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Edited By:
Dr Zerihun Doda, RPCO Director

Layout and Design:
Mr. Tesfay Gebremeskel, Research Publication Coordinator

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Edited by: Dr Zerihun Doda,
Director, Research Affairs Directorate
Email: doffanaz@gmal.com/ zerihun.doda@ecsu.edu.et

Layout & Design By: Dr. Abrehet Mehari
Research Publication Coordinator
Email: abrehet2005@gmail.com

Message from the Vice President for Research & Partnership

Ethiopian Civil Service University (ECSU) was established to support the transformation drive of building capacity of the public sector both at federal and regional levels through providing specialized education, training, research and consultancy programs and services. The University has been organizing scientific forums such as workshops and conferences with the aim of disseminating scientific research outputs and enriching the same to maintain its quality at different times.

Against this backdrop, the conference is organized under the theme 'The Seventh National Research Conference on Public Sector Transformation and Development.' A total of 95 research papers were collected by the 9th national research conference organizing committee. Of these, 55 were collected from over 12 higher education and training institutions, while 40 were funded by ECSU in the 2015 E.C. (2022-2023) calendar year. Passing through rigorous review process, of the95 papers, 40 were successfully recommended for conference representation (13 from outside and 27 from ECSU). The papers primarily were considered since they are directly related to the ECSU research thematic areas and believed to address problem-solving inquiries. The papers are categorized into the following sub-thematic areas,

Thematic Areas Distribution

Sub themes	**Freq.**
Economy & Development	12
Urban Governance, Diplomacy, Peace & Development	5
HRM& Public Service Delivery	9
Leadership&Development	3
Environment & Development	8
Cross-cutting	5
Grand Total	**42**

Of the 40 papers presented at the Conference, 15 under two themes are included in this volume, consisting of papers theme 1: in urban governance, diplomacy, peace & development economy and development and them 2: economy and development.

Dr. Alemayehu Debebe

July 2024

1 THEME 1: URBAN GOVERNANCE, DIPLOMACY, PEACE & DEVELOPMENT

1.1 Modeling Water Sensitive Urban Design Systems, in the Cases of Selected Secondary Urban Centers in Ethiopia, Adama, Debre Berhan and Hossana Urban Towns

[1]Daniel Lirebo (PhD) [2]Kifle Tadesse [2]Erkeno Yohannes
[1]Asst.Prof. College of Urban Developmental and Engineering Ethiopian Civil Service University,[2]Lecturers, College of Urban Developmental and Engineering Ethiopian Civil Service University

Abstract

Water Sensitive Urban Design (WSUD) is the interdisciplinary cooperation of water management, urban design, and landscape planning. WSUD develops integrative strategies for ecological, economic, social, and cultural sustainability. Water sensitive urban design (WSUD) is a broad area of practice, with a wide range of objectives from managing hydrology and water quality to improving urban amenity and mitigating urban heat island impacts. Unsurprisingly, there is a wide set of management practices that can be applied. The primary aim of the study is to model Water Sensitive Urban Design and Planning System for Adama, Debre Berhan, and Hosanna Urban Centers. The assessment of water sensitive urban design employed both secondary and primary data sources for modeling system was conducted using different methods including FGD, visual survey, Key informants Interview, Measurements, and Quantification of runoff from the three Case study Secondary urban centers, and appropriate analysis techniques. The research findings have shown the historical and socio-technical drivers of WSUD across case study urban centers in Ethiopia. They found that a complex interplay between issue champions (or change agents) and a suite of enabling context variables is important for transitioning toward water-sensitive towns and cities. This interplay of associations and networks helps to formalize the objectives of improving stormwater quality, foster large developers' receptivity to WSUD in the marketplace, and facilitate the development of capacity building tools. The research finally concluded and noted that the hydrological cycle within an urban area exhibits a number of characteristics, which are unlike any of the other commodities regarded within the urban metabolism. The consumption of and associated stormwater runoff generated eclipsed the quantities of any of the other urban commodities. As such, water has a major role to play regarding the urban metabolism. This made two observations with regard to urban wastewater: wastewater is an underutilized water resource, storm water drainage system in rainy season and wastewater is a reliable water source even in times of drought. It was noted that the utilization of this resource would invariably create a more sustainable urban metabolism and enhance resilience among local communities. It also highlights the importance of maintaining a water-sensitive urban design to create metabolic, ecological, and sustainable built environment.

Keywords: *Urban-Design, Metabolism, Water Sensitive, System, Modelling, Secondary-Urban Centers*

Introduction

Background of the Study

Impenetrable surfaces in urban zones include asphalt, buildings, structures, and in some cases, intensely compacted urban soils. With vegetation removed and surfaces made impermeable, water penetration and groundwater recharge are reduced, resulting in increased runoff rates and volumes. This decrease in infiltration, groundwater recharge, and base flow to urban streams leads to altered hydrology and negative environmental impacts, such as downstream flooding, stream bank erosion, and water quality degradation due to increased sediment, heavy metals, and a decline in aquatic life (Argue, J. R., 2004). However, by taking advantage of current opportunities to enhance the area's water management capacity, urban growth can be planned and executed to minimize the hydrological impact of urbanization using Water Sustainability Urban Design and Planning (WSUDP) concepts. WSUDP integrates the design of the urban water cycle, including water supply, wastewater management, stormwater, groundwater, urban design, and environmental protection, to improve livability and sustainability, especially when viewed as part of a comprehensive urban strategy (Argue, J. R., 2004).

WSUDP is an approach that optimizes the use of available water sources and completes the water cycle through various planning and design strategies. Water demand and supply, water conservation, wastewater recycling and reuse, pollution reduction, flood mitigation, localized water resource management, and rainfall and runoff harvesting are all components of the WSUDP approach (Beecham, S. and Myers, B., 2007). In areas like Adama, Debre Berhan, and Hosaina in Ethiopia, where urban design and planning strategies are lacking, the impact of rainfall and runoff on urban areas can be significant. This proposal focuses on modeling a Water Sustainability Urban Design and Planning System for these urban centers to address high runoff issues and improve water management strategies.

Problem Statement

The goal of water-sensitive urban design (WSUD) is to minimize water runoff and ensure that any runoff causes the least amount of harm. It also involves using water wisely to enhance our urban environment. Cities alter how water flows through the surrounding environment, with rainwater and runoff being directed into drainage systems and other watercourses by impervious surfaces such as buildings, roads, and other structures (Argue, J. R., 2004). One source of runoff is the catchment area, which refers to the area contributing runoff to a specific point on a watercourse or wetland. Common types of drainage structures found in cities like Adama, Debre Berhan, and Hosaina include rectangular cross-section open channel masonry types, closed rectangular channels, and circular pipes located on main streets. In river-side areas, common drainage structures include rectangular open channels, closed rectangular channels, and circular ditches. The development of an urban drainage network requires determining the hydraulic capacity of the existing drainage network. In these cities, there is a lack of proper recorded data on the existing drainage network capacity and the amount of runoff. However, stormwater drainage systems are a significant part of urban infrastructure, consisting of structures that need proper design, installation, and maintenance. These structures include street gutters, drainage inlets, manholes, culverts, drop structures, energy dissipaters, and surface drainage channels. Open channels are often used to collect stormwater runoff from urban areas and convey it to an outfall channel or a stormwater drainage inlet.

There are gaps in research associated with the challenge of runoff characterized by drainage. It often gets filled with dust, making it unsafe for animals and people. Additionally, the existing drainage system is not aligned with the principles of sustainable water-sensitive urban design and planning for the city. Retrofitting and mitigating urban runoff can be achieved through urban design interventions such as swales, buffer strips, Bioretention swales, constructed wetlands, infiltration mechanisms, or sand filter intervention mechanisms. Therefore, using appropriate urban design intervention mechanisms is necessary to minimize runoff in cities like Adama, Debre Berhan, and Hosanna. Determining which types of models of WSUDP to use requires consideration of various environmental, economic, and spatial aspects. This research aims to address this question by studying stream networks and stream orders, calculating the amount of runoff in these cities within each type of land use, and comparing it with the total capacity of water from the regional basin and watershed.

Hypothesis and Objective of the Study

Hypothesis of the study

The hypothesis for the study is "Well Managed Stormwater Drainage System is an Outcome of Water Sensitive Urban Design".

General objectives

The main objective of the study is to model a water sustainability urban design and planning system for the urban centers of Adama, Debre Berhan, and Hosaina. Therefore, this study investigates the impact of urban metabolic and water-sensitive design systems on the quality and sustainability of built environments in secondary urban areas located in the case study urban centers.

Limitations of this study

The major limitations of this study were the absence of willingness in politicians and officials to respond to interview questions and provide other related support. Another serious limitation was the country's security issues, as Ethiopia was facing civil unrest and a lack of rule of law, which hindered the successful execution of the research activities. Additionally, financial limitations posed a significant challenge to the success of the research.

Scope and description of the study area

The study has the following basic scopes: Theatrical scope, Spatial Scope and Temporal Scope.

Theatrical Scope

The main objective of the study is to model an appropriate strategy for managing urban stormwater runoff in the urban centers of Adama, Debre Berhan, and Hosaina. This includes determining the sources of stormwater runoff, calculating city runoff, and developing analyses of stream order, watershed, and basin characteristics. The ultimate goal is to create a model for managing stormwater runoff in these urban centers, known as the Water Sensitive Urban Design System in Ethiopia. This model will be tailored for secondary urban centers.

Temporal Scope

The study has been conducting from September to April 2015 E.C (up to the end of April 2022/23).

Spatial Scope

The scope of the research, geographically delineated in Adama, Debre Berhan and Hosaina Urban Center Town which as shown by the figure 1.1 below.

Descriptions of the Study Area

Research case study areas comprises three secondary urban centers include Adama, Debre Berhan and Hosaina towns. Adama is the second most populous city in Ethiopia and one of the fastest-growing cities in the country. It is the largest city in the Oromia Region, known for its industries and manufacturing enterprises. Strategically located on the main road linking Addis Ababa to Djibouti, Adama forms a Special Zone of Oromia and is surrounded by the East Shewa Zone. It is situated at 8°32′N 39°16′E, at an elevation of 1712 meters, 99 km southeast of Addis Ababa. The city is nestled between the base of an escarpment to the west and the Great Rift Valley to the east. On the other other hand, Debre Berhan is a town and woreda in central Ethiopia, located in the Semien Shewa Zone of the Amhara Region, about 120 kilometers northeast of Addis Ababa on the Ethiopian highway. The town has an elevation of 2,840 meters, making it the highest town in the area. It was an early capital of Ethiopia and later, along with Ankober and Angolalla, served as one of the capitals of the kingdom of Shewa. Today, it is the administrative center of the Semen Shewa Zone of the Amhara Region. The total coverage area of the town is 14.71 km2. According to the 2007 national census conducted by the Central Statistical Agency of Ethiopia (CSA), the town has a total population of 65,231, with 31,668 men and 33,563 women. Hosanna (also spelled Hosaina) is a town and separate woreda in the Central Ethiopia Regional State, Ethiopia. It serves as the administrative center of the Hadiya Zone. Located at a latitude and longitude of 7°33′N 37°51′E, with an elevation of 2177 meters above sea level, it was previously part of Limo woreda and is surrounded by it.

Methodology

In order to achieve the goals of this study, a range of methodologies have been employed. This study has utilized the case study approach, which advocates for the use of multiple sources of data and data collection methods (Kombe, 1995, 55). The approach to data collection and analysis in this study included both quantitative and qualitative sources and approaches, known as 'triangulation'. Under the quantitative method, tools such as household surveys (questionnaires) were conducted at each secondary urban center, along with measurements supported by Satellite images from Geospatial Agency, DEM, and GIS/Line/Nortek Maps of urban centers. Up to 10% of plots with different land uses and housing units were surveyed in each neighborhood to identify elements of water-sensitive urban design components for sustainable and metabolic built environments. For the qualitative method, the main tools included visual surveys, open-ended interviews with local and secondary urban level authorities, key informants, and communities, as well as focus group discussions associated with stormwater runoff planning and management systems. Primary data were supplemented by secondary data obtained from documents from planning institutions, water supply and sewerage authorities, road authorities of urban centers, and other concerned agencies during analysis. Additionally, related books, journals, and websites were consulted.

The study examined land uses of plots, blocks, and neighborhoods, as well as the structural and strategic spatial plans from each secondary urban center. It also focused on watershed management, water supply systems, and drainage systems of stormwater runoff catchment areas in each case study secondary urban center. Approximately 20% of the built environments in each case study area were surveyed. As explained above, the study included three case study secondary urban centers with sensitive and risky neighborhoods or settlements, including inner urban centers, intermediate zone, and a sub-zone of the urban centers. The selection of case study areas was based on a criteria matrix using identified indicators and variables under study.

Justifications for selecting the three Secondary Urban Centers

There are several components of water-sensitive urban design issues in the case study urban areas that experience complicated built environments with stormwater risks, scarcity of water supply, sewerage, and watershed management systems that might be able to ensure the metabolic and sustainability of urban centers due to poor urban design and planning. However, this research specifically focuses on three secondary urban centers: Adama, Hosanna, and Debre-Berhan. These centers have larger stormwater runoff flood risks and complexes due to their isotropic and flat nature of unique characteristics. These secondary urban centers require technical solutions, as no previous research has been conducted to measure, analyze, and model water-sensitive urban design and address the associated problems. The selected urban centers are heavily affected in the urban environment and have a greater negative impact on city residents compared to other secondary urban centers. Additionally, they serve as important economic nodes for the country.

Conceptual and Theoretical Frameworks

Urbanization and the rapid growth of cities have placed unprecedented strains on Earth's natural resources. Climate change and rapid population growth have exacerbated these strains, reducing the resilience of communities around the world. Urbanization and population growth are most rapid in developing countries within Asia and Sub-Saharan Africa, including Ethiopia. These areas are generally characterized by resource inefficiencies, and local governments do not possess the necessary financial and institutional capacity to adapt appropriately (Buhaug & Urdal, 2013, cited in Lloyd Gluckman, 2017). Shifts in global climatic conditions and the increasing frequency of extreme weather events, such as droughts and flooding, are keenly felt within these countries where resource deficiencies reduce their ability to respond to and build resilience against such events. Additionally, the rapid rate of urban population growth has placed significant pressures on the ability of local governments to meet societal demands for housing and service provision (Buhaug & Urdal, 2013). The growth of cities also places significant pressures on the natural environment, as increased demand drives more intensive measures to harvest natural resources, resulting in resource depletion perpetuated by associated reductions in the productive capacity of the natural environment. The urban form itself has implications for local and global environmental conditions; for example, hydrological functioning is altered through the modification of natural drainage systems, and local climatic conditions are altered as a result of the urban heat island effect (Rizwan et al., 2008).

Infrastructure plays a fundamental role in promoting sustainable development and water-sensitive cities. Infrastructure has the capacity to promote economic growth and development, enhance social conditions through service delivery, and protect the natural environment (Jordan & Infante, 2012). Water-sensitive cities can be achieved through the development of appropriate infrastructure designed to address specific city issues. Urban water management relies heavily on adequate infrastructure to deliver services such as water supply and sanitation and create more efficient management strategies. The effectiveness of management strategies in selecting and designing appropriate infrastructural systems to support the manipulation of the urban hydrological cycle is crucial for infrastructure to manipulate the urban water metabolism in reducing input requirements and waste production (Newell & Cousins, 2015). Achieving a water-sensitive city through the manipulation of this cycle must consider economic, social, and environmental sustainability.

The water crisis currently faced by many secondary urban centers, including Adama, Hossana, and Debreberhan, could have been avoided by appropriate transformations in water management approaches responding to data indicating imminent water resource deficits over a 20-year period. The Secondary Urban Centers from SNNPRG, ANRS, and ONRS are now grappling with the challenge of transforming urban water management quickly to prevent catastrophic outcomes. The response of the urban centers will require an approach to urban water management that promotes sustainability and builds resilience among local communities. Questions have arisen about the ability of the towns to adapt to these environmental stressors and transform management approaches, considering their status as developing secondary urban centers and the limited financial resources and capacity within governmental institutions, common characteristics of these urban centers. The transformation of the approach to water management in the study Urban Centers were required collaboration among professionals and stakeholders from various backgrounds in an interdisciplinary manner.

Principle of Urban Design for Intervention of Storm Water Runoff

Providing natural treatment is a critical element in minimizing water consumption. According to Edmiston (1986), low water gardens provide the opportunity to create attractive spaces by utilizing a range of native and exotic species that require little watering. In addition to the design characteristics of a water-sensitive residential subdivision, several authors highlight specific drainage practices that can be incorporated into development projects, particularly residential, in collaboration with the common urban form features mentioned by Hedgcock (1991). Evangelisti (1991) notes the general types of stormwater management practices, which include vegetative control (overland flow and grassed channels), detention (wet basins and wetlands), and retention (infiltration basins). It should be noted that these management practices are considered the most efficient and cost-effective solutions according to Evangelisti (1991). Evangelisti (1991) also adds that in some cases, it may be necessary to combine a number of management techniques to achieve a greater level of stormwater treatment as various physical and biological processes can be incorporated.

Vegetative controls can include grassed channels and overland flow. A grassed channel is simply a channel or swale that has a cover of grass to prevent erosion and enhance settling of suspended soil particles (Evangelisti, 1991). An overland flow is similar to a filtration strip, where strips of grass filter pollutants from the runoff. Importantly, it is noted that these vegetative controls are encouraged whenever practical and are influenced by topography, soils, space, and climate (Evangelisti, 1991). These characteristics are supported by Whelans (1994), who similarly states that the purpose of vegetative controls is to improve water quality and maintain groundwater recharge. Constructed wetlands (also referred to as artificial wetlands) incorporate large quantities of stormwater runoff and associated materials, whether they are dissolved pollutants or suspended products. The treatment or removal of such pollutants primarily occurs through sediment retention and biological uptake. The distinction between constructed wetlands and detention systems, according to Evangelisti (1994) and Whelans et al. (1994), includes the slow-moving flow within the wetland, the use of vegetation as a method of pollutant removal, and the shallower depth of wetlands. Importantly, according to both Evangelisti (1994) and Whelans et al. (1994), constructed wetlands are well-suited to areas where the water table is close to the surface.

Stormwater Runoff Calculations Methods

The preferred approach to stormwater management is to preserve the natural storage, infiltration, and pollutant treatment functions of each drainage area where possible. Where this is not practical, it is recommended to construct Best Management Practices (BMPs) that closely mimic these natural functions.

Peak Flow Calculations

Some of the state's stormwater programs require the attenuation of peak runoff. For example, the post-development flow rate for the one-year, 24-hour storm may not exceed the pre-development flow rate (Neuse and Tar-Pamlico NSW Programs). Additionally, it is important to calculate flow rates from the watershed when designing Best Management Practices (BMPs) such as grassed swales, filter strips, and restored riparian buffers.

The primary method that is used to determine peak runoff rate stormwater runoff is the Rational Method. The Rational equation is given as:

$$\mathbf{Q = C * I * A}$$

Where: Q = Estimated design discharge (cfs)

C = Composite runoff coefficient (unit less) for the watershed

I = Rainfall intensity (in/hr) for the designated design storm in the geographic region of interest

A = Watershed area

The composite runoff coefficient reflects the surface characteristics of the contributing watershed. The range of runoff coefficient values varies from 0 – 1.0, with higher values corresponding to greater runoff rate potential. The runoff coefficient is determined by estimating the area of different land uses within each drainage area.

Water sensitive settlements in a developing country context 'transforming our cities'

Water Sensitive Urban Design (WSUD) is a multi-disciplinary approach to urban water management that aims to consider the environmental, social, and economic consequences of water management infrastructure (Wong & Eadie, 2000). With this in mind, it is suggested that a Water Sensitive Settlement (WSS) is one where the management of the urban water cycle is undertaken in a 'water sensitive' manner (using the philosophy of WSUD), with the overall objective being ecologically sustainable development (ESD). By considering all aspects of the water cycle and their interaction with urban design, WSUD aims to be the medium through which sustainable development can be achieved. It should be noted, however, that in order to achieve ESD, it is critical that WSUD is set in an overarching planning process which encompasses the desired ESD objectives upfront. In other words, urban planning should not only take place as part of the urban design process as shown in Figure 1.2 but should be integrated from the outset.

Water Sensitive Urban Design (WSUD)

The concept of Water Sensitive Urban Design (WSUD) has recently been incorporated into several local and national RSA policies. This inclusion is often due to members of the LA advocating for it, with the goal of using these policies to drive change within their municipal environments. While the term WSUD is already being used in RSA, it is not widely understood. Originally, the plan was to adapt the well-known Australian term WSUD for the RSA context.

However, after extensive discussions with stakeholders from relevant professions, the term was divided into three components to be considered in an integrated manner. The ultimate objective is to achieve Water Sensitive Solutions (WSSs). The three components are as follows:

- ***Water Sensitive Urban Design (WSUD)*** – WSUD brings the concepts of 'water sensitivity' and 'urban design' together, ensuring that 'urban design' is undertaken in a 'water sensitive' manner.
- ***Water Sensitive Urban Planning (WSUP)*** – deals with urban planning and governance aspects. In the context of current water and environmental crises water planning needs to be undertaken at the highest level. The term WSUP brings together two components: 'Water Sensitive' and 'Urban Planning', ensuring that 'Urban Planning' is undertaken in a manner that considers and treats water sensitively.
- ***Water Sensitive Urban Management (WSUM)*** – deals with the post construction management of infrastructure. WSUM is the management of specific infrastructure supporting the three streams of the urban water cycle in a manner that is sensitive to the ecosystem and to the needs of affected individuals.

Water Sensitive Urban Design: Overview

Water Sensitive Urban Design (WSUD) can be defined as "the integration of urban water cycle management with spatial planning, which considers all parts of the urban water cycle" (Rohr, 2012:64). WSUD is an urban water management strategy that promotes sustainability by limiting impacts on the natural environment and ensuring the protection of hydrological flows and processes (Wong & Eadie, 2000). The strategy is characterized by three major objectives: 1) ensuring the protection of natural hydrological processes, 2) increasing the resilience of communities to the negative impacts of flooding, and 3) improving the quantity and quality of urban water resources (Melbourne Water, 2002). WSUD is a concept that requires interdisciplinary input to formulate and implement a plan designed to guide urban development in a way that promotes the achievement of multiple objectives (Wong & Eadie, 2000). Additionally, the concept exemplifies a holistic approach that incorporates professions including urban design, spatial planning, stormwater management, landscape architecture, and the infrastructure associated with these professions (Wong & Eadie, 2000), (Figures 1.4 and 1.5 below).

for managing the urban water cycle (Kunapo et al., 2009). WSUD focuses on all aspects of the urban water cycle, promoting sustainable development within urban areas with a major emphasis on managing stormwater and recognizing this water as a valuable resource that must be effectively managed to protect aquatic ecosystems within and downstream of urban areas. This approach informs project planning and places a strong emphasis on reducing costs in both drainage networks and water treatment (Kunapo et al., 2009). The strategy incorporates 'best planning practices' (BPPs) and 'best management practices' (BMPs) to promote sustainable development and the creation of a water-sensitive city (fig 1.6).

Sustainable Urban Drainage Systems (SuDS) provide an alternative stormwater management approach that promotes sustainable development and is an example of a Water Sensitive Urban Design (WSUD) approach that incorporates Best Practice Principles (BPPs) and Best Management Practices (BMPs). This approach to managing surface water that accumulates as runoff during storm events incorporates a drainage pattern designed to mimic natural processes and often takes the form of a network of interlinked systems commonly referred to as a 'treatment train'. The objective of this approach is to promote a high quality and quantity of stormwater runoff, supporting biodiversity and recognizing the value of this resource (Armitage

et al, 2014). Urbanization has a profound impact on the water cycle, including reduced rates of infiltration, changes in the volume and flow patterns of runoff, and modification of natural drainage systems. Therefore, an approach to stormwater management is required to adapt to and address the changing characteristics of urban areas.

Result and Interpretations

Extents of Storm Water

Stormwater extent refers to the area or extent of land covered by stormwater during rainfall events. This typically includes surfaces like roads, parking lots, rooftops, and other impermeable areas that prevent water from infiltrating into the ground. The extent of stormwater can vary depending on factors such as the intensity and duration of rainfall, topography, and the presence of adequate drainage infrastructure. Runoff, on the other hand, refers to the water that flows over the surface of the land instead of being absorbed into the ground. It occurs when the rate of precipitation exceeds the infiltration capacity of the soil or when the ground is saturated. Runoff can carry various pollutants, sediments, and debris and typically flows into nearby storm drains, streams, rivers, or other water bodies.

Managing stormwater extent and runoff is crucial to prevent flooding, water pollution, and erosion. Many cities and municipalities employ various stormwater management techniques, such as constructing retention ponds, green infrastructure, rain gardens, and implementing stormwater detention and treatment systems to control the extent of stormwater and reduce the amount of runoff entering water bodies. The extent of each study is described as follows:

Storm Water Extents in Adama

Based on the available data, it has been determined that the watershed of Adama town measures approximately 118 units of rainfall over the past century. This information has been extracted from both microclimate and macroclimate data. The depth of the recorded rainfall is 107, and it flows in 8 different directions. In terms of stormwater flow accumulation, Adama city experiences values of around 463 meters for smaller areas, while the largest accumulation reaches 147,370 meters. The highest slope interval observed is between 0 to 2%, leading to the highest runoff occurring in a specific area of the town covering 17,377 hectares. This area accounts for 56.44% of the entire city and reaches a maximum altitude of 254 meters above sea level, as indicated by the hill shade analysis. Consequently, in the case of Adama, it has been found that 2648 households are affected by the highest runoff. These households are located at a distance of 200 meters from each stream order.

Storm Water Extents in Hossana

Based on available data, it has been determined that the watershed of Hossana town measures approximately 201 intensities of rainfall over the past century. This information has been extracted from both microclimate and macroclimate data. The depth of the recorded rainfall is 187, and it flows in 8 different directions. In terms of stormwater flow accumulation, Hossana town experiences a value of around 13,524 meters for areas with a smaller size, while the largest accumulation reaches 96,978 meters. The highest slope interval observed is between 0 to 2%, which leads to the highest runoff occurring in a specific area of the town that covers 1538.67 hectares. This area accounts for 45.7% of the entire city and reaches a maximum altitude of 219 meters above sea level, as indicated by the hill shade analysis.

Consequently, it has been found that 1444 households in Hossana town are affected by the highest runoff. These households are located at a distance of 219 meters from each stream order.

Storm Water Extents in Debre Berhan

On the basis of the available data, it has been determined that the watershed of Debre Berhan town measures approximately 164.89 intensities of rainfall over the past century. This information has been extracted from both microclimate and macroclimate data. The depth of the recorded rainfall is 150, and it flows in 8 different directions. In terms of stormwater flow accumulation, Debre Berhan town experiences a value of around 6101 meters for areas with a smaller size, while the largest accumulation reaches 49280 meters. The highest slope interval observed is between 0 to 2%, which leads to the highest runoff occurring in a specific area of the town that covers 17,377 hectares. This area accounts for 56.44% of the entire city and reaches a maximum altitude of 254 meters above sea level, as indicated by the hill shade analysis. Consequently, in the case of Debre Berhan town, it has been found that 15036 households are affected by the highest runoff. These households are located at a distance of 200 meters from each stream order.

Quantification of Runoff

The quantification of runoff is calculated by using rational formula method. Rational formula analysis is a method used in hydrology and watershed management to estimate peak flood discharge from a particular catchment or drainage area. It is a simple and widely-used approach that involves using the rainfall intensity, duration, and the area of the catchment to estimate the peak flow.

The rational formula assumes that the rainfall intensity is uniform across the entire catchment and does not account for variations in soil types or land use. The formula is expressed as Q = CiA, where Q is the peak flow rate, C is the runoff coefficient, i is the rainfall intensity, and A is the catchment area. The runoff coefficient (C) represents the percentage of rainfall that becomes direct runoff. It varies depending on factors such as soil conditions, land use, and slope steepness. The rainfall intensity (i) is usually expressed in inches per hour or millimeters per hour, and the catchment area (A) is measured in square units. Rational formula analysis provides a quick estimation of peak flow but may not be as accurate as more complex hydrological models. It is commonly used in urban areas where detailed hydrological data is limited or unavailable. However, it should be used with caution and supplemented with proper site-specific investigations when greater accuracy is required for engineering or flood management purposes.

Quantification of runoff in Adama

Based on a rational formula to determine the flow of estimated peak flood discharge from a particular catchment, major factors such as rainfall intensity, land use area, and rainfall coefficients (minimum and maximum) are considered. Therefore, the maximum flow of stormwater in the case of Adam is 25,974.61 cubic meters of water per year, and the minimum is 16,273.87 cubic meters. This indicates that the amount of impervious surface in the city should be increased to manage runoff. Strategies should be implemented to reduce high flood risk and control high runoff, especially for affected buildings and households, as shown in Table 1.1 below.

Table 1.1: Adama rain fall intensity, land use area as well as rainfall coefficients

Land use	Area in meter square (A)	Minimum (C)	Maximum (C)	Rain fall Intensity (I)	Minimum Q=CIA	Maximum Q=CIA
Housing	3933.7	0.3	0.5	2.47	2914.8	4858.08
Commerce	1198.0	0.5	0.7	2.47	1479.5	2071.29
Service	867.2	0.5	0.8	2.47	1070.9	1713.50
Administration	182.6	0.3	0.5	2.47	135.3	225.47

Manufacturing	2887.5	0.5	0.8	2.47	3566.0	5705.61
Environment	8089.0	0.2	0.35	2.47	3995.9	6992.91
Roadand Transport	2099.4	0.6	0.85	2.47	3111.3	4407.74
				Total	**16273.87**	**25974.61**

Source: Measurement and survey Results, 2022

Affected Building due to Storm Runoff

Figure 1.7 illustrates that in Adama, at the Tourism Center conference, serious flooding occurs regularly during the rainy season. Assuming the stormwater drainage system can be redeveloped, another structural measure is possible, as buildings are quite vulnerable. It is necessary to increase the capacity of the drainage system, including stormwater ditches, sewer lines, and canals, which are currently too low. Additionally, runoff into low-lying parts of the town must be prevented. One solution is to trap surface runoff in open ditches with gratings placed perpendicular to the roads and drain pipes leading to the nearest river. The data set was modified so that runoff that cannot be handled by the sewers is discharged onto the streets. Elements V100, V101, and V102 represent branching points that only come into play when the drainage system is overwhelmed. Roads are represented by elements S109, S111, and S112 (refer to Figure 9). The surface runoff will be collected along with the canals, draining into an open ditch along the street and leading to the nearest river (element S110). The analysis clearly demonstrates that this method effectively drains surface runoff, resulting in a water level on the street of less than four centimeters, occurring only a few hours per year.

Slope Analysis

The slope of a land surface plays a crucial role in determining runoff characteristics. A steeper slope generally leads to faster and more concentrated runoff, while a gentler slope promotes slower and more dispersed runoff. In hydrology, the slope is typically calculated as the ratio of the vertical drop in elevation to the horizontal distance. However, it's important to note that other factors such as soil type, land cover, and rainfall intensity also influence the overall runoff process.

The GIS output of the DEM of Adama City indicates that the slope classification between 0-2% is 17,377.29 Ha (56.44%), 2.1 to 4% is 8,830.87 Ha (50.82%), 4.1-6% is 3,399.88 Ha (19.57%), and the slope coverage between 6.1 to 10% is 1,183.26 Ha (6.81%). The overall allocation of each type of slope in the case of Adama City is shown by the representation of GIS output in Figure 1.8 below.

Quantification of runoff in Debre Berhan

Based on a rational formula used to determine the estimated peak flood discharge from a specific catchment, major factors such as rainfall intensity, land use area, and rainfall coefficients (minimum and maximum) are considered. Therefore, the maximum flow of stormwater in Adam's case is 10,862.1 cubic meters of water per year, while the minimum is 6,814.75 cubic meters. This indicates that the amount of impervious surfaces in the city should be increased to manage runoff. Strategies should be implemented to mitigate high floods and control excessive runoff, especially for buildings and households that are most affected, as shown in table 1.2 below.

Table 1.2: Debreberhan rain fall intensity, land use area as well as rainfall coefficients

Land use	Area in meter square (A)	Minimum (C)	Maximum (C)	Rain fall Intensity (I)	Minimum Q=CIA	Maximum Q=CIA
Commercial	713.40	0.50	0.7	2.2	784.74	1098.64
Manufacturing and Storage	1,381.60	0.50	0.8	2.2	1519.76	2431.62
Recreation	1627.50	0.20	0.35	2.2	716.10	1253.18

Pure Residential	901.00	0.30	0.5	2.2	594.66	991.10
Mixed Residence	360.71	0.40	0.6	2.2	317.43	476.14
Service	445.00	0.50	0.8	2.2	489.50	783.20
Special Function	2659.10	0.30	0.5	2.2	1755.01	2925.01
Transport	483.00	0.60	0.85	2.2	637.56	903.21
Total					**6814.75**	**10862.1**

Source: Measurement and survey Results, 2022

Affected Buildings due to Runoff

Figure 1.9 below demonstrates how a drainage system degrades due to multiple factors, resulting in reduced performance over time. This degradation has had a significant impact on building structures and has particularly affected residents during the rainy season. Since such infrastructure plays a key role in preventing urban floods, it is important to monitor and quantify its performance. Debreberhan town is rapidly expanding and has been selected as a center for factories in Ethiopia. Unfortunately, street flooding and drainage system overtopping issues occur during the rainy season in the town. Flooding causes the area to become waterlogged, making it difficult to transport goods easily. Therefore, this situation clearly shows that the town administration should consider replacing or redesigning the stormwater runoff conveying ditches properly.

Slope

The slope of a land surface plays a crucial role in determining the runoff characteristics. A steeper slope generally leads to a faster and more concentrated runoff, while a gentler slope promotes slower and more dispersed runoff. In hydrology, the slope is typically calculated as the ratio of the vertical drop in elevation to the horizontal distance. However, it's important to note that other factors such as soil type, land cover, and rainfall intensity also influence the overall runoff process.

The GIS output put of DEM of Debre Berhan town indicate that the slope classification between 0-2% is 1538.67Ha (45.7 %), 2.1 to 4 % is 1259.70Ha (37.4 %), 4.1-6% is 562.04Ha (16.7%) and the slope coverage between 6.1 to 10% is 6.46Ha (0.2%). The overall allocation of each type of slope in the case of Adam city is shown by representation of GIS output in Figure 1.10 as shown below.

