provide a broader context, there remains a gap in understanding the specific challenges and successes of digitalization within the ECC's operational environment. This study to bridge the gap by providing a detailed analysis of how digitalization's role impacts on customs operations and trade facilitation within this particular context and motive of use technology impacts on customs operation, moving from a general understanding of global trends to a specific examination of the ECC's experiences.

1.2 Statement of the Problem

The Ethiopian Customs Commission (2022) mandates revenue collection, border security, and trade facilitation essential to the country's economic well-being. Despite the ECC's commitment to modernization, a crucial implementation with an expectation gap has surfaced. The operational reality, which is marked by on-going delays, high transaction costs, and little transparency, stands in stark contrast to the theoretical promise of a digital, seamless customs environment.

Ethiopian Customs Commission (2022) mention that the inability of digital tools used to result in shorter clearance times is the fundamental cause of this issue. The following three distinct aspects of this gap serve as the motivation for this study.

It was anticipated that the National Single Window, electronic payment platforms, and the Electronic Customs Management System (e-CMS) would automate processes and remove human bottlenecks. However, in reality, systemic flaws like frequent system interruption and erratic internet connectivity frequently compromise these tools (ECC, 2022). In order to avoid complete port congestion, the ECC frequently resumes manual interventions. This effectively negates the speed benefits of digitalization by creating a burden where traders must manage digital entries while still going through manual document validation. The main question still stands: Why does the system still require manual workarounds that maintain stagnant clearance times in spite of these high-tech adoptions? Ethiopian Customs Commission (2022)

The majority of the literature currently available on digitalizing customs concentrates on

developed nations with reliable infrastructure and high levels of digital literacy. In-depth empirical studies examining the particular difficulties of digitalization in a developing nation like Ethiopia are hard to come. The Ethiopian reality, in which inflexible digital frameworks collide with socioeconomic and infrastructure constraints, including internet network instability, is frequently overlooked by current theories of technology adoption (ECC, 2022). While, by examining the reasons behind the underutilization or avoidance of digital tools within the particular institutional framework of the ECC, this study aims to close this gap. (Ethiopia Custom Commission, 2022)

Ethiopia's government has big plans for using digital to make trade easier, but there's a gap between those plans and what's actually happening. Policies seem to think that just installing software will make things more efficient. But they forget about problems like different agencies not working well together and the old physical stamp way of doing things (ECC, 2022). We really need to check if these policies are leading to real improvements or if we need to weaken them to fix the specific reasons for the digital roadblocks. (Digital Ethiopia Strategy, 2025)

This study looks at these practical, theoretical, and policy problems to figure out why digitalization in the ECC hasn't given us the benefits we expected. It suggests how to get real, data-backed trade improvements.

To what extent the role of digitalization influences the effectiveness and efficiency of trade facilitation? World trade papers from groups like the WCO and WTO make going digital sound easy, but recent studies in Ethiopia show it's not working out so well. Tadesse (2023) said that the Ethiopian Trade Single Window (ETSW) is struggling because power and internet are spotty. Customs people have to go back to doing things by hand to keep ports from getting totally jammed up. Abate (2022) mention backs this up, saying that switching to the e-CMS hasn't stopped manual work. Instead, they've got a system where they have to double-check digital info against paper records to fix mistakes.

What's supposed to be a Single Window experience is also messed up because government groups don't really trust each other. Girma and Belay (2023) point out that even if a business uploads documents through the ETSW, places like the Ministry of Trade or Agriculture still want paper copies with signatures. This old way of doing things means it still takes a long time to get

clearance, even with new tech.

According to the Ethiopian Chamber of Commerce (2024), this whole situation ends up costing firms more money because they have to pay for both the traditional paper pushing and the digital stuff.

1.3 Objectives of the Study

The main objective of this was to examine the role of digitalization on customs operations and trade facilitation within the Ethiopian Customs Commission.

To achieve this main objective, the study pursues the following specific objectives:

1. To assess the current state of digitalization in customs operations and trade facilitation.
2. To identify the key digital tools and systems implemented for the role of digitalization of customs operation and trade facilitation.
3. To evaluate the effect of digitalization on the efficiency and effectiveness of customs operations in the Ethiopian Customs Commission.
4. To evaluate the effect of digitalization on the efficiency and effectiveness of trade facilitation.
5. To identify the challenges affecting the implementation and utilization of digitalization on customs operations and trade fade facilitation.

1.4 Research Questions

Based on the specific outlined above, this study seeks to answer the following research questions:

1. What is the current state of digitalization on customs operations and trade facilitation?
2. What key digital tools and systems have been implemented for the role of digitalization on customs operation and trade facilitation?
3. How digitalization influences the effectiveness and efficiency of customs operation?
4. To what extent digitalization influences the effectiveness and efficiency of trade facilitation?

5. What are the major challenges affecting the implementation and utilization of digitalization on customs operations and trade facilitation?

1.5 Scope of the Study

The study will focus on the operations of the Ethiopian Customs Commission at head office. The study collects data and analyzes this office.

The study will analyses data and digitalization initiatives implemented by the Ethiopian Customs Commission from January, 2025 to May 2026. This period allows for observation of recent development and the rapid pace of technological change.

This research is limited to study the role of digitalization on customs operations and trade facilitation at head office only.

The study scope focuses on the role of digital transformation for improving customs operations and facilitating international trade.

1.6 Significance of the Study

This study will to the existing academic literature by priority empirical evidence on the role of digitalization on customs operations and trade facilitation within the context of a developing economy like Ethiopia.

- It insights into the challenges and successes of implementing digital solutions in a unique regulatory and infrastructural environment, thereby enriching the understanding of digitalization's role in global trade.
- It can serve as a foundation for future research on similar topics. This emphasizes the academic contribution through empirical evidence and contextual insights.
- The findings of this research will provide valuable data and recommendations for Ethiopian policy makers, particularly those within the Ministry of Finance, Ministry of Trade and Regional Integration, and the Ethiopian Customs Commission.
- It will highlight areas where digitalization efforts have been successful and identify challenges /bottlenecks or areas requiring further investment and policy intervention to enhance trade facilitation. This evidence-based approach can inform the development of

more effective national trade policies and strategies aimed at improving Ethiopia's competitiveness in international trade. This directly addresses how the study can inform and improve policy decisions.

- For all stakeholders involved in international trade, including importers, exporters, freight forwarders, and logistics providers operating in Ethiopia, this study will offer practical insights into the current state of customs digitalization. It will help them understand the role, benefits and challenges associated with digital customs processes, enabling them to adapt their operations, optimize their supply chains, and navigate customs procedures more efficiently.

- Finally, this can lead to reduced operational costs and improved predictability in their trade activities. This focuses on the practical benefits for those directly engaged in trade.

1.7 Limitation of the Study

This study focuses on Ethiopian Customs commission role of digitalization on customs operation and trade facilitation. The study encountered the following constraints and limitations: Firstly, this study focuses only on head office workers and hence the result from this study cannot be shown to all Customs Commission offices of the country.

Secondly, due to finance and time constraints the study data is not collected from the entire population. The study also investigates only some parts of the Customs Clearance operation process.

Finally, the study is based on available information from primary and secondary sources. However, the primary data collected from head office customs commission employee.

1.8 Organization of the Study

The study organized into five chapters. Chapter One, 'Introduction,' will provide an overview of the research topic, including the background, problem statement, research questions, objectives, scope, and significance of the study. Chapter two, 'Literature Review,' will critically examine existing academic and professional literature on digitalization, customs operations, and trade facilitation, identifying theoretical frameworks and empirical findings relevant to the Ethiopian

context. Chapter there, 'Methodology,' will detail the research design, data collection methods, sampling techniques, and data analysis procedures employed in the study. Chapter Four, 'Data Presentation and Analysis,' will present the collected data and analyse it in relation to the research questions and objectives. The final chapter, Chapter Five, 'Summary, Conclusion, and Recommendations,' will summarize the key findings, draw conclusions based on the analysis, and provide recommendations for policy makers, practitioners, and future research.

1.9 Operational Definition

Digitalization: Refers to the adoption and implementation of digital technologies and processes within the Ethiopian Customs Commission, including but not limited to electronic data interchange (EDI) systems, automated risk management tools, e-payment platforms, and the electronic customs management systems (e-CMS), aimed at streamlining customs procedures and enhancing efficiency.

Customs Operations: Encompasses the core functions performed by the Ethiopian Customs Commission, such as import/export declaration processing, goods inspection, duty and tax collection, risk assessment, and enforcement activities, as measured by metrics like processing time, clearance rates, and compliance levels.

Trade Facilitation: According to the World Trade Organization (WTO), Trade Facilitation refers to the simplification, modernization, and harmonization of export and import processes. Specifically, the Trade Facilitation Agreement (TFA), which entered into force in 2017, focuses on the "movement, release, and clearance of goods, including goods in transit."

Ethiopian Customs Commission (ECC): Refers to the governmental body responsible for administering customs laws, collecting duties and taxes, and facilitating legitimate trade in Ethiopia, operating under the Ministry of Revenue.

Customs Declaration: The formal statement submitted to customs authorities providing detailed information about imported or exported goods.

CHAPTER TWO

REVIEW OF LITERATURE

These parts of the study gather literature from different authors writing related to research topics in theoretical and empirical literature reviews.

2.1 Theoretical Literature Review

This study is shaped by the key theories of digitalization, customs operations, and trade facilitation on customs operations. These frameworks together help us understand how digital customs systems are adapted, how they become part of the routine, and how they lead to better trade efficiency.

2.1.1. Digitalization

Digitalization refers to the general process of digital transformation of society and the economy, the narrower concept of digitalization refers to the (increasing) use of digital devices in work processes. In the early stages of the digital revolution, digitalization mainly concerned tasks and activities which involved the processing of information. But as the digital revolution matured, and the capabilities of digital devices expanded while their costs plummeted, essentially all aspects of work became increasingly digitized. The Internet of Things and Industry 4.0 are examples of all-encompassing digital systems, which convert almost everything that exists or happens in the workplace into usable information. This information is centralized and processed by management, which can achieve previously impossible levels of control. The digitalization of work processes directly affects working conditions because it transforms the technical nature of work process, and work organization because it boosts the capacity of management to monitor and control the activity of workers. The digital technologies that increase the efficiency and intensity of work processes also tend to create administrative clutter. The future of employment is increasingly shaped by technological adoption (Fernández-Macías et al., 2025).