Watershed Delineation

Table 1.2: Hosanna rain fall intensity, land use area as well as rainfall coefficients

Source: Digitized by Research Team, 2022

Land use	Area in meter square (A)	Minimum (C)	Maximum (C)	Rain fall Intensity (I)	Minimum Q=CIA	Maximum Q=CIA
Agriculture	45815540.81	0.25	0.4	2.2	25198547.4	40317675.92
Administration	264622.73	0.30	0.5	2.2	174651.003	291085.0057
Green Buffer	5129673.22	0.20	0.35	2.2	2257056.22	3949848.381
Commercial	2349721.68	0.50	0.7	2.2	2584693.84	3618571.382
Industry	2063878.30	0.50	0.8	2.2	2270266.13	3632425.808
Recreation	8931.51	0.20	0.35	2.2	3929.86617	6877.265793
Recreation	2142375.46	0.20	0.35	2.2	942645.203	1649629.105
Pure Residential	12233425.96	0.30	0.5	2.2	8074061.13	13456768.55
Mixed Residence	3607104.09	0.40	0.6	2.2	3174251.6	4761377.397
Service	4413648.17	0.50	0.8	2.2	4855012.99	7768020.781
Special Function	16419193.77	0.30	0.5	2.2	10836667.9	18061113.14
Transport	64632.25	0.60	0.85	2.2	85314.5689	120862.306
Total					**60457097.9**	**97634255**

The watershed of Debreberhan refers to the geographical area where water drains into a specific river or body of water near the town of Debre Birhan in Ethiopia. It is the region of land that collects rainfall and snowmelt, directing it to flow into rivers, streams, or lakes. The specifics of the watershed, including its boundaries and characteristics, would require more detailed information and analysis based on specific geographic data. Flow direction information is crucial for various hydrological analyses, such as determining stream networks, estimating catchment boundaries, and modeling surface runoff patterns. It helps hydrologists understand how water moves across a landscape, which is vital for managing water resources, planning infrastructure, and predicting flood risk, among other applications.

Quantification of runoff in Hosanna

Based on a rational formula to determine the estimated peak flood discharge from a specific catchment, major factors such as rainfall intensity, land use area, and rainfall coefficients (minimum and maximum) are taken into account. The maximum flow of stormwater in Adam's case is 97,634,255 cubic meters of water per year, while the minimum is 60,457,097.9 cubic meters of water. This suggests that increasing the number of impervious surfaces in the city could help manage runoff. Strategies should be implemented to address high floods and control excessive runoff, particularly in buildings and households that are most impacted.

Affected Buildings in Hosanna

Many people in Hosanna have died, and economies and buildings have been devastated by flooding, which is one of the most prevalent and catastrophic natural disasters in the urban center. Human activity on the land has led to changes in flooding patterns. Inadequate drainage infrastructure, along with activities like deforestation, is worsening the floods. In Ethiopia, southern Oromia is one of the regions affected by flooding, with the central part, including Taiwan areas and Hekmura areas, being the most frequently flooded places. Rapid population growth has led to people exploiting natural vegetation for various purposes, resulting in deforestation and increased susceptibility to natural disasters such as floods, as shown in figure 1.11. Therefore, identifying flood-prone locations in great detail is essential for effective

problem-solving. This challenging situation indicates that the Town Administration should redesign the existing drainage networks to address the problem.

Slope Analysis

The slope of a land surface plays a crucial role in determining runoff characteristics. A steeper slope generally leads to faster and more concentrated runoff, while a gentler slope promotes slower and more dispersed runoff. In hydrology, the slope is typically calculated as the ratio of the vertical drop in elevation to the horizontal distance. However, it's important to note that other factors, such as soil type, land cover, and rainfall intensity, also influence the overall runoff process.

The GIS output of the DEM of Hossana town indicates that the slope classification between 0-2% is 1538.67 hectares (45.7%), 2.1 to 4% is 1259.70 hectares (37.4%), 4.1-6% is 562.04 hectares (16.7%), and the slope coverage between 6.1 to 10% is 6.46 hectares (0.2%). The overall allocation of each type of slope in the case of Adam city is shown by representation of GIS output in Figure 1:12 as shown below

Model of Water Sensitive Urban Design for Selected Secondary Urban Centers

Generally, for general information the highest runoff is registered in the case of Hossana and the least value of runoff is in the case of Debre Berhan. Therefore, the following models (figure 1.13) should be the hydrological tools to propose different types of sustainable water sensitive urban design in those urban areas which is developed by using GIS tool.

Strategies of Water Sensitive Urban Design

Water sensitive urban design (WSUD) refers to a set of strategies and principles aimed at managing urban stormwater runoff in an environmentally sustainable and integrated manner. Some common strategies of WSUD include:

- ***Green infrastructure:*** Incorporating features like rain gardens, Bioretention basins, and vegetated swales to capture and treat stormwater at its source. These elements help to reduce runoff volume and improve water quality by filtering out pollutants.
- ***Water-efficient landscaping:*** Promoting the use of native plants, low-water-use grasses, and efficient irrigation systems to minimize water demand in urban areas. This reduces the need for excessive watering and conserves water resources.
- ***Water harvesting and reuse:*** Capturing and storing rainwater for later use in irrigation, toilet flushing, or other non-potable applications. This reduces the dependency on freshwater sources and helps to manage stormwater runoff.
- ***Permeable pavements:*** Using materials that allow water to infiltrate through the pavement surface and into the underlying soil, rather than creating runoff. Permeable pavements promote groundwater recharge and reduce the strain on stormwater infrastructure.
- ***Integrated water management:*** Adopting a holistic approach to water management that considers the entire urban water cycle. This involves integrating stormwater management with wastewater management, water supply planning, and urban planning to optimize water resource use and minimize environmental impacts.
- ***Education and community engagement****:* Raising awareness and educating the community about the importance of water conservation and sustainable urban water management practices. Encouraging public participation and involvement in WSUD initiatives can enhance their effectiveness and long-term success.

These strategies, when implemented in combination, can help create more resilient, sustainable, and water-sensitive urban environments that support both human and ecological needs.

Principles of Water Sensitive Urban Design

Water Sensitive Urban Design (WSUD) strategies aim to manage urban water sustainably and enhance the natural water cycle within urban areas. The key principles behind WSUD strategies include:

- ***Integration:*** WSUD strategies promote the integration of water management into the urban planning and design process. Water considerations are incorporated from the beginning to ensure a holistic approach.
- ***Water-sensitive approach:*** WSUD emphasizes the use of natural water systems and mimicking natural hydrological processes in urban areas. This involves preserving and restoring natural water bodies, protecting water quality, and minimizing the impacts of development on water resources.
- ***Stormwater management:*** WSUD focuses on managing stormwater runoff to prevent flooding, erosion, and pollution. Strategies may include the use of on-site detention basins, swales, permeable pavements, and green roofs to capture, treat, and infiltrate stormwater on-site.
- ***Water conservation:*** WSUD strategies promote water conservation measures to reduce potable water demand. This can involve the use of rainwater harvesting, Greywater reuse systems, and water-efficient technologies in buildings and landscapes.
- ***Enhanced biodiversity:*** WSUD aims to enhance urban biodiversity by incorporating green spaces, vegetation, and native plants. These elements can help regulate water flows, increase groundwater recharge, and provide habitat for wildlife.
- ***Community engagement:*** WSUD encourages community involvement and education to raise awareness about the importance of sustainable water management. This includes promoting public participation in decision-making processes and encouraging responsible water use.

These principles guide the planning, design, and implementation of WSUD strategies to create more sustainable, resilient, and water-wise urban environments.

1.1.1 Conclusion and Recommendation

1.1.1.1 Conclusion

This study has concluded that urbanization in recent years has dramatically increased the amount of impervious surfaces and affected local environmental conditions such as landscape or stream morphology, species richness, air temperature, climate change, and particularly a region's hydrology, particularly in secondary urban centers in different regions including Adama, Hossana, and Debreberhan. When heavy storms hit, a large volume of stormwater with pollutants containing sediment, nutrients, litter, oxygen-demanding waste, and heavy metals runs off the impervious areas, giving rise to flooding risk and water quality concerns, as well as a series of social problems. Despite the fact that conventional stormwater management approaches including gutters, pipes, and channels can control flooding by conveying runoff directly into receiving points, they have been considered unsuitable for urban sustainability development due to limited storage contributing to poor water-sensitive urban design, lack of contamination treatment, amenity value impact and ecological degradation, and backwater risks and overflow.

This research concludes that all study urban centers have composed traditional stormwater management systems in urban design schemes considered a "nuisance" and not a useful resource. It focuses on efficient disposal of stormwater by means of underground pipes and linear engineered overland flow paths to nearby streams and rivers. On the other hand, the water-

sensitive city, as the aspirational future state for water management, envisions at the far right a culmination of water supply, sanitation, flood protection, and environmental protection servicing strategies that ensure long-term sustainability, liveability, resilience, and prosperity. To operationalize this water-sensitive urban design vision, three principles for practice are proposed. This research also concludes that the water crisis currently faced by many secondary urban centers, including Adama, Hossana, and Debreberhan, arguably could have been avoided by appropriate transformations in water management approaches in response to data contained within a 20-year period indicating imminent water resource deficits. All stated secondary urban centers from SNNPRG, ANRS, and ONRS are now faced with the dilemma of transforming urban water management over a short timeframe to avoid catastrophic outcomes. The response of the urban centers has required an approach to urban water management that promotes sustainability and builds resilience among local communities.

On the other hand, it has concluded that several questions have been raised as to the ability of the towns to adequately adapt to these environmental stressors and transform management approaches given their status as developing secondary urban centers and the limited financial resources and capacity within governmental institutions, which are common characteristics of these urban centers. The transformation of study urban centers' approach to water management has required the collaboration of professionals and stakeholders from a multitude of backgrounds in an interdisciplinary manner. Furthermore, WSUD has exhibited great success within a number of cities in the global north; however, its application and implementation within secondary urban centers can be expected to differ given the comparative limited capacity of these urban centers. Hence, the role of spatial planning is explored as a potential mechanism through which to promote the implementation of WSUD and catalyze a systemic change in the study urban centers' urban water management. The study aims to further explore this idea and the relationship between WSUD and spatial planning by means of a case study to enable systemic change in Ethiopian urban centers in WSUD. These research findings also show that urban water resources are a means to discuss urban metabolisms, a well-documented field of study within Urban Political Ecology bound within specified spatial areas and inputs and outputs of various hydrological systems that are often easily recognizable. On the other hand, the 'hydro social cycle' is an emerging field of research that takes into account various socio-political factors, such as institutions, social practices, and physical infrastructure, recognizing these as inherent to the hydrological cycle, particularly within urban areas, to ensure water-sensitive urban design.

The research furthermore concludes that urban centers as Water Supply Catchments espouse that urban centers access a range of water sources that include but go beyond surface water sources capturing rainfall runoff from rural and forested catchments or groundwater. A water-sensitive urban center has a supply strategy built around multiple water sources and diverse infrastructures for water harvesting, treatment, storage, and delivery. This portfolio of sources imposes the least cost, including environmental impacts and other externalities. These alternative water sources include managed aquifer (groundwater) recharge schemes, urban stormwater (catchment runoff), rainwater (roof runoff), recycled wastewater, and desalinated water. Many of these sources are provided within city boundaries, each with its own reliability, environmental risk, and cost profile. Rainwater harvesting has been combined with real-time storm forecasting and control technology to alleviate urban flooding.

The study, however, concluded that all urban centers in the study were constructed with impervious paving rather than permeable pavings. There are various paving technologies that

could potentially allow water to permeate through a trafficable surface, such as Porous asphalt (PA), Pervious concrete (PC), Permeable interlocking concrete pavement (PICP), and Grid pavement systems (plastic or concrete). Permeable pavements can be designed with under-drainage systems that collect water for reuse or discharge, but more commonly, they allow water to infiltrate into the subsoil. They can be designed to accommodate a range of traffic loadings, from pedestrian foot traffic to trucks. Like any pavement, poor engineering design that does not provide adequate structural support for heavy vehicles can result in uneven subsidence. It is important to provide useful guidance on the structural engineering design of permeable pavements.

This study further concludes that all Urban Centers studied were participants in Water-Sensitive Communities. However, urban design decisions and water management practices should be governed by community values and aspirations. A water-sensitive Urban Center is characterized by its inherent social and institutional capital, reflected in communities living an ecologically sustainable lifestyle, recognizing the balance between consuming and conserving the city's natural capital, industry and professional capacity to innovate and adapt as reflective practitioners in city building, and government policies that facilitate the ongoing adaptive evolution of water-sensitive towns and cities in Ethiopia.

Similarly, all secondary urban centers studied have poor strategies for street sweeping and litter control systems. Street sweeping can help reduce general litter loads but is less effective at addressing fine sediment and associated pollutants. Street litter can also be managed through local regulations, such as prohibiting the supply of lightweight, non-biodegradable, plastic shopping bags and through drink container deposit schemes. There is also a lack of awareness about the benefits of urban design/housing design in the study areas to maintain sustainability through WSUD. Urban design influences road and lot layouts, building styles, and has a direct impact on the fraction of impervious surfaces and the amount of stormwater generated. Municipalities should recognize the trend of larger homes being built on smaller lots, with lower occupancy rates and smaller backyards. Housing models adopted in different urban centers of Ethiopia are achieving higher urban densities and larger (communal) backyards. There is also a lack of availability of rainwater tanks to promote water supply for different purposes. Rainwater tanks can be a simple lot-scale solution for reducing stormwater runoff and supplementing mains water supply to households. The common size does not exceed 5m3.

The research has concluded that the hydrological cycle within an urban area exhibits characteristics unlike any other commodities within the urban metabolism. The consumption of and associated wastewater generated surpasses the quantities of any other urban commodities. Water plays a major role in the urban metabolism. Two observations were made regarding urban wastewater: wastewater is an underutilized water resource, and wastewater is a reliable water source even in times of drought. Utilizing this resource would create a more sustainable urban metabolism and enhance resilience among local communities.

Recommendation

- Permeable paving: There is a broad range of paving technologies that allow water to permeate through a trafficable surface. This includes Porous Asphalt (PA), which is similar to conventional asphalt but with the fines removed to create greater void space. Additives and higher-grade binders are typically used to provide greater durability and prevent breakdown. Pervious Concrete (PC) is produced by reducing the fines in the mix to maintain

interconnected void space and has a coarser appearance than standard concrete. Permeable Interlocking Concrete Pavement (PICP) is made of interlocking concrete pavers that maintain drainage through aggregate-filled gaps between the pavers.

- Urban Centers should Comprise Water-Sensitive Communities: This asserts that community values and aspirations should govern urban design decisions and urban water management practices. A water-sensitive Urban Center is underpinned by its inherent social and institutional capital, reflected in communities living an ecologically sustainable lifestyle and recognizing the ongoing balance and tension between consuming and conserving the city's natural capital; industry and professional capacity to innovate and adapt as reflective practitioners in city building; and government policies that facilitate the ongoing adaptive evolution of the water-sensitive towns and cities.
- Preserve and maintain waterways and riparian areas: Intact waterways and riparian corridors provide excellent water treatment. Once waterways are degraded, it's very difficult to restore them, and it can take many decades before riparian water quality processes recover after disturbance. New developments should avoid direct impacts on waterways and riparian areas. Buffers on either side of the channel centerline should be preserved to protect environmental values, allow for natural geomorphic processes of erosion and accretion, and provide long-term flood resilience to surrounding areas.
- Street sweeping and litter control: Street sweeping can help reduce general litter loads (anthropogenic litter, organic litter, and coarse sediment) but is less effective at addressing fine sediment and associated pollutants. Street litter can also be managed through local regulation, for example, prohibiting the supply of lightweight, non-biodegradable, plastic shopping bags, and through drink container deposit schemes.
- Urban design/housing design: Urban design influences road and lot layouts and building styles and has a direct impact on the fraction of impervious surfaces and hence the amount of stormwater that is generated. Municipalities should realize a trend of larger homes being built on smaller lots, with lower occupancy rates and smaller backyards. In contrast, housing models being adopted in different urban centers of Ethiopia are achieving both higher urban densities and larger (communal) backyards.
- Rainwater tanks: Rainwater tanks can be a simple lot-scale solution for reducing stormwater runoff and supplementing mains water supply to households. The common size should not exceed 5m3. A typical rainwater tank system involves capturing, screening, and storing roof runoff in tanks for subsequent (non-potable) reuse such as clothes washing, toilet flushing, and garden irrigation. Rainwater tanks can provide an alternative source of water for end uses such as hot water systems, toilets, laundry, and gardens, thereby reducing the demand on centralized mains water supplies and minimizing the overall volume of stormwater runoff.
- Downpipe diverters: Downpipe diverters are a simple way of adapting existing downpipes so that rainfall is diverted to irrigate gardens and lawns. This uses water that would otherwise create stormwater. The devices are low cost, have wide applicability, and can be easily retrofitted. Downpipe diverters use a manually controlled flap valve to direct roof water from minor rainfall events to gardens or grassed areas, whereas large storm flows are automatically diverted into the conventional drainage system via the inbuilt passive bypass plumbing system. The device should be installed with an angled mesh leaf screen located above the diversion device.

- Applying the Principles of Water-Sensitive Practice: Urban Centers as Water Supply Catchments espouse that Urban Centers access a range of water sources that include but go beyond surface water sources that capture rainfall runoff from rural and forested catchments or groundwater. A water-sensitive Urban Center has a supply strategy built around multiple water sources and diverse infrastructures for water harvesting, treatment, storage, and delivery. This portfolio of sources imposes the least cost, including environmental impacts and other externalities.
- Urban Center should Provide Ecosystem Services: They should espouse integrating urban landscape design with sustainable urban water management. This integration incorporates ecological functions and services into urban communities to buffer the impacts of climate change while increasing natural capital in the urban and nearby natural environments. Landscapes are the product of varying natural and human-induced forces, interacting within a regional and global ecosystem. As well as improving amenity, public open spaces in water-sensitive urban centers provide ecosystem services to both the built and adjoining natural environments.
- Green roofs and walls: Green roofs and walls cover a broad range of approaches to add greenery to the rooftops and walls of buildings in the urban environment. Systems include shallow ("extensive") and deep ("intensive") substrate roof plantings, trellis systems growing vines on facades, and vertically supported growing media. Green roof systems can help mitigate urban heat island effects, reduce runoff, improve urban amenity, and provide insulation to buildings. They are suited to a range of urban environments, especially where the amenity benefits can be realized (i.e., the systems are visible and accessible). Installations must be easily accessible for maintenance, and roofs and/or walls need to have sufficient load-bearing capacity (this may limit the ability to retrofit them on some buildings). Solar aspect and shading need to be considered in site selection and system design.

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1.2 Exploring the Customers 'Satisfaction on the Ethio-Djibouti Railway Transportation Service Delivery using KANO Model

Kassa Moges (Ph.D)

Asst. Prof., Urban Planning and Development, Department of Transport Planning and Management, College of Urban Planning and Engineering, Ethiopian Civil Service University

E-mail: Kassamoges19@gmail.com

Abstract

The study examines the relationship between railway service quality and consumer satisfaction in the Ethio- Djibouti railway (EDR), a new public transportation system launched in 2018. The research uses surveys, conjoint analysis, KANO model, and ordinal multiple regression to gauge user satisfaction. The study finds that new EDR services are effective in five out of ten service quality categories or attributes, such as reliability, climate control, travel time, information provision, and cleanliness. The EDR line is experiencing improved satisfaction levels, operating better than bus and truck services, but with declining levels from 2021-2022. Recent customers and passengers have higher satisfaction levels than older and freight service users. Half of the analyzed attributes, such as payment-convenience and staff/hostel service, have insignificant impacts on customer satisfaction, while high levels of insignificance are found in payment-convenience and staff/hostel service. KANO model categorizes Staff/Hostess service and Cleanliness as basic features, while information provision is categorized as a performance feature. Reliability, Service-frequency & fare-levels are considered exciting features. However, customers are indifferent to payment-convenience, security, climate-control, and travel- time features. The study concludes that the chosen model, which emphasizes the significance of seeing a service as bundle of qualities rather than individual features, is

correct. Since, the KANO model helps to better understand customers'expectations and impact on satisfaction, these insights can inform EDR system and policy- makers to set market-driven priorities. To enhance customers' satisfaction, trust & values need to get adequate arrangements, technological-innovation and calibrate service performance monitoring instruments mainly on basic, exciting and performance features.

Key words: *Railway transport, Passengers' service, Customer satisfaction survey, KANO model, Service features, Ethio-Djibouti railway and Public transport policy*

Introduction

One of the most important and influential means of transportation in human history is public transportation, especially rail transportation. Due to its numerous advantages from both a socioeconomic and environmental standpoint, public transport networks are becoming an essential part of modern society and national development. These include reduced travel times and expenses, traffic, fuel usage, and carbon emissions. Because of the rapidly expanding populations and economies of nations, the rail transport network is regarded as one of the most significant forms of public transport to fulfil the various demands of urban economic activity (Lindfeldt, 2010; Rezapour and Ferraro, 2021).

Rail transport is key source of services for both passenger and freight transit for the majority of countries worldwide. Public forums and the media frequently criticise the railway system's poor service performances, which are unsatisfactory to consumers and general public, as demand for railway services rises. Governments and transport planners have therefore made great efforts to improve the satisfaction of consumers or public transport service users, and research in public transport, mainly railway transport, have mostly focused on customer satisfaction (Lindfeldt, 2010; Rezapour and Ferraro, 2021). In many regions of the world, rail transit still has issues despite efforts to improve it. Rail transportation's lateness, unreliability, and safety are some of its drawbacks that have drawn a lot of attention in relation to consumer satisfaction. The main problems with railway networks worldwide are delays and unreliability in service delivery. As reported by Yaghini et al. (2013), the British National

Audit Office (NAO) claims that events including trespassing, fleet issues, deaths, and infrastructure flaws continue to cost railway service providers a lot of money and cause major delays for their clients. The weather, station stay time, equipment maintenance, and other operational variations all have a role in the journey time delay, which affects the effectiveness of railway operations.

In the transportation industry, customer satisfaction (CSAT) is therefore one of the most important factors that service providers should take into account, particularly in the modern world when customers are better informed and competition is fierce (Dlugoš et al., 2017; Pouryousef, 2015; Wang and Work, 2015).

In order to facilitate the movement of people, products, and commerce, rail transport infrastructure and services are essential as engines of economic and social integration. This means that the availability of essential transport infrastructure and productive services, including freight and passenger rail travel, are necessary for a nation's economy to grow and thrive. This is the most significant, particularly for Ethiopia and other emerging nations. Ethiopia's rapidly expanding population and economy should take into account an efficient public transport infrastructure, especially rail networks for both freight and passengers, in order to satisfy its consumers and inhabitants.

Customer satisfaction has long been a priority for Ethiopia, particularly when it comes to obtaining high- quality service across all industries. Huge railway projects, such the Addis Ababa City Light Railway transit in 2015 and the new Ethio-Djibouti Railway (EDR) in 2018, were developed in response to Ethiopia's transport issues and increased demand for transport (National Planning Commission, 2016).

More significantly, the first-ever, novel, and exclusive railway service in Eastern Africa was inaugurated by the governments of Ethiopia and Djibouti. By 2025, the Ethio-Djibouti Railway project aims to become the premier transit provider in East Africa. Along with providing smooth, dependable freight and passenger rail services between Ethiopian stations and the Ports of Djibouti, the mission also aims to uphold core principles including integrity, diligence, efficiency, customer focus, and collaboration (EDR, 2022). However, the rail transport sector's service delivery has not yet maintained the anticipated quality and level due to the sector's dynamic character and rising consumer needs and expectations (MoT and ERC, 2019).

In the transportation industry, providing customer-oriented services and ensuring client satisfaction have become increasingly important in recent years. From the standpoint of the service industries, customer satisfaction is described as the assessment made by a client after a service interaction on the degree to which the client's wants, expectations, or criteria were met (Grigoroudis and Siskos, 2010).

Yeung et al. (2013) assert that more than the product or service in and of itself, what drives customers to make a purchase is their need for fulfilment. In addition to the advantages for the client, higher performance and client loyalty are positively connected with higher customer satisfaction. Customer satisfaction is measured in part by the customer's perception of the quality of the services they have received (Ramaswamy, 1996). There are two types of service attributes: tangible and non-tangible. Non- tangible qualities are things like how the service provider treats the consumer and how much the service costs. Tangible attributes include things like the actual infrastructure utilised to serve the customer. From the standpoint of the client, attributes can either be seen objectively or subjectively (Eboli and Mazulla, 2011).

In light of this, the development and consideration of the railway transport system is necessary to guarantee the long-term transportation of people and products. The provision of goods and passenger train services in particular needs to take customer satisfaction into account in order to improve mobility in a timely, cost-effective, safe, comfortable and ecologically responsible manner. According to Dabholkar, Shepherd & Thorpe (2000), and Dziekan (2008), performance evaluation based on service users' and passengers' experiences can explain the operation and service quality of public transport systems, namely trains. This is due to the fact that consumer contentment and the calibre of public transportation services—such as train services—are directly correlated. Service users' opinions and viewpoints, as well as their emotional assessments of the service, are used to understand and quantify this relationship. These assessments can be summed up as agreeing or disagreeing with important criteria and features of the service, or as liking and disliking, satisfying and unsatisfactory, views and perspectives (Jen, Tu & Lu, 2011; De Oña & de Oña, 2014).

The calibre and nature of the client experience as well as their expectations are what gauge and define customer satisfaction. It is helpful to first determine the main components of the service delivery process and the influence these components have on customer satisfaction before developing standard measurements. Client/customer expectations, perceptions of the service experience, importance, satisfaction, and improvement priorities are the internal and external aspects of the service delivery process that need to be measured. A conceptual model of the links

between these five service parts has been constructed in order to build upon them as the basis for the common measuring tools. Commonly used CSAT measuring techniques include the KANO model, SERVQUAL, SERVPERF, and others (Eboli and Mazzulla, 2011). Thus, it is possible to gauge customer satisfaction in part by asking them to rate the calibre of the services they received. As the system's users, the passengers are in a position to assess whether or not the service lives up to their expectations (Berry, Zeithaml, and Parasuraman, 1990; Geetika, 2010).

Customer satisfaction in the railway industry has been studied globally from a variety of angles and using a range of factors. For instance, Vincent (2014) investigated customer satisfaction and service quality on Kenyan trains. However, the SERVQUAL model was used for the study, and 90 passengers—small samples for quantitative research—were asked to complete questionnaires. The research conducted by Feng, Jason, and Tang (2018) likewise examined passenger happiness, but their main areas of interest were high-speed train service and the investigation of the relationship between service enhancement priority and passenger satisfaction.

Some studies, like Yohannes (2018), have been conducted on the Ethio-Djibouti railway, specifically in Ethiopia, although their focus was on opportunities for development related to freight and passenger rail capacity expansion and prognosis for around 50 years. Others concentrated on the no longer in operation Ethio-Djibouti railway services.

The majority of earlier research on the satisfaction and quality of rail services in Ethiopia, including those by Habtamu (2017) and Adane, Mintesnot, and Berhanu (2020), is restricted to the Addis Ababa Light Rail Transit (LRT), which has been providing intra-city mobility in Addis Ababa city since 2015. Additionally, they measured satisfaction in small-sized samples using a five-point Likert scale questionnaire and a restricted number of variables—no more than seven. The other recent study on satisfaction towards Addis Ababa LRT is the one done by Woldeamanuel and Woldetensae (2020), which used 205 sample respondents and only considered 14 service variables but found that passengers were satisfied with affordability and cleanliness but less satisfied with crowding, safety, and security of the service.

The Ethio-Djibouti railway has a vision, mission, and predicted benefits. However, since 2018, there has been little information available on whether or not these missions, visions, and ideals have been achieved. Particularly from the perspective of the service users, not much is known about the effectiveness of the service or the degree of consumer satisfaction with railway service.

The new Ethio-Djibouti railway service is the subject of little investigation and information, especially when it comes to consumer satisfaction. Thus, the increased interest in and need for research projects in Ethiopia, which just introduced a new railway transit service, served as the impetus for the current study. In order to find gaps and raise the calibre of the service, it is imperative that we investigate how train service consumers perceive their experiences and customer satisfaction.

The majority of researches on customer satisfaction employed theories and models that highlight expectations as a yardstick for gauging contentment. Furthermore, when customer needs are taken into account by prior research and service providers, it is typically done so in a simplistic way (e.g., by using expectations as the benchmark for gauging satisfaction) that ignores the importance of service attributes and the complex, ever-changing needs of the customer, both of which are critical for enhancing and sustaining customer satisfaction. Additionally, there is a lack of knowledge on which performance qualities and railway services are more or less satisfactory to service users when utilising the values of service attributes as a yardstick for satisfaction. The issues influencing the general level of client satisfaction and the EDR's service

calibre are still poorly understood. In order to investigate and elucidate service users' or customers' opinions, views, perspectives, and satisfaction with the quality and performance qualities of the service, the EDR service was selected as a case in the current study.

With less emphasis on the other factors that influence satisfaction, such as service features, values, and perception, the majority of customer satisfaction measurements and surveys concentrated on service quality and employed the SERVQUAL and SERVPERF models. They also didn't give the KANO model any thought. They have also focued on the contexts of developed nations, where the concepts of customer service and service quality are very unlike from those found in low-income nations that have different perspectivesme (Khan & Fasih, 2014).

Vargo and Lusch (2004) developed a novel quality viewpoint by introducing the notion of quality in relation to customer satisfaction, service, and cost. Most of the previous studies also conducted with little focus on railway transportation industry but on others such as banking industry (Bedi, 2010; Khan & Fasih 2014; Kaura, et al., 2012), airline industry (Lubbe, Douglas, & Zambellis, 2011), hotel industry (Marković, & Raspor Janković, 2013), educational industry (Naidoo, 2014; Jayasundara, et al., 2009), and accounting firm (Aga & Safakli, 2007).

Based on this, the current study sought to fill the above research gaps by choosing the Ethio-Djibouti Railway Industry, which is owned by Ethiopia and Djibouti as developing nations, because it wanted to understand the level of customers‘ satisfaction and how the KANO model works in measuring satisfaction in railway service in the context of a low-income country.

Customers have different perspectives, as demonstrated by the Kano model's examination of the link between feature existence and customer happiness, segmentation analysis, and consumer behaviour and viewpoint analysis. Consumers may react differently to distinct characteristics, as demonstrated by reverse features. The Kano model and the data gathering technique outlined in the following sections can assist us in determining the presence of various consumer kinds. After then, segmentation analysis may be used to see how different sets perceive a given characteristic. Thereafter, it could be necessary to choose whether to create several versions of your offerings with the intention of catering to different consumer types more than others (Kano et al., 1984; Kwong et al., 2011; Wang, 2013; He et al., 2017).

For the purpose of the customer satisfaction survey in the Ethiopia-Djibouti railway service, the present study generally used the Kano model. In contrast to previous models like SERVQUAL, this passenger- oriented model uses a variety of service quality and satisfaction metrics to assess service users' satisfaction with technology-based and innovative railway service providers.

In order to provide thorough statistical analysis and explanations using KANO model analysis in conjunction with statistical regression and qualitative analysis, data are frequently gathered utilising the KANO questionnaire surveys. Because this model employs quantitative, objective, passengers-oriented, multi-criteria, and mixed statistical analytic methodologies, its conclusions are therefore seen to be more accurate and objective. Compared to other comparable multi-criteria decision-making models, it is less affected by the evaluation experts' or evaluators' experience or expertise (Kwong et al., 2011; Wang, 2013).

When attribute performance varies, the Kano model is also more suited for categorising service qualities according to their relative influence on customer satisfaction. For use in passenger transport service modelling, the Kano model formulation's generic response surface makes conceptual sense. Furthermore, the model relaxes the capacity to represent variations in satisfaction levels over time for the same attribute level, as well as the assumption that the connection between CSAT and changes in service attribute levels is linear. Additionally, it

allows the research to measure CSAT using values rather than the expectancies included in the old models, which are inferior comparing standards. There has been contention that expectations are dynamic and subject to shift in response to consumer experiences and circumstances (Smith, 1995; Teas, 1994; Terry, 1997). Therefore, it is not in the aim of this study to measure service quality objectively by service operators using the effectiveness and efficiency of the service.

Accordingly, this research is motivated to focus on this new and recent project, which has not been studied so far, particularly the satisfaction of service users. The research also aims to determine the variation in customer satisfaction based on the socio-economic and travel characteristics of service users. It could measure the level and significant drivers of customers 'satisfaction and dissatisfaction by calibrating models where overall satisfaction is considered a dependent variable and service and performance attributes are independent variables. The results of the study can contribute to filling the literature gap, improving the current service quality and customer satisfaction, and providing policy considerations and inputs for further studies.For rapidly growing and land-locked countries such as Ethiopia, which launched the new Ethio-Djibouti railway (EDR) passenger and freight services recently (which account for over 70% of import and export trade), exploring the experiences, perceptions, and satisfaction levels of customers is imperative to improve the quality and performance of the services and the loyalty of customers. Therefore, this research is motivated to carry out an empirical investigation to understand the nature of railway transport service attributes and their relative impact or implication on the satisfaction of customers in the Ethio-Djibouti railway service using the Kano model by considering the complex and changing needs of customers as well as the values of service attributes.

The current research is also inspired to address the research gaps by doing a novel study to explore the overview of railway services and the impacts of service attributes on the satisfaction of customers with the Ethio-Djibouti railway new line. It, thus, is carried out to measure the level of CSAT from both users' and providers '(demand-supply side) perspectives in aspects such as rail transport service provision using appropriate models, criteria, and comparative assessments. More specifically, the study tried to address and answer the following critical questions:

i. How does each EDR service quality attribute determine and impact the CSAT?
ii. How do customers combine the values of individual attributes into the overall service evaluation?
iii. What are and how the attribute-level service quality drivers satisfying and dissatisfying the service users?
iv. Do the satisfaction levels vary among service users/customers of various socio-economic and travel characteristics?
v. V .What is the actual KANO category of each quality attribute compared to their hypothesized category?

Since there are no works that have been carried out to address these key questions related to customers 'satisfaction and service quality in the new EDR transport service, the study adds to the existing body of knowledge in different ways. Furthermore, the initial CSAT survey conducted for this research usually serves as a baseline study for further waves of surveys. While internal surveys can be used by institutions to study customer satisfaction levels, it is preferable to conduct external surveys with outside researchers and scholars (like the current study) in order to obtain objective and reliable understandings of customers' experiences, areas of satisfaction, and areas of dissatisfaction. Having the service provider 's goals, industry, and audiences considered, this kind of study can thus enable the utilization of expertise by asking service users

the right questions, collecting high-quality data and honest customer feedback, easy interpretation of feedback, benchmarking results, and data-driven decisions. This paper is generally organized into sections, including an introduction, a literature review, methods and materials, findings, discussions, and conclusion sections.

Methodology

Research Approach

The study used a pragmatism research paradigm, which combines positivist and interpretative paradigms, to get valid knowledge about the implications of the quality of each service characteristic on CSAT utilising theory, numerous variables, and indicators as evidence or justification. A philosophical approach known as pragmatism sits between positivism (the quantitative component of knowledge) and interpretivism (the qualitative dimension), placing it in the centre. This is due to the fact that the binary or one-dimensional distinction between qualitative and quantitative research is ultimately meaningless, since it just distinguishes between the two types of study based on whether or not the data is coded and presented as text or numbers.

In line with this research paradigm, a mixed research strategy was the best way to carry out the study's investigation and offer more conclusive empirical data by combining many research approaches than one could. The sequential triangulation technique of a mixed methodology was particularly appropriate to acquire distinct but complementary data on the issue and best comprehend the CSAT by converging multiple approaches, given the study objectives that demand both quantitative and qualitative evidence. After the key informant interviews (KIIs) are carried out on the initial 20 indicators or attribues, a close- ended KANO questionnaire surveys on railway service users were done using the final and refined 10 indicators/sub-indicators. The KII process could help to explore, refine and identify the key service quality attributes which were used in the KANO questionnaire for detailed statistical analysis and explanations. Qualitative data regarding the perception of customers were collected to inform the statistical regression and KANO model analysis and for triangulation with the quantitative findings.

Since the interest is to obtain knowledge or understanding of the research area by explaining the topic in theory and reality, a combined exploratory and explanatory research design was utilized. The purpose of exploratory design is to explore and refine the key service attributes through KII and provide input for the survey questionnaire. Consequently, an explanatory design was used to accurately explain the service attributes and their impact on customers 'satisfaction and challenges in the Ethio-Djibouti railway service delivery. For primary data collection, a cross-sectional and survey design was conducted on the selected Ethio-Djibouti railway line cities, stations, and onboard survey.

Data Types and Sources

The current study used two main types and sources of data such as primary data and secondary data based on the specific objectives. In line with study objective, the study could source its primary data including both quantitative and qualitative types from individuals who are typically the users of new Ethio-Djibouti railway line services or passengers in the selected cities and stations along the railway corridors such as Addis Ababa, Adama, and Dire Dawa. Examples of specific types of primary data include:

Data about the socio-economic status and travel behavior of new Ethio-Djibouti railway service users (passengers and shippers' information) such as age, gender, educational and income status,

residential location, service use, stations, etc.

- Information regarding structure and type of trains, stations, facilities, timetables and nature of services, customer handling and EDR origin-destination data of current traffic flow.
- Likert scale data (mix of 5 and 10 points) for determinants or drivers of customers 'satisfaction and attributes of service quality. For example, how they rate travel time & travel cost savings, cleanliness, comfort, etc.
- Questionnaire data about the expected and perceived service dimensions considering the five features of KANO model during daily or weekly trips. For example, which transport mode did you choose, do you choose and will you choose for work-related daily travels?
- Qualitative data were also collected regarding the factors and challenges of customers 'satisfaction and service quality in the new Ethio-Djibouti railway service delivery.

Besides, as evidence to supplement the primary data, secondary data stated in various reliable sources were used from published and unpublished materials, research articles, blogs, and papers of NGOs,

Government documents, and reports. Although secondary data are not as reliable as primary data, they could provide the researcher information through careful and critical review mainly for literature review, research gap, supporting data analysis, and recommendations.

Sampling Design

Target Population

Based on the purpose of the study the target population of the study are the Ethio-Djibouti railway (EDR) line customers i.e. passenger and freight service users. It includes all passengers and shippers or cargo service users of both eastbound and westbound service provisions as well as both domestic and international train services. For this purpose, the study included relevant railway service users who have access to and experience on the alternative modes in the same corridor such as personal cars, buses, trucks, airplane and the old French railway service but choose or are frequently using this EDR service. Accordingly, the research could make comparative analysis and brought to light an improved understanding of this market segment, and benchmarked these against literature findings. The entire satisfaction survey of the EDR line comprises not only the in-vehicle component but also a service.

As recommended by various studies and literature such as Research Advisors (2006) and Krejcie & Morgan (1970), this research used a segmentation analysis and comparative assessment to accurately explain the level and variability of customers 'satisfaction. The number of segments or sub-groups (as

–comparison‖ groups) was another consideration in the determination of sufficient sample size in quantitative studies such as voters and customer satisfaction surveys. Since the parameter must be measured for each sub-group, the size of the sample for each sub-group must be sufficiently large to permit a reasonable estimation. Treat each sub-group as a population and then use the table or formula to determine the recommended sample size for each sub-group. Then use a stratified random sampling technique within each sub-group to select the specific individuals to be included.

Thus, the target population for this satisfaction survey was considered to be heterogeneous with various socio-economic and transport usage characteristics. The pattern of service usage, frequency, stations, and timetables were not the same for these two segments of EDR customers i.e. passengers and shippers. At least two separate target populations (such as passengers and

freight service users) were identified to determine the sample size for each category of the target population separately.

Since the passengers 'information and statistics were collected from past studies as well as from EDR head office in Addis Ababa, Lebu, and Dire Dawa station and ticket offices, the target population for the category of passengers was known population. But, as the size of freight transport services is often explained in terms of tonnes of cargo or containers, the target population for shippers or freight service users was not known due to a lack of well-organized information.

For example, according to AfDB/OECD (2006), there were railway service provisions for 501,000 passengers and 207,000 tonnes of freight in 2002. The information obtained from EDR Lebu and Dire Dawa stations in 2022 reveals that an average of 850 passengers are serving the EDR service from Addis Ababa to Djibouti per day. This means a total of about 306,000 passengers per year. Consequently, the author used these statistics as the target population for the category of passengers and the unknown population for the category of shippers to determine two sets of sample sizes using formulas for known and unknown populations respectively.

Sample Size and Sampling Technique

Considering the heterogeneity and unique characteristics of both segments of target populations, two different formulas were applied using a 95% confidence interval. The researcher decided to determine the sample size using Krejcie & Morgan's (1970) and Anthony's (2014) formula for the known study population of the passengers, but Cochran's (1977) formula for the unknown study population of the shippers or cargo service users. Accordingly, the computed minimum sample size for EDR passengers and shippers or cargo owners were 383 and 385 respectively (i.e. a total of 768 EDR customers or service users). To apply segmentation and comparative analysis to the variability of customers 'satisfaction the calculated sample size of 768 EDR service users were proportionally categorized into relevant segments mainly based on customer types, frequency of service use, stations, and other socio- economic variables such as sex, age, as indicated in Table 1.

Table 1. Sample size and sampling technique for satisfaction survey

S/N	Segment of Samples	N	EDR stations			n	Sampling
			Lebu/Endode (25%)	Adama (15%)	Dire Dawa (60%)		
1.	EDR passengers(east & westbound trips)	306,000	96	57	230	383	Quotaand accidental sampling
2	Shippers/freight service users (mainly west-bound trips)	No clear statistics	96	58	231	385	Quotaand accidental sampling
	Total	NA	192	115	461	768	NA

Source: Researcher 's work (2023)

Out of the total operating EDR stations, three stations namely Addis Ababa-Lebu, Adama, and Dire Dawa stations (located in Ethiopia) were purposively selected excluding the station in Djibouti because of financial and time limitations and considering the relatively more significant volume of traffic flow and services they serve in the railway line. Besides, out of the total of 752km rail line which runs from Djibouti to Addis Ababa, Ethiopia has a total of 681 km rail line (about 90%) which stretches from the Djibouti border to Addis Ababa.

According to the information obtained from the EDR project and ticket offices, a relatively

greater traffic flow, passenger and freight services are registered in the three stations. As the modal share of the Ethio-Djibouti railway is 42%, 80%, and 85% in the Addis Ababa-Adama, Adama-Awash, and Awash- Djibouti corridors respectively, all operating stations are not equal in their capacity and service provision. Particularly, Dire Dawa station is serving a greater role in both east-bound and west-bound train travels for domestic and international services. This is why a larger percentage of the sample size quota was assigned to it.

As it is common in most transport service surveys, due to a lack of readymade and well-organized sampling frames about the lists of EDR transport service users, a probability sampling technique was not feasible, instead, an accidental or convenience sampling technique was used to select samples. Accordingly, passengers and freight service users who are available at the time of the field survey (questionnaires and interviews) were chosen from each station considering the representation of various socio-economic characteristics such as sex, age, and economic status. In addition, 16 key informants
were selected based on the data saturation principle among EDR service customers for qualitative data collection in the selected stations.

Methods to Collect Data and Materials

As the Ethio-Djibouti railway service provision is a new and recent phenomenon, there were shortage of study, literature, and difficulty in obtaining well-organized information on this area mainly patterns of service quality, statistics on service users, and customers 'satisfaction. So, the author could do his best and use possible research methods considering the gaps in the literature and information.

The study was undertaken based on primary and secondary data sources considering the nature, scope, objectives of the research, and availability of time and resources. Due to this reason, this study employed mixed approaches for various types of data and materials from various sources through both quantitative and qualitative methods such as close-ended questionnaires, interviews, observation, and document review. Passenger and freight service users' related information were gathered from critical stations found along the Ethio-Djibouti corridor like Addis Ababa, Adama, and Dire Dawa.

To collect primary data from railway service customers through a questionnaire, surveys were conducted on the stations, waiting rooms, and on-board with the actual passengers and shippers (cargo owners) based on train service timetables. This could enable the application of segmentation and comparative analysis to understand the level of variability of customers 'satisfaction among various categories of customers such as passengers and freight service users as well as customers of various stations and socio-economic backgrounds.

Accordingly, close-ended questionnaires were self-administered to gather quantitative initial data for service quality and customer satisfaction evaluation surveys from the extensive number of respondents which are highly recommended for accurate and representative satisfaction surveys. The KANO-based questionnaire investigation in the stations were carried out through the assistance of data enumerators, railway operators, and staff members. The questionnaire tool was divided into sections such as socio- economic and travel or train use characteristics, attributes and features of customer satisfaction, service quality indicators & sub-indicators, and challenging factors affecting railway service provision.

A 5 and 10-point Likert scale type items were used for the respondents to rate and place a priority on each indicator & sub-indicators respectively of customer satisfaction and service quality as per the procedures of the KANO model. Particularly for the refined sub-indicators, a 10-point Likert scale questionnaire is chosen because it increases accuracy over other types of

Likert scales. Mainly the scale which goes from 0 to 10 with labeled midpoints (for example, 4,5, and 6) was the best and right rating scale for the CSAT survey. Also when an even number scale rather than an odd number is used, the probability to get sample's opinion toward negative or positive is higher.

However, 5 and 7-point scales have an error of central tendency or neutral point of opinion which is useless for use in researches. To help ease the respondents' burden and effectively manage the survey, the key was to keep the survey as short as possible. By refining the sub-indicators and keeping the numbers to a maximum of 10 based on the results of the interview, this 10-point liker scale was also planned and used for a maximum of 10 minutes survey and using concise questions (maximum of 15 questions). Often, the longer the survey, the higher the dropout rate.

Besides, the survey was designed with simple, concrete words, as well as consistent words and syntax. As the scale consists of 2-3 labeled points (strongly satisfied, intermediate, and strongly dissatisfied), exhaustive, and mutually exclusive response options, it offers enough answer options for the respondents to easily choose the most valid answer. Overall, these 10-point Net Promoter Score (NPS) scale questionnaires best fit the needs and make the survey easy to understand by respondents and quick for analysis**.** Pilot study was done before the actual survey is done to increase the validity of the instruments and the quality of the data.

Furthermore, interviews and kano questionnaires were employed sequentially to collect data and materials. Firstly, to refine and identify the most important ones from 20 indicators and sub-indicators, the key informant interviews (KIIs) were employed with the purposively selected EDR customers service users through face-to-face at stations based on train service timetables or telephone procedures for 10 days. These KIIs were also carried out using textual and audio-visual recording tools based on the consent of key informants. Consequently, about 10 refined and most important indicators were used as inputs for the questionnaire survey within 20 days. Besides, an onboard survey was used in consultation with the EDR company to permit free rail service for data collectors to effectively and successfully reach all respondents while traveling**.** Deploying large number of data collectors and training was used to increase the response rates.

In addition, field observations were conducted at the selected stations mainly in Addis Ababa and Dire Dawa city using a well-structured checklist and photographs. On the other hand, relevant secondary data were collected from publications, research, operation control center, reports, and archives through careful document review. Different electronic and print media, databases, and websites were also searched to extract some supportive ideas and data.

Operationalization of Variables

Service quality and customers 'satisfaction with EDR service are well defined, contextualized, and subdivided into various dimensions and attributes. The key concepts, variables, indicators, and sub- indicators are identified and operationally defined to measure and evaluate the levels and drivers of CSAT via quantitative analysis. For example, CSAT level is considered as a dependent variable, whereas socio-economic, demographic, and service usage characteristics of customers and service quality attributes, features, and indicators are considered as predictor variables for the multiple regression models.

The dependent or outcome variable i.e. overall customers 'satisfaction is represented and measured using a 0-10-point scale rating from –extremely dissatisfied 'up to –extremely satisfied‖ respectively. Using the principles of the KANO model, the independent variables mainly the service quality and features were measured using the defined indicators through a 5-

point Likert scale question items. Respondents could place their priority of likings and disliking on each indicator using a scale rating.

KANO model was applied to find out the components of service quality & the requirements or needs of service users and their effect on customers 'satisfaction and perception of quality. The requirements of customers were categorized into five attributes or features. As indicated in Table 2 the selected five indicators (i.e. attributes or features) of service quality and customers 'requirements are Attractive, Performance, Must-have (Must-be), Indifferent, and Reverse.

Table 2. Operationalization of customers 'satisfaction (CS) and service quality attributes

S/N	Attribute of service quality & customer requirements	Symbol	Measurement and interpretation
1	Basic, Must-Have	M	As the presence of this is taken for granted, insufficiency of the attribute would result in extreme non-satisfaction, but the sufficiency would not increase the CSAT level
2	Performance	P	The functional presence of the attribute generates CSAT while the absence would result in non-satisfaction
3	Exciting, Attractive	A	The functional presence of the attribute results in a high level of CS while the absence would not affect CSAT
4	Indifferent	I	Whether the attribute is present or not, would not affect CS
5	Reverse	R	The presence of the attribute would generate non-satisfaction, but the absence would increase CSAT

Source: Adapted from the KANO model (Kano et al., 1984 and He et al., 2017)

Additional sub-indicators are identified for each indicator in the EDR service quality and CSAT evaluation survey questionnaire. Based on expert consultation and literature review, a total of 30 relevant sub-indicators or levels (i = 30) are selected from 10 quality attributes or features. This means each quality attribute or feature was divided into 3 levels to indicate functional and dysfunctional sub- features of customer questionnaire. The railway service ratings given by respondents were processed with use of the ten criteria/attributes such as: security, payment procedure, on-board climate control, service frequency, travel time, travel fare level, reliability, cleanliness, information provision, staff/hostess service, safety and seat comfort.

For each quality attributes or feature **i**, the functional and dysfunctional customer questionnaire was applied to collect the service users 'evaluation, requirements, and need. The functional questionnaire reveals customer 's evaluation, requirement and demand when the passenger/freight service meets the sub-indicator. In contrast, the dysfunctional questionnaire indicates the customer 's evaluation, requirement, and demand when the service does not meet the sub-indicator. The initial data of 30 sub- indicators were gathered using a close-ended questionnaire and counted. Consequently, the final results were used as inputs to obtain the final service quality and to estimate the level of importance of each service quality attribute, the respondents used a scale (1 to 10) to value the service based on every given criteria Ci (i=1,2...,10). As the ratings are given from 1 to 10, values were normalized by calculating the average value for each criterion. However, respondents used a 5-point scale to rate the significance of effect of each attribute on their level of satisfaction.

Overall, KANO model is more suitable for this study to classify railway service attributes in terms of their relative impact on customer satisfaction as attribute performance changes. The generic response surface of Kano model formulation is conceptually appealing for application in passenger transport service modeling. For example, it relaxes the assumption of linearity of the relationship between customer satisfaction and changes in service attributes levels, as well

as the ability to model changes in satisfaction levels over time for the same attribute level (CQMJ, 1993; Lin et al., 2010; Chen, 2012).

Analysis Methods

Once data collection phase was completed, both types of quantitative and qualitative primary data were processed, edited, organized, and prepared for the analysis phase. With the help of Statistical Package
for Social Science (SPSS) software version 24, quantitative data were encoded, processed, and edited and qualitative data also were transcribed and coded. Data were presented using textual and graphical tools such as tables, bar graphs, pie charts, histograms, and others for each categorical and continuous variable.

Following the analysis of the qualitative survey data using content analysis, quantitative surveys and conjoint analyses were carried out in order to provide data enabling the exploration of the quantitative relationship between EDR service quality attributes (considered as indepenedent variable) and customer satisfaction (considered as depenedent variable). Conjoint analyses together with multivariate data analysis is effective for modeling how customers combine the values of individual attributes into the overall evaluation of a service. Among the types of conjoint analyses, the rating analysis alternative allows a respondent to rate the ten attributes and their levels. For the purpose of this experiment, a rating-based conjoint analysis (using a 10-point likert scale) was selected as it allowed for the design of a number of service packages that are essentially hypothetical packages of service attributes that are offered on the EDR.

Through a conjoint analysis modelling framework, it was shown that, due to non-linear effect on customer satisfaction, not only attribute but attribute levels are critically important in customer service evaluations. A multivariate data analysis mainly ordinal multiple regression model was used for the estimation of separate relationship between each independent variable with dependent variable.

According to Tutz (2012) ordinal multiple regressions basically estimates the cumulative probability of an outcome where the outcome is an ordinal variable and assumes that the effects of explanatory variables are proportional across the outcomes i.e. proportional odds assumption. The coefficients are then estimated by solving a proportional odds model. Across all the profiles, the intercept value represents the respondents 'rating of the best possible service corresponding to zero dummy values for other attribute levels. The signs of the coefficients are indicative of the directional effect of the attribute level on customer satisfaction, where negative values indicate an inverse relationship. P-values of less than 0.05 are indicative of the statistical significance of coefficients at 95% significance level.

The effect of each level is estimated separately and it therefore does not assume that the levels are related; that they can be used to estimate both linear and non-linear relationships, and that the types of relationships can vary between attributes. This is because, for categorical nature of data structures relating to customer satisfaction, this model is deemed the most appropriate approach to a survey instrument. Dependent variable can either be a metric or non-metric measure, and the Independent variables are non-metric. The multivariate ordinal regression model was thus used to estimate and predict the impact of various independent variables (such as socio-economic characteristics of customers and service quality indicators) on the outcome variable i.e. overall customers; satisfaction. To regress CSAT with railway service, the following model was be used:

$$\mathbf{Y = \beta 01 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \ldots\ldots + e}$$

Where, Y is the dependent variable (DV) i.e. overall customers

'satisfaction X_1, X_2,$X_{3....}$are the independent variables (IV)
and
β_1,β_2, $\beta_{3....}$are the slope or regression coefficient of each IV

To make the Ethio-Djibouti railway service viable and successful the author believes that appropriate planning and feasible forecast of drivers affecting the current and future customers 'satisfaction and demand is required through such kind of regression analysis. One-way ANOVA tests were employed to check the existence of statistically significant variation in the satisfaction level among three or more segments of customers such as by station locations. Similarly, an independent sample t-test was run to test the hypothesis and check the statistically significant variation in the satisfaction level among two segments of customers: passengers Vs. freight service users, Domestic Vs. International customers and service usage year etc.

In addition, with regard to the statistical data analysis, descriptive statistical such as frequency (ex. for the counts of 30 sub-indicators) and percentage were also used to summarize and describe categorical variables such as sex, station locations or towns, railway usage characteristic like passengers and cargo owners, train or coach type, domestic or international passengers and their satisfaction levels, etc.The generic response surface of the Kano model formulation is conceptually appealing for application in passenger transport service modeling. However, regarding the implementation of KANO questionnaire literatures showed that misinterpretation of questions is common in practice. As the interpretation of questions and completion of the survey questionnaires by respondets were done with the help of data enumerators or survey moderators the limitations and drawbacks of the model were significantly reduced.

Results and Discussion

As an answer to each research questions, the findings or results of the study particularly, quantitative and qualitative data analysis and interpretations are presented in this section.

Demographic data and travel behaviors of respondents

Table 3. Respondents' demographic and travel behaviors data

Respondents 'attributes	Responses	Frequency	Percentage
Which kind of customer you are?	Passengers service users	426	62
	Freight service users	261	38
When have you started the use of EDR service (since 2018)?	Less than a year ago	41	6
	1-2 years ago,	117	17
	2-3 years ago,	337	49
	About 4-5 years ago	192	28
What is the frequency of your railway service use?	Occasionally	21	3
	Once a week	55	8
	2 to 3 days per week	391	57
	4 days per week	220	32

Source: Field survey (2023)

As mentioned in method section, the satisfaction surveys were administered on the 768 EDR

customers and service users to collect primary data using close-ended KANO questionnaires. The author made extensive efforts to reduce non-response rate of questionnaires. However, about 687 valid questionnaires were obtained to develop data set for the statistical and kano model analysis. Accordingly, the response rate for the analysis of customer satisfaction was found to be 89 percent. All key informant interviews (n=15) were also conducted successfully for the qualitative analysis.

As indicated in Table 3, out of the valid 687 data collected through KANO questionnaire surveys, 261 (or 38%) data were obtained from EDR Freight service users while 426 (or 62%) from Passengers service users. Regarding the length of time as customers and users of the service since the start of EDR service in 2018, most of the respondents (337 or 49%) have started traveling by it about 2-3 years ago. 192 of the respondents (28%) have started the use of EDR servive about 4-5 years ago, which is almost since the start of the operarion in 2018. Whereas, 17% and 6% of the respondents have started the use of EDR servive about 1-2 years and less than a year ago respectively.

Table 3 also indicate the frequency of railway service use by the customers. Thus, two-third i.e. 391 (or 57%) and 220 (or 32%) of the respondents travel 2 to 3 days and 4 days per week respectively. But, 55 (or 8%) and 21 (or 3%) of respondents replied that they travel Once a week and occasionally respectively. Therefore, the sample therefore comprises respondents that can be considered customers or service users who are fairly familiar with the EDR service conditions in the corridor.

Qualitative results

The major questions and issues that motivated this study were: what customers ‘satisfaction means in railway service and how it is measured? How service quality and customer satisfaction were related? how good is the new EDR service? What are the divergences between reported satisfaction levels and customers perception and how can the EDR industry really satisfy customers? For this purpose, detailed interviews and discussions were firstly held with 15 rail service users on the specific service attributes. Participants were asked to provide their opinions on the importance of a number of predetermined railway transport service attributes, and were also asked to indicate how satisfied they were with the performance of the EDR in respect of the service attributes. The survey moderators or data collectors were also urged to further probe participants on service satisfaction threshold values that would potentially be used to calibrate ranges in the quantitative survey. The responses and qualitative results about customer ‘s satisfaction on each service attribute are summarized below:

- **Reliability:**

All participants (n=15) agreed that reliability refers to the ability of a service to deliver on what it promised, especially in respect of timetables. Participants reiterated the importance of communication and felt that any foreseen or unforeseen problems should be communicated to them. Participants also indicated that on an ordered scale of 1 to 10, where the value of 10 represents the best situation, that they give the service the value of 8, which according to participants is equivalent to being acceptable. They indicated that if the service runs late, and it is not the operator ‘s fault, for example as a result of power cable theft, they would understand, otherwise they expect the service to be on time. Some participants felt that they would not use the train in the morning, if it was occasionally 30 or more minutes late, due to work and business commitments requiring punctual arrival. Some indicated that they were not aware of a day on which the train service was late.

- **Security:**

For many participants (n=11) security represented a basic expectation from such kind of public transportation service. To this end, while all participants indicated that they would not use the service if more than 10 criminal incidents were reported every month on EDR service, some indicated that they would still stop using the service even if as few as one incident was reported. However, all the participants (n=11) regarded the current security levels as adequate to the extent that they felt ―safe to put a bag down or take out a cell phone‖ in contrast to other train services operated in Addis Ababa city mainly AALRT.

The physical presence of security personnel seemed to be particularly important to the extent that a respondent remarked that ―when I see security guards, I feel safe‖. They indicated that the initially- promised security levels drew them to the mode. However, participants felt that, should there be a serious security threat, the current security arrangements would not be adequate to deal with it because they seem ill-equipped.

- **Safety:**

Most participants (n=12) were not concerned about safety related to equipment malfunctioning and accident. They indicated that this aspect never crosses their minds. However, should there be more that 10 reported cases of compromised safety levels, they would not use the service, depending on the type of incidents and associated levels of threat. In general, it was felt that malfunctioning equipment such as a door and window will not stop them from making use of the EDR service. Some participants also felt that there needs to be trained medical personnel for the first aid service on the train or in the vicinity in order to deal with medical emergencies. Regarding the necessity of regular announcement of evacuation procedures, some participants felt that ―people do not want to be reminded about the risks of accidents that could happen‖ and felt that once or twice a month should be adequate.

- **On-board climate control:**

Mixed feedback and responses were found regarding the service performance of on-board climate control. Some complained that since the Addis Ababa-DireDawa-Djibouti corridor is found in the lowland and rift valley areas where the climate is often hot there were no adequate air conditioners (AC) or coolers in the coaches during summer but others contradicted this. Further, while some participants said that the air in the train was ―very hot‖ in summer, others indicated that it was good, and some even disagreed on the most comfortable season or month. Some participants even went as far as saying different human races have different temperature tolerances. A number of participants (n=12) felt that there was not enough water on-board, especially during summer. Overall, while participants regarded on-board climate control as valuable, they did not regard it as critical to the extent of saying ―even if it is hot, when the train starts to move, the wind pushes through and it is fine‖.

- **Ticket Payment convenience:**

Almost all the participants (n=15) were dissatisfied with the location and way in which coupons and tickets were sold. They complained that tickets are bought one day ahead mostly at the new stations that are located far out of the nearby cities after traveling up to 20kms and as a result they find it difficult to purchase them. Furthermore, participants felt that the location and remoteness of ticket shops for selling tickets compromised their security because on the day many people would be carrying large amounts of cash & properties and therefore, they become vulnerable to robbery, and they would welcome alternative ticket shops in the nearby city centers. It was felt that it is safer for commuters to be able to buy the tickets on the train instead

of one day ahead or that ticket sales through internet-based mobile banking system be introduced. Participants also complained that on the day of ticket purchasing they usually stand in long queues for as long as 30 minutes and often fear that the train will leave them behind. Self- service kiosks were also recommended in order to reduce queue lengths at ticket sales booths and to do away with having to rise early on the sales dates.

- **Fare levels:**

For almost all of the participants (n=14) fare levels of EDR services for local and international passengers are considered expensive particularly the new ticket price executed as of 15th November 2022. Participants strongly felt that the level of tariff is for example increased from 450ETB into 750ETB, which is about 50% increase, for a single travel from Dire Dawa to Lebu or Addis Ababa. Participants felt that they are not paying a fair price for the service they are getting. Even though prices and expenses of transport companies are increasing all over the world, the current new tariff is seen as unreasonable. Off course, EDR fare level is still better than air travel but higher than buses and trucks for the same travel origin and destination. Some participants indicated that they will still use the train if the fare increases, but the operators should inform them well in time. Other participants did say they might be inclined to pay more if the service quality is enhanced significantly, for example service frequency, ticket procedures, cleanliness and time to the nearest station.

- **Speed of railway travel:**

Most of the participants (n=14) showed that they would be dissatisfied if the train frequently stopped at every station. They thought that the limited stop service is one of the main reasons for making use of the new EDR service, and this differentiated it from other bus, truck services and the old French railway service. However, the trains stopped when the line is blocked by cattle, camel, people and during accidents but still managed to travel within about 12 hours between Addis Ababa and Djibouti port (it would still remain attractive) which took about 3 days before the start of this new EDR service.

- **Service frequency:**

Participants were generally dissatisfied with the monthly schedules and frequency for the eastbound and westbound travels mainly passengers 'services. The current schedule and frequency were criticized for not providing for people who work flexible hours and days. Currently participants are forced to use other alternatives such as cars and buses to allow for the flexibility and do their businesses. Participants also felt that the frequency of EDR services should be increased per direction.

- **Time to the nearest station:**

Majority of the participants (n=14) were not generally happy with the time it took to travel to the nearest station, which was reported as ranging between 30 and 45 minutes. Even there are stations with no adequate taxi services where passengers may travel on foot. Most of the new stations are built in remote areas outside cities. This longer distance of the nearest stations could also expose passengers to additional costs and safety problems while traveling by Taxi, three-wheel rickshaw or bajaj and on foot to purchase ticket and make travel. They would not be pleased if the time to station increased to a value as high as an hour, and indicated that they would stop using the service if that occurred.

- **Crowding:**

All the participants (n=15) were satisfied with the current setup where all passengers have a guaranteed seat and no standing is allowed. Increased levels of crowding that include standing

passengers would
displease the participants for the price they are paying for the service. Furthermore, participants sensed that increased levels of crowdedness would obstruct the movement of hostesses and create security or comfort problems to passengers.
However, many participants strongly felt against the reservation of seats. They expect public transportation mainly in such kind of international and modern railway service, seats to be readily available and provided based on numbers to anyone wishing to make use of them. Some participants remarked that even if the seat reservation system is not formally in place it is informally practiced to their detestation.
Most passengers did not sit on the appropriate seat number written on the ticket. As a passenger you come in and see a seat and just sit on it without crosschecking the seat number and the next thing you get this funny look and an attitude and they forget this is a train and not a plane, and that sometimes is a source of conflict among passengers. The few who supported a seat reservation policy felt that it would allow them to see the same people every day and avoid mixing with ―moody‖ people.

- **Information quality:**

With regard to the current information quality in the EDR service participants did not have any strong feelings. However, they felt that they should be informed through a website, electronic mail, or mobile phone text messages if there are service changes or delays. They indicated that it is understandable that there could be delays, but they should be forewarned in order to make alternative arrangements, including making use of alternative transportation modes.
Some indicated that they lose money and prospective clients if they are late for businesses and meetings as they are remunerated on the basis of time worked. The EDR company also makes use of notice board posts to communicate schedule and fare changes. Other participants indicated that communication regarding the ticket sales is poor and that there is no internet-based communication to facilitate the sales.

- **Cleanliness:**

Majority of the interview participants (n=14) revealed that the levels of service cleanliness was by far best in the beginning 2-3 years of the EDR operation but cleanliness is reducing in recent years. They also indicated that the train facilities and the toilets at stations were realistically clean and satisfactory. However, in most instances the participants strongly considered that cleanliness is mainly the responsibility of the passengers. The habit of consumption and waste management of passengers significantly affects the level of cleanliness in the train service. Generally, participants have no problem mixing with people from different backgrounds inside the train as it allows them to network and sharing of different experiences. However, unclean passengers and those with negative attitudes were identified as unattractive. Cultural differences for example patience or impatience of publicly consuming ―khat‖ (a local weed drug) were sources of potential conflict and should be alleviated through respectful and improved communication.

- **Friendliness of train service staff:**

Most participants (n=11) were generally satisfied with the treatment they receive from the EDR staff mainly train coaches, hostesses and ticket sellers. Some complained about the genuineness of the smiles from the service staff, and when they sense unfriendly customer handlings, they feel irritated. Even though the presence of hostesses by itself is considered important by participants to enhance the service,the hostesses should respect the passengers more. Otherwise passengers would consider stop using the EDR service.

- **On-board entertainment:**

Participants value the provision of on-board entertainment in the form of music, movies, television, newspapers and internet. Wide variation in the preferred content of entertainment is observed and it included movies, different types of music and current affairs. In most cases participants receive movies and music; however, they disagreed on the type of music that should be played and also the television programs that should be shown. Furthermore, they are now unable to read newspapers for current affairs while travelling. The number of newspapers was reported by some participants as extremely insufficient. Thus, some participants commented that if newspapers are not provided then the train cannot be a business and modern train.

Quantitative and Kano model findings

The qualitative survey results informed the design of the quantitative survey instruments. Based on this the KANO model parameters, a 5-point questionnaire and a rating-based conjoint analysis framework were applied for the collection of primary quantitative data from about 687 participants and estimate of the relationship between service quality and customer satisfaction.

The model structure showed satisfaction as a summative function of a combination of service attributes levels, and not just attributes. This is because of the fact that the view that customers rate service as apackage of attributes and not just individual attributes and customer satisfaction is the overall outcome of the effect of attribute levels. The service quality parameters were used as predictor variables and the customer satisfaction as the outcome variable in the model. Accordingly, the effects of service quality parameters were estimated using the ordinal multiple regression model.

Based on the results of qualitative interview data and text analysis, the basic and most sensitive service quality attributes were identified and used as input or explanatory variables for the quantitative analysis using ordinal multiple regression model. As indicated in Table 4, the extent of customer satisfaction (CS) with the CS+ coefficients (i.e. satisfaction coefficients which is between 0 to 1) and CS– coefficients (i.e. dissatisfaction coefficients which is always a minus number) of the three levels of each attribute were measured. For the CS+ coefficients – the closer the result is to one, the higher the effect on customer satisfaction. Conversely, a CS+ coefficient near 0 suggests that that particular feature has very little influence on satisfaction.

Table 4. The combined regression model parameters for passenger and freight service user customers

Attribute	Attribute levels	Coefficient	P-value
Payment convenience	In cash only, inside train and at station any day of month	-0.461	0.234
	In cash only but at payment station any day of month	-0.267	0.071
Frequency	One train per day per direction	-0.052	0.161
	One train per two days per direction	0.203	0.584
Cleanliness	Slightly clean vehicle/train/stations	-0.188	0.553
	No clean vehicle/train/stations	-0.499	0.323
Fare level	Equal to up to 50% the tariff of other options in the same O-D	-0.325	0.001
	Equal to the tariff of other options in the same O-D	0.014	0.083
Reliability	Sometimes reaches & leaves up to 30 minutes late	-0.865	0.0002
	Sometimes reaches & leaves over 30 minutes late	-1.146	0.0001
Staff/Hostess service	No hostess but with self-service on refreshments	-0.158	0.122
	No hostess and no refreshments	-0.426	0.005
Security	1-10 crimes reported per month	0.074	0.512
	Over 10 crimes reported per month	-0.265	0.056
Climate control	Slightly uncomfortable temp	-0.525	0.0350
	Extremely uncomfortable temp	-0.372	0.0004
Travel-time	Equal to over 50% the travel-time of options in the same O-D	-0.746	0.1062
	Equal to up to 50% the travel-time of options in the same O-D	-0.382	0.0001
Information	Poorly communicated service timetables & changes	-0.624	0.0001
	Service timetables & changes not communicated	-0.958	0.0001
Intercept		6.425	NA
Sig.		0.010	NA
R^2		0.48	NA

Source: Field survey (2023)

At the same time, we also need to consider the dissatisfaction coefficient (CS–). If this lies towards -1, then not including this feature has a strong impact on customer dissatisfaction. A value close to 0, conversely, means that the absence of this feature is not likely to make customers dissatisfied. The CS– coefficient is always a minus number, which underlines the negative influence on satisfaction if the feature in question is absent. The satisfaction and dissatisfaction coefficients were a good guide when ranking and classifying individual features. According to the statistical analysis of the regression model, out of ten attributes the ones that are found to have some levels estimated to have relatively significant impact on the outcome variable, i.e. customer satisfaction, are: Reliability, Climate control, Travel-time, Information provision and Cleanliness.

Qualitative results showed that unlike the passengers freight service users were also positive for additional service quality categories or attributes such as trains'carriages, maintenance of trains and stations, frequency of trains and accessibility generally to stations/platforms.

On the other hand, insignificant impact is found for the rest five quality attributes such as Payment convenience, service frequency, fare levels, security and Staff/Hostess service. High levels of insignificance are detected, particularly in respect of payment convenience and Staff/Hostess service. A relatively high intercept implies that their satisfaction may be explained by parameters other than the ones included in the model. This is expected, since the attributes chosen for modeling purpose were out of the many other attributes that were expressed by participants of interview discussions. Estimating the parameters with a zero intercept, while it would improve the model fit, would compromise the reliability of the model.