2.1.2. Customs Operations

The World Customs Organization (WCO) and the World Trade Organization (WTO) have been examining block chain and distributed ledger technology (DLT), the internet of things (IoT), and

big data, data analytics, artificial intelligence (AI) and machine learning to identify how these advanced technologies can promote trade facilitation and assist customs administrations in fulfilling their objectives of ensuring, safety, security and fair revenue collection, WCO (2022).

The digitalization of customs clearance particularly in developing nations is infested with a lot of challenges such as technological barriers, infrastructure limitations and legal discrepancies, involves allowing the flow of goods from one part of the world into another and streamlining procedure of clearing goods through borders by embracing the use of big data, the technology of block chain and artificial intelligence. Emon Sarker (2025) this change is now critical for improving global trade, inconspicuous delays, preventing fraud, and improving transparency (Bondarenko, 2023). Because of the connectedness of economies and the emergence of digitalization, there is an increasing need for current trade processes (Manyika, Lund, Bughin, Woetzel, Stamenov, & Dhingra, 2016). Customs administrations are able to improve timeliness of cargo determinations, create compliance, and lower trade-related threats in the implementation of digital tools (Prysiazhniuk, 2024).

The World Bank, in its 2005 publication 'Customs Modernization Handbook', suggested that: it is widely acknowledged that an open trade regime will only foster trade integration when a range of complementary policies is in place. One of the most important complementary policies is to put in place a well-functioning customs administration that provides traders with transparent, predictable, and speedy clearance of goods. Indeed, a poorly functioning customs administration can effectively negate the improvements that have been made in other trade-related areas. The adoption of information and communication technology (ICT) has been crucial in modern customs administration (Lewis, 2009).

The greater use of electronic systems throughout the supply chain has led to more information being available in an electronic format for use by Customs and other government agencies. In addition to this structured trade data, the internet provides Customs with an invaluable source of information for its control and enforcement functions across the board, including valuation, identity management, goods classification and track/trace activities. This is a changed environment, and it has demanded a new response. The World Customs Organization (WCO) has begun a wholesale review of its structure, instruments and overall strategic response to modern demands. This is termed 'Customs in the 21st Century' (C21) and provides a draft

strategy and action plan for customs administrations everywhere to adjust their national or regional strategic plans. The adoption of information and communication technology (ICT) has been crucial in modern customs administration (Lewis, 2009).

2.1.3. Trade Facilitation in Customs Operations

Customs authorities have embraced advanced analytical technologies. Around half use some combination of big data, data analytics, artificial intelligence and machine learning. Those who do not currently use them have plans to do so in the future. The majority of customs authorities see clear benefits from advanced technologies, in particular with regard to risk management and profiling, fraud detection and ensuring greater compliance. WCO (2022)

These technologies will continue to benefit the work of customs authorities in the future and include developments in block chain, IOT, big data analytics, AI and machine learning, biometrics, drones, virtual and augmented reality, and 3-D printing. WCO (2022)

Digital customs systems are vital for trade facilitation as they automate documentation, improve risk targeting, and enhance the sharing of information among border agencies. In a landlocked country like Ethiopia, having efficient digital customs operations is especially critical for boosting export competitiveness and lowering logistics costs.

Lewis (2009) discusses the significant impact of ICT on enhancing the efficiency of customs operations For several years, international organizations including the Organization for Economic Co-operation and Development (OECD), the World Bank, the World Customs Organization (WCO), the World Trade Organization (WTO) and the European Union, have considered and provided recommendations on the use of information and communication technology (ICT) to enhance trade facilitation and to improve the processes of customs administrations. Now, governments, the business community and individuals are looking to improve their respective financial situation as a matter of absolute necessity during the current global economic downturn. Trade is a key ingredient to bolstering economic performance, and customs services are one component of a nation's trading profile. Prudent management of ICT is a means to reap benefits that impact positively on the effectiveness of all customs operations, and hence the improvement of national finances.

2.1.4. Efficiency and Effectiveness of Customs Operations

The technology acceptance model suggests that whether or not an information system is used successfully hinges on how users perceive its usefulness and ease of use. In the realm of customs administration, platforms like e-CMS, electronic payment system, & automated risk management tools need to be embraced by customs officers, clearing agents and traders if they are going to work well.(ECC,2022)

In the Ethiopia Customs Commission (2022) context the perceived benefits of these digital systems show up in quicker clearance times, fewer mistakes made manually and better tracking of shipments. We discuss the system's ease of use, simplicity, and reliability. If these aspects are in place, users are more inclined to adopt these digital customs systems which lead to a boost in operational performance.

2.1.5. Efficiency and Effectiveness of Trade Facilitation

The landscape of customs clearance operation and taxation is experiencing a significant shift, driven by digital technologies and innovative frameworks. The custom authority in Oman recognizes the needs of to adapt and modernize its processes and operations in customs to align with the global advancement in digitization and evolving technologies. As a result, an electronic system was developed to ensure efficiency and improve the quality of custom clearance processes. (Hussainey, Albaimani & Al Qamashoui, 2026)

LPI is an essential system of measurement for assessing a country’s effectiveness in logistics and trade activities which is developed by the World Trade Bank. There are six elements to measure and benchmark the logistic performance where the customs clearance route acts as a fundamental role in guaranteeing a smooth and timely movement of shipments across borders. Effective customs procedures contribute to reducing trade charges, developing confidence in supply chains, and encouraging economic growth (Hussainey, Albaimani & Al Qamashoui, theories used.

2.2 Empirical Literature Review

2.2.1. Digitalization of Customs Operations and Trade Facilitation

Digital agenda, the issues of technology application and the digital future of customs have been discussed for several years. Work on the introduction of technologies is carried out by customs administrations everywhere. There are results of implementation - the latest joint study of the WTO and the WCO with surveys of administrations of different countries. Block chain, artificial intelligence, big data analytics, biometrics, drones, virtual and augmented reality are the technologies that have already enhanced the efficiency of customs authorities in advanced countries and will continue to serve the purposes of ensuring control, security, and transparent implementation of the fiscal function by customs administrations (Ivanuschenko, 2023).

Otabekovna (2023) analyzes the role of "Digital Customs" in modern customs authority and outlines areas for improvement. Digital customs systems typically involve the use of a centralized database that contains information about goods, traders, and transporters. While, this database is accessed by customs authorities, traders, and other stakeholders, who can submit and access information as required. Digital customs systems also use sophisticated risk management techniques to identify high-risk consignments, allowing customs authorities to target inspections more effectively. One of the key features of digital customs systems is the use of electronic manifests. An electronic manifest is a digital record of the goods being transported. Digital Customs: Navigating the New Frontier In today's globalized world, the internet has become a central hub for the exchange of goods and services. With the rise of e - commerce and digital transactions, customs procedures have had to adapt to keep pace with this new reality. The challenges posed by digital trade have required the creation of new rules and regulations to ensure the safety and security of cross-border transactions. The use of digital customs has revolutionized the customs clearance process, making it more efficient and cost-effective. Customs authorities around the world are grappling with a number of complex issues related to digital trade. These include the authentication of electronic documents, the detection of counterfeit goods, the protection of intellectual property rights, and the management of risks related to e-commerce transactions. As a result, customs operation is being transformed to take into account the unique characteristics of digital trade.

2.2.2. Digital Tools and Systems for Customs Operation and Trade Facilitation

Ivanuschenko (2023) examines how the fiscal functions of customs authorities are altered by digitalization. It is extremely important to avoid duplication of information agencies within the state, as well as between different countries, it's unreasonably expensive. In recent years, experts have referred to this problem under the term «Silo mentality» - fragmentation, lack of unified access to common data, differentiation of ownership of data and the results of their work within one organization. This term, which initially appeared in the business environment, becomes relevant for the activities of departments and states. Global supply chains and global value chains are becoming more and more complex. A number of modern studies are devoted to the analysis of the new 'Supply Chains 4.0». The components are produced in different countries, adding value in different jurisdictions. Access to this information for the purpose of controlling the reliable cost of the final imported goods in the conditions of disparate data ownership is virtually impossible.

2.2.3. The Effect of Digitalization on the Efficiency and Effectiveness of Customs Operations

WCO tools, instruments and applications of significance to customs administrations on digitalization include Revised Kyoto Convention, Revised Kyoto Convention (RKC) Guidelines on Application of Information and Communication Technology, Single Window Compendium, IT Guide for Executives, Model Bilateral Agreement on Mutual Administrative Assistance in Customs Matter & Guidelines for Developing a Mutual Recognition Arrangement/Agreement, Risk Management Compendium, WCO Cargo Targeting System, Customs Enforcement Network (CEN) suite, Recommendation on the Use of Unique Consignment Reference, WCO Data Model and the Recommendation related to its use, and the WCO Study report on Disruptive Technologies, Revised SAFE Framework of Standards 2021,amongst others. The use of these tools and instruments by customs administrations in the region will ensure a standardized and harmonized approach to automation/digitalization. In COMESA, as at November 2021, 13 Member States (MS) are contracting parties to the RKC namely Democratic Republic of Congo (DRC), Egypt, Eswatini, Kenya, Madagascar, Malawi, Manutius, Rwanda, Sudan, Tunisia, Uganda, Zambia and Zimbabwe. Given its significance as a blueprint for efficient, effective and

modern customs procedures, there is a need for the non-contracting COMESA MS to accede to the convention as soon as possible (Gichuki and Msiska, 2021).

2.2.4. The Effect of Digitalization on the Efficiency and Effectiveness of Trade Facilitation

The impact of digitalization on regional trade agreements is significant .The reforms and modernization of customs has involved a shift from processing of manual documents to automation of customs processes and procedures. The changes are wide ranging and include electronic document submission, adoption of electronic payments, inter-agency cooperation & coordination including interfacing of government agency systems involved in clearance, implementation of One Stop Border Posts (OSBPs) pre-arrival goods processing, coordinated border management, electronic tracking of goods and risk-based management. Such measures have long been recognized by Revenue and Customs Authorities to secure and facilitate trade. Customs authorities employ automated customs systems for the processing and clearance of goods, encompassing manifest lodgment, risk assessments, processing of payments to actual release of goods. The efficacy of the automated systems is further enhanced when they are interfaced with other agencies involved in the clearance process along the supply chain, that is, Cross Border Trade Agencies which have automated systems (Gichuki and Msiska, 2021).