The researcher first hypothesized the classification of those ten service quality attributes, in order to test the hypotheses and then determine the actual class or category of each attribute in line with the Kano model. Among the different methods of Kano model, the three-level Kano questionnaire method was applied to classify attributes based on the customer satisfaction coefficient value of their three levels.

As indicated in Table 5, the extent of customer satisfaction (CS) with the CS^+ coefficients (i.e. satisfaction coefficients which is greater tahn 0) and CS^- coefficients (i.e. dissatisfaction coefficients which is always a minus number) of the three levels of each attribute were measured. Accordingly, the ratios of the differences between customer satisfaction coefficients of attribute levels three and two as well as coefficients of attribute levels two and one were calculated so as to classify the attributes into Kano model categories.

Table 5. Comparison between the hypothesized and estimated attribute classification

SQ attributes	The hypothesized classification of attribute	Ratio of attributes	The estimated classification of attribute
Payment convenience	Basic	-0.267	Indifferent
Frequency	Excite	0.203	Excite
Cleanliness	Basic	1.654	Basic
Fare level	Performance	0.014	Excite
Reliability	Basic	0.324	Excite
Staff/Hostess service	Basic	1.696	Basic
Security	Basic	-4.581	Indifferent
Climate control	N/A	-0.372	Indifferent
Travel-time	Performance	-0.382	Indifferent
Information	Basic	0.535	Performance

Source: Field survey (2023)

Based on KANO model analysis it was assumed that attributes having ratios with values equal to or close to 1 shows a performance classification of an attribute in the Kano model, as it represents a linear relationship. Since improvement in attribute performance has a diminishing effect on customer satisfaction, an attribute with ratios more than 1 represent a basic attribute. Conversely, attributes having ratios less than 1 represent excite classification. Besides, attributes with below zero or negative ratio are considered to be classified as indifferent attribute in the Kano model analysis.

Compared to the hypothesized classification of attribute, KANO model analyses were performed on ten attributes to estimate their actual KANO model category or classification. Accordingly, out of ten attributes the ones that are really found to be in the attribute category or classification of BASIC are Staff/Hostess service and Cleanliness. Information provision is an attribute that is found to be in the category of performance. The attributes in the classification of excite are Reliability, Service frequency and fare levels, whereas Payment convenience, security, climate control and travel time are found to be in the indifferent category.

Even though two regression models were separately run for passenger and freight service customers, a combined regression model was run because the current research evaluated customers 'satisfaction as a function of a combination of attributes and input data from all kinds of customers. Since, accuracy of kano model is sensitive to the number of service quality attributes, attribute levels and sample size; the application of a combined regression model was also due to the use of larger respondent samples and greater number of attribute as well as their levels that may increase the complexity and impracticability of the survey if separate models are used. Accordingly, the combined regression model was run using a total of about

687sample size and rating observation. Since each service quality attribute was assigned three levels, each sample respondent could make about 30 rating observations.

As indicated in Table 4, this model was found to be significant at Sig.=0.010. About 48% of the variance and effects on the outcome variable i.e. customer satisfaction was also explained by the model, which is a reasonable value (r^2=0.48). The combined regression model statistical analysis reveals that out of the selected ten service quality attributes there are a number of attributes that have some levels estimated to have relatively significant impact on the outcome variable i.e. customer satisfaction such as Reliability, Climate control, Travel-time, Information provision and Cleanliness. Accordingly, EDR is doing satisfactory services on these attributes which have significant impact on CSAT. This is similar with findings of studies such as Woldeamanuel and Woldetensae (2020), that confirmed passengers were more content with the service's cost and cleanliness than with its crowding, safety, and security.

However, almost half of the statistically analyzed attributes have some levels estimated to have relatively insignificant impact on the outcome variable. These are: Payment convenience, service frequency, fare levels, security and Staff/Hostess service. Particularly in respect of payment convenience and Staff/Hostess service high levels of insignificance are detected which have also stronger impact on the dissatisfaction, emotion and trust of the customers. These findings are consistent with previous studies such as Ismail et al., (2006) and FengZhen, Jason and Jia Tang (2018) that revealed the price of services directly influences not only service quality but also customer satisfaction.

In comparison with the hypothesized classification of attribute, according to KANO model analysis out of the ten attributes the ones that are really found to be in the attribute category or classification of BASIC are Staff/Hostess service and Cleanliness. Information provision is an attribute that is found to be in the category of performance. The attributes in the classification of excite are Reliability, Service frequency and fare levels, whereas Payment convenience, security, climate control and travel time are found to be in the indifferent category.

In case of the current customers 'satisfaction survey, the statistical findings of KANO model attribute classification is found to be consistent with the qualitative results. This is because, with the exception of the six attributes whose levels are defined incrementally better, the negative ratio sign in four attributes including Payment convenience, security, climate control and travel time are indicative of a counterintuitive relationship between their performance and customer satisfaction. They are also indicative of the presence of reversals and in this study, these reversals are present at attribute levels that have been shown to have a statistically insignificant relationship to customer satisfaction. For example, Counter-Intuitive shows ignoring customers while intuition tells us we have to pay attention to customers.

This means customers are found to be indifferent to features such as Payment convenience, security, climate control and travel-time no matter how much they are implemented. When achieved or not achieved and when present or not resent the customer's satisfaction or behavior does not change. EDR company need to be aware of that improving these quality feature does not increase satisfaction.

Empathy, according to Aga & Safakli (2007) and Naidoo (2014), has a major impact on customer satisfaction since it attends to each individual client's demands. Jayasundara et al. (2009), also indicated that empathy, reliability and assurance all have a substantial impact on customer satisfaction. Customer satisfaction has been achieved by an improvement in the quality of a certain service of public transport, particularly the reliability, which could encourage more people to utilise it (Lindfeldt, 2010; Rezapour and Ferraro, 2021).

In line with the findings of these studies, in the current study the service quality features such as Reliability, Service frequency and fare levels are found to be exciting, or delighter or attractive features because they are unexpected, totally surprising and capable of delighting customers by offering more than they expect. This means, even though customers get very excited when these attractive features are well-implemented, customers are usually indifferent when the features are not present. This is because, customers may not even be aware of the possibility of their existence and these are featuring that customers didn't know they might need them. However, once Reliability, Service frequency and fare levels are presented or well-implemented in the EDR service customers will be delighted to have them. Thus, satisfying these attractive or exciting quality features or needs of customers allows the EDR company to excel, and be world-class in its services.

Since there is direct correlation between the level of implementation of ‒Information provision‖ and customer satisfaction, out of the ten features information provision alone is categorized as a performance feature. This means, satisfying the needs of customers particularly on information provision allows the EDR Company to remain in the transport market in the corridor. Since, other transport service providers usually end up competing on such feature with each other, EDR company may provide the maximum implementation of information provision at an attractive price.

Based on the KANO model analysis, Staff/Hostess service and Cleanliness are categorized as Basic feature of EDR service, which is also known as Must-Have or Must-be, or mandatory features. This is because, both service quality features are those that customers usually expect to see and these features must work. As their presence in the EDR service delivery is taken for granted, satisfying customers with these features or needs allows EDR Company to get into or get easy entry to the transport market.

More specifically, whenever the Staff/Hostess service or respect and Cleanliness are present and fully implemented in the rail service, customers will be indifferent about it. It is simply assumed that the service will function with that feature. On the other hand, whenever these quality attributes are not present and not implemented, the EDR service is viewed as broken by customers. Similarly, Ismail et al. (2006) and Aga & Safakli (2007), showed that customer satisfaction is significantly impacted by service quality.

It doesn't matter what other features the EDR service has. That is why, as Staff/Hostess service or respect is not achieved in EDR service customers' satisfaction dropped significantly and then the service isn't considered as good enough. Correspondingly, past studies (Cook et al., 2002; Friman, Edvardsson, and Gärling, 2001), showed that the experience appears to be the primary factor influencing the evaluation of service encounters, rather than the duration. Satisfaction is generally more impacted by intangible service attributes than by tangible ones.

Based on this classification system, notable differences were found between the hypothesized attribute classes and the actually calculated classes in Table 5. It can be concluded by the foregoing analysis that service attributes and their impact on customer satisfaction can only be classified, once properly measured, for the market in which they were measured. It is mandatory for the EDR company to assess and know the market being served in order to facilitate the design of rail service provisions that are market responsive. Failure to do so may lead to the maximization of service gaps (promotional, understanding and procedural gaps) identified by Hill and Alexander (2006) and TajuAbdulaziz (2020), resulting in a structurally misaligned service between intended customers and the service offering.

Conclusions

Worldwide, public transport, including train services, is specifically designed and extensively run to be a sustainable choice and a tool for managing travel demand. In order to inform the planning, design, and management of public transport services, notably the Ethio-Djibouti railway, the research was intended to empirically investigate the casual link between railway service quality and consumer satisfaction.

This is crucial for figuring out how railway transport operations and services may be methodically modified to match the always changing demands of consumers, either increasing customer satisfaction or reducing displeasure. In addition, although though defining service quality standards is a typical practise in managing public transport systems, the connection between defining service quality standards and consumer satisfaction is sometimes methodologically ambiguous. Review of the qualitative and quantitative concepts of customer satisfaction, together with any related analytical models, served as a basis for the design, implementation, and analysis of the empirical part of the inquiry.

The empirical portion of the study was restricted to a strategically significant market group made up of commuters or passengers who have access to private vehicles and other choices but decide to use the Ethiopia-Djibouti railway or are inclined to do so. The research expanded our knowledge of this market sector and compared it to findings from the literature based on the outcomes of the qualitative and quantitative surveys, KANO model, rating analysis of conjoint analyses, multivariate data analysis mainly ordinal multiple regression.

It was proven that the chosen model in service research, which emphasises the significance of seeing a service as a bundle of qualities rather than individual features, is correct. In the specific instance of the Ethio-Djibouti railway transportation, the entire voyage constitutes a service, not only the portion that takes place within the carriage. It was also clear that there are a variety of needs, demands, and expectations for an Ethiopia-Djibouti railway service, often articulated incoherently, even within this specific railway market.

Aspects of the qualitative investigation were supported by the quantitative portion of the study. It was demonstrated using a KANO and conjoint analysis modelling framework that not only attributes but also attribute levels are crucially essential in customer service evaluations owing to non-linear influence on customer satisfaction. In instance, results from consumer satisfaction surveys verified the impact of the Kano model. It was demonstrated that once a service design has been chosen, both current and potential consumers can evaluate its performance consistently.

The interview results revealed that the new EDR line is doing well compared to other public transport options such as bus, truck and airplane services currently provided in the corresponding corridor as well as the previous railway services operated before 2018.

According to the KANO model analysis, the new EDR services are found to be commonly good for both categories of customers' satisfaction levels in five out of ten service quality categories or attributes such as Reliability, Climate control, Travel-time, Information provision and Cleanliness due to their significant impact on satisfaction. Trains carriages, good maintenance of trains as well as stations were also additional reasons of satisfaction particularly for freight service users.

Based on the evidence from key informants the overall satisfaction levels are also improving at a corridor level for example, from about 80% to 83% for the pre-and post-2018 period but with gradually declining levels from 2018 to the 2022 period. Additionally, customers who have only recently started using the service have greater satisfaction levels than those who have been using it for a long time. This is mainly because of the influence of the recently seen poor service

quality over the relatively better services seen in the first about two years since 2018.

Among the typical EDR customers, passengers have more satisfaction and a tendency to be more tolerant of less than ideal service delivery than the cargo service users. Almost half of the statistically analyzed attributes have relatively insignificant impact on the outcome variable such as Payment convenience, service frequency, fare levels, security and Staff/Hostess service. Particularly in respect of payment convenience and Staff/Hostess service high levels of insignificance are detected which have also stronger impact on the dissatisfaction, emotion and trust of the customers.

Service quality indicators evidently confirmed that the EDR service is doing something satisfactory and right, even if these categories of indicators are inadequate and do not always provide a true picture of the wider issues correlated to the emotional connection experienced by customers such as trust and value. Though, the text analysis of existing reports, literatures and media frequently seems to portray the EDR railway industry exaggeratedly and positively, there were a deviating views and discrepancy between the statistical facts or reports and the general customers 'perception of railway service use.

Based on the KANO model analysis, Staff/Hostess service and Cleanliness are categorized as Basic feature of EDR service, which is also known as Must-Have or Must-be, or mandatory features. This is because, both service quality features are those that customers usually expect to see and these features must work. Out of the ten features information provision alone is categorized as a performance feature. This means, satisfying the needs of customers particularly on information provision allows the EDR Company to remain in the transport market in the corridor.

The service quality features such as Reliability, Service frequency and fare levels are found to be exciting, or delighter or attractive features because they are unexpected, totally surprising and capable of delighting customers by offering more than they expect. However, customers are found to be indifferent to features such as Payment convenience, security, climate control and travel-time no matter how much they are implemented. When achieved or not achieved and when present or not resent the customer's satisfaction or behavior does not change. The study thus found that both retaining current customers and attracting new ones are significantly correlated with satisfaction.

It is possible to conclude that Kano model really help railway service providers to better understand their customers_ expectations, and the impact of these on customer satisfaction. The findins and insights of the study imply and help to set market-driven priorities in the Ethio-Djibouti railway service development strategy and to avoid spending time on unnecessary development. This of course saves time and money, and saves resources. Ethio-Djibouti railway system need to use the Kano model to enable the system to concentrate on the things which have the highest effect on customer and user satisfaction, which will secure the success of Ethio-Djibouti railway system long-term.

Based on the findings, practical recommendations for policy and decision-making considerations relating to the incorporation of customer satisfaction, and the manner of doing so, in the Ethio-Djibouti railway system were suggested as follows:

- The need to create, for service evaluation reference purposes, an agreed to service definition formulated by a tripartite arrangement comprising prospective operators, contracting authorities and prospective customers;
- Making contract provisions in respect of budgeting for service quality functions such as marketing and monitoring that is explicitly linked to service context, and

- Calibrating service performance monitoring instruments on the basis of empirical relationship between customer satisfaction and retention or attraction probabilities.
- Since, the Kano model could help to better understand customers_ expectations and their implications on customer satisfaction, setting market-driven priorities in the Ethio-Djibouti railway service development strategy is necessary to avoid spending time and resource on unnecessary development. So that Ethio-Djibouti railway system need to use the Kano model to enable the system to concentrate on the things which have the highest effect on customer and user satisfaction, which will secure the long- term success of the system.
- Especial attention needs to be given on the attributes such as Staff/Hostess service, Cleanliness, and information provision to satisfy and retain the existing customers, to attract the prosective customers, and ultimately to get into and remain in the transport market. Besides, the Reliability, Service frequency and fare levels of EDR service shoud be enhanced as they are unexpected, totally surprising and capable of delighting customers by offering more than they expect. To enhance customers 'satisfaction, trust and values need to get adequate arrangements, technological-innovation and calibrate service performance monitoring instruments mainly on basic, exciting and performance features.

Given that the classification of attributes in the Kano model is sensitive to the number of attribute levels, a relatively larger respondent samples or bigger number of attribute levels would improve the kano model classification accuracy. To address the limitations of current study, further researches can also apply two or more separate regression models based on the type of customers or target groups, instead of using a combined single model to crosscheck the findings of the current study.

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1.3 Practices of Conflict Early Warning System and Police Timely Response in Selected Areas of Ethiopia , [1]Abdo Beshir, [2]Fikadu Kasa,

[1]&[2] Lecturers, Ethiopian Police University,Sendafa,Ethiopia
E-mail: abdobeshir6@gmail.com

Abstract

The practices of conflict early warning and police responses system in Ethiopia has not been captured and displayed in the landscape of the field. These and the escalating nature of violent conflicts in the country initiated the research project. This study investigated the system of conflict early warning and the timely responses of police focusing on multiple cases that happened in conflict hot spot areas of the country. The study employed qualitative research approach and exploratory research design. A purposive sampling was employed to select informants who were from the Ministry of Peace, Police, regional peace and security bureau, and public Universities. Data were collected through in-depth interviews, key informant interviews, focused-group discussions, and document review. The collected data were analyzed and interpreted thematically. As a result, the study found that the CEW structure mandated to own pre-conflict activities is not uniform throughout the country. In terms of its practice, it is also found to be different across regional states and city administrations of Ethiopia. Despite the differences, identification of indicators of conflicts, conflict incidents and situation analysis, pre-conflict assessment by field monitors and focal persons assigned for this intended purpose are some of the CEW activities implemented in different areas of the study. Furthermore, police's response as per CEW information is found to be minimal and different across regions and city administration. Establishing uniform and clear CEW structure is a recommended mechanism to alleviate the challenges of the sector. Likewise, sufficient attention should be given to active participation and consultation of communities towards the implementation of CEW system.

Keywords: *Practices, Conflict Early Warning System, Police Timely Response, Ethiopia*

Introduction

Conflict early warning is a system used to inform decision-making, predict, and draw conflict trends, feed response strategy formulation, to alert communities of risk, and initiate responses to violent conflict (Nyheim, 2015). It is intended to detect rising tensions headed towards violent conflict and, therefore, is complementary to conflict prevention when it focuses on tensions that are already rising but has little to do with preventing tensions from rising at all. Early warning does include not only the gathering of data but the analysis of that data to develop strategic

options for response but does not include the responses themselves which come under conflict prevention (Haider, 2014).

Violent Conflict Early warning and Response systems are paramount important in tackling various threats to human security, such as: armed conflict; genocide and human rights violations (Haider, 2014). Thus, the conflict early warning and response theoretical frame negates its practice in many circumstances. In other words, the nature of the early conflict response is highly dependent on the nature of the conflict and violation prediction (Rohwerder, 2015).

Nowadays, countries have been exerting their efforts to strengthen conflict early warning systems which feed prompt responses. For instance, Sri Lanka implemented citizen-based conflict early warning system which relies on local knowledge and local actors to early predict and early warn violent conflicts (Palihapitiya, 2013). Likewise, Indonesia identified and strengthened the community-based Conflict Early Warning and Early Response System (CEWERS) and conflict prevention framework (CSPS, 2012).

In Africa, many countries have engaged in establishing early warning and response systems. For instance, in Nigeria, there is a pilot SMS-Based Conflict Early Warning System (Stine, 2013). Likewise, many East African countries adopted IGAD's CEWR framework which led to the preparation and approval of CEWARN Protocol in 2000. The government of Ethiopia, Kenya, Uganda, and Eritrea showed high level of interest specially to intervene the cross-border conflicts between member countries (Mwaura, 2020).

In Ethiopia, before the establishment of Ministry of Peace, it was the mandate of the Ministry of Federal Affairs to manage conflict early warning and response system. In 2019, Ethiopia's Ministry of peace has established conflict early warning and rapid response directorate. In the same vein, it is clearly portrayed in the Federal Police Proclamation No. 720/2011, crime and violence prevention is the primary responsibility of the police organizations. Conflict early prevention is one of the responsibilities of the police system to save life, crime prevention and maintain social order.

However, the conflicts, violations and breakdown of law and order have been escalating (Pact, 2019). Throughout all corners of the country, complex protracted violence, ethnic tensions and breakdown of law and order became common incidents. The number of displaced people due to conflict has been increasing and remained a challenge for humanitarian response (IOM, 2020). In many cases, these social crises are related to the absences of vibrant CEW system and delayed police response mechanisms.

Due to the above details, establishment of CEW systems, early responses and early interventions call for multi-sectorial preventive interventions in which different actors significantly cooperate. As part of it, the police prompt response can take the biggest share since it has the potential to organize major actors in the security system at different echelons. It is undeniable that the multi-modal nature of the recent conflicts in the country has been calling wisdom from security sectors to early prevent.

This paper aims to investigate the underlying CEW systems, practices, and police timely response mechanisms in selected conflict hot spot areas of Ethiopia where violent conflicts were recorded following post political reform period of 2018. More specifically, the paper focus on the exploring the existing CEW structures across the selected regions and city administrations; identifying the existing CEW practices across the selected study areas; and investigating the

existing police response mechanisms towards conflicts following CEW information and warnings. Thus, the study seeks to understand the CEW system and police response mechanisms in the face of the ever-increasing violent conflict in Ethiopia.

Methodology

This study was conducted in some purposively selected parts of Ethiopia. Based on the data from Early Warning Rapid Response Directorate of Ministry of Peace (2021), some hotspot areas of conflicts were identified. Accordingly, areas such as: Ataye, Kemise, Bahirdar, Adama, Bordode, Guji, shashemane, Gedeo, Hawasa city, Diredawa and Addis Ababa were covered. Among higher educational institutions: Ambo, Dirdawa and Bahir Dar Universities were addressed. Following the 2018 political reform in Ethiopia, these study areas have experienced violent conflicts in which the conflict has extended to 2021. Thus, the extended multiple conflict cases happened in between 2018 to 2021 in the selected sites were described in this study.

This study was employed qualitative research approach and exploratory research design where participants' lived experiences and knowledge regarding Violent conflict incidents constituted the primary source of data. The target populations of this study were officers and officials of Ministry of Peace (MoP), Police, and Peace and Security bureau. Also, vice president of student affairs, campus polices, and student councils were involved at the Universities. They were selected through purposive sampling. The sample size has been determined based on the data saturation level of the study.

Data were collected using in-depth interviews, key informant interviews, and focused-group discussions. They were selected using purposive qualitative sampling, where gender, age, and life experienced (being victim of the then conflict, level of participation to prevent the conflict, being eyewitness about the conflict and pre-conflict outbreak indicators etc.) were considered. Accordingly, thirty-seven interviews (male thirty-two & female 5), six focus group discussions (3 with police & three with peace and security officers), and document analysis were conducted.

The collected data were analyzed and interpreted thematically to meet the study's objectives, considering the theoretical framework adopted in this study and in line with the reviewed literature. Information obtained from interviews and FGDs has been voice-recorded (with consent obtained from the study participants) and then organized into themes that emerged from the literature and during conversations with the study participants. These themes consist of words/concepts/phrases that helped us to understand the CEW system along with its practices and response mechanisms from the experiences of the study participants. By applying a thematic analysis, the researchers can gain deeper insights into the study participants' diverse voices without preempting any predetermined answers.

Results and Discussion

Structure of conflict early warning and Response system

At national level, the issue of CEW is ideally owned by MoP. As stated by study participants in the ministry, there is an official organizational structure that is mandated to own CEW tasks at national level. Accordingly, it is organized at the directorate level by the name of conflict early warning and rapid response. However, the structure is not extended to the regional and city administrations of the country in a uniform manner. In fact, a pilot test was undertaken to establish the structure at the regional and city administration levels as peace values building

directorate under peace and security bureau. Though CEW structure is established in Mop, it is not functional and hence remains ideal. An official from MoP expressed his view on the issue as: '…Ministry of Peace, as institution, has its structure and operates at national or federal level. It has no structure extended to regional and levels below it such as Zones, Weredas and kebeles. It, however, operates in collaboration with regions and their constituents including zones, *weredas* and kebeles.'

According to the above informant, the structure of CEW is not uniform throughout the country. Due to this region, its operation is undertaking in the form of collaboration with regional states and city administrations. Not only between the national and regional levels, but also CEW structure is not uniform among different regions and city administrations.

The response of the above official is also supported by other research participants from different regional and city administrations. For instance, Amhara regional state has established CEW Structure as Conflict prevention and resolution directorate under peace and security bureau of Amhara region. Proclamation no 176/2010 issued to declare the Amhara National Regional State Executive Organs redetermination of their powers and duties is a legal foundation for this mandate. In this proclamation, the bureau has the mandate to prevent conflicts before it happens and solve the conflicts happened is officially given to peace and security bureau. This structure is found to be different from the CEW structure established in MoP and other regional and city administrations as well.

> In Oromia region, CEW is structured under a situation room. Extremely limited numbers of experts are assigned to operate the situation room. Accordingly, there are one data manager and two conflict early warning experts in the situation room at the regional level. Also, the situation room has one data manager and two conflict early warning experts in the session room at zonal level. There are two data managers, two conflict early warning experts and one field monitor at the Woreda district levels of the region. Finally, the structure has only one field monitor at the kebele level. Thus, as structure, situation room is available from woreda to regional levels, but not at the Kebele level. But the structure is not functional because it has stacked at its pilot test level conducted at some limited areas of the region. This CEW is also found to be different from other regional and city administrations.

In the Afar regional government, conflict early warning unit has been established structurally under the directorate of peace values building of peace and security bureau. In doing so, the bureau extends its structure to the community level. In this regard, community-based organizations like Peace Mothers, Peace Youth, and Independent Advisory groups and others under the framework of peace initiatives are parts of the structure. Thus, the CEW structure established in Somali is not similar with the federal and other regional and city administrations of the country.

In Addis Ababa city administration, peace and security administration bureau is the primary responsible organization to CEW tasks. The bureau established CEW structure from the center to Wereda levels of administration. In addition, with this, the bureau has integrated structure with Federal police, Addis Ababa Police, Oromia special zone police under conflict early warning and rapid response units. The structure has also entities from the broader society that are involved in the same Community police, public army, Volunteers and Block coordinators. This structure is somehow similar with the CEW structure established in In the Somali regional government.

Unlike other regional and city administrations, the structure of CEW in Dire Dawa city administration is given for Dire Dawa Police intelligence directorate. In this city administration, even if there is not a unit directly organized as conflict early warning, the intelligence directorate

collects and analyses data showing conflict threats in the city and provides input to the Crime Prevention Directorate.

In addition, with regional and city administrations, federal public universities also have CEW structures. In this regard, Bahir Dar University has security structure at directorate level under the president office. Under this structure, it has a total of 1077 security police working in different shifts on all campuses. Each shift has coordinators and team leaders to assess pre-conflict information. Proctors, student council and volunteer students are also part of the structure. In addition to this, the university has an integrated CEW structural unit of CEW committee consisting of members from campus police, officials, students, Bahir Dar town police, Federal police, and the surrounding community leaders. Likewise, Ambo University has CEW structure established and coordinated under campus polices. The campus police have coordinators and team leaders who are responsible for assessing pre-conflict information. As part of this structure, Peace forum consisting of members from campus police, officials, students, Ambo town police, federal police and the surrounding community leaders are formed to own CEW activities.

In terms of CEW response structure, it is primarily established in the police sector. However, other security sectors like militia and peace and security offices have shared responsibilities. As it is clearly portrayed in the Federal Police Proclamation No. 720/2011, crime and violence prevention is the primary responsibility of the police organizations. Conflict early prevention is one of the responsibilities of the police system to save life, crime prevention and maintain social order. In line with this, regions and city administrations established CEW response structures under crime prevention and intelligent department. However, it is difficult to find separate CEW structure mandated to this specific task. In other words, there is not jointly established CEW structure among the different security sectors.

Therefore, despite the differences, CEW system is officially structured at national, regional and city administrations and in public universities as well. Mop is the responsible organization for the task at national level. In many regions and city administrations (Oromia, Amhara, Somali, Addis Ababa), the task is given for peace and security bureaus of mentioned administrations whereas, in Dire Dawa the task of CEW is given for police which is found to be unlikely with other regions and city administration. In terms of its naming, CEW appeared as directorates and units as peace values building directorate, Conflict prevention and resolution directorate, conflict early warning and rapid response units and situation room. Thus, it can be said that CEW structure is formless in Ethiopia. In other words, it is difficult to find uniform CEW structure from the national to lower administration level called Kebele. Though, Mop is responsible to create such structure, the sector is unseen. Due to this reason, regions and city administration formally and/or informally establish their own CEW structures which are different vertically and horizontally among each other.

Pre-Conflict CEW Practices

CEW Through Assessment of Potential Conflict Indicators

The most common CEW system that is practiced in Ethiopia is anticipation of potential conflicts using some pre-determined indicators. Using this strategy, potential conflict incidents will be assessed, and potential cases will be identified accordingly. Following this, the reliability of the collected information and probability occurrence of identified cases will be filtered and analyzed

by experts. Then after, the analyzed CEW information is made ready for decision to respond the conflict before it would happen. Finally, the analyzed CEW information will be sent to concerned decision makers. In line with this, information on the issue is shared among different actors to warn and then respond to the case. This process and practice of CEW system is commonly operating at federal level, in all regions and city administrations.

At the national level, the ministry of peace handles early warning activities involving identification of indicators of conflicts, conflict incidents and situation analysis. Mop is used as means for gathering and communication of information include telephone conversation and telegram group. There is a pilot test being conducted on early warning and rapid response operations in three regions (Oromia, Gambela and SNNPR), two zones, twelve weredas and sixty kebeles with and ten universities sought to be included further. An informant from MoP explained the practice as:

Mop collects early information on conflict from different bodies on a daily and regular basis after which it organizes and communicates the information to federal Police and /or to the Ministry of Defense. The Ministry's engagement in conflict management involves early warning, conflict resolution and situation room.

Despite the difference across regions and city administrations, experts are assigned at grass root level to collect CEW information. Among the others, field monitors are the primary actors to collect information on potential conflict incidents before it would happen. An informant from Oromia regional state expressed his view on how CEW field monitor is practiced in the region as:

> …If a potential conflict case is reported to Kebele, the field monitor together with Kebele administrator will send the case to the district data manager. District data manager signs the district administrator and installs the case on the system. After it is loaded on system, it would show green if it immediately solved by concerned body, yellow if it is in progress and red if it is extremely dangerous. At this time, all leaders at all levels, from the federal to the zonal, can observe and monitor the issue and even they can act as needed. If the problem goes to an unwanted level due to the negligence of the district leaders, since the system will count the day after it loaded, they will be questioned and accountable for the consequences.

An informant further illustrates the practice as:

> …field monitor collects information about conflict indicators to know whether it going to be occurred which is used to analysis the situation in general and there are inquiries it uses to collect it. These consist of thirty-five questions and collecting data from twenty-five people. These questions contain social, economic, political, and social issues which are also analyzed accordingly. The analyzed information will be reported to the relevant body by the field manager and the kebele leader.

Likewise, in other regions and city administration, CEW information is collected using different modalities and indicators. For instance, in Addis Ababa city administration, information on emerging conflicts is gathered over 24 hours using different media such as Telegram group and phone calls and messages. An informant from Addis Ababa bureau Peace and security administration discount the practices as:

> … CEW information of the city is gathered in daily basis. There is a telegram group linking individuals from center to woreda through which information are shared at every minute. Information from Volunteers, what sup, telegram group, phone, with information of 24 hours to the ruling party and shared along the vertical structures. In addition, with this, weekly report is presented to the concerned body.

In line with the above, the practice of CEW assessment through field monitors is functional in Amhara regional state. In the region, there are field monitors for conflict early warning activities for 170 conflicts sensitive kebeles. These field monitors are employees of peace and security offices of respective woredas. An informant from Amhara regional state, peace, and security bureau pinpointed points on the issue as:

> …In addition to CEW field monitor, there are focal persons in all four thousand kebeles of the region for conflict early warning activities. These focal persons are voluntary individuals assigned by community policing officers and kebele peace and security sector. These field monitors and focal persons assess their kebeles based on predetermined conflict indicators and report the assessment result to the woreda, zone and region within 24 hours.

In Dire Dawa City administration, there is conflict early warning practice that is implemented through different methods. In this regard, CEW information is collected using a toll-free phone line/data phone or public call and analyzed accordingly. In the city there is also an information desk or Police Call Center that collects CEW information. Using these modalities, early conflict warning messages come from the groups made in the community, for example, community safety patrols, independent advisory group leaders, taxi associations, school community policing, etc. are playing significant roles. The police collaborate closely with this community group. The groups identify conflict risks, work to mobilize the community, work with the police to assess the extent of potential damage and provide recommendations on how to prevent them.

In Afar regional state, the peace and security bureau own CEW practices which rely on community-based structures like peace mothers, peace youth, and independent advisory groups for the task. Using these actors, the bureau identified some sources of the conflicts that have happened in the area. An informant from Gedamitu woreda reveled practical CEW experience in the following manner.

In collaboration with different community-based structures, we collect CEW information formally and informally. For example, we had collected and responded to the potential conflict before it happened in 2020. There was religions extremism movement under the same religion saying you do not worship or preach. The group who mobilizes this agenda had a plan to aggravate the issue to violent conflict. We had early warning information so that was managed before it changed to actual conflict.

In addition to the federal, regional and city administration CEW practices, public universities also have concerns to prevent conflicts that happen in their compound. For instance, in Bahir Dar security officers, coordinators and team leaders assess pre-conflict information using different strategies. Those students who are members of the peace committee are assigned to gather CEW information in blocks, classrooms, and student's cafeteria. An informant who led the peace and security task of the university reflects his idea as:

> …We have police securities that immerse themselves with students without wearing uniform to do assessments on potential conflicts. Also, students who are members of the peace committee and police securities gather potential CEW information by hiding themselves. In addition, with this, the campus police always do random assessment based on indicators of conflicts.

Ambo University also has similar initiatives towards CEW activities. An informant from this university put his experience as: 'We have security forces and different student-based clubs that are mandated to CEW tasks of the campus. The primary objective of these groups is to prevent conflict attempts before it happens. These actors gather CEW information in blocks, classrooms, and student's cafeteria.'

Therefore, there are fragmented efforts in the practice of CEW through MOP, regional and city administration peace and security sectors and public universities as well. However, like the structure, the practice lacks uniformity and integration. Thus, it can be said that at national and regional levels, sequential model of conflict early warning system is highly practiced. The sequential model is a method of CEW for achieving conflict alerts. Instead of describing a causal structure that involves some number of independent variables pointing to a variable quantity like the likelihood that a conflict will erupt. However, the above CEW practice seems inaccurate and unstandardized since indictors and procedures to undertake assessment are not uniform across the nation. In addition, with sequential model, in Dire Dawa City administration and afar regional state, there is trying to implement community-based CEW practice using different community-based associations. In community-based CEW, the system relies on local knowledge and local actors to early predict and early warn violent conflicts. The local community-based structures and previous experiences in preventing conflicts have been applied.

Police Timely CEW Response Practices and Mechanisms

It is obvious that conflict early responses and early interventions call for multi-sectorial preventive interventions in which different actors significantly cooperate. As part of it, the police immediate response can take the biggest share since it has the potential to organize major actors in the security system at different echelons.

The task to respond potential conflict incidents is officially given to police across different administrative levels of the country. On top of this mandate, police have different response mechanisms upon the received CEW information. At federal level, Federal police own the mandate and operate in collaboration with regions and city administration police commissions. In doing so, communicates the information to the Ministry of Defense to respond the cause immediately.

In Amhara Regional State, Amhara police in collaboration with other security sector actors tried to respond conflicts that are potentially to occur. The commission has many experiences in receiving conflict early warning information directly or indirectly. An informant from APC illustrates his points on the issues as the following.

The commission had different early warning information on all conflicts that happened in the region in one or another way. The commission had early warning information Qimant-Amhara conflict in North Gondar, Ataye Conflict (attack) aroused at different time, Conflict case happened at Awra Godana Kebele of Minjar woreda. In these cases, there was information before the actual conflict happened. Indicators like Preparation of the Qimant group around Aykel, Shene around Dawa chefa woreda of Oromo nationality special zone and strange armed forces movement around Awra Godana were reported indirectly. These cases were reported as there were strange movements and preparations for conflict. These officers provided the information physically and through phone calls.