The introduction of blockchain technology in the control of foreign trade transactions is related to technological challenges (WCO, 2019). The technology frees participants from duplicating documents and information and allows automatic collection of data on shipments, creating digital analogues of cargo declarations and other documents. But at the same time, it does not confirm that the shipment of the goods actually took place. Procedures for using the technology require further development. And it is possible to use other solutions and technologies, in particular the Internet of things. When analyzing technologies, it is important to pay attention to the division into the so-called emerging and disruptive ones. The latter are largely subject to research since they significantly change the prevailing conditions. Digitalization profoundly affects the fiscal role of customs (Ivanuschenko, 2023).

2.2.5. Challenges Affecting the Digitalization of Customs Operations and Trade Fade Facilitation

Implementation of digital customs systems are faced with challenges like lack of interoperable infrastructure, legal barriers, and slow regulatory processes, especially in economies with underdeveloped technology ecosystems. Encounters diverse obstacles deriving from regional and trade environment variances. Customs agencies will need to reconcile with such future technologies as AI, block chain, and big data interfacing with the current infrastructure and cyber security. Getting through the many international commerce restrictions, data-sharing protocols, and standardization is complex. Also, cultural challenges, like resistance to change from customs officials, traders, and legislators, are major variables responsible for digital transformation. Knowing what these problems are can help us discover ways to guarantee that initiatives for digital customs are on stream. (Sarker, 2025)

The application of the technology for the control procedures, however, generates a number of risks and challenges. The next significant difficulty is in the application of the term «electronic transmissions». “Electronic transmissions are free of Customs duties”, in accordance with the World Trade Organization (WTO) Moratorium on Customs Duties on Electronic Transactions 1998. But today e-mails are not only letters and documents. This is software, music, movies, games, books, etc., often an integral part of a traditional product. Digitalization profoundly affects the fiscal role of customs (Ivanuschenko, 2023).

Ivanuschenko (2023) examines how the fiscal functions of customs authorities are altered by digitalization .It is extremely important to avoid duplication of information agencies within the state, as well as between different countries, it’s unreasonably expensive. In recent years, experts have referred to this problem under the term «Silo mentality» - fragmentation, lack of unified access to common data, differentiation of ownership of data and the results of their work within one organization. This term, which initially appeared in the business environment, becomes relevant for the activities of departments and states. Global supply chains and global value chains are becoming more and more complex. A number of modern studies are devoted to the analysis of the new ‘Supply Chains 4.0». The components are produced in different countries, adding value in different jurisdictions. Access to this information for the purpose of controlling the reliable cost of the final imported goods in the conditions of disparate data ownership is virtually

impossible.

The World Economic Forum (WEF) conducted a survey on Trade tech in 2020 with the aim of understanding the utilization of technology in trade by firms and to assess the impacts of technologies on global trade going forward. The study found that technologies that are thought to have their full impact on trade the soonest are e-commerce, digital payments, cloud computing, IoT, digital services, digital documents and 5G. Technologies expected to impact trade in the longer term are robotics, virtual reality (VR), 3D printing (3DP) and AI (Frontier Technologies are fully defined in the UNCTAD Technology and Innovation Report 2021: Catching technological waves: (WEF, 2020).

Many nations have put into place digital customs for seamless trade. Singapore's Trade Net is the first national computerized customs clearing system, simplifying document submission. This technique cuts clearing time considerably (Yuan, 2019). The European Union offers electronic customs to combine business models to increase regulatory compliance and bolster data sharing (IOANA, 2024). While the Eurasian Economic Union is embracing digitalization to improve cross border movement and minimize bureaucracy, it is also a method to increase economic engagement (Bondarenko, 2023). The United States is also adopting AI-powered block chain solutions to enhance regulations compliance and strengthen sanctions enforcement (Hung, 2024). The examples in the essay indicate that digital customs can help modernize trade and business on a global view. Moving from traditional customs clearance, especially in developing countries, faces significant challenges such as technological barriers, infrastructure limitations, and regulatory inconsistencies. Digital customs clearance, especially in developing countries, faces significant challenges such as technological barriers, infrastructure limitations, and regulatory inconsistencies. It is not very easy since it comes with legislative limits and tech infrastructure requirements. Nonetheless, countries will execute the digital transition, making global commerce efficient, transparent, and adaptable to future difficulties (Ozturk, 2024).

Technological Barriers: The main hindrance to the digital customs implementation is the insufficient infrastructure of IT, especially in developing countries. Most of the customs agencies are handling outdated systems, no internet connectivity or capability to connect to the Internet, and lack of technical knowledge with subsequent difficulties in implementing digital platforms. . (Sarker, 2025)

Regulatory Barriers: The policies of inconsistent international trading and lack of consistent rules on the borders are the other significant barriers. Inconsistent national trade paper policies as well as compliance hamper harmonizing the digital customs procedure. .(Sarker, 2025)

Cultural and Organizational Barriers: Customs officials' and trade players' reluctance to let them change can slow down the speed of digital transformation. Various workers become familiar with efficient and traditional methods of paper-based operations and may find it impossible to switch to electronic methods due to fear of job security status, complexity and lack of training. . (Sarker, 2025)

2.3 Conceptual Frame Works

The conceptual framework of the study shows how digitalizing customs operations connect with trade facilitation. Here, customs operational performance helps to clarify these relationships of independent and dependent variables.

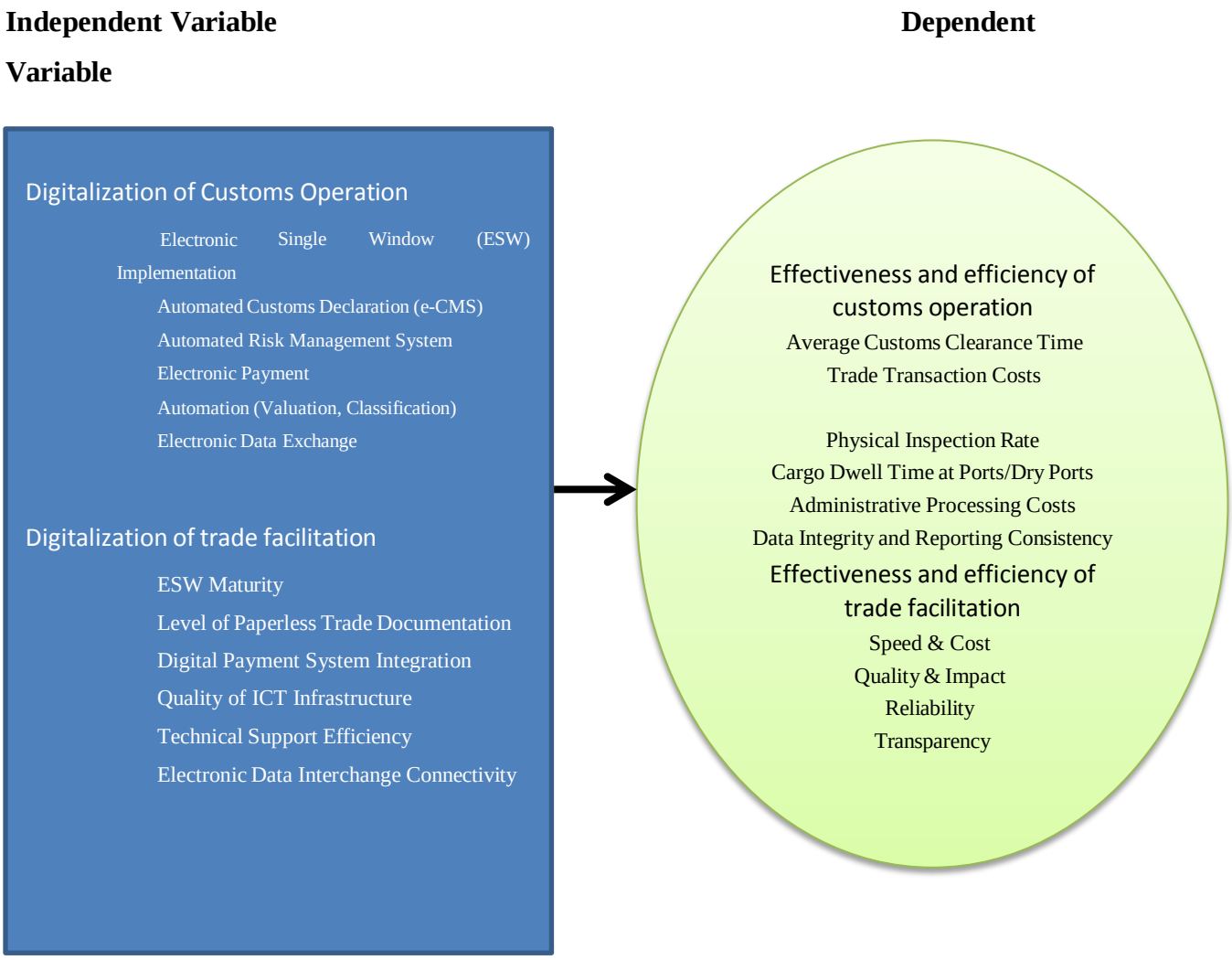
2.3.1. Independent Variable: Digitalization of Customs Operation and Trade Facilitation

Digitalization is all about using information and communication technologies in customs processes. In this study, we look at several key elements: - Electronic declaration systems like e-CMS, Electronic payment systems, automated risk management and selectivity, Electronic data exchange with other government bodies, Automation of tasks like valuation, classification, and documentation.

2.3.2. Dependent Variable: Effectiveness and Efficiency of Customs Operation and Trade Facilitation

Trade facilitation is all about making cross-border trade procedures simpler and more efficient. We measure it through: Reduced clearance times, Lower transaction costs, Predictability in customs procedures, Better compliance from traders

Figure 1: Conceptual Framework



Conceptual frame work of own study Source: Research data, 2026

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter presents the research approach, methods and design being used by the study. Mainly deals with the whole issue of the research framework, including research design, sample size, research methods, data collection and analysis techniques.

3.1. Description of Study Area

This study was conducted by the Ethiopia Customs Commission. The Ethiopian Customs Commission is the body responsible for collecting revenue from Customs duties and Domestic taxes. In addition to raising revenue, it is responsible to protect the society from adverse effects of smuggling and contraband. It seizes and takes legal action on the people and vehicles involved in the act of smuggling, any tax evasion and avoidance while it facilitates the legitimate movement of goods and people across the border (Ethiopian Customs Commission). This study was conducted on head office customs commission.

3.2. Research Approach

This research uses mixed research involving both qualitative and quantitative approaches. Mixed methods research combines quantitative and qualitative approaches by including both quantitative and qualitative data in a single study. The purpose of mixed methods research is to build on the synergy and strength that exists between quantitative and qualitative research methods to understand a phenomenon more fully than is possible using either quantitative or qualitative methods alone. (Gay, Mills & Airasian, 2012). Walliman (2011) provides a foundational overview of research methods and the techniques you use to do research. They represent the tools of the trade, and provide the ways to collect, sort and analyze information so that you can come to some conclusions. If you use the right sort of methods for your particular type of research, then you should be able to convince other people that your conclusions have some validity, and that the new knowledge you have created is soundly based. Research is a term used liberally for any kind of investigation that is intended to uncover interesting or new facts.

As with all activities, the rigour with which this activity is carried out will be reflected in the quality of the results.

This study used a qualitative and quantitative mixed research approach to examine the role of digitization on custom operation and trade facilitation. Mixed methods study refers to the collection or analysis of both quantities and /or qualitative data in a single study (Creswell et al., 2003). In other words, what we generally consider qualitative data- "words, pictures, and narrative"-can be combined with quantitative, numerical data from a larger-scale study on the same issue, allowing our research results to be generalized for future studies and examinations.(Sharlene N. Hesse-Biber 2010). These approaches are appropriate when your purpose is to describe, explain, or evaluate, and are particularly useful for studying complex problems or issues. (Patricla, 2017)

Quantitative data can be measured, more or less accurately because it contains some form of magnitude, usually expressed in numbers. Walliman (2011)

The study followed quantitative approach and descriptive statistics for qualitative approach. So, the study uses both qualitative and quantitative research approaches.

3.3. Research Design

Walliman (2011) describes numerous types of research design that are appropriate for the different types of research projects. The choice of which design to apply depends on the nature of the problems posed by the research aims. Each type of research design has a range of research methods that are commonly used to collect and analyze the type of data that is generated by the investigations. The research design provides a framework for the collection and analysis of data and subsequently indicates which research methods are appropriate.

Based on the purpose of research, scientific research is classified into three types: exploratory, descriptive and explanatory. This study uses only descriptive analyses of the role of digitalization on custom operations and trade facilitation within the Ethiopian Customs Commission.

3.4. Population and Sampling

This study is conducted at Ethiopia Customs Commission at head office. According to Creswell and Creswell (2018) provide the population. Identify the population in the study. Also state the size of this population, if size can be determined, and the means of identifying individuals in the population. Questions of access arise here, and the research might refer to availability of sampling frames mail or published lists of potential respondents in the total population. • Sampling design. Identify whether the sampling design for this population is single stage or multistage (called clustering). A single-stage sampling procedure is one in which the researcher has access to names in the population and can sample the people (or other elements) directly. In a multistage or clustering procedure, the researcher first identifies clusters (groups or organizations), obtains names of individuals within those clusters, and then samples within them. Type of sampling. Identify and discuss the selection process for participants in these research samples. Ideally to draw a random sample, in which each individual in the population has an equal probability of being selected (a systematic or probabilistic sample). The HR data of Customs Commission at head office indicates that the total worker number of head office is 842.

3.4.1. Sample Design

In this research, a stratified random sampling method will be use to obtain representation from all departments. The selected group is made up of 842 staff members from the ECC Headquarters.

For this study focused on the 842 customs officers currently stationed at the Head Office. To ensure the data was accurate and up-to-date, I used the official list of active personnel provided by the Ethiopian Custom Commission's HR department as the sampling frame.

In this research the sample size using Mugenda and Mugenda, which led to a sample of N=89 respondents when a 10% margin of error was considered. Strata (like IT Department, Operations, and Finance) were created from the population, and from each stratum, participants were proportionally selected randomly. This procedure was employed to include different viewpoints in the picture of how digitalization influences the commission's various functionaries' roles.

3.4.2. Sample Size

To determine the sample size from the number of people working at Customs Commission head office used a simple formula to include in the survey. The employees are considered to be homogenous in their nature and also influenced by the operation of the system. To calculate the sample size used by Mugenda and Mugenda, (2003) Based on this formula confidence level is 90% and level of precision is 10%, 10% margin of error was used due to the homogeneity of the population. Where e^2 is this a marginal error?

According to Taro Yamane (2003), when the population size (N) is known, the sample size (n) can be determined using the following formula:

$n = {}^{N}1+N\,(e2)$

Where:

- n = sample size
- N = total population
- e = level of precision (marginal of error)

  Size (n) can be determined using the following formula:

$$n = \frac{842}{1+842\ (0.10^2)}$$

$$n = \frac{842}{1+8.42}$$

n = 89.4

Based on this calculation, I rounded the result to the nearest whole number, and we ended up with 89 customs officers for our study sample.

Therefore, based on the above formula the sample size is determined by 89 respondents.

3.5. Data Collection

Data Collection Methods applied in this research that takes data from both primary and secondary sources to provide an in-depth understanding of how digitalization is changing the way customs operations and trade facilitation are being done. When you undertake a research study, in most situations, you need to collect the required information; however, sometimes the information required is already available and need only be extracted. (Ranjit, 2011)

To achieve this, the relevant data has been obtained through two main approaches:

3.5.1. Primary Data Collection

The primary data collected mainly from employees of Customs commission at head office. Other information from informal discussion and interviews held with practitioners in the sector and expert opinion. To collect primary data (from primary sources) the study is going to use Questionnaire. The questionnaire is designed using a 5-point Likert Scale (ranging from "Strongly Disagree" to "Strongly Agree")

3.5.2. Secondary Data Collection

Secondary data that will be gathered from written materials of customs commission documents and reports and other like books, other researchers, and the internet. To get secondary data, different documents from concerned bodies of the customs commission will be referred and in addition other secondary sources like books, internet and other Research will be used.

3.6. Data Analysis

After collecting the data through questionnaires, the researcher has organized and prepared the various data depending on the sources of information. Upon collection, data from questionnaires and interviews will be organized, coded, and prepared for analysis, distinguishing between quantitative and qualitative sources. Quantitative data analysis will be performed using SPSS Version 2026 and Microsoft Excel, employing **descriptive techniques** to interpret findings effectively. Descriptive statistics, presented through tabulations, percentages, and figures, will summarize the data for clarity.

3.7. Scale Reliability

Reliability and validity are important factors when performing research. Reliability aims to secure that the measuring instrument should not generate any random errors. Reliability refers to the quality of a measurement procedure that provides repeatability and accuracy (Ranjit, 2011).

3.8. Validity

The validity of the measuring instrument should not generate systematic errors. According to Malhotra (2010), there are three types of validity in a study: content validity, predictive validity, and construct validity. This study addressed content validity through the review of literature and adapting instruments used in previous research.

3.9. Ethical Considerations

Ethical issues consideration on study's necessary for the purpose of ensuring the privacy as well as the safety of the respondent. The researcher used the data from Customs workers which were collected through a questionnaire from the Customs Commission head office. The confidentiality of the participants was also ensured by not disclosing their names or personal information in the research question. Only relevant details that helped in answering the research questions were included.

Hence, this study fully considers the ethical matters of all the individuals involved in the study.

CHAPTER FOUR

RESULTS, DISCUSSION AND INTERPRETATIONS

4.1. Introduction

This chapter deals with data presentation, analysis, and interpretation of data obtained through survey questionnaires and secondary sources of data together. To collect primary data 89 questionnaires were distributed for employees of the Ethiopia Customs Commission head office as sample size. Out of N=89 questioners 85 respondents were returned and participated, however 2 rejected as a result of missing data and 2 not returned. The result of the response rate was presented as 97% of respondents were returned the questionnaire filling properly. Therefore, the result obtained from the response rate implies the rate is a best representative of the sample size, and analyzed using statistical software SPSS (Version 26) and EXCEL.

4.2. Demographic Profile of Implication

The study analyzed the background information of the respondents by using the following parameters: gender, age, education background, position in the organization, and work experience held by the respondents. Demographic data of respondents are presented and analyzed as shown in the following tables.

Based on the following table 4.1 out of the total 85 respondents 49 (58%) of them were males while the rest 36 (42%) of them were females. As far as respondents' age is concerned, the distribution of frequency and percentage shows that, 4 (5.3%) of respondents found between the age groups of 18-25 years, about 4 (5%) of them found between the age groups of 26-35, about 38(45%) of them found between the age groups of 36-46, about 43 (51. According to the age distribution of the respondent, the majority of them were found at young and youth age groups.

Variable	Category	Frequency	Percent
Gender	Male	49	58%
	Female	36	42%
Age	18-25	4	5%
	26-35	38	45%
	36-46	43	51%
Education Background	First Degree	45	53%
	Second Degree	40	47%
Position in Organization	Senior Manager	12	14%
	Middle level Manager	22	26%
	Lower level	27	32%
	Other	23	27%
Work experience	1-5 year	22	26%
	6-10 years	21	25%
	11-15 years	33	39%
	>15 years	9	11%
Total		**85**	**100%**

Table 4.1: Demographic data of respondents Source: Research data, 2026

As per as table 4.1 concerning the educational level of the respondents the data show that, 45(53%) and 40 (47%) of respondents found education level of First Degree and Second Degree holders respectively. According to the data level of education in Ethiopia, the Customs Commission head office is dominated by First Degree holders, followed by Second Degree respectively.

Concerning the position and status of the respondents the result indicates that 12(14%) of respondents were Senior Manager, 22(26%) of the respondents were Middle Level manager, 27(32%) of respondents were the Lower Level and 23(27%) of respondents were others. The results indicate that the respondents were from different positions and status of organization however most respondents were lower level.

With related to the employee work experience in organization 22 (26%) of them were found between 1-5 years, on the other hand 21 (25%) of respondent between 6-10 years and the rest 9 (11%) were above 15 years of work experience and the 33 (39%) of them were between 11-15 years. As the data indicated, the majority of the respondents were found between 11-15 year experiences. With regards to the organization work experience condition, it can be shown that most of the employees are well experienced.

4.3. Descriptive Analyses Assess the Current State of Digital Customs Operations and Trade Facilitation

In this part of the study as it were revealed in the objectives articulated under section 1.5 to describe the respondent views on the role of digitalization on Customs operation and facilitation at Ethiopian Customs commission.