A police official from Atay town of Amhara region further adds her points on the as:

> … in many conflict cases happened in our zone, we have received early warning information from different actors. For example, police member living and working Ataye, and the community at large were reported to the zone police as Shene was providing military training in forests around the boarders of Oromo nationality special zone and North shewa zone of Amhara region. We have received this information during different meetings and informal physical contact from the concerned bodies. We had reported this information to higher police and political officials of the

zone and to responsible regional officials as well seeking command for prompt response. Unfortunately, these officials did not give a timely response.

In Oromia region, the regional police tried to respond to the conflict cases upon the CEW situation room data manager report. The police tried to act on the reports in collaboration with different actors of the security sector like the federal police. However, in most cases, the response is not successful due to varied reasons. Delayed response and poor integration of security sectors are the cause of the failure. Due to these reasons, though many conflict cases were warned, police could not respond to them appropriately.

In Dire Dawa city administration, the intelligence units of police commission collect and analyses CEW information to prevent various conflicts related issues. Based on the analyzed information police try to respond conflicts without causing damage to property or human. In Addis Ababa city, there are rapid response standard operating procedures under the coordination of the city police. The response operation takes place at various levels: *kebele*, *wereda*, Zone, Region, and national /federal levels. The framework embraces conflict rapid response, conflict rapid response planning, conflict rapid response implementation and conflict rapid response monitoring and learning. Using these frameworks, conflict attempts caused by land grabbing, religious extremism, public gatherings, and political mobilizations were managed before they occurred.

In the Afar Region, the regional police tried to give immediate response towards potential conflicts through physical deployment of police forces. In addition to its own efforts, the regional police commission calls the federal forces (federal police and defense forces) to respond to conflicts. In this regard, the Afar police have many successful and unsuccessful experiences.

A crucial, yet so far mainly under-reflected, issue is the question of who is going to be warned and who is supposed to act upon this warning through the establishment of organizational structures (Wulf & Debiel, 2009). Across the globe, there are organizational structures established at various levels to own CEWR initiatives. Within the UN Department of Humanitarian Affairs and the Office for the Coordination of Humanitarian Affairs, several early warning projects led to the establishment of Early Warning System in the context of which Relief Web and the Integrated Regional Information Network were set up (Boshoff, 2003). The International Crisis Group (ICG) also has a wider CEW structure to warn potential conflicts and crisis that will happen around the world based on investigative research and intelligence (Schmeidl, 2002 & Boshoff, 2003). At continental level, the African Union Border Program is established as CEWR structure to the prevention of conflicts in 2006. The AUBP is being implemented at national, regional, and continental levels based on the principle of subsidiarity and respect of the sovereignty of States. This CEW structure has local stakeholders that are identified as the primary drivers and key players of cross-border cooperation. To implement the structure, five members of the Panel were appointed. Under AUBP CEWR framework, a sub-structure called Structure of FemWise-Africa was established in 2007 (Campbell, & Meier, 2007).

Besides, IGAD has formulated an extensive strategy for the implementation of the various CEW structures in east Africa (IGAD, 2002). Since the Horn of Africa is a region that is haunted by conflicts ranging from intra-state and inter-state to cross-border community conflicts, a Conflict Early Warning and Response Mechanism (CEWARN) was established in 2000. The rational of CEWRAN is to systematically anticipate violent conflicts and respond in a timely and effective manner. The mandate of CEWARN is to 'receive and share information concerning potentially

violent conflicts as well as their outbreak and escalation in the IGAD region' (Keyserlingk & Kopfmüller, 2006). With the mandate to predict tensions and conflicts CEWARN combines elements of the predictive model and the risk assessment models. Operationally, CEWARN established a network of field monitors, country coordinators, national research institutes and conflict-EWR units at the national level and began its work in two pilot areas on pastoral conflicts in the cross-border areas of Ethiopia, Kenya Uganda and Sudan as well as in the second cross-border areas of Kenya, Ethiopia and Somalia.

Similarly, the West African Network for Peace building (WANEP) has been engaged by ECOWAS to assist in data collection for the purpose of early warning. Since 2002, when a memorandum of understanding was signed, WANEP has been officially charged with facilitating the ECOWAS Warning and Response Network (ECOWARN). WANEP collects data on human security issues, most notably human rights and democracy, food shortages, unemployment, arms flows and civil-military relations and droughts and flooding (Souaré, 2007).

While we discuss the aspects of pre-conflict CEW practices, the issue of conflict early warning response underlies in three different prevention approaches. The primary is CEWR through Operational prevention which is a short-term effort using political or military means to prevent a conflict or forestall escalating violence. The other is CEWR through structural prevention approach which includes the efforts through developmental or economic tools to address the root causes of conflict, aiming at risk reduction and to call for better regulatory frameworks. The final is CEWR through systemic prevention approach which tries to reduce conflict on a global basis and goes beyond mechanisms focused on any state (Rubin and Jones 2007). Thus, the effectiveness of CEWR practices is highly determined by the type of approach preferred. Structural and systemic prevention both target underlying causes of conflict with a mid- to long-term perspective. However, they could be inadequate in an upcoming or even acute crisis that requires prompt action whereas operational prevention seeks to contain or reverse the escalation of violent conflict by using the tools of preventive diplomacy, economic sanctions and/or incentives, and/or military force (Campbell and Meier 2007).

Likewise, the type of CEWR model also determines the effectiveness of conflict response practices. In this regard, the correlation models focus on structural indicators and try to relate causal models from empirical research to future outbreaks of violence. The sequential models filter accelerators to understand when events lead to worsening a crisis. The conjectural models look at escalation scenarios and inductively establish what factor combinations and thresholds lead to violence; finally, the response models' try to identify windows of opportunity for early and effective intervention in crisis situations (Verstegen, 1999). Most of the causal factors identified in the global model were found to be applicable to regional contexts. In the model for sub-Saharan Africa, for example, the regime type continued to be the most important variable – with all partial democracies with factionalist political competition experiencing instability. At the same time, this regional model also showed some particularities: infant mortality no longer had a decisive impact, as the differences within the region were not significant. At the same time, the relevance of state-led discrimination increased. Furthermore, some variables achieved significant relevance, such as trade openness, colonial heritage, leader's years in office and the existence of a dominant religious majority (Goldstone et al. 2005).

Many countries and organizations use potential Conflict indicators to warn potential conflicts and respond accordingly. According to FSI (2005), there are twelve indicators that might lead to an escalation of conflict occurrences. As to this organization, social indicators include mounting

demographic pressures; massive movement of refugees or internally displaced persons creating complex humanitarians' emergencies; legacy of vengeance-seeking group grievance or group paranoia; chronic and sustained human flight. The Economic indicators include uneven economic development along group lines; sharp and/or severe economic decline. Furthermore, the Political indicators comprise criminalization and/or de-legitimization of the state; progressive deterioration of public services; suspension of arbitrary application of the rule of law and widespread violation of human rights; security apparatus operates as a 'state within state;' rise of factionalized elites; intervention of other states or external political actors.

The AU Continental Early Warning System (CEWS) implemented two conflict and crisis early warning mechanisms to prevent them from developing into full-blown conflicts (AU, 2002). The primary mechanism was through observation and monitoring center (The Situation Room') at the AU headquarters which is responsible for data collection and analysis based on appropriate early warning indicators. The other mechanism is through the implementation of parallel observation and monitoring units at the sub-regional level, which are supposed to link up to the Situation Room. Thus, the main instruments of the CEWS are reports, compiled based on open-source information that identifies potentially dangerous activity. In its CEW Structure, IGAD concentrates on monitoring pastoral conflicts, thus avoiding becoming caught up in the major conflicts of the region. To this end, CEWARN initially adopted an incremental approach by focusing exclusively on two pastoralist conflicts. Its aim is to report on all violent conflicts in a broadly defined human security area and not just on national or state security. CEWARN uses a set of fifty-two socio-political indicators for two types of reports. On one hand, there are Violent Incident Reports with indicators on armed clashes, raids, and protest demonstrations. On the other hand, there are other crimes and indicators for reports on the presence and status of communal relations, civil society activities, economic activities, governance and media, natural disasters, safety and security and social services. Likewise, as part of CEW practice, WANEP also collects data on human security issues, most notably human rights and democracy, food shortages, unemployment, arms flows and civil military relations, droughts, and flooding (Souaré, 2007). It processes and analyses the data and prepares reports requesting immediate response from the ECOWAS headquarters in Abuja.

Regarding the facets of existing CEW response practices**,** the decision not to intervene is not primarily a question of the availability of information on potential or on urgent violent conflicts is the major purpose of EWR systems. The AU joint security force is responsible for responding to conflict and crisis incidents in Africa. However, the AU's military capacities are still not extraordinarily strong. In other words, the African security force (ASF) is found to be still in its initial stages to respond conflicts at their early stage. Due to this reason, the AU wants to have up to five regional brigades with a strength of at least 3,000 troops each, ready to operate as an African Rapid Reaction Force by June 2010 and capable of deployment anywhere on the continent in collaboration with ECOWAS, IGAD, the Southern African Development Community (SADC), the Economic Community of Central African States and the Arab Maghreb Union. The Continental Early Warning System (CEWS) is supposed to anticipate and thus prevent conflict from turning violent. Only a few specialists have been employed so far. Thus, the early warning system is far from functioning. The African Peace Facility Fund, mutually financed by the EU and AU, provides special support with its pledge of €300 million between 2008 and 2010 (Kinzel, 2007). Under the umbrella and collaboration of the above CEWR imitative, potential conflicts and crisis were responding in some African countries like in Burundi, Darfur, Somalia, and Comoros in different years. In these countries, joint military

forces were recruited from different countries and deployed to proactively respond to potential conflicts and crisis (Engel, 2008).

Conclusion

As a conclusion, the finding of this study shows that regions and city administrations had different conflict practice since 2018. Though conflict is common, the nature and magnitude of conflict is different. Many issues are mentioned as causes of these conflicts: land ownership claims in the border areas of different regional states accompanied by political factors are found to be the key features of these conflicts among the others. Regarding the CEWs, regions and city administration along with their lower structures have different practices and experiences. Officially, the mandate of CEW is given to the peace and security bureau. It can be said that there is fragmented and disintegrated structure of CEW system in the country. Police have different mechanisms to respond to conflict before it happens. The response depends on the received CEW information. To this end, the police collect CEW information using different mechanisms and however the response is found to be ineffective due to factors like inaccurate analysis of risk and late decision of officials among the others.

Recommendation

This study recommended the best way to identify problems. Regarding the structure, to be an effective, independent working unit of CEWER should have to organize in police institutions. It will help to collect appropriate and accurate information regarding conflict threats by police expertise. Thus, they can easily identify that who is the instigator of the conflict, the number of human resources that can be involved, the amount of damage that can be caused, the destructive force, the weapons and the location of the occupied, with whom they have contact, the areas/issues they are targeted, etc. It helps the police to make readiness accordingly, and to respond immediately and proportionally. Also, the institutions that have probability or in threat for conflict to be occur (**i.e.,** considered as danger zones) like universities should be given attention and they should be able to have their own department of CEW under the supervision of the police institution.

Conflict early warning should involve the public, various sections of society, all security sectors, other related government organizations, and all other stakeholders to address appropriately. Then, regular awareness-raising should be provided by concerned bodies like police at all levels. It is necessary to conduct awareness work on the extent, context**,** and threats of conflict in very crucial areas like schools, universities, religious institutions and so on. Also, it is expected to work in coordination with elders and religious leaders who are indigenously working on the prevention and resolution of conflicts in various parts of the country. Thus, it can facilitate and sensitize all the organization, stakeholders, and sections of the society so that as to collaborate alertly with the police to provide information about conflict threats. Leaders and professionals who are assigned to CEWER should be given continuous and timely training and it should apply to all relevant bodies used to support this work.

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1.4 Leveraging Digital Infrastructure to Boost Regional Integration in East Africa: Enhancing ICT Lead Integration Among COMESA Member States, Temesgen Aschenek (PhD)

Asst. prof. School of Diplomacy and International Relations, Ethiopian Civil service University
E-mail:taschenek@gmail.com

Abstract

The objective of the study was to examine the role of digital infrastructure in boosting regional integration in and among COMESA member states. It intended to analyze mechanisms for policy harmonization and major challenges ahead of using information communication technology for regional integration. The mode of inquiry applied for the research was mixed research methodology. This is because the data generated were expressions, feelings, and qualitative type plus quantitative figures showing the digital infrastructure in the region. In addition to using verified databases, and policy and strategy documents; the research used key informant interviews and focus group discussions as the major data collection instruments. The selection of samples was through the purposive sampling technique. The results show that limited ICT infrastructural development; lack of policy harmonization and convergence among member states; governments' repression of digital freedom, states insistence on border control, and limited initiatives in the African continental free trade area affect the role of ICT for using regional integration. To that end, the study recommends that states should work to narrow the gap in policy disparities and focus on policy harmonization and convergence to harness the importance of ICT for regional integration.

Key Words: *Digital Infrastructure, Digital Skills, Policy Harmonization, Regional Integration*

Introduction

Background of the Study

One of the major developments after the decolonization of Africa was the emergence of regional integration initiatives with the formation of the Organization of African Unity and later the adoption of the Lagos Plan of Action in the early 1980s. Despite, conventional regional

integration initiatives have been launched long ago, Africa has low success stories. In the advent of the digital revolution ICT lead integration is given much emphasis to produce better results. Regional digital infrastructures, e-governance initiatives, and the transformation of the digital landscape can help developing countries become more regionally integrated, diversified, inclusive, and sustainable (Gottschalk, 2019). Furthermore, ICT facilitates faster and more reliable integration outlooks by facilitating e-transactions in financial, trans-border trade, movement of people, and e-commerce (Mohamed, 2015). The ten-point south-south digital cooperation framework of UNCTAD also affirms the fact that digitalization promotes regional integration through data economy, cloud computing, broadband, and e-commerce practices. As outlined by Gottschalk (2019), the digital infrastructure boosts reliable communication and transactions; fosters southern economies to become more integrated; overcomes technical constraints of small developing economies; and creates synergies and connectivity. ICT plays a building-up role in enhancing regional trade and integration that further boosts to build innovation, export potential, and interconnections.

Digital infrastructure as a prerequisite for the development of e-governance refers to all forms of digital technologies that provide the foundation for an organization's information technology, digital connections, and operations. The digital infrastructure can foster Trans-border resource flows and regional integration operations which break barriers to economic opportunity; Break barriers to participation; break barriers to knowledge flow; breaks barriers to labor migration and financial flows (Mohamed, 2015). Regionally Integrated e-government Applications and the soft infrastructures like the policy infrastructure, e-government policies, and strategies are key elements for the development of robust digital infrastructures that subsequently foster regional integration in Africa.

The eight recognized RECs have been seen as important pillars for fostering regional integration in the continent. Of these RECs, the Common Market for Eastern & Southern Africa (COMESA) was reported as Africa's largest economic community both in geographic coverage and population sizes (Niway, 2014). COMESA is a huge regional economic community accounting for 21 member states of the continent which comprises 35%. COMESA activities in promoting the development of ICTs in the region have been grounded in the understanding that telecommunications are an important factor in facilitating trade transactions among member states through reducing tariffs to promote trade in ICT equipment and related items (Lapukeni, 2015). However, this has had limited success as very few member states produce ICT equipment that would qualify under the rules of origin criteria. Likewise, the digital infrastructure in the COMESA region mainly focuses on Digital Free Trade Area (DFTA), e-learning, e-government, and e-legislations. The regional IT master plan of COMESA also shows the main interventions on GIS, IT network services, e-governance, and overall digitalization initiatives in political, economic, and social spheres that are integral elements of regional integration initiatives in the sub-continent. Therefore, The objective of the study was to examine the role of digital infrastructure to boost regional integration in and among Common Market for Eastern and Southern Africa member states.

Statement of the Problem

Regional integration and cooperation initiatives in Africa have been a history of disappointments, full of approbations and accusations. While it is not deniable that significant signs of progress have been made in economic integration particularly in West Africa (ECOWAS) and East African Community (ECA) disappointments have been echoed in many other RECs on the Continent. The case is also the same in the COMESA region where there are

still weak developments in the sub-regional cooperation. Three major problems could be traced to the low level of regional integration in the COMESA region. The first is most regional integration initiatives in the continent have been focused on conventional approaches without considering sustainability and resilience mechanisms. Economic, financial, human mobility, Trans-border trade, and goods flows have been less supported by ICT and digital transformations. While digital infrastructure has been the best tool to foster regional integration in mostly successful examples of regional integration achievements in the world, Africa has limited initiatives in ensuring access, and affordability of the digital infrastructure for effective utilization for that purpose. Digital infrastructure should be leveraged on regional integration initiatives to ensure suitability and resilience integration in the region.

Second**,** in most discussions, ICT-led integration has been out of the radar of academic and non-academic discourses. ICT and digital infrastructure as the best approach for regional integration have a spillover effect in that it significantly affects all dimensions of the actors of regional integration including humans, systems, transportation, communication, and other facilities. What is critical is that access to ICT has hindered the existence of vertically integrated dominant operators that are providing both the infrastructure and services at the same time with limited accountability mechanisms. Finally, despite huge investments, Africa has been dependent on the data generated from the global core regions which significantly affected the evolution of ICT-based regional integration in the continent.

Similarly, limited resources in terms of expertise and technical capabilities; non harmonized regional policies, institutions, and regulations are becoming a serious concern. Even the existing policies and legal frameworks are uneven and the implementations of policies across the region are fragmented, varying level of adoption of policies and regulatory mechanisms impedes the promotion of competitive markets among member states. The policy and legal infrastructures are also very limited to ensuring regional integration schemes among COMESA members. Despite there being initiatives for e-commerce applications with trans-border in nature; states are still retaining restrictive policies, custom duties, and strong border controls for the flow of goods and services. Likewise, taking such critical problems as the major factors affecting regional integration in Africa, the research tries to bring new approaches by redesigning ICT-based regional integration approaches in the COMESA region. The research is particularly relevant to remap regional integration schemes through ICT lead approaches by leveraging available opportunities through the integration of institutional, sectoral, and policy frameworks in the COMESA region.

Research Objectives

General Objective

The main objective of the study is to assess the role of digital infrastructure in ensuring regional integration schemes in the COMESA region.

Specific Objectives

Specifically:

- To examine the status of digital infrastructure for regional integration initiatives in the COMESA region.
- To evaluate the policy harmonization approaches for ICT-led integration among COMESA member states.

- To examine major bottlenecks for leveraging ICT in ensuring sub-continental integration in the COMESA region.

Significance of the Study

The research has significant implications for African Governments, Achieving UN Sustainable Development Goals, and African Union Agenda 2063 through concrete findings and policy recommendations. First, for the member states of COEMESA, the research provides a proper understanding of the issue by generating theoretical explanations of the broader picture of digital infrastructure and regional integration in Africa with practical examples of countries from the COMESA region. It supports African Governments to design appropriate policy frameworks that could serve as a foundation stone for different stakeholders engaged in the sector by filling knowledge gaps and providing the best possible policy options to the aspirations of transforming human lead regional integration into digital-supported regional integration moves.

Scope of the Study

Comprising the largest member states COMESA is cited as one of the largest REC on the continent. Thus, thematically, the study focuses on designing mechanisms to leverage information and Communication Technology for sustainable and effective regional Integration initiatives in the COMESA region. The temporal scope of the study mainly focuses on the advent of the new millennium, 2002 to 2021. The departure date was selected because most ICT initiatives were launched in the COMESA region after the ICT program and policy were launched in 2002 as a basis for creating large markets to attract foreign investment into the region. The spatial scope of the study focuses on the 21 member states of COMESA as a regional block in Eastern Africa.

Literature Review

Digital Infrastructure for Regional Integration in East Africa

With multi-faceted challenges at the global level, global priority agendas have been tackled by different mechanisms. Particularly, digital technologies are playing critical roles in addressing global priority areas. Digital infrastructure has been the best approach in location services, connectivity, Trans-border resource flows, and productivity (Calderón and Cantú, 2021). Robust, digital infrastructures with digitally-enabled transactions of trade in goods and services mainly depend on efficient supply and demand chains. As noted by Research ICT Africa (2022) well-founded digital infrastructure facilitates an extensively higher degree of real-time transactions and information exchanges, across geographical boundaries that ultimately lead to regional integration through cross-border data value chains. Eastern Africa has a huge potential for exploring digital opportunities. However, with the adoption of high-speed internet, land-locked countries paying high premiums, affordability, and availability issues are becoming the major challenges to boosting cross-border transactions (World Bank, 2018).

As Africa’s aspiration to a prosperous Africa by 2063 Africa’s digital economy is a key element to ensure regional integration in the continent. As noted by Research ICT Africa, Africa's (2022) digital economy will grow by over $300 billion by 2025. The most important catalysts for such projection are trans-border data follows, digital trade and e-commerce practices will take the lead. Such digital infrastructure elements are key to boosting regional integration in the COMESA region. As the world bank Group (2018) Noted.

> " A single digital market is one in which cross-border barriers to providing and accessing digital infrastructure, content, and services are eliminated and one in which a seamless, competitive regional digital ecosystem drives a reinforcing cycle of economic growth, investment, innovation, job creation, and improved service delivery."(World Bank, 2018:6)

Despite the role of digital technologies becoming a critical element of regional integration and promising movement toward the adoption and use of digital technologies across Africa, the real progress towards creating a digital economy is happening at a different pace across African countries (Grace et al., 2020). There are variations in defining the role of digital infrastructure, the creation of a digital economy, and varying degrees of prioritization in countries in East Africa. Digital infrastructure is very limited in home-based digital markets that are small and patchy and of insufficient size to fascinate investment or provide the addressable customer base for technology-driven companies to rapidly scale up. The basic level of digital literacy remains low and discrepancy and the region's educational institutions are not producing the volume of workforce-ready for the purpose (World Bank, 2018). Governments are only scratching the surface of the opportunities associated with leveraging technology to improve service delivery while limited attention was given to the role of information communication technology and digital infrastructure to realize continental and sub-continental integrations.

Harmonizing Regional ICT Policies, Strategies, and Regulatory Mechanisms

The intention of implementing e-governance initiatives is to ensure omnipresent access to information so that it ensures the government accountability and transparency serve the interests of the people. According to a study by Bhatt & Aggarwal (2011), most e-governance initiatives depend on four major elements: people, policy, process, and infrastructure. Likewise, taking cases of developing countries, their study revealed that most e-governance implementations failed because borrowed technologies were implemented in different socio-cultural contexts. In its comprehensive study on the role of ICT policies in the transition to smart and sustainable development, ITU (2016) advised policy guidelines should focus to enable the bulk of populations to get access to ICT, improve ICT environments for use and promote citizen-centric approaches. At the same time ITU by taking the policy and practice of ICT initiatives in the Arab region came up with a lack of an integrated regional plan, inefficient human resources, and a weak policy environment as the main factors for the failure of ICT-related initiatives.

In his comprehensive study of the importance of developing successful ICT strategies and policies in a knowledge-driven society, Rahman et al. (2011) argues that though countries are formulating, adopting, and implementing ICT policies, e-strategies, and legal frameworks, the vital part of the success of policies which is the critical assessment of their progress is a missed element in the practicality of strategies. Policies and strategies need to be complemented with the evaluation of the impacts and effectiveness of such initiatives. With diversity in political, social, and economic status, policies, and strategies with different motives have to be compatible with the national context of the implementing country. The implementation of policies and strategies should include national commitments, particularly from the political decision-making body, to engage and entertain different stakeholders in the sector.

ICT policies need to be inclusive to ensure that the poor are not the losers of the digital revolution. Likewise, the design of ICT policies and strategies should emphasize the human development aspects by incorporating information-driven policies and e-strategies in a knowledge-driven society. In their studies on the practicality of policies to narrow the digital divide in Australia, Weaver & Ellis (2008), come up with regional communities (ICT community

centers) that are highly relevant to empower communities through the development of ICT-boosted social capital and regional developments. Their approach showed as the best way to implement ICT practices that need to be designed in community wises and programs must focus on a way to ensure regional economic developments.

As the World Bank (2018) emphasized policies, strategies and legal frameworks are essential ingredients of cross-border collaborations. For example, for effective cross-border collaboration prerequisites include, digital payments, e-transactions laws, consumer protection legislation, and digital identifications are a critical element that helps to boost cross-border transactions. Plus, that Calderón & Cantú (2021) also noted that digital skills, digital infrastructures, digital services, and e-commerce practices are nothing unless supported by regional policy and regulatory mechanisms that are designed in a way that ensures competition, and reduce the digital divide, ensures cyber security and consumer protections.

Challenges of Using ICT for Regional Integration

With the advent of the information and communication technology revolution, the poor and the developing world are losers because of limited access to ICT. Access is determined by different factors that require education, infrastructure, and institutions which are basic ingredients that many developing countries lack (Rahman et al., 2011). In his studies of African countries' experience, Adam (2012) figured out the involvement of the private sector in ICT investment in Africa is limited, constrained by poor access to infrastructure, complex bureaucracy, inadequate conducive environment, and limited access to capital and technological facilities. Similarly, the ITU report (2016), with a special focus on the Arab Region, indicates that poor infrastructure, limited enabling environment, lack of universal access to ICT, non-innovative and inappropriate adoption, and use of ICT significantly limit the use of ICT and governance initiatives for sustainable development. The ITU, ICT development index report (2017) also shows that despite the increasing diffusion of telecommunications at the global scale and continued progress in the sector, limited access to affordable ICT tools constrains the use of ICT for development.

Similarly, the ITU Plenipotentiary Conference (2014) also emphasized the critical role of access to bridge the digital divide. ITU's "Connect 2020 targets" also mainly focus on access and use of broadband internet with particular attention to reaching out to developing countries (ITU, 2017). Particularly, the access gap is increasingly raising concerns in developing countries about possible impacts on efforts to achieve the UN Sustainable Development Goals. Likewise, despite continuous progress in access to ICT, the digital divides and inequalities continue to affect different regions, households, and individuals to the extent to which the Information Society is contributing to economic and social development (ibid). A study by Warf (2017) on the Asian experience of obstacles to e-governance implementation also indicates that poverty, illiteracy, and low penetration of access to the internet and ICT facilities are substantial factors that affect e-governance implementation.

Conceptual Framework

The digital infrastructure in the COMESA region mainly focuses on Digital Free Trade Area (DFTA), e-learning, e-government, and e-legislations. The regional IT master plan of COMESA also shows the main interventions on GIS, IT network services, e-governance, and overall digitalization initiatives in political, economic, and social spheres. Thus, the conceptual model links these variables to show the relationship between dependent and independent variables.

Methodology

Description of the Study Area

Comprising over two-thirds of African Geographical Coverage COMESA has 12 million square kilometers of geographical coverage. According to the COMESA report (2018), the region aspires for regional integrations in line with the AU Agenda 2063. It has a population of 583 Million, a GDP of 805 Billion, and a global import-export trade of 324 Billion dollars. (COMESA, 2018). The association comprises 21 member states trenching from North to the south with the Eastern portion of the continent. To boost promoting regional integration through trade and the development of inclusive resources in the region COMESA was founded in 1981 as a preferential trade area which is one of the pioneers of regional associations in Africa operating with the framework of the Legos Plan of Action and AU. Despite COMESA being established in 1981, its history mainly began in 1994 when COMESA replaced the Preferential Trade Area (PTA). As it was established with a treaty CMESA was mainly established to forester cooperation among member states through the mobilization of manpower and natural resources.

The research employed both qualitative and quantitative research methodologies to deeply investigate the project in question. Likewise, complementary to qualitative and interpretative research methodologies, descriptive statistics is employed to analyze and describe the basic features of data accessed from different databases, interviews, and focus group discussions. A comparative research design is preferred for this study. Because the study covers 21 countries' comparison of digital infrastructure, motives for regional integrations, variations, and harmonization of ICT policies and legislation can only be depicted if a comparative approach is employed across the countries.

Sampling and Sampling Technique

Determining sample sizes and sampling techniques are relevant in research. As noted by Omona (2013) sampling technique and sample selection are relevant to improve the quality of research outcomes. Similarly, Kirsti et al (2016) argued that ascertaining sample size in qualitative research is important but by a different means. The best approach to sampling in qualitative research is “information power” to guide an adequate sample size for qualitative studies. The information power indicates that the more information the sample holds, relevant to the actual study, the lower number of participants is needed. This means that in qualitative research the selection of samples is not about representation but identification of relevant information sources with a deeper understanding of the phenomenon.

The sampling selection in this study also applies the "information power approach. The selection of the samples mainly focuses on the quality of the dialogue, the expertise power of the informant, and the proximity of the informant to the issue of investigation. The sampling method is purposive sampling in which deliberately locating respondents is mainly the major task of the researcher. Similarly, to get informants that could not be figured out in purposive sampling, snowball sampling was used. The use of such sampling selection and method is mainly because the study mainly focuses on analyzing policy frameworks, the status of digital infrastructures, and the major challenges. Likewise, the purposive sampling method was applied to trace participants in FDG and key informant interviews. The major sources of data were collected from the Ethiopian Ministry of Foreign Affairs, African Institute for Development Policy, African Union, Inter-Governmental Authority for Development, University of Kigali, Civil Society Organizations, Pan African University, South Sudan Ministry of Foreign Affairs,

Ethiopian ministry of Science and technology, ministry of Trade and Regional Integration and consultancy forms operating in the COMESA region.

Sources of Data and Tools of Data collection

Databases

The main sources of data this research conducts are secondary and primary data. Sources such as books, journal articles, magazines, policy documents, and internet sources are used. Furthermore, websites of institutions, and data from Ministries, and ICT companies of the respective countries in the COMESA region were identified as the source of data. Besides, news articles, press releases, interviews by media channels, reports, and statistical data were extensively used to fully interpret current developments in digital infrastructure in the region. Furthermore, for the cross-comparison of the ICT development in the region, descriptive data were used from selected ICT data sets. In this regard, the following databases were used as a major source of data.

Table 1: Databases

	Name of the database	URL	Data type to be collected
1.	The world bank ICT access index	(https://tcdata360.worldbank.org/indicators)	Qualitative and Quantitative Data
2.	International Telecommunication Union ICT indicators database	https://www.itu.int/en/ITU-D/Statistics);	Qualitative and Quantitative Data
3.	United Nations Cyber Law tracker	(https://unctad.org/	Qualitative Data
4.	African Regional Integration Index	(https://www.integrate-africa.org/rankings/regional-economic-communities/comesa/)	Qualitative and Quantitative Data
5.	United Nations E-government Knowledge Database	(https://publicadministration.un.org/egovkb/en-us/Data/)	Qualitative and Quantitative Data

Key Informant Interviews

As qualitative research mainly depends on an in-depth analysis of a phenomenon, the study mainly uses key informant interviews from relevant stakeholders working on regional integration endeavors in East Africa. Key informant interview was mainly relevant in this study in that they mainly focused on understanding the status and prospects of regional integration and interpreting policy and legal frameworks that can only be possible by engaging experts in the domain. Likewise, based on the purposive sampling techniques a total of 27 key informant interviewees with a high level of information power in the domain were conducted.

Focus Group Discussions

Focus group discussion was relevant to get current data on ICT's role in regional integration because participants were selected from relevant institutions that have direct experiences on the issue. For that purpose, 2 separate focus group discussions with 12 members each were organized to complement the data gained from interviews and databases. A total of 24 participants were participating in the focus group discussions.

Data Analysis Techniques

The data to be collected are mostly qualitative. Thus, content and thematic analysis techniques were employed. Content analysis is a common approach for analyzing qualitative data. It is best suited as a method and approach for the categorization of verbal or non-verbal data for the sake of filtering, classifying, summarizing, and tabulating raw data. The research approached content analysis accompanied by a narrative analysis that involves formulating and reformulating data presented by people in *different* aspects to sort out, enhance, and give meaning to the reader. Furthermore, to explore patterns, relationships, and associations between the data gathered, the framework analysis was extensively used for its appropriateness. Similarly, the thematic analysis was used for the identification of patterns, interpreting themes, and analyzing thematic concepts in data which are qualitative types. In addition, descriptive statistics, i.e., percentages, have been computed for the quantitative data generated through the databases.

Results and Discussion

Demographic Characteristics of Participants

Participants for key informant interviews were selected based on educational qualifications, Work Experiences, and Fields of specialization. Based on these criteria a total of 27 Interviews were conducted in different modes. The mode of interview was based on convenient and encompasses, email interviews, phone interviews, and face-to-face interviews. Similarly, a total of 24 participants were involved in focus group discussions to triangulate the data.

Educational Level of Participants

The minimum level of education of participants was a BA degree and the maximum was a PhD degree in relevant disciplines related to the study of regional integration and information communication technology. Hence, 53.3% of BA degree holders, 33.3% of MA holders, and 13.3% of PhD and above degree holders were participants in the study.

Years of Experience of Participants

The experience of participants determines the quality of data in particular research. Likewise, the minimum years of experience are 1-5 years and over 33.3 percent have above 10 years of experience. Figure 2 shows that 36.7% of the participants have 1-5 years of experience. Whereas 16.7% and 13.3% of the respondents have 5-8 years and 8-10 years of work experience respectively.

Data Mining and Database sources

The following databases were used as sources of data for the research. Specifically Quantitative data were extracted from these sources which were relevant to complement the qualitative data that were collected with FGD and key informant interviews. Likewise, the world bank ICT access index, International Telecommunication Union ICT indicators database, United Nations

Cyber Law tracker, African Regional Integration Index and United Nations E-government Knowledge Database were appropriately used.