Accordingly, primary data were collected about the role of digitalization on customs operation and trade facilitation under five major categories namely i) customs operation, ii) trade facilitation, iii) identify the key digital tools & system, iv) the effect of digitalization efficiency and effectiveness, v) Challenges affecting implementation

Considering the existing experiences with the customs operation, respondents were asked to indicate the extent of their agreement about the role of digitalization on customs operation and trade facilitation from the alternative questions arranged in five point Likert scale method to measure the role of digitalization on customs.

Based on this, respondents were to personally evaluate the role of digitalization on customs operation and trade facilitation of Ethiopia Customs commission using five point Likert scale responses namely; 1= strongly disagree, 2=disagree,3= neutral, 4=agree and 5=strongly agree. All respondents were workers from the Ethiopian Customs Commission head office.

4.3.1. The Current State of Digitalization Customs Operation

Customs operations: These operations involve verifying documentation, classifying goods, calculating duties and taxes, and performing physical checks to enforce national safety and economic policies

Question Item	Mean	Std.Dev
ECC digitalized the verification of documentation to enforce national safety and economic policies	3.94	1.004
ECC digitalized the classification of goods to enforce national safety and economic policies	3.99	0.994
ECC digitalized the calculation of duties and taxes to enforce national safety and economic policies	3.95	1.022
ECC digitalized the performing of physical checks to enforce national safety and economic policies.	3.90	0.919
Mean of mean	**3.95**	

Table 4.2: Analysis of current state of digital customs operation Source: Research data 2026

Given the information in Table 4.2 on customs operation verification of documentation highly digitalized as Ethiopian customs commission has a role in achieving fast delivery service, accounts for a mean score 3.94. Accordingly Ethiopian Customs Commission highly digitalized the verification of documentation to enforce national safety and economic policies for the current state of digitalization achieving fast delivery services at ECC.

The second question was asked to confirm ECC digitalized the classification of goods to enforce national safety and economic policies on customs operation, with mean score 3.99 this indicate that ECC highly digitalized the classification of goods to enforce national safety and economic policies on customs operation.

The third question was asked ECC digitalized the calculation of duties and taxes to enforce national safety and economic policies digital customs operation, with a mean score 3.95 based on this result ECC highly digitalized for support for calculation of duties and taxes.

The fourth question was ECC digitalized the performing of physical checks to enforce national safety and economic policy, with mean score 3.90 the result shows that ECC highly digitalized with maximizes the performing of physical checks.

Therefore, based on the above data the average of mean score on current state of digitalization on

customs operations of documents verification, classification of goods, calculation of duties and taxes, performing of physical checking digitalization role on customs operation and trade facilitation to enforce national safety and economic policies accounts for a grand mean of 3.95 indicating customs rate is moderately high on digitalized.

4.3.2. The current State of Digital Customs on Trade Facilitation

Trade facilitation: is simplifying, standardizing, and harmonizing international border procedures to make trading faster, cheaper, and more transparent.

Question Item	Mean	Std.Dev
ECC digitalized the Simplification of international border procedures to make trading faster, cheaper, and more transparent.	4.6	6.456
ECC digitalized the Standardization of international border procedures to make trading faster, cheaper, and more transparent.	3.77	1.016
ECC digitalized the harmonization of international border procedures to make trading faster, cheaper, and more transparent.	3.89	0.900
Mean of Mean	4.09	

Table 4.3: Analysis of current state of digital trade facilitation Source: Research data 2026

Given the information in the above table 4.3, also on ECC digitizing the Simplification of international border procedures, accounts for with a mean score 4.6. Accordingly ECC highly accelerated digitalized Simplification of international border procedures to make trading faster, cheaper, and more transparent.

The result for the second questions account for a mean score 3.77. Accordingly ECC is moderately highly digitalized the Standardization of international border procedures to make trading faster, cheaper, and more transparent.

The last question ECC digitalized the harmonization of international border procedures to make trading faster, cheaper, and more transparent, Accounts for a mean score 3.89 so the results shows that ECC is above average performance digitalized at harmonized customs procedure.

Based on the above data the average mean of mean score 4.09. This indicates on the current state

of the digitalization on customs on trade facilitation advanced performance high.

4.3.3. To identify the key digital tools and systems implemented for the role of digitalization of customs operation and trade facilitation.

Question Item	Mean	Std.Dev
The ECC has successfully implemented **Electronic Customs management systems** (e.g., e-CMS) to automate core administrative workflows.	3.87	1.033
Internal System Integration effectively links various customs units (valuation, tariff, and audit) to ensure a seamless data flow.	4.09	0.826
The **Electronic Payment system** allows for the real-time digital settlement of duties and taxes, reducing manual bank reconciliations.	4.06	0.786
Digital tools for customs valuation and risk profiling have significantly improved the accuracy and speed of internal inspections.	3.84	0.998
The **Electronic Single Window** (e-SW) effectively integrates all cross-border regulatory agencies into one centralized digital portal for traders.	3.84	0 .879
The **Digital Document Submission system** allows for paperless filing of all required permits and certificates by importers and exporters.	3.95	0.785
Cargo Tracking systems (such as ECTS) provide real-time visibility and monitoring of goods throughout the transit corridor.	3.87	0.923
External System Integration seamlessly connects the ECC with trade stakeholders like banks, shipping lines, and clearing agents.	3.99	0.764
Mean of Mean	3.953	

Table 4.4: Key digital tools and system analysis Source: Research data 2026

Given the information in the above table 4.4, on ECC the e-CMS and trade facilitation to automate core administrative workflows accounts for a mean score 3.87. Accordingly, ECC moderately strong performance to apply and implements the e-CMS system to improving the services providing for customers serving anywhere of the country online.

The second on ECC and trade facilitation the internal system integration accounts a mean score 4.09. Accordingly, ECC highly satisfied for effective links various customs units (valuation, tariff, and audit) to ensure a seamless data flows.

The third question was asked to confirm the electronic payment system allows for the real-time digital settlement of duties and taxes reducing manual bank reconciliations. This Accounts for a mean score 4.06 which ECC is highly digitalized to collect taxes and duties for a countries revenues.

The fourth on digital tools accounts a mean score 3.84. Accordingly the ECC has positive perception on details tools for customs and risk profiling have significantly improve the accuracy and speed of internal inspection.

The fifth on e-SW in the role for digitalization and customs operation and trade facilitation account the mean score 3.84, accordingly for this e-SW moderate, high positive perception for effective to integrate all cross-border regulatory agencies and into one centralized digital portal.

The sixth the role of digitalization on customs operation and trade facilitation for digital documents system accounts a mean score 3.9. This indicates that the submission system allows for paperless filing of all required permits and certificates by importers and exporters in ECC is favorable perception.

Seventh was asked the role of ECC and trade facilitation for cargo tracking systems accounts a mean score 3.87. This indicates that time and visibility and monitoring of goods throughout the transit corridor really provided as partially moderate.

The eighth asked the role of ECC and trade facilitation on External system Integration that accounts a mean score 3.99. This indicates that ECC moderately high with Trade stakeholders like banks. Shipping lines and customs clearing agents seamlessly connected.

Finally, key digital tools and systems implemented for the role of digitalization of customs operations and trade facilitation. Total Grand for the respondents a mean score 3.953. This moderate high shows customs apply and use the tools however use manual methods until now with most of the time e-CMS, e-SW and payment methods improve digitalization customs operation apply advanced.

4.3.4. To Evaluate the Effect of Digitalization on the Efficiency and Effectiveness Customs Operations

The efficiency and effectiveness of customs trade facilitation refers to how well customs procedures help goods move quickly, smoothly, and at a lower cost across borders. This occurs while still ensuring security, compliance, and revenue collection.

Question Item	Mean	Std.Dev
The use of digital tools has significantly **reduced administrative costs** and "hidden fees" (e.g., storage and demurrage) for traders.	3.89	0.911
The Single Window system has **eliminated the need for traders** to submit the same data multiple times to different government agencies.	4.02	0.756
Digital document submission has **shortened the overall time** traders spend Interacting with regulatory authorities.	3.91	0.840
The digitalized trade process is consistent, allowing traders to accurately plan their **logistics and delivery schedules**.	3.74	0.861
Digital platforms provide clear and accessible information regarding trade regulations, fees, and the **real-time status of shipments**.	3.91	0.811
The current trade facilitation tools effectively meet the needs of **all supply chain actors, including banks, carriers, and agents.**	3.82	0.833
Mean of Mean	3.881	

Table 4.5: Evaluate efficiency and efficiency trade facilitation Source: Research data 2026

First the above table 4.5 accounts a mean score 3.89.this indicated that the ECC highly digitalized on efficiency and effectiveness uses of digital tools has significantly reduced administrative costs (storage fee, demurrage)

The Secondly question asked ECC, accounts a mean score for e-SW 4.02.this indicated that the ECC high level of perception on efficiency and effectively e-SW system has eliminated the need for traders to submit the same data multiple times to different gov't agencies.

The third question asked the effect of ECC digitalization on the efficiency and effectives on customs operation digital documents and submission has the overall time trader's speed interacting with regulatory authorities with a mean score 3.91. This indicates that ECC highly moderate on

digital documents and submission has the overall time trader's speed interacting with regulatory authorities has shorted.

The fourth question asked ECC digitalized trade process is consistent allowing traders to accurately plan their logistics and delivery schedules with a mean score 3.74. This indicates the ECC highly moderate on efficiency and effectively digitalized trade process in consistent plan their logistics and delivery schedules.

The Fifth question asked ECC the real time status of shipments with a mean score 3.91.this indicates that ECC highly digital on efficiency and effectively the real time status of shipments clear and accessible information regarding regulation and fees to provide using digital platform moderately.

The last question asked ECC for the current trade facilitation tools effectively with a mean score 3.82. This indicate that on ECC high at efficiency and effectively on customs operations for the current trade facilitation tools effectively to meet the needs of all supply chain actors including banks and gents moderately.

Based on the above data the average mean score 3.881. This indicates that ECC on the efficiency, effectiveness of customs trade facilitation by reduced cost, avoid duplication, interacting with regulatory and trade process consistency, Accurately, provide clear and accessible information regarding trade regulation, fees and the real time statues of shipments must be applied continuously to improve the use of digitalization in the digitalization world as moderately

Efficiency of Customs Operations	Mean	Std.Dev
Internal digital systems have **accelerated the processing speed** of declarations, from initial entry to final release.	3.96	0.794
The ECC effectively uses automated **systems to manage** high cargo volumes with minimal reliance on manual, paper-based labor.	3.93	0.842
Integrated digital modules have **eliminated internal bottlenecks** by allowing for the instant transfer of data between different customs units.	3.80	0.910
The automated risk management system effectively distinguishes between high-risk and compliant shipments for more accurate inspections.	3.81	0.998
Digitalized valuation and classification tools have improved the accuracy of duty collection and reduced the risk of revenue leakage.	3.94	0.836
The digital infrastructure allows the ECC to enforce trade laws and security protocols more strictly and consistently than manual systems.	3.87	0.768
Mean of mean	3.225	

Table 4.6: The effective and efficiency analysis of customs operation Source: Research data 2026

The above table 4.6 shows that on ECC Internal digital systems have accelerated the processing speed of declarations, from initial entry to final release. Accounts a mean score 3.96. Accordingly ECC highly or above average level for Internal digital systems have accelerated the processing speed of declarations, from initial entry to final release.

The secondly question The ECC effectively uses automated systems to manage high cargo volumes with minimal reliance on manual, paper-based labor with a mean score 3.93. This indicates that ECC highly satisfaction on digitalized for effectively uses automated systems to manage high cargo volumes with minimal reliance on manual, paper-based labor.

The third question for integrated digital modules have eliminated internal bottlenecks by allowing for the instant transfer of data between different customs units with a mean of 3.80. Based on this results ECC highly operational reality for integrated digital modules have eliminated internal bottlenecks by allowing for the instant transfer of data between different customs units.

The fourth question for the automated risk management system effectively distinguishes between

high-risk and compliant shipments for more accurate inspections with the mean of 3.81. This results shows that ECC highly above average digitalized by automated risk management system effectively distinguishes between high-risk and compliant shipments for more accurate inspections.

The fifth question for ECC Digitalized valuation and classification tools have improved the accuracy of duty collection and reduced the risk of revenue leakage with mean score accounts 3.94. This indicates that ECC highly above average performance digitalized on valuation and classification tools have improved the accuracy of duty collection and reduced the risk of revenue leakage.

The last question for ECC The digital infrastructure allows the ECC to enforce trade laws and security protocols more strictly and consistently than manual systems with the mean score 3.87. This indicates that ECC moderately high performance for infrastructure allows to enforce trade laws and security protocols more strictly and consistently than manual systems.

Therefore, based on the above data the average mean on to accelerated the process speed of declaration from initial to final release, to automated high cargo volumes with minimal reliance on manual paper based labor, by eliminated internal bottlenecks entirely the customs units, high risk compliant shipments for more accurate inspections , have improved the accuracy of duty collection and reduced the risk of revenue leakage and the digital infrastructure allows the ECC to enforce trade laws and security protocols more strictly and consistently than manual systems accounts for a grand total 3.225.indicating moderately and slightly positive

4.3.5. Challenges Affecting the Implementation and Utilization of Digitalization on Customs Operations and Trade Facilitation

A. Regulatory Challenges	Mean	Std.Dev
Existing customs laws hinders the digitalization of customs Procedures	**3.78**	0.943
Outdated regulations hinder implementation of digital systems	**3.87**	0.708
Data protection regulations affect system usage	**3.73**	1.095
Lack of harmonized regulations affects system integration	**3.69**	0.964
Regulatory approval delays adoption of digital systems	**3.81**	1.052
Mean of mean	**3.7776**	

Table 4. 7: the analysis of Regulatory challenges, Source: Research data 2026

B. Technological Challenge

B. Technological Challenge	Mean	Std.Dev
Poor ICT infrastructure affects system performance	4.16	0.738
System downtime disrupts customs operations	4.05	1.022
Lack of system integration affects efficiency	4.10	0.937
Cyber security risks affect trust in digital systems	4.01	0.857
Limited access to modern technology hinders digitalization	4.15	0.866
Mean of mean	4.094	

Table 4.8: Analysis of Technological challenges Source: Research data 2026

C. Cultural and Organizational Challenges	Mean	Std.Dev
Resistance to change affects adoption of digital systems	3.99	1.012
Lack of training affects effective system usage	4.13	1.003
Limited digital skills affect system utilization	4.13	0.845
Organizational culture affects digital transformation	4.10	0.850
Lack of management support affects implementation	4.12	0.827
Mean of mean	4.094	

4.4. Cultural and Organizational Challenge analysis, Source: Research data 2026

From the above tables, 4.7 on existing customs laws hinders the digitalization of customs Procedures with accounts a mean score 3.78. Accordingly, ECC moderately highly existing customs laws hinders the digitalization of customs.

The second questions asked to outdated regulations hinder implementation of digital systems with the mean score 3.87. This indicates that on ECC moderately high efficient outdated regulations hinder implementation of digital systems.

The third question asked to data protection regulations affect system usage with mean score 3.73.

This indicate that ECC high level of agreement for Data protection regulations affect system usage.

The fourth question asked for Lack of harmonized regulations affects system integration with the mean score 3.69. This indicate the ECC moderately high level on agreement or satisfaction on Lack of harmonized regulations affects system integration.

The fifth question asked ECC Regulatory approval delays adoption of digital systems with the mean score 3.81. This indicate that ECC moderately high for regulatory approval delays adoption of digital systems.

The sixth question asked for Poor ICT infrastructure affects system performance with the mean score 4.16. This indicate that ECC strongly agreement for Poor ICT infrastructure affects system performance is high.

The seventh question asked for System downtime disrupts customs operations with the mean score 4.05. This indicate that ECC's high to very highly disrupt customs operations by System downtime.

The eighth was ECC Lack of system integration affects efficiency with the mean score 4.10. This indicate ECC high level of performance affected by the Lack of system integration efficiency.

The ninth question asked for ECC Cyber security risks affect trust in digital systems with the mean score 4.01. This indicate ECC strongly performing Cyber security risks affect trust in digital systems

The tenth question asked for ECC Limited access to modern technology hinders digitalization with mean score 4.15. This indicated that ECC on limited access to modern technology hinders digitalized in high level of satisfaction.

The eleventh question asked for ECC Resistance to change affects adoption of digital systems with the mean score 3.99. This indicated that ECC moderately resistance to change affects adoption of digital systems

The twelve question asked on ECC Lack of training affects effective system usage with the mean score 4.13. This indicated that ECC has positive evaluated for lack of training affects

effective system usage.

The thirteen question asked for ECC Limited digital skills affect system utilization with the mean score 4.13. This indicated that ECC highly practiced the limited digital skills affect system utilization.

The fourteen question asked for ECC Organizational culture affects digital transformation with the mean score 4.10. This indicated that ECC strongly affected by Organizational culture digital transformation.

For the fifteen question asked for ECC Lack of management support affects implementation with the mean score 4.12. This indicated that ECC efficiently affected by lack of management support implementation

Therefore based on the above data the average mean score on the average and high performance outcomes for customs procedure, digital systems, data protection regulation and harmonized affects system integration and usage, approvals delays adoptions with grand mean of mean 3.7776 ECC show positive perception for regulatory challenges.

Second the average mean of mean 4.094 indicated ECC highly challenged in technology by ICT infrastructure, system down time disruption, lack of system integration, cybersecurity, and limitation of modern technology and the Third grand of the mean of mean accounts again 4.094 that ECC efficiently challenged on culture and organization challenges indicated that resistance to change system, lack of training, limited digital skill, organization cultures and lack of management support affects digital system, usage, utilization, information and implementation.

4.5. Comparison of Average Mean

The average mean of current state of digitalization, key digital tools and systems, evaluate the effect of digitalization and challenges affecting implementation and utilization of digitalization.

Description	Average Mean
To current state of digitalization on customs operations and trade facilitation	4.02
To identify the key digital tools and systems implemented for the role of digitalization of customs operation and trade facilitation	3.95
To evaluate the effect of digitalization on the efficiency and effectiveness customs operation	3.55
To identify the challenges affecting the implementation and utilization of digitalization on customs operations and trade facilitation	3.99

Table 4.9: Comparative Average mean of the study Source: Research data 2026

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. Introduction

This chapter presents a brief summary of majors on summary, conclusions and recommendations based on analysis made on chapter four. The chapter has three major sections namely 5.2 summary, 5.3 conclusion and 5.4 recommendations.

5.2. Summary of findings

Based on data analysis, discussion of results with respect to the basic research questions in the survey, the following are the summary of major findings of this study.

- The data was collected from Ethiopia Customs Commission head office employees, Out of total 89 questioners 85 respondents were returned and participated. These were mainly male (58%) remaining female; most are first degree holders (45%) and experienced workers.
- There were five perspectives that see the role of digitalization on custom operations and trade facilitation. On conducting customs operation and trade facilitation, key digital tools and system implements, evaluation of the terms of current state of digitalization, based on the analyzed data the role was found to be ranked first with a mean score of 4.09 digital tools followed by the major challenges with a grand mean score of 3.94.
- Thus most respondents agree that the role of digitalization on customs operation and trade facilitation of ECC was performed but need attention to service better. These results imply that the ECC the role of digitalizing needs improvement the role and use of digitalization needs improvement on customs operation and trade facilitation. thus most of the respondents said the role of digitalization was performed on average. These results imply that the Ethiopian customs commission
- As per the study result well the role operated and performed a grand mean score 3.95, 4.09, 3.953, 3.881, 3.225, 3.776, 4.094 and 4.094 respectively. Comparing the role of digitalization on customs operation and trade facilitation was shown high.
- The results and findings from Ethiopian Customs commission in terms of current state of

digitalization, key digital tools and system, evaluate the effect of digitalization and identify the major challenges too.

- The role of digitalization on customs in efficiency and effectiveness of customs operation and in operation of process. Finally, the major challenges affecting the implementation of digitalization

5.3. Conclusions

Based on the results obtained from analysis and finding the following conclusions are made for digitalization the customs operation and trade facilitation study.

The finding of the study indicates that the role of digitalization on custom operations importance to facilitate the import and export of the country trade, however from operational the cultural, infrastructural challenges existed now. Therefore, to ensure their efficiency and effectiveness, the role of digitalization is a very important and big issue. Going digital is a massive win for modernizing customs and speeding up international trade. Customs administrations aren't just talking about tech; they are actively rolling out electronic systems that completely reshape how goods move across borders. Looking at the data, the high feedback scores make one thing obvious: the people on the ground clearly see and feel the impact of these digital platforms improving their day-to-day operations.