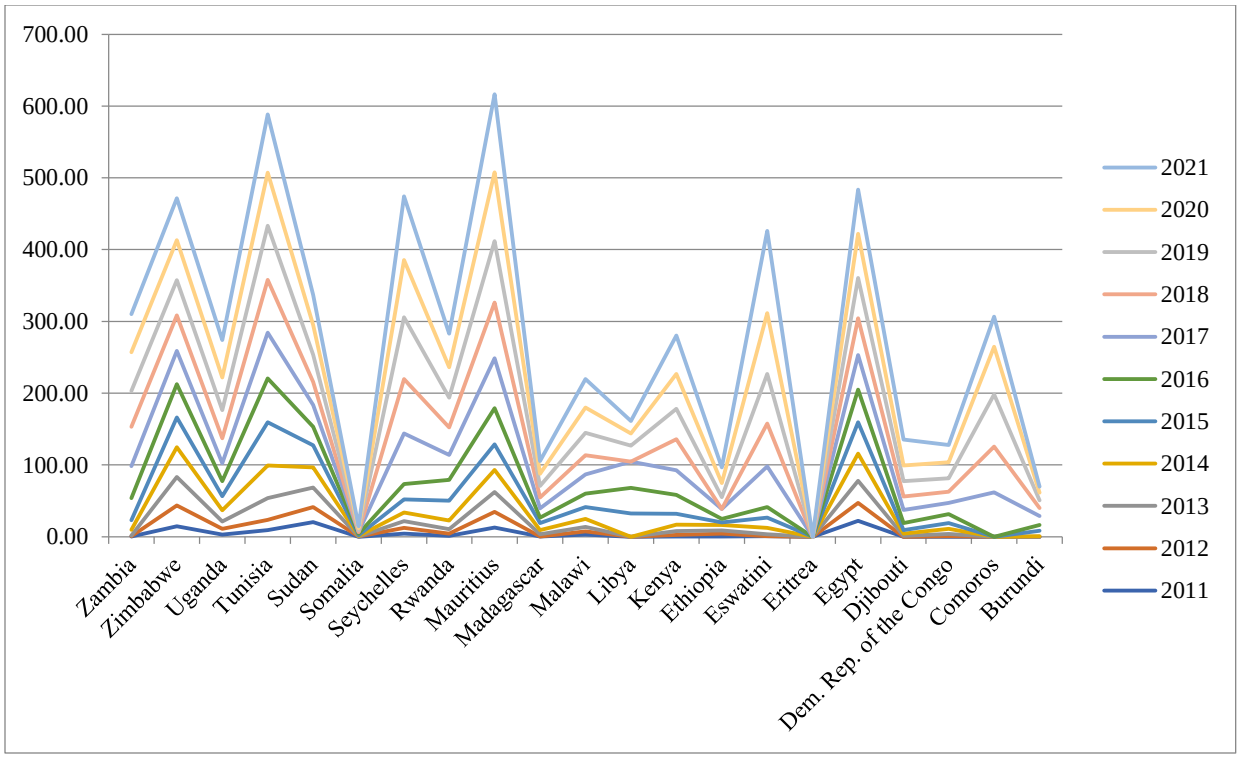
Examining the status of Digital Infrastructure in the COMESA region

The status of digital infrastructure is captured with the issue of access to ICT, the level of digital infrastructures, and the level of fixed broadband subscription per 100 individuals. Individuals using the Internet (%); E-commerce Skills Development and Mobile Cellular Subscription are the major indicators to measure the status of digital infrastructure in the region.

Fixed Broadband Subscription per 100 Individuals

The broadband subscription shows the level of digital Infrastructure in the region. While most of the countries are below the world average, there are significant variations among countries. The following table shows the fixed broadband subscription per 100 Individuals.

Figure 1: Fixed Broadband Subscription per 100 Individuals

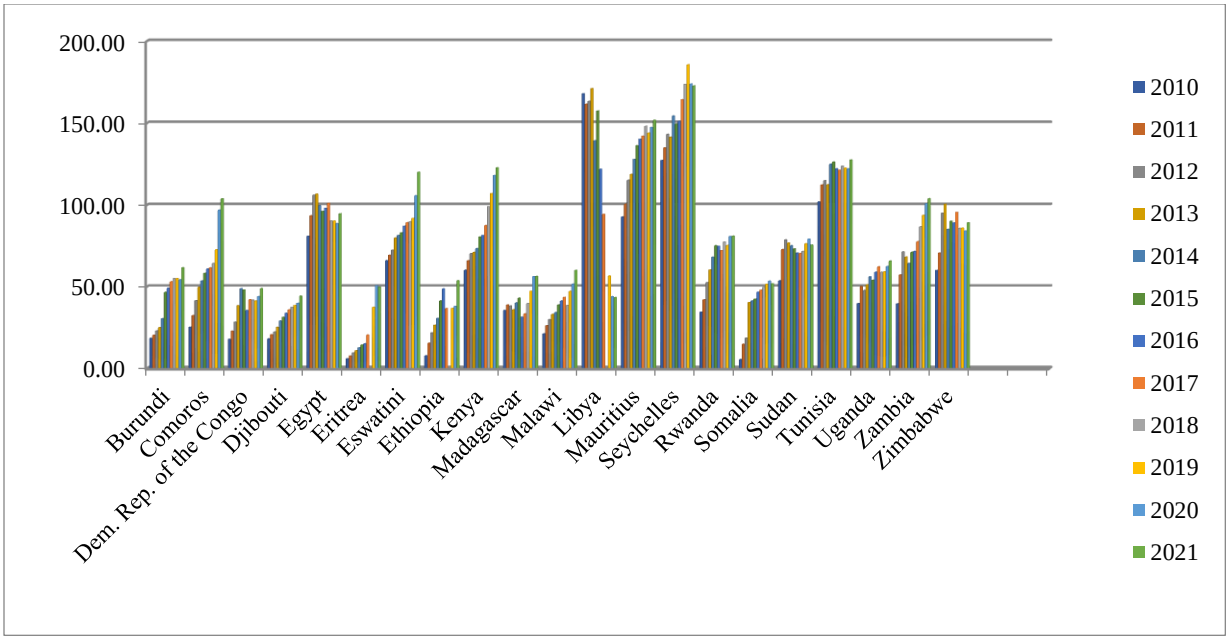


Source: databases

Mobile Cellular Subscription

Mobile-cellular telephone subscriptions refer to the number of subscriptions to a public mobile-telephone service that provides access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions; and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems; subscriptions to public mobile data services; private trunked mobile radio; telepoint; radio paging and telemetry services.

Figure 2:Mobile Cellular Subscription

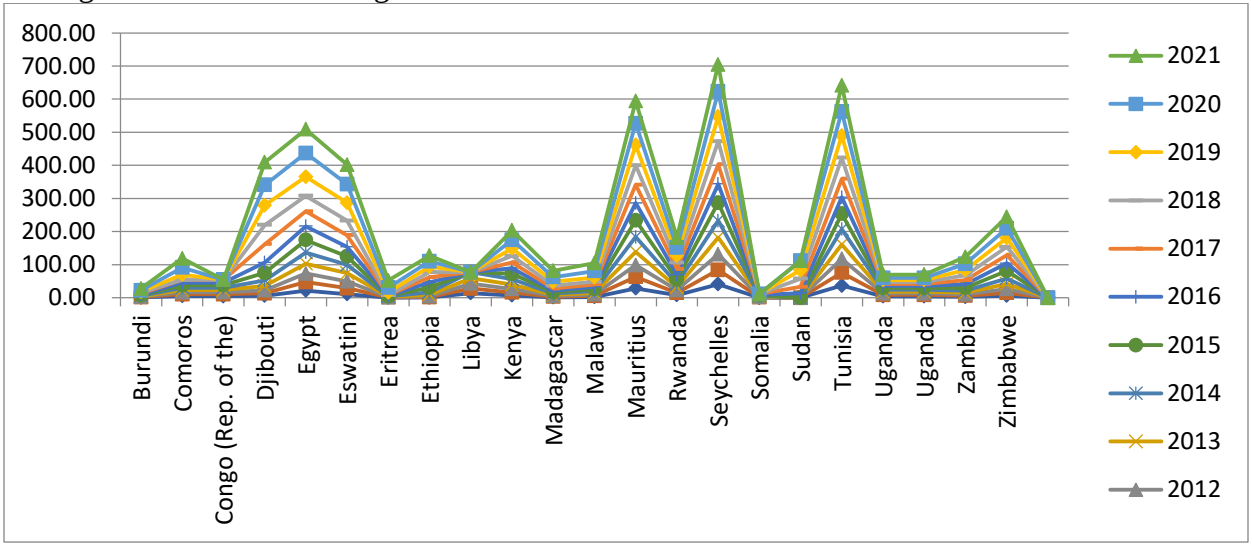


Source: Databases

Individuals using the Internet

This indicator can include both; estimates and survey data corresponding to the proportion of individuals using the Internet; based on results from national household surveys. The number should reflect the total population of the country; or at least individuals 5 years and older. If this number is not available (i.e. target population reflects a more limited age group) an estimate for the entire population should be produced. If this is not possible at this stage; the age group reflected in the number (e.g. population aged 10+; population aged 15-74) should be indicated in a note. If no survey data are available at all; please provide an estimate specifying in detail the methodology that has been applied to calculate the estimate

Figure 3:Individuals using the Internet



Source: Databases

Digital infrastructure and Regional Integration in COMESA region

Using Information Communication technology increases ever-growing interconnectedness among states and people. Information society theory denotes increased connections between societies mainly because of greater efficiency and productivity in businesses and organizations; increased opportunities for education and lifelong learning; greater social inclusion of marginalized groups; enhanced cultural exchange and understanding; and a more sustainable planet through increased use of ICTs in environmental monitoring and management. This shows that information communication technology if leveraged with regional integration boosts interconnectedness between societies. Particularly using ICT for regional Integration schemes fosters the transaction process to speed up the transaction beyond borders. Mainly because CT allows the rapid information flow amongst those member states and this in turn highly enhances the smooth functioning of the integration scheme. Using information Communication technology that binds the regional integration and can address information from one region to another region. As one of the informant's states;

> *ICT has the potential to connect vast networks of people across geographic boundaries at a negligible marginal cost. ICT is perhaps the most dynamic force driving globalization because of its ability to cross national boundaries.*

Under the right circumstances, information and communication technology (ICT) can be a powerful tool for increasing productivity and generating economic growth by facilitating trade, transportation, and financial issues. Using ICT increases the tendency of digitization in every aspect of hum and life. It integrates the infrastructure, the soft elements of social capital, and digital transactions without limit to geography and boundaries. It smoothens the integration of other dimensions of infrastructures through communication. Particularly ICT infrastructures improve regional integration mainly because they facilitate transition and shift from industrial to knowledge-based economies that generate maximum yields for regional trans-border follow of goods and services. It also fosters an increase in the importance of services over manufacturing and distribution.

However, as denoted by focus group discussants the level of digital infrastructure has few improvements in some COMESA countries, the majority are still lagging in terms of digital infrastructure. The improvements that have been seen in the last few years are not satisfactory for leveraging ICT for regional integration. Disparities among countries are high and significant differences have been observed. For example, as one of the key informants' states;

> *For instance, there is a system of sending money through mobile money across some member countries like Rwanda, Kenya, and Uganda. But other countries like Ethiopia, Eritrea, Sudan, and Djibouti, have limited electronic transactions. Transborder financial flows are also negligible in most member countries of COMESA.*

As noted by experts, key infrastructures for regional integration in Africa can be seen in two categories: soft and hard infrastructures. In soft infrastructures, there is a need for communication towers, systems for controlling the transportation of goods, systems of trading digitally, harmonization of digital payment, and regional ICT polices and strategies. On the other hand, hard infrastructures, including there is need for highway roads facilitations, train networks, connecting countries, cheap flights construction of stop customer offices where customs officials work together to speed up the process of goods clearance. With this in mind, the level in COMESA region shows that there are limited infrastructures and are also not well harmonization rules and regulations among member states to ensure digital coherence

One of the major components of both hard and soft infrastructure Large Data Centers (DCs) are capital-intensive and require significant investments in time and money to build which the region lacks. Digitalization administrations, ICT infrastructure development, adoption of one policy for communication, and most importantly adoption of one Telecom for the continent. These benefits include lower transaction costs for business, lower risks associated with investments, expansion of markets, pooling of regional resources, better utilization of economies of scale in production, and more efficient allocation of resources. One of the key informant states that

> Africa greatly lags behind the rest of the world in terms of digital infrastructure and technological advancement. Several factors could be attributed to this. First, lack of favorable policy and strategy, second, poor education system and more inclination for behavioral sciences, third, low attention to science and technology innovation, fourth, financial, material, and technical constraints to invest in digital infrastructures.

The first and most important digital infrastructure in my view is satellite technology and state-of-the-art communication apparatuses that enable instantaneous connectivity among COMESA region as well as Africa in general. Expansion of telecom infrastructure, internet, and networking. The other is changing the whole or part of the governance structure to a new and robust e-governance system. Moreover, building a digital economy, and adopting new technology in the banking, marketing, and finance sector is vital for successful regional integration in Africa.

COMESA region lacks the necessary infrastructure, ambition, and vision to build a digital economy. Unfortunately, as the pandemic and its aftermath have demonstrated, global goodwill is not a viable alternative. The majority of Africa lags behind the rest of the world in key infrastructure categories such as energy, road and rail transportation, and water infrastructure. To use electricity as an example, entire communities in large swaths of Africa are disconnected from the grid. Economic infrastructure is the economic system's nerve center. It is crucial to the development of not only the economy but also of civilization. One of the key missed elements in regional integration initiatives in COMESA regions is the low focus on leveraging ICT. As stated by the informant. The level of ICT infrastructure is poor in Africa but the digital infrastructure is essential to integrate Africa one is the digitization of the infrastructure is paramount, the system that is employed to systematize the sector through digitization enhances the development that is expected in the region. In the first place, the system allows a close network and make available the required information to the employee or scholars in the Sector. Secondly, helps the desired quality of services and techniques in the field.

ICT Policy Adoption and Harmonization in the COMESA region

ICT policy harmonization refers to the level of policy convergence among individual states and also in the regional economic communities. How individual state policies align with regional block policies determines the level of policy harmony and convergence in the region. This is analyzed through individual state policies among other states and also the link with the regional blocks.

Individual State Policies and Legislations

A prerequisite for conducting commercial transactions online is to have e-transaction laws that recognize the legal equivalence between paper-based and electronic forms of exchange. In line with the legislations and policies related to ICT the key elements are electronic transaction laws; consumer protection laws; privacy and data protection regulations and cybercrime legislation are relevant. Out of the 54 countries in Africa (54 countries) some have legislation. Likewise, In line

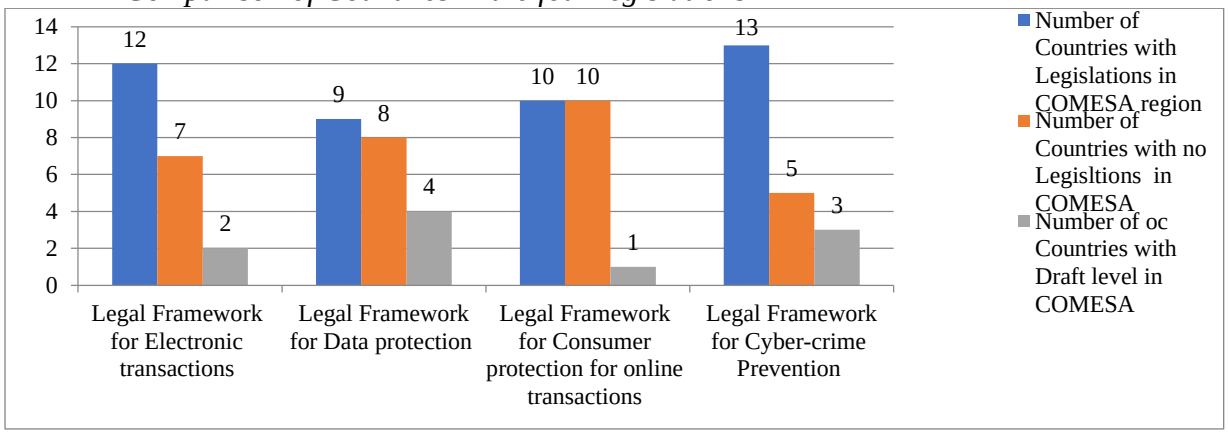
with this Electronic Transactions laws and regulations 33 (61%); Consumer Protection 28 (52%); Privacy and Data Protection, 33 (61% and Cybercrime, 39 (72%) countries have legislation and policies.

Table 2: Individual State Policies and Legislations

Country	Legal Framework for Electronic Transactions	Legal Framework for Data Protection	Legal Framework for Consumer protection for online transactions	Legal Framework for Cyber-crime Prevention
Burundi	Draft level	No	Draft	yes
Comoros	No	No	no	no
Congo (Rep. of the)	No	No	no	Draft
Djibouti	No	No	no	Draft
Egypt	Yes	Yes	Yes	Yes
Eswatini	No	Draft	no	Draft
Eritrea	No	No	no	no
Ethiopia	Yes	Draft	no	Yes
Libya	No	No	no	no
Kenya	Yes	Yes	Yes	Yes
Madagascar	Yes	Yes	Yes	Yes
Malawi	Yes	Draft	Yes	Yes
Mauritius	Yes	Yes	Yes	Yes
Rwanda	Yes	Yes	Yes	Yes
Seychelles	Yes	Draft	Yes	Yes
Somalia	No	No	no	No
Sudan	Yes	No	no	Yes
Tunisia	Yes	Yes	yes	no
Uganda	Yes	Yes	Yes	Yes
Zambia	Yes	Yes	Yes	Yes
Zimbabwe	Draft	Yes	no	Yes

Source: Cyber law tracker and Interviews

***C**omparison of Countries in the four legislations*



Source: Databases

Regional Policies

The EGEE-ICT is a major initiative for regional policy harmonization and implementation in the region. The programme aims to support the effective review and/or development of various regional policy and regulatory frameworks in a harmonized manner that contributes to enhancing competition, and improved access to cost-effective and secure ICT services. The program mainly targets the five Regional Economic Communities namely COMESA, the East African

Community (EAC), and Intergovernmental Authority for Development (IGAD), the Indian Ocean Commission (IOC), and Southern Africa Development Community (SADC). COMESA as the lead REC will implement the programme on behalf of other Partner RECs in the EA-SA-IO region.

As indicated above access to the Internet mobile telephony penetration has increased as a result of both private and public sector investments in infrastructure, internet penetration is also rapidly growing. The socio-economic benefits of accessing and using ICTs, in particular the Internet, are rising rapidly as essential information and services, both in the public and private sectors, continue to move online. This is the major benchmark for using ICT for regional integration initiatives. One of the key informants stated that the major challenges in using ICT for regional integrations in COMESA region are vertically integrated telecom operators' monopoly of the infrastructure in the region; uneven policy and regulatory regions and different modes of policy adoption which is fragmented among member states and limited resources for policy, legal and institutional harmonization in the COMESA member states.

It is also clear that there are no integrated policy adoption mechanisms in the region. As stated in the innovation diffusion theory, preferential adoptions, and partial adoptions of ICT also significantly affect the regional disparities in Telecom operations in the region. Some countries have restrictive ICT policies in terms of the Transborder cases while the policy architecture of COMESA aspires for transborder policy harmonization and open ups.

However, Individual countries have hampering policies that affect the use of ICT for regional integration initiatives. Until recently Ethiopia had a telecom monopoly in which it doesn't allow foreign telecom companies to operate as most of the respondents stated most countries in OCMESA region have the policy infrastructure. However, what is lacking is low policy implementation and a lack of harmonization in policies. Despite the polices there states in the region have restrictive approaches to digital technologies. For example, Internet connectivity where some countries also shut down the internet, for example, Ethiopia and Uganda.

Digital Access and civil liberties are two sets of issues in ICT policy that are crucial to the development of regional integration. Also, access provides the ability and the possibility for everyone to use the internet and other media. Expensive internet bundles, and trade policy related to the introduction of internet gadgets. Similarly, there are Overlapping policy is the biggest issue, and also border restrictions on transnational communications. Most of the countries also lack liberalization especially the ICT sector and telecommunications which encourages vertical monopoly of the expansion of the sector.

Because of such restrictions, trade-led growth and the potential for greater regional economic integration is weak. In terms of policy and legislation harmonization the major limitations are poor (a) port and customs quality regional usage policies; policy barriers to trade and investment, and nascent regional economic governance strategy are at the lowest level. Cyber Security issues, emerging and alternative new means of communication technology, and limited initiatives for policy harmonization are key issues to be considered. low level of a policy and strategy initiative for PPP to expand ICT throughout member states, governments' monopoly on telecom infrastructure, and strong censorship affect the usage of ICT for regional integration.

The COMESA states do not have a policy or law towards new technologies they are invented, and the issue of intellectual property rights is also a major Challenge. This raises several legal and regulatory issues for policymakers, ranging from the legality of electronic methods of contracting and the security risks they entail to concerns about cybercrime and the ability to protect intellectual property rights online. Some countries may have no interest in formulating a

binding legal frame for ICT development and its integration with other countries. Poor legal enforcement and policy for developing ICT also affect regional policy harmonization. Every telecom Service must operate easily and at the same price in the region with different telecom companies. One of the key informant states that

> *The issues of national security issues are the main issue, and the other is the multiple memberships of member states with other international organizations who are not member of COMESA. Such concerns lead states to focus on Internet fragmentation and jamming due to political instability and conflicts. Integrity and authentication, Confidentiality, Managing ICT security risks, Digital Signatures, Public Key Cryptography, Regulatory Approaches, Data Protection,*

ICT Policy Harmonization Approaches among COMESA Member States

Regional ICT policies are relevant to bring unified taxation on data thus making it accessible for people in the region and this in the long run will encourage digital trade due to data affordability. Regional ICT policies also encourage citizens to have access to information. If there is effective implementation of ICT-related policies, regional integration will be boosted through digital payment of goods and services, through digital declarations of goods at borders, and communication among member countries will be also developed. This would be an excellent platform to allow traders, students, and even health and financial institutions to knowledge share and also pay for access to goods and services. This will be very good and will rapidly encourage regional integration in the COMESA region.

ICTs provide access to information through communication channels such as the Internet, online video telephony, fax, computer networks, satellite technology, mobile phones, and wireless networks. ICT tools have a significant indirect and direct impact on countless citizens' cultural, economic, political, and social lives in third-world countries, such as job creation, education, e-commerce, and governance, and thus on social systems and economic growth. ICT advancement addresses critical issues that developing countries face, such as brain drain, and proposes solutions to challenges in key economic sectors such as environmental protection, education, health, and civil protection.

ICT also affects governments by improving responsiveness, increasing efficiency, and enhancing governance practices. Governments can encourage the diffusion of ICT through their supply of online services and their use of new technologies. To some extent good and a significant role in the development of science through the various stages of humanity, is more than ever aware need to invest in technological innovation to encourage economic and social cooperation, and to accelerate the path towards harmonious regional integration between the different States that make it up. The researcher understands that ICT promotes economic development due to the rise of international business communication etc.

Overall, most African countries lack conducive ICT policies. This remains the major setback to boosting regional integration. Adopting favorable ICT policy by individual member states and enhancing innovation that ultimately improves regional integration. It increases information exchange and resource mobilization for a common purpose. Possessing information, reducing poverty, proper use of natural resources, and improving infrastructure allocation, can show problems and solve them. Regional ICT policies play a significant role in fostering regional integration in the COMESA region. As is well known, regional integration is a drawn-out, expensive process that involves constant communication between all parties involved. ICT policies speed up economic growth and social change by affecting organizational systems and the dynamics of individual and group work.

It is the best mechanism to integrate the region, as the information shared and relations boosted between government and businesses, business to business, and government to government increases. Once the ICT infrastructure is put in place in the region it has a greater impact on the socioeconomic development of the region as well as the continent. It enables countries to easily conduct trade, energy, and other activities. Digital Trading or E-commerce, E-visa (Visa Arrival), and speedy services. COMESA members should aggressively employ the digitization process.

Bottlenecks of Sub-Continental Integration in the COMESA Region

Apart from the lack of well-established digital infrastructures different soft elements and infrastructures are becoming the major bottlenecks of regional integration in the COMESA region. the risk of exclusion for those without access to ICTs; the need for increased security and privacy protections; the challenge of managing ever-increasing amounts of data; the need for improved literacy in using and understanding ICTs and the need for careful regulation of ICTs to ensure they're used ethically are becoming key elements of Challenges of using ICT as a tool of regional Integration.

Lack of Policy Harmonization

Multiple memberships of COMESA members in other regional blocs, Lack of policy coordination. Lack of funds to implement the already existing policies for infrastructure development. Lack of policies that enrich people's skills in technology. There is also a lack of political will to implement the existing policies. The lack of Digital Freedom and disparities in policies among member states to ensure the digital freedoms of citizens are also relevant factors. The states in the region have overlapped memberships may lead to duplication of efforts and unnecessary competition among countries and institutions. This leads Lack of political commitment resulting in delays in legal and policy outcomes, Poor private sector participation economic imbalance between Members Political Clashes among Member states affect the process of regional integration.

Although services trade has been increasing in COMESA, key challenges to future expansion include poor infrastructure, unfavorable business environment, limited technology, lack of skilled professionals, and low domestic demand in some countries (UNCTAD, 2015). Insubstantial infrastructure development, lack of rational management, instability in domestic politics, inadequate service input, inadequate communication service, lack of trade liberalization, financial service, Lack of commitment and determination among political leaders, low level of trade exchange between member states, low ICT infrastructure provision across the region, strict trade policies, high restrictions on the flow of goods and services across the region.

Limited Digital Infrastructure

Poor physical infrastructure connectivity includes rail, roads, and several flights to different COMESA member countries. Policy is the major challenge to boost regional Integration in COMESA. There is no innovative economy, it is an import economy, new technologies are exported, STEM education is in the primary phase in COMESA states, Lack of resources, regional conflict or clash, member states communication gap policy of states difference, model of government policy, difference of interest and political ideology.

Low ICT and Internet infrastructures, poverty, the high price of the internet and ICT tools, instability, and conflicts. Poor infrastructure, unfavorable business environment, limited technology, lack of skilled professional government unwillingness, harsh relationship, foreign intervention one is finance the developed nation should support this noble idea of the digitization

of the region and without limit have access to the technology. Unfair Competition, autocratic leadership, war, lack of peace, and insecurity are the major factors impeding regional integration in the region.

Multiple Membership and Duplication of Efforts

The countries in eastern Africa at least engaged in two regional blocks. For example, Kenya is a member of COMESA; IGAD, and East African Community. Ethiopia too is a member of COMESA, and IGAD. Thus, the data shows that each member's states of COMESA are engaging in more than 2 Blocks of RECS which affects effective engagement in policy harmonization and ICT infrastructure development. Duplication of effort and financial allocations are also the result of multiple memberships. This intern contributes to the country's engagement in effective regional integration initiatives but is busy with routine tasks.

Conclusion and Recommendations

Conclusion

Digital infrastructure in Africa particularly in the eastern part of the continent shows that there is an even distribution of platform firms leading to less competitive advantage in Africa. This again led to uneven distribution of digital infrastructure that has been highly constrained by different levels of responses by member states of the COMESA region. As digital technologies are complex, the regulatory and data flows are also becoming complex in which countries with nascent digital ecosystems unilaterally seek to balance the need to allow free movement of their data between jurisdictions against concerns for privacy, cyber security, protecting infant industries disregarding consent and compensation.

The future of the information Communication technology and its impact on the society is unpredictable. While there are destructive elements, there are also positive outcomes that significantly affect societies. ICTs will continue to become more pervasive and integrated into all aspects of our lives including in interpersonal and beyond national borders. As most of human lives are affected by ICT it will be important to ensure that everyone has access to them and knows how to use them safely and responsibly. The study also revealed that there are few concerns to studying the role of leveraging digital infrastructure for socio-economic and political integration in the COMESA region. It is therefore important to understand the various challenges faced by countries in their digital transformation initiatives to exploit regional integration.

Apart from its role of social connectedness ICT is said to be a driver of social, economic, and business change. The extensive adoption of ICT after the millennium has led to a central change in the way we live work and communicate with each other. Equally significant is the role of ICT in fostering connection between business and people across borders between state and non-state actors. The Internet has been used for a range of activities such as shopping, banking, studying, and socializing without any restrictions in specific boundaries. Despite such facts, ICT has been little utilized to leverage regional integration initiatives in the CEMSA region. Business-to-business transactions, State-to-state communications, and Trans-border business interactions are not well geared with ICT. Police disparities among member states, Lack of Policy convergence between states, and above all lack of regional polices that can serve as a regional tool hampers the efforts of regional integration initiatives. Lack of binding agreements and effective ICT legislation are also degrading public trust in trans-border transactions. Some countries like Ethiopia are also firmly tightened policies that are closed and isolated from member states. Similar to those efforts to study the level of policy harmonization and development of common

regional legal frameworks are also very limited. In this regard, it is imperative to study alignments on policies to have a clear legal and regulatory regime to support the free flow, storage, and processing of data across borders and a harmonized data protection and privacy regime to ensure the security of personal data in the region.

Recommendations

Leveraging Information Communication technology is the most viable option to ensure regional integration and cooperation. To that end, governments of the member states should emphasize policy coordination and try to have more agreements in place with other regional blocs (e.g., the tripartite agreement between EAC-COMESA AND SADC) to avoid clashing policies. Policy harmonization should also be worked between and among states. Similarly, Individual member states work individually and collectively to improve the physical infrastructure. This can be done by pooling together a common infrastructure fund to boost countries with fragile economies Harmonization of policies is the most important, waves of border restrictions also is another factor that solves such challenges. COMESA members should strengthen the harmonization among national systems and build a relatively small market to maximize the opportunities for economies of scale and market integration.

Political commitment and security concerns are also vital in this regard. Carefully on contentious issues that might lead to a diversion of attention from the achievements and potentialities toward thinking and acting about unresolved issues whose avoidance has an insignificant impact on the COMESA's future. Issues like political and security issues and the cooperation that lacks regional consensus need not be the basis for insistence and subsequently undermining already-observed progress and potential benefits of cooperation on other issues. Having political commitment and determination, adopting and implementing sound ICT policies and strategies, increasing member states' financial and material contributions, expanding ICT infrastructure, involving the private sector

Social Consciousness and awareness of the positive mentality of value regional integration, the strength of the institutional structure, the design of multilateral foreign policy, the liberalization service sector, and increased transport and communication service, to boost the performance of transport and construction service export outside the region, increased diversity service, emphasize skill development service, capacity building, build institutional performance capacity and regularly and policy reforms in the named sector, etc. Social mobilization, building digital liberty, increasing ICT budgets for all the member states, building more ICT and Internet infrastructures, and allowing Digital rights and freedoms have paramount importance.

Equally important is emphasizing digital freedom and rights should also be considered. As stated in the UN conventions people have similar rights that they enjoy offline as should it be online as well. Thus, governments in the region should focus on digital freedom that could support regional initiatives and smooth adoption of technology. COMESA as a regional block should also work on the compliance of member states on digital usage and freedom which has significant implications for the development of the sector.

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1.5 A vexing Question in Ethiopia's Intra-party Governance: Leadership Election, Kefale Beyazen

Ph.D. Candidate at the Department of Political Science and International Relations, Addis Ababa University, Ethiopia
Email- kefale.beyazen@aau.edu.et

Abstract

The paper examines the nature of intra-party leadership selection processes in Ethiopia and whether they adhere to democratic principles. It contends that undemocratic practices in leadership selection compromise the integrity of the parties and their contribution to democratization. The main problem in this regard is that leadership selection lacks inclusivity and transparency in procedures. The article examines the process of leadership selection within political parties, arguing that parties lacking transparent and democratic mechanisms for this purpose will experience internal vulnerabilities and make limited contributions to broader democratization efforts. The study employed a qualitative approach relying on primary and secondary data sources. Interviews, FGDs, and documentary sources were used to answer the research questions. Data were collected in Addis Ababa, Debre Zeit, Hawassa, and Bahir Dar from 16 key informants from October 2022 to April 2023. A comparative case study design was used to shed light on the larger cases by adopting a detailed and in-depth study of five purposefully selected political parties. The study found that political parties that allow their rank-and-file members to select their leaders are said to be democratic, and thus have a likelihood of making a societal democratic contribution, whereas the opposite is true--as the data revealed for most Ethiopian parties.

Keywords: - *party leaders, Ethiopia, intra-party democracy, leadership tenures*

Introduction

Political party leaders hold significant power in terms of influencing their party's internal operations and citizens' perceptions of the party (Cross and Jean-Benoit, 2015: 13). As a result, identifying who will assume the party's leadership is critical for determining intra-party governance (Punnett, 1992:1). In addition, in parliamentary systems, a candidate for prime minister must first serve as party leader. Put in other words, the post of party leader frequently functions as a path to the country's highest political position (Ofer Kenig, 2008:241). It might be argued that all leadership selection methods undermine democratic norms such as participation, representation, competitiveness, and responsiveness. As a result, leadership selection processes cause disparities in the party's democratic nature.

Many party scholars explored party leadership selection processes from a cross-national perspective (Cross et al., 2015); the role of grassroots members during selection in Germany

(Bram Wauters, 2014); and Ofer Kenig (2008:240) explored the nature of competitiveness of leadership selections in 11 countries, taking 25 political parties all in western democracies. Mihail Chiru et al. (2015) studied party leadership selection rules, whether they vary in opposition or incumbent or in old and new parties. Covering the cases of 107 political parties in 14 countries to examine 1192 leadership elections, William Cross and Jean-Benoit Pilet's (2015:252) study showed a cross-national study of democratic values of inclusiveness, competitiveness, and accountability.

On the other hand, studies focusing on Ethiopia's political parties do not by and large address leadership selection processes on a comparative basis. Most of the empirical analyses in Ethiopian parties focused on legal perspective on internal governance (Teguada, 2018), political party programmaticity (Solomon, 2014), political party genesis (Andargachew, 2015), political culture (Kassahun, 2003), or specific processes like coalition formation (Asnake, 2011), and electoral campaigning results (Zemelak, 2018). Furthermore, some of these studies indicate that inter-party relations, particularly between the opposition and the ruling party, have pushed back Ethiopia's democracy (Merera, 2007). In this study, we primarily focus on party leadership selection processes. This is because the selection of party leaders is critical in determining intra-party governance.

It goes without saying that choosing a new leader who will also serve as prime minister is crucial for party politics as well as the state as a whole. This is particularly true when a party in power makes this decision (Kenig, 2016:22; Kenig, 2009: 241). For instance, the last four Ethiopian prime ministers were chosen in internal party leadership elections held by the then ruling party, the EPRDF. The nomination of party leaders in an undemocratic manner and the significant concentration of power in their hands, particularly in the case of the party in power, have drawn a great deal of criticism and discussion. This is so because it is recognized that seizing governmental power and authority also entails seizing control of the resources of the state, which may then be used for the leadership's own gain.

When examining intra-party leadership selection, three issues are critical in assessing the implications for democracy. As a result, the regularity of competitions, the extent to which parties demonstrate roots in their members, and the extent to which rank-and-file members believe in intra-party elections determine who leads the party (Michelle and Lambright, 2001:437).

How a party chooses its leaders is one of the most crucial intra party democracy (IPD) indicators. A growing trend among the parties in advanced democracies to assure IPD is the inclusion of all-party members, on a one-member-one-vote basis, in choosing a party leader (Cross, 2009: 174). A form of positive feedback loop might be created by allowing party members to participate in the candidate leader selection process by drawing more people to the party, which in turn enhances inclusion.

According to James Wilson (1962:341), "*parties would be internally democratic, with party members choosing party leaders and holding them accountable, to ensure that party leaders are responsive to the rank-and-file*." In developed democracies, candidate leader nomination inside political parties appears to be significantly influenced by inclusive and democratic processes (Mares, 2012:15-8). This has several benefits. First, it enhances the democratic legitimacy of political parties and their images among the public (Epstein 1984). Second, a democratic leadership selection process can also enhance the relationship between party members and their leaders.

Who has a voice in a party leader's selection is essential to intra-party democracy because of the significant role a leader plays in party and public decision-making? However, there is a wide range of who chooses the party's leadership, from the small party elite to all of the electorate's party members. In light of this, the level of inclusivity in the process of choosing the next leader may be open to all interested voters, only open to all members, only open to party conferences as a delegate of members, only open to parliamentary party/members of the national legislature, party elite/small group, etc. (Cross, 2013:102). Broadly speaking, three mechanisms of leadership selection are employed by most political parties: party congress, conducting primary elections, and appointment.

In addition to the Marxist-Leninist perspective, one theoretical framework to which this article adheres is liberal electoral democracy (Moller, 2007:382), which connects both the liberal aspect (emphasizing a constitutional guarantee of liberties) and the rule of law, also known as rule for the people. This feature of liberal democracy promotes individual freedoms of belief, speech, association, and assembly (Mukand and Rodrik, 2020: 770). It also advocates for the rights of ethnic, cultural, and religious minorities. These all serve as a guarantee in intra-party politics for the smooth operation of party leadership selection (Diamond, 2003:9). Representation, which is a key element of liberal democracy, happens through the intermediaries of political parties. Indeed, the majority of nations require party membership as a condition for running for office (Turkmen, 2016: 94). Representatives who are recruited by political parties and elected by the electorate are expected to be attentive and accountable to their constituents. The electoral component of democracy emphasizes rule by the people, and hence political power is passed on through regular, free, fair, and competitive elections (Diamond, 2003, 8–12).

In Marxist-Leninist political parties, democratization of intra-party leadership selection processes fell short. This is because Leninism defined politics as a world of discontinuities and disjunctions, a world of difficult choices in which having a majority does not ensure the right to govern, democracy does not guarantee survival, and being correct does not guarantee success (Lustig, 1977:31).

Most Ethiopian political parties are related with the first generations of parties that started in the 1960s or 1970s and all subscribe to Marxist-Leninist ideology, therefore today's parties are in some manner similar to this theory. However, most of their beliefs about party organization were Leninist rather than Marxist. Accordingly, in 1899, Lenin stated that only an autonomous working-class party can serve as a strong bulwark in the fight against autocracy, and that only by forming an alliance with such a party and supporting it can all other fighters for political liberty play an effective role. He was beginning to argue that the class's independence is dependent on the presence of a properly orientated party (Ehrenberg, 1979:76).

The organizational structure of most Ethiopian parties is typically Leninist. Furthermore, the Leninist practice of criticism and self-criticism (self-evaluation) was used to cultivate conformity, discipline, and order. Criticism and self-criticism were utilized as a subtle and effective weapon of institutionalized control over human behavior (Gebru, 2009:66).

Inner party democracy in such a hierarchical party organization must adhere to Leninist democratic centralism norms. In theory, all committees are democratically elected, allowing for criticism, debate, and resolution of conflicts. Major changes require the approval (by vote) of two-thirds of the members of the concerned committee. Issues that cannot be resolved at a single level are passed on up the party hierarchy. The system is thus characterized by a disciplined hierarchy, with individuals subservient to the party, minorities subordinate to majorities, lower levels subordinate to higher levels, and the entire party subordinate to the Central Committee.

Leadership, unlike that of liberal democracy, is said to be based not on rank, status, wealth, or charisma, but rather on a commitment to the revolutionary cause, the subordination of any form of self-interest to that of the party, the willingness to sacrifice everything, and the erasure of any schism between particular and common interests (Alpa, 2021:708-9).

The three principles that explained what made such Marxist-Leninist parties unique at the time were institutional principles (democratic centralism), intellectual principles (scientific objectivism), and sociological principles (a commitment to the party as the class's historical vehicle). Democratic centralism aimed to achieve organizational unity akin to that of the military while ensuring full participation of all members in the formulation of organizational policies. Political decisions, leadership elections, and so on must all be made in accordance with democratic principles. However, after decisions are made, the parties must be able to move forward together. This Leninist concept assumes a two-way flow: authorization, suggestions, and new leadership from below, and immediate policy and tactical guidance from above. It does not accept all applicants, but rather selects its members. Its various parts rarely know what each other is doing and rely on the leadership to monitor the whole. That is why Leninism serves as the formal theory of leadership in Marxist literature (Lustig, 1977:31).

Research objectives

The main objective of this article is to investigate the internal leadership election processes of five Ethiopian political parties. It will specifically look at whether the processes correspond to democratic norms such as participation, inclusion, competitiveness, and transparency.

The core research question that guides the study is: Does political party internal governance subscribe to intra-party democratic norms? How are leaders elected? Who are the electorates of the party leader? What is the implication of a leadership election for a national democratic ethos?

The core assumption in the article is that undemocratic practices in leadership selection compromise the integrity of the parties and their contribution to democratization.

Methodology

Obtaining a list of all legally registered political parties in accordance with the National Electoral Board of Ethiopia's (NEBE) Registration Proclamation No. 1162/2019 was the first step done by the researcher in identifying sample parties. As a result, as of October 2022, it registered 55 political parties in total—21 national parties, 33 regional parties, and one front or coalition of five parties.

Therefore, the researcher attempted to make sample representatives by selecting five political parties, of which two were multi-ethnic and two ethnics, based on their organizational structure or age, with two existing prior to and two developing after the March 2018 Ethiopian political reform. Based on their impact on national politics and commitments to the democratic process, political parties are chosen. Therefore, to choose among various samples, factors such as their ethnic composition, geographic presence as regional and/or national, membership size, election-related experiences, incumbency tradition, ideological diversity, and MP membership are taken into consideration.

The study employed a comparative multiple-case study approach to reveal the issue of political party leadership selection processes. Five purposively selected political parties that broadly represent the political party landscape in Ethiopia were considered. These include the Prosperity Party (PP), Ethiopian Citizens' for Social Justice (EZEMA), National Movement of Amhara (NaMA), Oromo Federalist Congress (OFC), and Ethiopian Social Democratic Party (ESDP).

The research methodology used for the study was qualitative. Primary data were collected through key informant interviews, focus group discussions (FGDs). Secondary data were

collected from books, journal articles, legal documents, party documents including party by-laws. A comparative case design is used to compare and contrast leadership selection principles and practices in the five parties considered for this study. The collected data were interpreted using the thematic analysis method.

From October 2022 to April 2023, data were collected from eleven key informants from all five sample parties in Ethiopia's cities of Addis Ababa, Bahir Dar, and Hawassa. In addition to that, one focus group discussion with five participants from rank-and-file members of two sample parties, namely PP and EZEMA, was conducted in Debrezeit. Participants in the interview were purposefully selected with care to share their experiences with leadership selection processes. While FGD participants were selected to be members, they were supposed to share their experience as ordinary party members. As a result, one party chairman, two deputy party chairs, three party executive committee members, two democratic institution experts, one expert from the National Electoral Board of Ethiopia, and one judge from the Federal High Court who had experience adjudicating party conflicts arising from leadership selection-related cases were chosen as interviewees to gain firsthand knowledge of party politics. One political party scholar was also interviewed as a key informant.

An outstanding case study for investigating the leadership selection process is the Prosperity Party (formerly EPRDF). It has claimed to use inclusive selection practices for the leader and candidates ever since it underwent a rebranding on December 25, 2019. Its history of coalition building, the dichotomy between sister and ally parties, and eventual merger or rebranding into a single national party should all be examined from the perspective of leadership selection processes. It can also represent the former EPRDF periphery parties, which were once allies before becoming members of the merger in 2019. With more than 12.5 million members (nearly 10% of the country's population) and organizational structures ranging from cells to Congress, the party secures 410[1] national legislative seats out of 436 total seats that were contested in the last national election of June 2021. Ideologically, the PP claims to be pragmatic, as it adheres to both liberalism and social democracy.

The National Movement of Amhara (NAMA), an ethnic party, is used as a case study since it has a greater geographic presence than any other opposition party—aside from the ruling party—in the Amhara area. It is also used as a case because it quickly gained members in both the regional and federal parliaments after being founded in June 2018. The party also claims that it quickly expanded internal democracy by implementing a peaceful transfer of leadership posts from February 22 to 23, 2020. Due to the claimed attempt at the process of democratization, it is of interest to study its position as it won five federal and 13 regional council seats in the June 21, 2021, election.

Ethiopian Citizens for Social Justice (EZEMA), a national party founded in May 2019, aims to introduce novel party structures to the nation. It has changed its internal structure from a centralized fashion of having a division of roles among leaders (plural leadership structure) to a decentralized fashion away from dogmatic trends of presidentialization of the party in Ethiopia. Additionally, it introduced the '*shadow ministry'* or shadow cabinet[2] or shadow portfolio within the party hierarchy to scrutinize the policies and actions of the government. Therefore, it is

[1] https://www.thereporterethiopia.com/11688/ *accessed on March 27, 2024.*

[2] *Accordingly, the party's leader (merī in Amharic) will be the country's prime minister after winning the national election. Whereas the party's chairman (līk'emeniberi in Amharic) is responsible for party affairs.*

determined whether such activities would be implied by national democratization efforts on the basis of such factors.

OFC has a lengthy history of participation in elections and a large number of party members. It was previously known by the name of the Oromo National Congress (ONC), established in 1996. After the merger of the Oromo Federalist Democratic Movement (OFDM) and the Oromo People's Congress (OPC) in 2012, the Oromo Federalist Congress (OFC) was formed. Given the history of nonviolent, democratic resistance to the incumbent, it is thought that Oromo parties are entitled to a representative to represent their geographic presence among the sizable Oromo people. OFC claims to support the development of a democratic culture in the nation because it has participated in national elections for such a long time. That is partly why the study sampled it.

Another political party with a long history of opposition in Ethiopian politics is the Ethiopian Social Democratic Party (ESDP). This party's previous name, Ethiopian Social Democratic Federal Party, was used up until 2006. Later on in 2006, however, the name of the party was modified to ESDP while asserting its ideological ties to social democracy. The reason ESDP was chosen as a case is partly because, in 2013, ESDP, OFC, and three other parties joined together to form a front called the Ethiopian Federal Democratic Unity Forum (*Medrek* in *Amharic*). Consequently, such a front may be a useful case in point to study the leadership selection processes that have an impact on intra-party governance or intra-party democracy within that front—in this case, *Medrek.* Additionally, the social basis and bulk of the ESDP's members are thought to be from Southern Ethiopia, which would represent the numerous ethnic parties in the area. As a result, it might demonstrate or represent the political culture of internal party leadership processes among political parties in southern Ethiopia.

Discussion and Findings

Participatory nomination for leadership

In Ethiopia, the selection of political party leaders has been a crucial factor in the internal governance of political parties. More often than not disputed leadership selection leads to a split or the big loss of membership. For instance, the former ruling party the Ethiopian People's Revolutionary Democratic Front (EPRDF) was divided after replacing its former chairman with the current president of the ruling Prosperity Party (PP) Abiy Ahmed, in March 2018. Ethiopian Citizens for Social Justice, known by its Amharic acronym (EZEMA), lost some of the founding leaders, who competed for the leadership position with the incumbent chairman of the party in July, 2022. [3] [4] The National Movement of Amhara (NAMA) remained fractured to the extent of being unable to hold the meeting of the general assembly after replacing its former chairman, who served the party since its establishment from June 2018 until February 2020.

Conversely, the Oromo Federalist Congress (OFC), previously known as the Oromo National Congress (ONC), was established in 1996 and has never conducted formal party leadership elections. Instead, the founding chairman is affirmed as head of the party through acclamation. n. However, a splitter group rose up against his leadership in 2007, taking the case to court, where the court ruling handed over the ONC to the faction, prompting the incumbent to adopt a new

[3] *https://www.thereporterethiopia.com/34597/ accessed on 18/01/2024*

[4] https://addisstandard.com/the-interview-in-my-view-ezema-has-reached-its-limits-and-its-relevance-has-dwindled-habtamu-kitaba-former-executive-member-of-ezema/ accessed on 23/06/2023

name- OFC. [5] The ESDP (Ethiopian Social Democratic Party) did not experience a split or a significant decrease in the number of rank-and-file members as a result of leadership selection processes partly because it has never changed its sitting leader since its inception.

The influence of the rank-and-file members during leadership selection processes, according to a response from the ruling party, is limited to endorsing the proposal put up by the party leader. This respondent was discussing how intra-party democracy has merely been employed as lip service. Congresses are conducted every two and a half years during the EPRDF era and the PP adopts the same rule binding it not to exceed three years (see Article 16/2 of the PP's by-law). As the interviewee pointed out:

> *"When a party is in an incumbent position, it has the authority to decide how to allocate state resources. Consequently, the way to governmental power is probably through the party leadership post. Therefore, it can be anticipated that the democratic ideals of accountability, transparency, and competition will not guide the methods used to choose leaders. Hence Before the election room, intra-party congressional meetings to nominate candidates are set up. The moderators are completely aware of who will be identifying whom, and the nominees are aware of who will be naming them. As a result, they make the process appear democratic when it is not. For instance, 75 names will be put forth by the congressional participants to choose 65 members of the Central Committee. But before the election, practically everyone is known. If an undesirable candidate succeeds in this nomination procedure, the deception is still going on because they will be eliminated during the vote-counting phase. Vote counters will carefully weed out undesirable candidates in this case by lowering the vote. No one will protest the undemocratic procedure since they are aware of the manipulation and are afraid of reprisals."*[6]

Below the Central Committee members' selection process, the Prosperity Party's regional branch offices leadership selection processes are governed by a steering committee (*āsitebabarī komītē*) comprising of five individuals including the regional president, the head of the regional party branch office, the deputy regional president, the regional party political affairs head, and the head of the organization sector (*ye'āderejajeti zerifi ḫalafī*). These committee members conduct nominations for approval by party headquarters.[7] The respondent added that this kind of centralized decision-making process applies to all party structures, including zonal-level and district-level (Woreda)-level party branch offices. This means, leadership selection at all levels within the PP is heavily centralized, in spite of promises of internal party democracy, transparency, accountability, inclusivity, diversity.

As noted by EZEMA's founding member in an interview with the researcher, the party has reformed the traditional way of recruiting members centrally. Hence, every party's local unit has the duty of recruiting members, which has been done by the central office in most parties. More importantly, every member of the leadership in the party has to get the endorsement of its local unit to compete for leadership positions and/or public office. Ideally, this structure seems to be

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[5] *Interview with an Executive Member of OFC, November 2023, Addis Ababa, Ethiopia*

[6] *Interview with a former PP Central Committee Member, November 2022 Addis Ababa, Ethiopia*

[7] *Interview with PP official, May 2023, Bahir Dar, Ethiopia*

democratic. However, practically, individuals have a big say in whether to intervene in the activity for their sake. Hence, pitfalls regarding intra-party democracy are highly visible. [8]

On the role of existing party members to recruit new members, the party's high official revealed to the researchers that

> *"Every member has an annual plan to recruit five potential candidates for membership, who are then screened for leadership. This grand plan is conducted by the party's organizational affairs department and dispatched to districts. Hence, the grassroots district offices implement this plan, contextualizing their potential. Such plans of the party look good on paper, as the implementation cannot be evaluated from the perspective of the plan."* [9]

The intra-party leadership nomination of EZEMA for a congressional gathering conducted on July 2-3/2022 was a new beginning in the domestication of IPD. The process was even praised by the ruling party, which has never happened previously. A member of the ruling party's joint council of 15 political parties in Addis Ababa expressed gratitude for EZEMA's internal contestation throughout the leadership selection process. [10]

However, imperfections are visible when viewed from the inside of a real democratic culture. The leadership contest at EZEMA was likewise similar to what had previously occurred among political party leaders in other political parties. The incumbent group persuaded potential voters to vote for them by promising them a future appointment to the party's executive organ. To ensure this assignment, these leaders circulated a secret written document via WhatsApp group based on a task division to the level of manipulating the vote count. Section 4.4. of the secret document assigning one group member states:

> "*...approaching vote counters to let them know the list of our candidates for approval..." Prior to the implementation of the secret ballot method, groups recognized how to secure the nomination process by obtaining chances from those who leads the congressional meeting, as stated in section 1.2, "....creating a conducive channel for our voters to obtain a chance of nomination from the moderators…*"[11]

Concluded this way, EZEMA's intra-party leadership selection process resulted in the winners taking all kinds of political games in which the losers left empty-handed—from full pocket to empty wallet, pushing them back to losing either their previous positions or supporters. This marks elite capture and clientelism in the party's leadership selection processes. Accordingly, incumbent party leaders were selected through opaque processes dominated by elite factions, undermining democratization efforts by concentrating power and perpetuating patronage networks.

The majority of political parties in Ethiopia require the existing party leaders' approval before the candidate selection process may proceed. By no means does this guarantee party democracy within. A party that does not experience democracy within the party structure cannot dare to democratize the society it wishes to lead after assuming public office, according to an expert in NEBE who gave the researcher an interview:

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[8] *Interview with EZEMA's executive member, October 2022 Addis Ababa, Ethiopia*

[9] *Interview with EZEMA's executive member, October 2022 Addis Ababa, Ethiopia*

[10] *Interview with PP official, November 2022, Addis Ababa, Ethiopia*

[11] *Interview with a former executive member of EZEMA, October 2022 Addis Ababa, Ethiopia*

> *"In reality, though, no one wants to welcome an opponent by opening up the race for power or the process of choosing candidates to challenge him because politics is all about holding onto power. Besides, incumbent leaders do not want people in opposition to their authority whom they do not fully trust and know. As opposed to challenging, they instead encourage a nominee who is more devoted to them to work with them. Above all Ethiopian political parties are extremely oligarchical organizations run by a small number of unyielding leaders who are impotent to find solutions to the nation's urgent issues."*[12]

Participation in the early stages of political party leadership selection is crucial for government employees or businesspeople hoping to advance after elections or secure public positions. It depends on the capacity to forecast the outcome of an election, thus it's a dangerous investment. Leaders selected for congress in Ethiopian political parties do not have a clear requirement to be identified. As one interviewee from OFC told the researchers,

> "*When some members initiate criteria (like a long stay of membership, experience in party-related affairs, visible contribution to the party, and popularity to be used for nominating leaders), the top leadership feels disinterested in that. Those progressive members would not have a free space to access the larger members of society to propagate their initiation, as the political playing field is restrictive for accessing the grassroots*." [13]

In a number of parties in Ethiopia, the party's leader is the one who makes all the key decisions, including those relating to selecting leaders and formulating policies. For example, ESDP is more well-known if its leader is identified. The phrase "*his party*" is therefore frequently used to refer to the party. However, the executive member of the Ethiopian Social Democratic Party describes the leadership selection procedure as democratic. As a result, each district submits candidates for congressional approval. The 500-member congress that meets every three years makes decisions about leadership as well. But the party does not have a defined period during which a leader must step down; hence the position of chairman can be held indefinitely.[14]

Nonetheless, instead of a party focused on its members, the ESDP is a leader-centered party, with significant power being heavily concentrated in the hands of one individual. Leader-centered parties also involve democracy; however, this is an elitist interpretation of democracy, in which dependable leaders are given permission by election to act on behalf of the party as a whole. For instance, despite the party's term, the existing leader was permitted to hold the position for a longer period of time.

In talking about the role of party congresses in leadership selection within the party, an ESDP respondent stated that the party has a general assembly that convenes to select the central council (*ma'ikelawī mikiribēti*), which consists of 31 members and is responsible for selecting 11 executive members. These executives will consist of a chairperson, a deputy chairperson, a secretary, an accountant, the head of public relations affairs, the head of organizational affairs, a legal affairs officer, and three audit and inspection committee members.[15] In all of these systems,

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[12] *Interview with an expert in the NEBE, November 2022 Addis Ababa, Ethiopia*

[13] *Interview with OFC official, October 2022, Addis Ababa, Ethiopia*

[14] *Interview with an Executive Member of the ESDP, October 2022 Addis Ababa, Ethiopia*

[15] *Interview with an Executive Member of the ESDP, October 2022 Addis Ababa, Ethiopia*

rank-and-file members participate in leadership selection by nominating members of Congress who represent their constituencies.

Inclusiveness

Inclusiveness is the level of participation of rank-and-file members (selectorates) during party leadership selection processes (Kenig, 2009: 242).

Revealing how PP is highly centralized against the main criteria of IPD, an interviewee noted that:

> *"Decentralization, a stand-in for IPD, is seen as eroding within the PP as some high-level leaders, also known as committee of coordinators, screen, nominate, select, and terminate leadership. Other leadership members are unaware of this process and feel left out of the decision-making process as a result."* [16]

Leadership selection within the PP frequently lacked inclusion and failed to appropriately reflect different perspectives other than the interests of the ruling circle. As a result, there was dissociation between party leaders and the rest of the membership.[17]

Regarding the other political party, EZEMA, one of the founding members of the party asserts that the district offices or local units have the authority to nominate their representatives for election to public office and to attend party congress meetings. As a result, the center is no longer able to control how the local units operate on a daily basis. The respondent kept going, saying:

> *"Nominees for leadership positions are chosen based on certain standards. Prioritized criteria include someone's level of education, political experience, popularity, discipline, and level of consistent membership dues payment. Every member may register in his or her particular district because the process is open to anyone who wants to run for office. The district-level congress selects the top three candidates to make an announcement for the center after the registration deadline has passed. This process has been used for all intra-party leadership elections."*[18]

However, it was not possible to assert that the procedure of intra-party competition for key leadership positions ensured intra-party democracy because some defects went against the democratic principles of competition, accountability, and transparency.

> *"The nominees for the first position initially referred to as "party leader," started to argue that only their implementation tactics differed each other not on the party's fundamental policy pillars. Professor Berhanu and Mr. Andualem, the two main competitors, allocated four million and 400 thousand ETB, respectively, to win the election. However, there was some degree of labeling tag, cooptation and spread among participants."* [19]

Ensuring inclusive representation during leadership transitions has remained a challenge for NAMA. The transition of party chairperson from the former to the current leader in February 2020 has caused instability in the party structure due to power struggles among conflicting

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[16] *Interview with PP official, May 2023, Bahir Dar, Ethiopia*

[17] *Interview with a former PP official, November 2022 Addis Ababa, Ethiopia*

[18] *Interview with EZEMA's executive member, October 2022 Addis Ababa, Ethiopia*

[19] *Interview with EZEMA's executive member, October 2022 Addis Ababa, Ethiopia*

interests inside the party. Such a trend has been driven by provincialism within the party, resulting in a drop in membership. Since then, the party has been unable to have its general assembly meeting, as the NEBE warned.[20] It has also overlooked the essential function of an inclusive political party that stresses which involves its grassroots members in leadership selection.

OFC is another party that did not prioritize inclusivity in its leadership selection process. The party lacks clear guidelines and procedures for candidate nominations, vetting, and leadership elections, as many claimed after a well-known activist, Jawar Mohammed, took over as vice chairman on December 28, 2019, in preparation for the rescheduled national election of May 2020, which was postponed to May 2021 due to the COVID-19 pandemic. The individual had never been a registered member of the party before being selected deputy chairman shortly after entering Ethiopian party politics, returning his US citizenship, which he had held for several years. [21]

This case was controversial because of an allegation against the person who made a U-turn on party switching from OLF that he subscribed for long to OFC, owing to the fact that the former was unable to participate in the election while the latter was in a peaceful political contest, ready to compete in the national election with 206 local offices across the Oromia region, a formidable support base that the former lacks.[22]

Nonetheless, the party's high-ranking official stated that during Central Committee membership choices, the party attempts to balance the discrepancy between the 20 zones of the Oromia area that the party claims to represent. As a result, the respondent justifies the proportion of leaders depending on the population density of each zone. As he noted, such balances apply to all 17 executive members, where there are no three executive members from one zone except West Shoa. [23]

Above all, during their general assembly meetings, many Ethiopian political parties select leaders from among their membership. However,

> *Many of these participants in the congressional meetings are brought to meeting halls for reasons they are not aware of. Some of these people are told they will be paid an allowance in exchange for their participation in electoral processes, as they are supposed to be delegates from local party organizations. Local party organizations thus make arbitrary decisions about membership registration. The major reason for this is the decline in membership numbers to fulfill the required number of general assembly meeting participants: five percent of their founding members for regional parties (200) and 2.5 percent of their founding members for national parties (250).*[24]

[20] *Interview with NAMA's executive member, November 2022, Addis Ababa, Ethiopia*

[21] *https://www.youtube.com/watch?v=fy2UigshFkE accessed on 24/01/2024.*

[22] *https://www.youtube.com/watch?v=BGXifDL5t-c accessed on 22/01/2024.*

[23] *Interview with an Executive Member of OFC, November 2023, Addis Ababa, Ethiopia*

[24] *Interview with an expert in the NEBE, November 2022 Addis Ababa, Ethiopia*

Competition

Intra-party competition is viewed as an important component of intra-party democracy. The selection of leaders is a defining role of political parties and a critical feature of intra-party life, making it an important venue for intra-party competition (Marion, 2023:85).

An interviewee from the executive committee of the ruling party questioned the level of competitiveness during the EPRDF regime but asserted that things had improved under the PP. As a result, he pointed out that

> *"The competition was not democratic during the EPRDF era because nominations were made using unofficial networks. However, during the PP's period, nominations started to be made openly, and a secret poll was used to choose the leader for approval. Besides, individuals who were against the 2018 reform were the ones who attempted to sabotage the leadership selection procedure in March 2018. It was noticed that these cliques were warning upcoming leaders to take action. As a result of their violent tendencies, these factions started the civil war in November 2020*." [25]

In fact, competitiveness in the democratic sense has never evolved under the PP's leadership selection methods. During the most recent general assembly meeting, which approved the current president on March 11-13, 2022, no contender had been presented to contest him. This is due in part to the fact that pre-election preparations take place outside of the meeting hall, with those who will nominate a candidate being shortlisted. Only these pre-informed nominators will be given the opportunity to select leaders, with the convene serving only to endorse.[26]

Leadership selection in the EPRDF/PP is more significant than in other political parties in Ethiopia because it is the party in power and controls state resources and government authority. This has led to dissension, dispute, and division at all levels of the party, as was shown in the selection of the party chairman in March 2018. An interviewee who had been taking the initiative to carry out a pre-planned ruse to oust TPLF's position of power shared his experience with the researcher. He said this:

> *"Before the party puts him forward as a candidate, a potential party leader must first win over his circle. Small-circle networks and conspiracies are used to gain all necessary authority. According to EPRDF tradition, sister political parties must finish their work before presenting it to the general assembly for approval, not for election. As a result, the rank-and-file members have little power to voice opposition to the leaders' proposal in this matter."*[27]

The respondent stated that the TPLF had entire control of the trend prior to the historic intra-party election that removed it from important posts in the federal government's civil, security, and military branches. Pre-groupings and conspiracies were nonetheless organized in conjunction with the three-member parties of the front (Oromo Democratic Party-ODP, Amhara Democratic Party- ADP, Southern Ethiopian People's Democratic Movement- SEPDM) using

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[25] *Interview with PP official, March 2023, Hawassa, Ethiopia*

[26] *Interview with a former PP official, November 2022 Addis Ababa, Ethiopia*

[27] *Interview with a former PP official, November 2022 Addis Ababa, Ethiopia*

the pattern they have had for so long of being a rule setter. The four front member parties competed to win the chairperson and deputy roles in the course of the pre-election. [28]

EZEMA's high-level official expresses appreciation for their party's remarkable beginning of such intra-party competition and commends both nominees for their dedication to upholding intra-party democracy regardless of the competition's outcome. He also added that:

> "*The party has been preparing for the selection process for more than three months. The line-government wing of the party nominated five candidates for party leader, and the party nominated five additional candidates for party chairmanship. However, when just two candidates remained to compete for the position of party leader, it was extremely odd because both sides' followers were engaging in character assassination. The reaction applauded the loser for having written a congratulations letter for the winner because democracy is all about the process. It could also be remembered that three NEBE cameras and two specialists had verified the democratic nature of the entire procedure*."[29]

OFC, another political party, has been accused of not having a tenure system for its leader. Its current chairman, who has been involved in Ethiopian politics for the past five decades, became the party's chairman shortly after founding the ONC in 1996 (OFC since 2007). However, he justifies his chairmanship by pointing out that it does not give public resources, whereas the ruling party does.[30] Furthermore, he claims that Ethiopia's democratic defects have historically been brought about by young leaders, beginning with Emperor Haileselassie at the age of 20s, followed by Mengistu at 37, Meles at 37, and Abiy at 41. As a result, age is not a panacea.[31] He also revealed that, despite his wish to resign, his young party supporters wanted him to stay in office. He adds that many young people in their thirties are also part of the leadership. Most important of all, he explains his party position as a volunteer activity, with no tangible economic advantage beyond not covering petrol bills. That is all why OFC has no tenure system for political party leadership posts, as he argued. [32]

Responsiveness

The EPRDF's leadership selection process in March 2018 has had a significant impact on the political power structure of the nation. The SEPDM executive committee pushed for the resignation of former EPRDF chairman Hailemariam Desalegn (despite the former PM revealed that the initiation was his own [33]) as a means of ushering in reform, according to a former member of the EPRDF executive who is now a member of the PP [34] executive committee. Those who opposed the change, however, asserted that the new leadership wouldn't take power by trying to remove them.

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[28] *Interview with a former PP official, November 2022 Addis Ababa, Ethiopia*

[29] *Interview with EZEMA's executive member, October 2022 Addis Ababa, Ethiopia*

[30] *Interview with an Executive Member of OFC, November 2023, Addis Ababa, Ethiopia*

[31] *https://www.youtube.com/watch?v=REBURBlr8BY accessed on 23/01/2024.*

[32] *Interview with an Executive Member of OFC, November 2023, Addis Ababa, Ethiopia*

[33] *https://www.youtube.com/watch?v=FQF4hvvBc7o accessed on 15/09/2023 Accessed on 15/09/2023.*

[34] *Interview with PP official, March 2023, Hawassa, Ethiopia*

In the absence of rules governing access to candidacy, existing party elites may devise strategies to keep prospective candidates from competing in leadership elections by setting a high bar for the number of signatures needed from delegates to qualify for election.

The foundation of most political parties in Ethiopia is charismatic leadership, which comes with a lack of accountability to the party members. Election outcomes are frequently influenced by party leaders' personalities, or at least public perceptions, a process known as "*presidentialization*" or "*personalization*" of politics. In the short term, this might not be a problem because having a charismatic leader offers a party a distinctive "*brand*" that is simple to promote, and such a leader can define the path of the party. On the other hand, the absence of formal decision-making mechanisms frequently results in issues with policy definition and leadership transition over the long term. However, instead of being in office due to any observable abilities to win votes, the majority of party leaders have done so mostly because of their roles in the founding of their various parties, like the ESDP and OFC. Party founders typically remain in their organizations. Therefore, this kind of charismatic leadership represents one of the largest threats to internal democracy.

Locating Ethiopian parties' experience, the NEBE has accused the PP's organizational congress, which took place from March 11–13, 2022, of violating the organization's bylaws and democratic standards. According to a response from the executive committee member of PP, the alleged violations were:

> *"The replacement of the list of chosen CC members following the congress election, the announcement of inspection and regulation commission members rather than their election, and the expulsion of NEBE observers from the executive committee selection processes. The PP was compelled to have another congress in Hawassa in November 2022 because of these and other allegations. It was strange during the EPRDF era for membership size and population number to start being taken into account when choosing CC members and executive members*."[35]

Above all, leadership selection has been complicated by ethnic diversity in multi-ethnic parties (PP, EZEMA, and ESDP) and severe provincialism in ethnic-based parties (NaMA, OFC). The requirement for representation and balancing diverse ethnic or provincial interests when selecting leaders has been a source of contention within such parties. Such claims can sometimes lead to party splits.[36] The OFC and NAMA have been attempting to balance provincial power distribution during Central Committee member elections. The parties comprehend that compromising on such matters will result in party splits, as NAMA has experienced.[37]

In sum, among all three methods of leadership selection, which include party congresses, primary elections, and appointment processes, all of the sample parties (PP, EZEMA, NAMA, OFC, and ESDP) in this study apply the first method. In party congresses, a type of leadership selection mechanism, party members gather to elect leaders and make important decisions. While primary elections involve party members or the public directly voting for their preferred leaders of the party, which is uncommon to all Ethiopian parties, the ruling party utilizes appointments

[35] *Interview with PP official, March 2023, Hawassa, Ethiopia*

[36] *Interview with EZEMA's executive member, October 2022 Addis Ababa, Ethiopia*

[37] *Interview with an Executive Member of OFC, November 2023, Addis Ababa, Ethiopia*

to mid-level party leaders below the CC. For example, once executive and central committee members are elected at congressional meetings, the other party officials are appointed. [38]

Conclusions

This article emphasizes the role of political party leadership in shaping Ethiopian democratic attempts. It is argued that Ethiopian political parties' internal problems oftentimes stem from leadership selection processes having a negative impact on their contributions to the process of democratization in the country. With a spillover effect, an undemocratically selected leader has negative repercussions on the big democracy. In varying degrees, such incidents have been experienced in the sample political parties, and the study explored such implications for the country's democratic promises. Hence, a spillover effect, an undemocratically selected leader has negative repercussions on the big democracy. It was found that the sampled parties have all witnessed, in one way or another, compromising democratic leadership selection procedures that resulted in challenging the internal governance of parties.

In Ethiopia, the majority of party leadership positions have been held by the same individuals for a sizable amount of time. Since doing so would jeopardize the standing of present leaders, parties often do not cultivate future leaders. Since the same elite group controls nearly every sample party through co-optation, none of the party elites are motivated to change the status quo because they are content with their current positions. In this regard, a point of disagreement that could have an impact on intra-party democracy is the method used to choose candidates within political parties. However, an important IPD indicator is the degree of party members' involvement in the leadership selection process.

In all sampled political parties, the party leader controls the leadership selection process directly or indirectly. Despite party members have high expectations to have a role the level of party members' participation falls short of both. In addition to choosing nominees, the leadership has the authority to expel candidates from the party or vet re-election for the following election. Independent inspection and discipline committees for mitigating such violations on both sides are always the instruments of the incumbent leaders, as seen in the PP, NAMA, and EZEMA.

The article investigated how leader selection affects democratic legitimacy, representation, accountability, transparency, party unity, stability, inclusiveness, and diversity in the sample political parties, dominantly in EZEMA, NAMA, and PP.

Institutionalizing leadership selection processes and having a strong legal framework are vital for ensuring fair and transparent processes. Political parties that have well-defined rules and procedures for leadership selection, supported by legal mechanisms, are more likely to contribute to democratization, which is all lacking in the sample political parties.

In sum, Ethiopia's political landscape has a history of rule by authoritarianism and limited opportunities for democratic practice. The absence of a well-established democratic political culture presents a hurdle for political parties seeking to build internal party democracy during leadership selection processes.

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[38] *Interview with PP official, May 2023, Bahir Dar, Ethiopia*

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2 THEME 2: ECONOMY & DEVELOPMENT

2.1 How is the Multidimensional Poverty Changing in Ethiopia? An Empirical Examination Using Demographic and Health Survey Data, Admassu Tesso Huluka (PhD)

Associate Professor of Development Studies, Department of Development Management
College of Finance, Development and Management, Ethiopian Civil Service University

E-mail: admassutesso@gmail.com

Abstract

Utilizing the three most recent waves of Demographic and Health Surveys data from nationally representative samples, this study employs the Alkire and Foster methodology to gauge the Multidimensional Poverty Index changes in Ethiopia. The analysis looks at the multidimensional poverty levels among Ethiopian households based on a number of factors, including basic living standards, access to healthcare and education, and how these vary amongst subpopulation groups. After proper data transformation and rearranging, we have applied ordered probit model to assess the trends and determinants of multidimensional poverty at national and sub-population levels. Location of residence, the sex and literacy of the household head, family size, age of the household head, land area, and the region of residences are the main factors that impact multidimensional poverty. Although the percentage of households in multidimensional poverty has been rapidly declining, the vulnerability of households to poverty has been alarmingly increasing. We have also found that while multidimensional poverty remains predominantly rural, the vulnerability of urban households has been rapidly increasing over time. We have also empirically proved that the rich get richer and richer while the poor get poorer and poorer in Ethiopia. Our result also revealed that multidimensional poverty level varies greatly by regional states with the first and second hardest hit being the Somali and Afar

regional states. We have found that household size has a non-linear effect on multidimensional poverty. Finally, a number of practical and theoretical implications are drawn.