The study found that using digital tools can really improve how customs operations work. It makes things more efficient and effective by providing better services, cutting down on paperwork, reducing wait times, and making everything more transparent. This also helps speed up the customs clearance process. But even though people think digitalization is a good thing, the study shows that customs operations aren't yet as efficient and effective as they could be. There's still room for improvement to reach the expected level of performance.

The study also identified some challenges that impede implementation and use of digitalization in customs operations, as well as trade facilitation. Technological limitations, inadequate infrastructure / tools, lack of technical skills and training, organizational resistance to change as well as regulatory or policy-related barriers are some of the others. The existence of these challenges impairs the full potential of digital transformation in customs administration.

Thus, the study concludes that despite digitalization being an important tool to improve customs and trade facilitation, implementation challenges need to be addressed in a manner as to better operationalize the use of effective digital systems. Improving technological infrastructure, enhancing employee

5.4. Recommendations

To improve the impact of the role digitalization and trade facilitation in the Ethiopian Customs Commission, the ECC and stakeholders must prioritize the complete integration of the national Electronic Single Window (e-SW), electronic customs management system (e-CMS), and online electronic payment system for duties and taxes. This includes verifying and assessing declarations while ensuring oversight of activities from the headquarters to all border points, aiming to lessen human intervention and decrease clearance times for all imports and exports. Additionally, the Ethiopian Customs Commission (ECC) must invest in strong cyber security, infrastructure, and ongoing staff training programs to successfully handle the shift from manual paperwork to electronic automated systems. Ultimately,

Finally, the study the ECC enhance its data sharing protocols with adjacent nations and regional trade groups to align customs processes, which would facilitate a smoother movement of goods and lower the overall trade costs due to additional warehousing and demurrage fees.

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APPENDICES

Appendix I – Questionnaire

Addis Ababa University College of Business and Economics School of Commerce

Dear Respondents,

This questionnaire is designed to gather information on ***"The Role of Digitalization on Custom Operations and Trade Facilitation; Evidence from Ethiopian Customs Commission."*** The purpose of the study is to fulfill a thesis requirement for the Masters of Art in Logistics and Supply Chain Management. The information that you provide will be used only for the study purpose and will be kept strictly confidential.

Finally, I would like to thank you in advance for your cooperation and dedication of your valuable time to fill this questioner.

With Regards,

Amanuel Gobeze Bable

Contact address Address:-Phone No. 0925250135 E-mail:amanuelg423@gmail.com

PLEASE NOTE:

No need of writing your name

Indicate your answer with mark (√) on appropriate block/cell for all questions. If you have any question, please contact me with the following address:-

PART I. BACKGROUND INFORMATION

1. **Gender** a) Male b) Female

2. **Age Group** a) 18-25 b) 26-35 c) 36-46 d) 47-55 e) 56 and above

EDUCATION BACKGROUND

a) Secondary school and below b) Completion of High School c) Diploma

d) First Degree e) Second Degree and above

POSITION AND STATUS IN THE ORGANIZATION

b) Senior Manager b) Middle Level Manager c) Lower Level d) Other _____

WORK EXPERIENCE IN ORGANIZATION

c) 1-5 Year b) 6-10 Years c) 11-15 Years d) Above 15 Years Dear respondent:

This section of the questionnaire addresses the current state of digitalization of Ethiopian Customs commission. Please read each statement applied to the current state of digitalization and indicate the extent of your agreement towards the statements by putting a tick mark (√) in the boxes representing your judgment.

Please use the rating scale representing your level of agreement as follow: 1=**Strongly Disagree**, 2=**Disagree**, 3=**Neutral,** 4=**Agree**, 5=**Strongly Agree**,

Code	To assess the current state of digitalization on customs operations and trade facilitation	Scale				
A	**Customs operations**: These operations involve verifying documentation, classifying goods, calculating duties and taxes, and performing physical checks to enforce national safety and economic Policies.	**1**	**2**	**3**	**4**	**5**
1.	ECC digitalized the verification of documentation to enforce national safety and economic policies					
2.	ECC digitalized the classification of goods to enforce national safety and economic policies					
3.	ECC digitalized the calculation of duties and taxes to enforce national safety and economic policies					
4.	ECC digitalized the performing of physical checks to enforce national safety and economic policies.					
B	**Trade facilitation**: is simplifying, standardizing, and harmonizing International border procedures to make trading faster, cheaper, and more transparent.	**1**	**2**	**3**	**4**	**5**
5.	ECC digitalized the Simplification of international border procedures to make trading faster, cheaper, and more transparent.					
6.	ECC digitalized the Standardization of international border procedures to make trading faster, cheaper, and more transparent.					
7.	ECC digitalized the harmonization of international border procedures to make trading faster, cheaper, and more transparent.					
C	**To identify the key digital tools and systems implemented for the role of digitalization of customs operation and trade facilitation.**	**1**	**2**	**3**	**4**	**5**
C.1	**Digitalization of Customs Operations**					
8.	The ECC has successfully implemented **Electronic Customs Management systems** (e.g., CMS) to automate core administrative workflows.					
9.	**Internal System Integration** effectively links various customs units (valuation, tariff, and audit) to ensure a seamless data flow.					
10.	The **Electronic Payment system** allows for the real-time digital settlement of duties and taxes, reducing manual bank reconciliations.					

11.	**Digital tools** for customs valuation and risk profiling have significantly improved the accuracy and speed of internal inspections.					
C.2	**Digitalization of Trade Facilitation**					
12.	The **Electronic Single Window** (eSW) effectively integrates all cross-border regulatory agencies into one centralized digital portal for traders.					
13.	The **Digital Document Submission system** allows for paperless filing of all required permits and certificates by importers and exporters.					
14.	**Cargo Tracking systems** (such as ECTS) provide real-time visibility and monitoring of goods throughout the transit corridor.					
15.	**External System Integration** seamlessly connects the ECC with trade stakeholders like banks, shipping lines, and clearing agents.					
D	**To evaluate the effect of digitalization on the efficiency and effectiveness customs operations**	**1**	**2**	**3**	**4**	**5**
D1	**Efficiency of Trade Facilitation**	**1**	**2**	**3**	**4**	**5**
16.	The use of digital tools has significantly **reduced administrative costs** and "hidden fees" (e.g., storage and demurrage) for traders.					
17.	The Single Window system has **eliminated the need for traders** to submit the same data multiple times to different government agencies.					
18.	Digital document submission has **shortened the overall time** traders spend Interacting with regulatory authorities.					
D2	**Effectiveness of Trade Facilitation**	**1**	**2**	**3**	**4**	**5**
19.	The digitalized trade process is consistent, allowing traders to accurately plan their logistics and delivery schedules.					
20.	Digital platforms provide clear and accessible information regarding trade regulations, fees, and the **real-time status of shipments**.					
21.	The current trade facilitation tools effectively meet the needs of **all**					
	supply chain actors, including banks, carriers, and agents.					
D3	**Efficiency of Customs Operations**	**1**	**2**	**3**	**4**	**5**

22.	Internal digital systems have **accelerated the processing speed** of declarations, from initial entry to final release.					
23.	The ECC effectively uses automated **systems to manage** high cargo volumes with minimal reliance on manual, paper-based labor.					
24.	Integrated digital modules have **eliminated internal bottlenecks** by allowing for the instant transfer of data between different customs units.					
D4	**Effectiveness of Customs Operations**	**1**	**2**	**3**	**4**	**5**
25.	The automated risk management system effectively distinguishes between high-risk and compliant shipments for more accurate inspections.					
26.	Digitalized valuation and classification tools have improved the accuracy of duty collection and reduced the risk of revenue leakage.					
27.	The digital infrastructure allows the ECC to enforce trade laws and security protocols more strictly and consistently than manual systems.					
E	**To identify the challenges affecting the implementation and utilization of digitalization on customs operations and trade fade Facilitation**	**1**	**2**	**3**	**4**	**5**
E1	**Regulatory challenges**	**1**	**2**	**3**	**4**	**5**
28.	Existing customs laws hinders the digitalization of customs Procedures					
29.	Outdated regulations hinder implementation of digital systems					
30.	Data protection regulations affect system usage					
31.	Lack of harmonized regulations affects system integration					
32.	Regulatory approval delays adoption of digital systems					
E2	**Technological challenge**	**1**	**2**	**3**	**4**	**5**
33.	Poor ICT infrastructure affects system performance					
34.	System downtime disrupts customs operations					
35.	Lack of system integration affects efficiency					
36.	Cyber security risks affect trust in digital systems					
37.	Limited access to modern technology hinders digitalization					

E3	Cultural and Organizational Challenges	1	2	3	4	5
38.	Resistance to change affects adoption of digital systems					
39.	Lack of training affects effective system usage					
40.	Limited digital skills affect system utilization					
41.	Organizational culture affects digital transformation					
42.	Lack of management support affects implementation					

PART VII. OPEN ENDED QUESTIONS

1. Are there any additional digital solutions you believe should be introduced to enhance customs operations? _____
2. In your opinion, what improvements are needed in the current digital systems to better meet operational demands? _____
3. In your experience, how has digitalization affected the efficiency and effectiveness of customs operations at the Ethiopian Customs Commission? _____
   _____
4. What has been the overall impact of digitalization on customs operations and trade facilitation at the Ethiopian Customs Commission? _____
   _____

Thank You

ቀን 30/08/2018 ዓ.ም

ለኢትዮጵያ ጉምሩክ ኮሚሽን

አዲስ አበባ

ጉዳዩ ፡-ለጥናት እና ምርምር የሚሆን መጠየቅ ለማስሞላት ስለመጠየቅ

እኔ አማኑኤል ጎበዜ በጉምሩክ አስተላላፊነት የስራ መስክ በመሰማራት ላይ የምማገኝ የተቋሙ ቤተሰብ መሆኔ ይታወቃል።

ስለሆን በአዲስ አበባ ዩኒቨርስቲ ቢዝነስ እና ኢኮኖሚክስ ንግድ ሥራ ትምርት ቤት የሦስተኛ ዓመት ተማሪ ስሆን ለመመረቂያ ጽሑፍ የሚሆን ጥናት እና ምርምር ስም ''The Role of Digitalization on customs operation and trade facilitation, evidence from ECC'' በሚል ርዕስ በዋናነት የማደርገው በዚሁ የኮሚሽኑ ዋና መስሪያ ቤት ዙሪያ ስለሆነ ለመስሪያ ቤት ሰራተኞች መጠየቅ ለመሙላት ይተባበሩንኝ ዘንድ በዋናንትም ለዋጋ ትመና፤ ለታሪፍ ዳይሬክቶሬት፡ ለትራንዚት ክፍል፡ለአምራች ክፍል፡ ለመረጃ ቴክኖሎጂ፡ ለህግ ክፍል፡ ለኦፕሬሽን ስራ ዘርፍ ወዘተ ለመሳሰሉት በኮሚሽኑ በኩል የትብብር ትህዛእ በደብዳቤው ላይ እንዲመራልኝ ስል በትህትና እየይቃለሁ።

ከሰላምታ ጋር

አማኑኤል ጎበዜ

ለአደሉ ኦፕሬሽን ዳይሬክቶሬት ዓመድ ሥራ ክፍል
ለመጀመሪያ ደረጃ ለጉምሩክ ጣቢያ ሠራተኞች
አቶ ሽመልስ ጋዶዜ ለተጠየቁትን መመሪያው እንደሚለው
መልካሙ ለመመለሳቸው የሥራ ክፍተ ተሬትሮ ሰጥተው
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Logistics and Supply Chain Management Department

Ref AAU/SoC/LSCM/449/2
Date 30/08/18

TO WHOM IT MAY CONCERN

SUBJECT:- REQUEST FOR DATA COOPERATION FOR MASTER'S THESIS – LOGISTICS AND SUPPLY CHAIN MANAGEMENT

- **Student Name:** Th Amenulel Gebeyehu GSE/1345/16
- **Thesis Topic:** The role of digitalization in trade facilitation, Evidence from ECC

This letter serves as a formal request for collaboration between the Department of Logistics and Supply Chain Management, School of Commerce, Addis Ababa University, and your esteemed organization. We are seeking your cooperation to support the thesis requirement for our final year Master of Science in Logistics and Supply Chain Management students.

Our program requires candidates to produce a thesis that bridges academic frameworks with real-world industry challenges. To achieve this, students need access to authentic operational data. We believe this cooperation will be mutually beneficial: our students gain critical data for rigorous analysis, while your organization receives actionable, research-based insights.

We respectfully request permission for the above-named student to collect data through: Questionnaires administered to relevant personnel; Interviews with key informants and subject-matter experts; or other methods as appropriate (document review, observation, etc.)

All data will be treated with strict confidentiality, and identifiable company information will be anonymized. We are amenable to a delayed publication clause to protect proprietary insights. Each student is supervised by an experienced faculty member, and we will work with your designated liaison to ensure a smooth process with minimal disruption to your operations.

We greatly appreciate your consideration and your investment in developing Ethiopia's next generation of supply chain leaders. Please feel free to contact the undersigned for any matters arising from the data collection process.

Sincerely,

Department of Logistics and Supply Chain Management

Tariku Jebena, PhD
Head, Department of Logistics and Supply Chain Management
School of Commerce, Addis Ababa University

+251-11-5521320 aauschoolofcommerce@aau.edu.et P.O.Box 3131 aau.edu.et

Appendices

Appendix I – Questionnaire

Addis Ababa University College of Business and Economics School of Commerce

Dear Respondents,

This questionnaire is designed to gather information on ***"The Role of Digitalization on Customs Operation and Trade Facilitation; Evidence from Ethiopian Customs Commission."*** The purpose of the study is to fulfill a thesis requirement for the Masters of Art in Logistics and Supply Chain Management. The information that you provide will be used only for the study purpose and will be kept strictly confidential.

Finally, I would like to thank you in advance for your cooperation and dedication of your valuable time to fill this questioner.

Sincerely Yours,

Amanuel Gobeze

Please Note: -

No need of writing your name

Indicate your answer with mark (√) on appropriate block/cell for all questions.

If you have any question, please contact me with the following address:-

Contact Address

If you have any question, please contact me with the following address:-

Phone No. 0925250135

E-mail:amanuelg423@gmail.com

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Part I. Background Information

1. Gender a) Male b) Female

2. Age Group a) 18-25 b) 26-35 c) 36-46 d) 47-55 e) 56 and above

3. Education Background

a) Secondary school and below b) Completion of High School c) Diploma

d) First Degree e) Second Degree and above

4. Position and status in the organization

a) Senior Manager b) Middle Level Manager c) Lower Level d) Other ____

5. Work experience in Organization?

a) 1-5 Year b) 6-10 Years c) 11-15 Years d) Above 15 Years

Dear respondent:

This section of the questionnaire addresses the current state of digitalization of Ethiopian Customs commission. Please read each statement applied to the current state of digitalization and indicate the extent of your agreement towards the statements by putting a tick mark (√) in the boxes representing your judgment.

Please use the rating scale representing your level of agreement as follow:

1=**Strongly Disagree**, 2=**Disagree**, 3=**Neutral**, 4=**Agree**, 5=**Strongly Agree**,



Code	To assess the current state of digitalization on customs operations and trade facilitation	Scale				
A	**Customs operations**: These operations involve verifying documentation, classifying goods, calculating duties and taxes, and performing physical checks to enforce national safety and economic policies.	1	2	3	4	5
1.	ECC digitalized the verification of documentation to enforce national safety and economic policies					
2.	ECC digitalized the classification of goods to enforce national safety and economic policies					
3.	ECC digitalized the calculation of duties and taxes to enforce national safety and economic policies					
4.	ECC digitalized the performing of physical checks to enforce national safety and economic policies.					
B	**Trade facilitation**: is simplifying, standardizing, and harmonizing international border procedures to make trading faster, cheaper, and more transparent.	1	2	3	4	5
5.	ECC digitalized the Simplification of international border procedures to make trading faster, cheaper, and more transparent.					
6.	ECC digitalized the Standardization of international border procedures to make trading faster, cheaper, and more transparent.					
7.	ECC digitalized the harmonization of international border procedures to make trading faster, cheaper, and more transparent.					
C	**To identify the key digital tools and systems implemented for the role of digitalization of customs operation and trade facilitation.**	1	2	3	4	5
C.1	**Digitalization of Customs Operations**					
8.	The ECC has successfully implemented **Electronic Customs management systems** (e.g., eCMS) to automate core administrative workflows.					
9.	**Internal System Integration** effectively links various customs units (valuation, tariff, and audit) to ensure a seamless data flow.					
10.	The **Electronic Payment system** allows for the real-time digital settlement of duties and taxes, reducing manual bank reconciliations.					
11.	**Digital tools** for customs valuation and risk profiling have significantly improved the accuracy and speed of internal inspections.					
C.2	**Digitalization of Trade Facilitation**					
12.	The **Electronic Single Window** (eSW) effectively integrates all cross-border regulatory agencies into one centralized digital portal for traders.					
13.	The **Digital Document Submission system** allows for paperless filing of all required permits and certificates by importers and exporters.					



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14.	**Cargo Tracking systems** (such as ECTS) provide real-time visibility and monitoring of goods throughout the transit corridor.					
15.	**External System Integration** seamlessly connects the ECC with trade stakeholders like banks, shipping lines, and clearing agents.					
D	**To evaluate the effect of digitalization on the efficiency and effectiveness customs operations**	**1**	**2**	**3**	**4**	**5**
D1	**Efficiency of Trade Facilitation**	**1**	**2**	**3**	**4**	**5**
16.	The use of digital tools has significantly **reduced administrative costs** and "hidden fees" (e.g., storage and demurrage) for traders.					
17.	The Single Window system has **eliminated the need for traders** to submit the same data multiple times to different government agencies.					
18.	Digital document submission has **shortened the overall time** traders spend interacting with regulatory authorities.					
D2	**Effectiveness of Trade Facilitation**	**1**	**2**	**3**	**4**	**5**
19.	The digitalized trade process is consistent, allowing traders to accurately plan their logistics and delivery schedules.					
20.	Digital platforms provide clear and accessible information regarding trade regulations, fees, and the **real-time status of shipments**.					
21.	The current trade facilitation tools effectively meet the needs of **all supply chain actors**, including banks, carriers, and agents.					
D3	**Efficiency of Customs Operations**	**1**	**2**	**3**	**4**	**5**
22.	Internal digital systems have **accelerated the processing speed** of declarations, from initial entry to final release.					
23.	The ECC effectively uses automated **systems to manage** high cargo volumes with minimal reliance on manual, paper-based labor.					
24.	Integrated digital modules have **eliminated internal bottlenecks** by allowing for the instant transfer of data between different customs units.					
D4	**Effectiveness of Customs Operations**	**1**	**2**	**3**	**4**	**5**
25.	The automated risk management system effectively distinguishes between high-risk and compliant shipments for more accurate inspections.					
26.	Digitalized valuation and classification tools have improved the accuracy of duty collection and reduced the risk of revenue leakage.					
27.	The digital infrastructure allows the ECC to enforce trade laws and security protocols more strictly and consistently than manual systems.					
E	**To identify the challenges affecting the implementation and utilization of digitalization on customs operations and trade fade facilitation**	**1**	**2**	**3**	**4**	**5**
E1	**Regulatory challenges**	**1**	**2**	**3**	**4**	**5**
28.	Existing customs laws hinders the digitalization of customs procedures					
29.	Outdated regulations hinder implementation of digital systems					

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30.	Data protection regulations affect system usage					
31.	Lack of harmonized regulations affects system integration					
32.	Regulatory approval delays adoption of digital systems					
E2	**Technological challenge**	**1**	**2**	**3**	**4**	**5**
33.	Poor ICT infrastructure affects system performance					
34.	System downtime disrupts customs operations					
35.	Lack of system integration affects efficiency					
36.	Cyber security risks affect trust in digital systems					
37.	Limited access to modern technology hinders digitalization					
E3	**Cultural and Organizational Challenges**	**1**	**2**	**3**	**4**	**5**
38.	Resistance to change affects adoption of digital systems					
39.	Lack of training affects effective system usage					
40.	Limited digital skills affect system utilization					
41.	Organizational culture affects digital transformation					
42.	Lack of management support affects implementation					

Part VII. Open ended questions

1. Are there any additional digital solutions you believe should be introduced to enhance customs operations? .....
   .....
   .....
2. In your opinion, what improvements are needed in the current digital systems to better meet operational demands? .....
   .....
   .....
3. In your experience, how has digitalization affected the efficiency and effectiveness of customs operations at the Ethiopian Customs Commission? .....
   .....
   .....
4. What has been the overall impact of digitalization on customs operations and trade facilitation at the Ethiopian Customs Commission? .....
   .....
   .....

Thank You