Keywords: *Demographic, Ordered probit, Multidimensional poverty, Trends, Vulnerability*

Introduction

National and international development programs have always reduced poverty to the top of their priority list (OPHI, 2022; UN, 2018). The 2030 Agenda for Sustainable Development comprises 17 goals that aim to improve societal well-being in the social, economic, and environmental domains with a primary focus on ensuring that no one is left behind (UN, 2018). Despite concerted efforts, the prevalence of multidimensional poverty is on the rise. Globally, an estimated 1.3 billion individuals are affected by multidimensional poverty, primarily concentrated in developing countries. Among these individuals, nearly one billion lack the means to procure fuel for cooking, maintain adequate hygiene standards, or secure decent housing. Furthermore, 568 million people lack access to safe drinking water (OPHI, 2022).

It is now harder to obtain housing, energy for cooking, food, drinking water, healthcare, housing, and high-quality education than it was to do so when the 2030 Agenda for Sustainable Development was first approved. People often find themselves at a disadvantage when it comes to opportunities and choices, which leaves them unable to fully benefit from economic growth, innovation, or globalization. Therefore, to effectively address multidimensional poverty, it is imperative to identify and strengthen vulnerable population groups be identified and strengthened (Fahad et al., 2023; Saddique et al., 2023).

Over the past three decades, the Ethiopian government has prioritized poverty reduction efforts, aligning with international initiatives (EEA, 2021). Initiated in 2002, the strategy known as Agricultural Development-led Industrialization (ADLI) has been central to this endeavor (Admassu & Beneberu, 2019). This strategy aims to catalyze and sustain progress across the broader economy, emphasizing rapid and continuous agricultural development. According to Admassu and Negatu (2016), ADLI operates on the premise that factors influencing agricultural performance are intertwined with broader economic and social initiatives. It posits that bolstering agricultural output through trade and technological advancements generates substantial demand for products from various industries, such as construction, fertilizer, transportation, and commercial services. The Ethiopian government has formulated and implemented several five-year national plans in line with ADLI, including the Sustainable Development and Poverty Reduction Program (SDPRP 2002-2005), the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP 2005/06–2009/10), the first Growth and Transformation Plan (GTP I 2010/11-2014/15), and the second Growth and Transformation Plan (GTP II 2016-2020).

Even though the GDP growth rate has somewhat increased, multidimensional poverty remains one of Ethiopia's biggest problems. Available evidence shows that Ethiopia has encountered a challenging combination of a fast-growing youth population, rising inflation, an unstable external environment including a volatile sub-region, and a generally higher level of risk, often on a large scale, endangering inclusive and long-term development progress. Consequently, overseeing the country's socioeconomic policy agenda has become more difficult and complex (UNDP, 2022b).

Ethiopia released its most comprehensive ten-year national plan, known as the prosperity plan, in 2020 after realizing the importance of addressing multidimensional poverty (FDRE, 2021). The prosperity plan intends to provide locals with better options and respectable living conditions while simultaneously addressing issues with governance, economics, social issues, and security.

The plan emphasizes defining poverty more broadly, taking into account not only financial indicators but also factors such as education, health, and other variables. However, understanding the trends and identifying the underlying root causes of multidimensional poverty is a critical first step toward effective poverty reduction (OPHI, 2022; UNDP, 2022c). Evaluating a plan's success in reducing poverty could be difficult if the trends and underlying causes of multidimensional poverty are not understood.

Two key findings emerge from a thorough analysis of empirical literature on poverty in Ethiopia. Firstly, the majority of multidimensional poverty studies that are nationally representative are quite old and are not likely to reflect the state of affairs as it is today (Seff & Jolliffe, 2016; Bizuneh, 2015; Brück & Workneh Kebede, 2021; Dercon & Gilligan, 2008). Second, the location-specific nature of recent multidimensional studies barely captures the multidimensional reality of poverty in other parts of the nation (Admasu et al., 2021; EEA, 2021; Mare et al., 2022; Teka et al., 2019). These studies are neither nationally representative nor provide insight into the current trends and causes of multidimensional poverty across different subpopulation groups because they were based on a very small sample size obtained through a cross-sectional study design. The trend and determinants of multidimensional poverty must, therefore, be evaluated at the national and regional levels, as well as the dichotomy between urban and rural areas and the sex composition of household heads using the most recent datasets.

To better understand how multidimensional poverty varies over time among various subpopulations, this study examines household-level data from nationally representative large-scale surveys of three rounds of Demographic and Health Survey (DHS) data (2011, 2016, and 2019). Policymakers at both the federal and regional levels need to understand the complex relationship between household demographic characteristics and poverty dynamics, and how these vary across different regions and living locations. This study's findings provide new insights into this relationship.

Three novel perspectives were incorporated into the multidimensional poverty research within this study. Firstly, it utilizes the Alkire and Foster (AF) technique to formulate a Multidimensional Poverty Index (MPI) at national, regional, and gender headship levels, focusing on non-monetary indicators such as living standards, health, and education. Secondly, the study employs an ordered probit model to elucidate the factors influencing multidimensional poverty at the household level across various MPI categories. Despite numerous studies on multidimensional poverty, none have endeavored to examine the determinants across these four categories of households in Ethiopia. Finally, the study offers insights into the determinants of multidimensional poverty at the national level.

The subsequent sections of this paper are structured as follows: Section 2 outlines the study's conceptual framework, supplemented by empirical evidence. Section 3 delineates the data and methodologies utilized, encompassing data sources, statistical descriptions, MPI construction, estimation procedures, and descriptive details of explanatory variables. Section 4 delves into discussions on trends and determinants of multidimensional poverty estimation, ordered probit regression findings, and empirical results. Finally, Section 5 provides concluding remarks and policy implications drawn from the findings.

Literature Review

Theoretical Framework

Amartya Sen's capability approach, introduced in 1984, defines poverty as a lack of the ability to lead a fulfilled life and sees development as the enhancement of capabilities. This approach

prioritizes human beings as the focal point of development rather than mere instruments for its achievement (Sen, 1984, 2000). Emphasizing human needs and freedoms, the approach provides a nuanced alternative to economic metrics like GDP per capita growth, widely embraced by the UNDP within human development contexts (Alkire & Santos, 2014; OPHI & UNDP, 2021).

Amartya Sen's framework underscores the complexity of reality and advocates for evaluations reflecting this complexity. It acknowledges the variation in individuals' ability to translate resources into meaningful functionings and recognizes the influence of circumstances on desires for unattainable goals. The approach highlights the importance of options, regardless of their utilization, and assesses well-being based on the capability to achieve a quality life. It argues for evaluating wealth based on the ability to lead valuable lives rather than material possessions or subjective well-being (Sen, 1984, 2000).

Empirical Literature Review

A number of country-specific studies have been conducted in Asia, Latin America, Sub-Saharan African countries, and Ethiopia. Hu et al. (2022) employ the multidimensional Poverty Index (MPI) approach to investigate the role of rural pension schemes in China. To create multidimensional poverty indicators, they considered the variables of quality of life, health, social inclusion, and subjective welfare. The findings reveal that rural pension scheme membership helped reduce poverty in the 45–59 age range across all parameters, particularly in terms of health, life, and subjective welfare. The pension successfully reduced poverty among the elderly (over 60 years). Furthermore, they discovered that as people age, pension income can effectively reduce the insured subgroup's multidimensional poverty experience.

Several studies have employed the Multidimensional Poverty Index (MPI) to analyze various aspects of poverty across different contexts. Dirksen and Alkire (2021) utilized four measurement strategies within MPI to explore multidimensional poverty among children. These strategies encompassed integrating children's deprivations into national poverty metrics, comparing children and adults using disaggregated indicators, examining gender and intra-household disparities, and developing an individual measure of multidimensional child poverty. Gallardo (2022) employed Bayesian network classifiers and Chile's socioeconomic survey data to measure vulnerability to multidimensional poverty, constructing an MPI consisting of 15 welfare indicators across education, health, employment, and housing dimensions.

Sulaimon (2022) utilized MPI to assess the determinants of multidimensional poverty in Nigeria, employing analysis of variance (ANOVA) and ordinary least squares (OLS) methodologies. However, the study faced criticism for using regression analysis without strictly metric variables. Brück and Kebede (2013) investigated consumption and multidimensional poverty dynamics in Ethiopia using the Ethiopian Rural Household Survey (ERHS), constructing MPI from health, education, and living standards indicators. Despite its findings on the long-term effects of multidimensional poverty, the study's small sample size and outdated reference years limit its policy relevance.

Seff and Jolliffe (2016) examined Multidimensional Poverty Dynamics in Ethiopia, using MPI alongside consumption-based approaches. They identified limitations due to small sample sizes in Ethiopian panel data, which hindered representative analyses. Additionally, the exclusion of key rural household assets in asset index calculations further constrained the study's insights. These studies collectively highlight the versatility and challenges of MPI applications in understanding and addressing multidimensional poverty across diverse settings, underscoring the need for robust methodologies and comprehensive data sources.

Bersisa and Heshmati (2021) conducted a comparative analysis of poverty in Ethiopia using traditional consumption expenditures and Multidimensional Poverty Index (MPI) based on Ethiopian Socioeconomic Survey (ESS) panel data from 2011-12 and 2013-14. The study found significant differences in poverty intensity, severity, and depth between the two metrics. While 36% of households were deemed poor by the unidimensional measure, 46% were identified as multidimensionally poor. Factors such as demographics, geography, and household head influenced household poverty, with poverty generally decreasing over time. Despite limitations in sample size and outdated data, the study offered valuable insights through subgroup analysis.

The Ethiopian Economics Association (EEA, 2021) investigated socioeconomic development in the Afar region using MPI, employing the Multidimensional Welfare Analytical Framework (MWAF) and Sustainable Livelihood Framework (SLF). Utilizing both primary and secondary data sources, the study constructed MPI with ten indicators covering health, education, and living standards. Results indicated that 96% of the region's population experienced multidimensional poverty, with higher rates in rural areas. While methodologically robust and offering subgroup analysis, the findings are region-specific and not generalizable to Ethiopia as a whole.

Gebrekidan et al. (2021) assessed determinants of multidimensional poverty among rural households in Tigray's Degua Tembien district using cross-sectional data from 420 households. They found that 60% of households were multidimensionally poor. However, the study's location specificity limits its generalizability.

Mare et al. (2022) employed Alkire and Foster's MPI technique to analyze multidimensional poverty among rural households in Burji and Konso areas of Southern Ethiopia. Using a modified MPI approach with four dimensions and 14 indicators, the study revealed high deprivation rates in cooking fuel, flooring, and drinking water. The MPI for the study area was 0.419, with 76.6% incidence and 54.7% intensity of multidimensional poverty in rural areas. However, the study's limited geographical coverage and small sample size restrict the applicability of its findings beyond the studied districts.

Summary of the literature review

A thorough review of empirical literature on poverty in Ethiopia yields two significant conclusions. Firstly, most nationally representative multidimensional poverty studies are outdated, failing to capture the current state of poverty (Seff & Jolliffe, 2016; Bizuneh, 2015; Brück & Workneh Kebede, 2021; Dercon & Gilligan, 2008). These studies also lack decomposition of poverty determinants across subpopulations, limiting their usefulness for national and regional policymakers. Secondly, existing multidimensional studies are often location-specific and may not accurately represent multidimensional poverty across the country (Admasu et al., 2021; EEA, 2021; Mare et al., 2022; Teka et al., 2019). Due to their reliance on small, cross-sectional samples, these studies cannot provide insights into trends and causes of multidimensional poverty across subpopulations or serve as nationally representative data sources. Consequently, there is a pressing need for comprehensive assessments of multidimensional poverty trends and determinants at national and regional levels, taking into account urban-rural disparities and the gender of household heads. Such analyses are essential for informing targeted policy interventions to address multidimensional poverty effectively.

Methodology

Analytical Model

The Multidimensional Poverty Index (MPI) is an internationally recognized measure employed in over 100 developing countries, aiming to operationalize Amartya Sen's capability approach to

poverty assessment (Alkire & Santos, 2014; UNDP, 2019; Sen, 1984, 2000). Alkire and Santos (2014) emphasized the reliability of Demographic and Health Surveys (DHS) databases for MPI calculations. The MPI, designed by Alkire and Foster (2011), features a robust assessment framework comprising four interconnected steps: indicator selection, cut-off value assignment, identification of the impoverished, and quantification of multidimensional poverty. The MPI captures the distribution of deprivations among the poor, ensuring sensitivity to deprivation intensity, without requiring adjustments for price disparities or inflation (Alkire et al., 2022; Alkire & Foster, 2011).

In this framework, markers and threshold values were carefully chosen, adhering to the methodology outlined by the Oxford Poverty and Human Development Initiative (OPHI) (UNDP & OPHI, 2019). Education, health, and living standards were considered as the three dimensions of well-being, each weighted equally to comprise the household deprivation index. While individual indicators within a dimension carry equal weight, modifications were made to the asset ownership dimension for contextual relevance. Unlike OPHI, which assesses deprivation based on ownership of specific assets, this study modified asset ownership indices to reflect deprivation across a broader spectrum of assets, tailored to the study area's context (Admasu et al., 2021; Alkire et al., 2022; Alkire & Foster, 2011; Gallardo, 2022; Oxford University, 2019).

The strength of the MPI lies in its direct measurement approach, allowing for straightforward comparisons across different regions and eliminating the need for adjustment for location-specific factors. By capturing the combined distribution of deprivations among the poor, the MPI provides a comprehensive understanding of multidimensional poverty, enhancing Sen's capability approach to poverty assessment. Through meticulous indicator selection and cut-off value assignment, the MPI framework ensures a robust and globally comparable measure of poverty, facilitating targeted policy interventions to alleviate poverty and enhance well-being in diverse contexts.

Table 3 MPI Dimensions, Indicators, and Deprivation Cutoffs

Domains	Indicators	Weights	Deprived if…
Health	Child Mortality	0.17	Any child has died in the family since the last five years (1=yes, 0= otherwise)
	Child nutrition	0.17	Household has at least one child underweight or stunted (1=yes, 0= otherwise)
Education	Child School Attendance	0.17	Any school-aged (child aged 7-15 years is not in school) (1=yes, 0= otherwise)
	Years of Schooling	0.17	No household member has completed six years of schooling (1=yes, 0= otherwise)
Living standards	Electricity	0.06	The household has no electricity (1=yes. 0= otherwise)
	Safe water	0.06	The household does not have access to safe drinking water (1=yes, 0= otherwise)
	Improved Sanitation	0.06	Household has no improved sanitation with WHO Standards (1=yes 0= otherwise)
	Standard Housing	0.06	Household has roof, floor & walls that it is of low quality (1=yes, 0= otherwise)
	Improved Cooking	0.06	The household cooks with dung & wood (1=yes, 0= otherwise)
	Assess ownership	0.06	The household does not own more than two among: radio, mobile telephone, animal-drawn cart, land usable for agriculture, livestock and bank account (1=yes, 0= otherwise)

The second step in evaluating MPI is to determine the weight of each dimension and indicator (UNDP and OPHI, 2019). Weights are the values allocated to the indicators and dimensions of MPI. Just as the dimensions, indications, and cut-offs are determined over time, the weights are also determined. Weights are essential to calculate each deprivation's relative value in the final measure (UNDP & OPHI, 2019).

The concept of cut-offs and weights can be expressed mathematically as follows: Let Y be a matrix whose entry yij indicates the indicator level j for individual i. The deprivation then occurs when yij falls strictly below the corresponding cutoff for indicator j and individual i, that is,

$$y_{ji} < z_j \text{.....(1)}$$

where zj denotes the deprivation cutoff of the j indicators (Alkire et al., 2022). In this research case, all of our indicators are identified as a dummy in which a score of 1 is given if deprived and 0 otherwise, as explained in Table2 above.

Different weights (wj) can be assigned to different indicators depending on their policy relevance(Alkire et al., 2022). The weights are represented in a 1 × I vector, where $w = (w1, w2, w3 \dots \dots wJ)\ with\ 0 < wj < 1$ and $\sum_{J=1}^{D} wj = 1$. Because we assume that each indicator is viewed as having equal importance, equal weights are assigned to the indicators. This implies that all the weights are equal to 1/D.

Next, all aspects of poverty are noted. The weighted deprivation scores for each indicator were added to determine the household deprivation score for each dimension. Individual i's poverty status in a given dimension is determined by first determining the deprivation threshold for each dimension and then calculating whether individual i's value in that dimension falls below the deprivation threshold. Accordingly, a household receives a score of 0 for all indicators if it is not deprived and a score of 1 for each indicator if it is (Alkire et al., 2021, 2022; Alkire & Foster, 2011; Firdausy & Budisetyowati, 2022; Gallardo, 2022).

A multidimensional deprivation score was then determined. To determine who is poor, one must add up all households' weighted deprivation scores (cj). The weighted deprivation score was determined as follows:

$$c_j = w_1 J_1 + w_2 J_2 + w_3 + J_3 + w_j J_j \text{.....(3)}$$

Finally, the row sum of **ci** represents the number of weighted deprivations that individual *i* faces. Following Alkire and Foster (2011), a household is given a deprivation status score of 1 if deprived in any indicator and a status score of 0 otherwise. To discriminate between poor and non-poor persons, different cut-off methods may be used: *union* approach, *intersection* approach, and *intermediate* (*dual-cut-off*) approach (Bersisa & Heshmati, 2021; UNDP & OPHI, 2019).

The intersection approach states that a person is considered poor only if they simultaneously fail in all indicators, in which case they receive a score of 1; otherwise, they receive a score of 0. The drawback of this approach is that it mainly targets the poorest of the poor, leading to low incidence rates. The likelihood of being impoverished in every indicator simultaneously decreases with the number of indicators, making it more likely that the prevalence of multidimensional poverty will be underreported (UNDP & OPHI, 2019). However, according to the union approach, people are classified as multidimensionally poor if they endure at least one measurable deprivation. The limitation of this approach is that it identifies a larger number of people as poor and, hence, is more likely to overestimate the prevalence of multidimensional poverty (UNDP & OPHI, 2019).

A realistic cutoff point was used in the intermediate (dual-cutoff) approach. This approach holds that the value of the dual cutoff is unaffected by an increase in the accomplishment level yij of a non-poor person. It is "deprivation centered" in the sense that the identification function's value is unaffected by an increase in any non-deprived achievement, yij ≥ zj. In other words, alterations in non-deprived achievement levels have no bearing on an individual's poverty status (Bersisa & Heshmati, 2021; UNDP & OPHI, 2019). It is also worth noting that in determining who is poor or not poor, the unidimensional poverty evaluation permits a higher degree of non-deprived achievement to compensate for other dimensional deprivations, which is not the case in MPI using the dual-cutoff approach(UNDP & OPHI, 2019). Thus, we used the dual-cut-off approach in this research, consistent with (OPHI and UNDP (2021), UNDP and OPHI (2019), and UNDP (2021). Accordingly, any household and everyone in it is termed multidimensionally poor if the deprivation score is 0.3333 or greater, and non-poor otherwise.

Measuring multidimensional poverty comes next after identifying the poor. We employed the most basic multidimensional headcount ratio, which is defined as the achievement level (Bersisa & Heshmati, 2021; UNDP & OPHI, 2019), in accordance with Alkire and Foster (2011):

$$H = \frac{\sum_{i=1}^{N} pk(y_j, Z)}{N} = q / N \quad \text{.....(4)}$$

where q is the number of poor individuals identified with the identification function defined in Equation (3), N is the population size, and H is the percentage of multidimensionally poor people(Alkire et al., 2022; Alkire & Foster, 2011; Dirksen & Alkire, 2021; Hu et al., 2022; Nguyen et al., 2021).

The 'H' in equation 4 above, however, lacks policy relevance despite its ease of calculation because it does not increase when a poor person experiences deprivation in a new dimension (Alkire & Foster, 2011). Regardless of how many additional dimensions a poor person may be denied, H remains constant. Therefore, there is a need for an index that increases in proportion to the number of deprivations that the poor report. Let's define "A" as the ratio (Alkire et al., 2022; Alkire & Foster, 2011) of the number of deprivations experienced by the impoverished individuals to the total number of poor individuals.

$$A = \sum_{i=1}^{n} \frac{c_j(K)}{\left(\sum_{i=1}^{n} c_j(K) d\right)} \quad \text{.....(5)}$$

where d is the total dimension measuring poverty and n is the number of individuals. Here, the denominator represents the total number of impoverished people, while the numerator represents the number of deprivations faced by each individual person. Lastly, the product of the incidence (H) and breadth (A) given in Equations 4 and 5 yields the multidimensional poverty index as follows:

$$MPI = M_o = H * A = \sum_{i=1}^{n} \frac{c_j(k)}{(nd)} \quad \text{.....(6)}$$

The multidimensional poverty index (Mo) can be computed using binary, ordinal, or real-valued data, and it has desirable characteristics that increase with the number of deprivations reported by the poor people (Alkire et al., 2022). In this study, most of our data were binary and hence used an ordered probit model.

Model specification

First, the multidimensional poverty index was converted into an ordinal measure with four categories (UNDP & OPHI, 2019). While any household with a deprivation score of less than 0.200 is considered non-multidimensionally poor, anyone with a deprivation score of 0.200 or higher but less than 0.333 is *vulnerable* to multidimensional poverty. Anyone with a deprivation score of 0.333 or higher but less than 0.500 was considered multidimensionally poor. People in *extreme* multidimensional poverty have deprivation scores of ≥ 0.500.

Ordered probit or logit models are the best options for analyzing such ordered discrete variables (Greene, 2018). The ordinal nature of the dependent variable would be overlooked by multinomial logit or probit models; hence, such models are not considered here. Unlike the logit model, the probit model assumes a normal distribution for the error term (Greene, 2018). However, in practice, the logistic and normal distributions provide similar results. The most frequently used model for an ordered response is the ordered probit. Thus, this study employs an ordered probit model.

Accordingly, we specify the probit model as follows: Assume that the unobservable random variable yi* is dependent while treating yi as the observed variable, as a categorical variable with 'j' response categories, and also as a proxy for the unobserved latent random yi*. It then follows (Greene, 2018):

$$y_i^* = x'_i\beta + \varepsilon_i, i = 1,2,3....N.....(7)$$

Y*i is the hypothesized predicator of household multidimensional poverty (Omultipoor) with the four categories defined above, βs is a vector of parameters to be estimated, and ε_i is an error term that is assumed to be normally distributed. The values for the observed variable yi are then assumed to be related to the latent variable yi* in the following manner (Greene, 2018):

$$y = j, if\ \mu_j - 1 < y^*_i \leq \mu_j,\ j = 1,2,3,,,,\ j.....(8)$$

where μ refers to the unknown threshold parameters, $u-1 = -\infty, u0 = 0, uj = \infty$, and the estimated cutoff points, and μ follows the order $\mu -1 < \mu_0 < \mu_1 ..... < \mu_j$. The probabilities that a given household and individuals within it fall within the response category of j are as follows:

$$\begin{aligned} p_{ij} &= p(y_i = j) = p(u_j - 1 < y^*_i \leq u_j) \\ &= F(u_j - x'_i\beta) - F(u_{j-1} - x'_i\beta) \end{aligned} \quad (9)$$

where F'(·) is the standard normal cumulative distribution function, and *j* is the response categories, in this case 1, 2, 3, and 4 because there are four categories for multidimensional poverty categories, as explained above.

The effects of changes in explanatory factors on cell probabilities were measured using marginal effects. There are j sets of marginal effects in the ordered probit model with j choices. As a result, the marginal effect of a regressor increase on the chance of an individual falling into the j response category is given by (Admassu & Beneberu, 2019):

$$\begin{aligned} \frac{\partial p_{ij}}{\partial x_{ri}} &= \{F'(u_{j-1} - x'_i\beta) - F'(u_j - x'_i\beta)\} \\ &= \{F'(u_{j-1} - x'_i) - F'(u_j - x'_i)\}\beta \end{aligned} \quad (10)$$

Where F (·) is the standard normal density function. Following Huluka and Wondimagegnhu (2019), the final estimated model is specified as

$$\text{Omultipoor}_{ij} = \alpha + \beta W_i + \gamma X_i + \delta Y_i + \lambda Z_i + \varepsilon_i \quad (11)$$

where *Omultipoor* is multidimensional poverty; subscript *i* represents a household and any individual within it; subscript j (j = 1, 2, 3, and 4) represents the multidimensional poverty categorization of dependent variables indicating (1) whether a household falls within the non-poor, (2) whether a household falls within the vulnerable to multidimensional poverty category, (3) whether a household is within the multidimensionally poor category, and (4) whether a household is within the extreme multidimensional poverty category; W, X, y, and Z are, respectively, individual characteristics, household head characteristics, location of residence (rural versus urban), and dummies for regional states; α, β, γ, δ, λ are parameters to be estimated and $\varepsilon \approx$NID(0, 1). Finally, we used the maximum likelihood technique to estimate the parameter values.

Data sources and collection techniques

Alkire and Santos (2014) say that the DHS databases are trustworthy. This study looks at data from the Ethiopian Demographic and Health Surveys (EDHS) in 2011, 2016, and 2019. These surveys were funded by USAID, UNICEF, the World Bank, and the United States Agency for International Development. They looked at information from 75,665, 73,901, and 40,133 people in each of those years. This helps us understand how poverty changes over time. But, the problem is that each time they did the survey, they asked different people. This makes it hard to see if poverty is getting better or worse over time for everyone.

Results and Discussions

Multidimensional Poverty Trends

Our results show that multidimensional poverty continued to decline from a peak of nearly 76 percent in 2011 to 67 percent and 62.7 percent in 2016 and 2019, respectively. Table 2 presents the multidimensional poverty status over time.

Table 4. Multidimensional poverty status over time

Multi-dimensional poverty measures	Survey years (numbers in brackets are percentages)			
	2011	2016	2019	Total
Non- multidimensionally poor	17,114 (24.1)	22,693 (32.95)	14,716 (37.3)	54,523 (30.40)
Multidimensionally poor	53,906 (75.9)	46,181 (67.05)	24,740 (62.7)	124,827 (69.60)
Total	71,020 (100)	68,874 (100)	39,456 (100)	179,350 (100)
Population share	0.393	0.392	0.215	100
Headcount ratio (H)	0.809	0.731	0.647	0.744[39]
Intensity of Poverty (A)	0.585	0.561	0.53	0.565
Adjusted headcount (H*A = MPI=M0)	0.473	0.41	0.343	0.42

[39] *The values of H, A & Mo in the last column shows the overall value of the indices in the population, which is given by the weighted sum of the indices in the three subgroups with weights given by the related population. Example, the last column of head count ratio (H) which is 0.744 is calculated as [(0.393*0.809)+(0.392*0.731)+(0.647*0.215= 0.744].*

Relative contribution to incidence (H)	0.428	0.385	0.187	100
Relative contribution to adjusted headcount (M0)	0.443	0.382	0.175	100

This result is also in line with previous studies that used various datasets and were conducted by Bersisa and Heshmati (2021), Brück and Workneh Kebede (2021), Dercon and Gilligan (2008), and Seff and Jolliffe (2016). It is disturbing that a sizable portion of the population is imprisoned in multidimensional poverty.

MPI is a welfare measure that accounts for both the severity and prevalence of poverty. The percentage of people who are multidimensionally poor is shown by the poverty prevalence, which is denoted by (H). From its peak of approximately 81 percent in 2011 to 73.1 percent in 2016 and finally to 64.7 percent in the most recent DHS dataset, this percentage has been falling quickly. This suggests a weighted average of 74.4 percent over the study period. Although the trend indicates that the prevalence of poverty has been decreasing over time, a sizable portion of the population still lives in multidimensional poverty. Other studies (Bersisa & Heshmati, 2021; Brück & Workneh Kebede, 2021; Dercon & Gilligan, 2008; OPHI & UNDP, 2021; Seff & Jolliffe, 2016) also support this conclusion. The fact that each period's relative contributions to the incidence and severity of poverty also declined sharply confirms the trend of declining poverty.

The average multidimensional poor person who lacks weighted indicators is depicted by the intensity of poverty (A) (OPHI, 2022). It shows the percentage of weighted deprivations that the impoverished in a community endure relative to the total number of deprivations that the community may encounter. Our results show that the severity of poverty is declining but at a very slow rate compared to its prevalence. The average multidimensionally poor person was deficient in 58.5 percent of the weighted indicators in 2011; this percentage decreased only slightly to 56.1 percent in 2016 and 53 percent in 2019, indicating a weighted average of 56.5 percent.

A weighted average of 42% is implied by the MPI value, which is the product of two measures (the prevalence and intensity of multidimensional poverty), and decreased from 47.3 percent in 2011 to 41 percent in 2016 and 34.3 percent in 2019. The multidimensional poverty index (MPI) is the percentage of the population that has been adjusted for the degree of deprivation experienced. The United Nations Development Programme and Oxford Poverty and Human Development report, which indicate 49.1%, 43.6 percent, and 36.7 percent in 2011, 2016, and 2019, respectively, are comparable to this downward trend (OPHI and UNDP, 2021). The discrepancy in the metrics used to calculate asset ownership may be the primary cause of this moderate difference.

Table 2 shows that the relative contributions of each period to MPI were 44.3 percent, 38.2 percent, and 17.5 percent, respectively, despite the fact that the weighted shares of the population in the datasets of 2011, 2016, and 2019 were 39.3 percent, 39.2 percent, and 21.5 percent, respectively. This unequivocally demonstrates that 2011 contributed five percentage points more than the population share of that year. In comparison, 2019's contribution fell short of its population share by almost four percentage points. This is compelling evidence that more people leave poverty than enter it, confirming the amazing progress made in the multifaceted fight against poverty.

Trends of Multidimensional Poverty over Time

As explained in the methodology section, the multidimensional poverty index was converted into an ordinal measure with four categories: non-poor, vulnerable, poor, and destitute. An ex ante process that considers prospective outcomes leads to vulnerability (Hernández & Zuluaga, 2022).

In other words, vulnerability is the ability to predict a future state of affairs based on current knowledge characterizing exposure to poverty, as opposed to poverty itself. On the other hand, poverty is an aftereffect of households taking on different risks and engaging in activities associated with their resources or income. Different intervention strategies may be needed for households vulnerable to multidimensional poverty compared with those already experiencing multidimensional poverty. Similarly, households with varying levels of multidimensional poverty may require disparate policy intervention. Therefore, evaluating households' vulnerability to multifaceted poverty and their different poverty levels is essential. Table 3 presents the patterns of poverty and household vulnerability over time.

Table 5. Trends of Multidimensional Poverty over time

MPI Status	Survey Years					
	2011		2016		2019	
	Number	Percent	Number	Percent	Number	Percent
Non-poor	8,184	10.8	10,754	14.6	6,773	16.9
Vulnerable	8,930	11.8	11,939	16.2	7,943	19.8
Poor	15,006	19.8	16,824	22.8	10,333	25.8
Destitute	43,535	57.5	34,384	46.4	15,084	37.6
Total	75,655	100	73,901	100	40,133	100

Interestingly, the proportion of non-multidimensional poor households increased over time from a minimum level of nearly 11 percent during 2011 to nearly 17 percent during the latest survey round. Regretfully, the percentage of households vulnerable to multidimensional poverty has been rising at almost the same rate as multidimensional poverty decline. This could suggest that unless targeted policy measures aimed at raising their assessment levels are implemented, households that have narrowly escaped multidimensional poverty are more likely to relapse into poverty. Comparably, the percentage of poor households has increased, although the percentage of destitute households (extreme multidimensional poverty) has significantly decreased. This finding is also consistent with the previous literature (Firdausy & Budisetyowati, 2022)

Characteristics and Trends of Multidimensional Poverty

The disaggregated data analysis shows that the vulnerability patterns and level of multidimensional poverty vary depending on the gender of the household heads, wealth groups, and whether households are located in urban or rural areas. Details are presented in Table 4.

Table 6. Characteristics of poverty by the socioeconomic characteristics of the households

Individual Characteristics	Non-poor (%)			Vulnerable (%)			Poor (%)			Destitute (%)		
	2011	2016	2019	2011	2016	2019	2011	2016	2019	2011	2016	2019
sex of headship												
Male	6.2	8.3	11.3	10.5	16.4	22.9	21.6	24.6	27.9	61.6	50.7	37.9
Female	9.0	12.4	15.3	15.1	17.8	21.7	21.8	25.4	28.5	54.1	44.5	34.5
Total	6.8	9.1	12.0	11.4	16.7	22.7	21.6	24.8	28.0	60.2	49.5	37.3
Pearson chi2(3) = 938.0754 Pr = 0.000												
Urban	33.9	47.7	34.1	25.9	20.7	25.7	23.0	19.2	21.7	17.3	12.4	18.6
Rural	0.8	2.0	3.9	8.2	15.9	21.6	21.3	25.8	30.3	69.6	56.3	44.2
Total	6.8	9.1	12.0	11.4	16.7	22.7	21.6	24.8	28.0	60.2	49.5	37.3
Pearson chi2(3) = 6.8e+04 Pr = 0.000												
5 quintiles of wealth												
poorest	0.0	0.1	0.0	2.2	3.3	6.0	7.2	14.2	21.3	90.6	82.4	72.7

poor	0.0	0.0	0.2	3.9	7.0	13.3	16.5	18.7	28.9	79.6	74.2	57.6
moderate	0.1	0.3	1.2	10.3	14.8	24.9	27.4	27.1	36.5	62.1	57.9	37.4
rich	5.0	7.2	12.1	22.4	26.8	35.1	35.8	32.6	31.4	36.8	33.5	21.4
richest	46.9	60.2	60.9	25.6	17.8	21.3	16.0	13.3	11.4	11.5	8.7	6.4
Total	6.8	9.1	12.0	11.4	16.7	22.7	21.6	24.8	28.0	60.2	49.5	37.3

Pearson chi2(12) = 1.1e+05 Pr = 0.000

Tigray	10.2	12.0	21.9	12.4	19.8	24.3	22.0	30.1	22.9	55.4	38.1	31.0
Afar	5.9	6.1	6.0	8.0	8.2	9.4	13.8	17.6	25.0	72.3	68.1	59.6
Amhara	4.7	6.2	9.3	11.7	18.5	24.6	22.7	27.8	33.0	60.9	47.4	33.1
Oromia	4.5	7.2	10.2	11.0	12.9	22.9	21.7	23.8	27.7	62.8	56.0	39.2
Somali	4.1	3.4	2.4	6.3	9.2	8.5	15.6	19.9	23.5	74.0	67.5	65.6
Benishangul-Gu	3.0	4.9	10.3	11.0	20.0	27.4	23.1	26.5	30.9	62.9	48.6	31.4
SNNPR	4.2	4.9	7.1	9.9	22.1	26.9	22.2	25.8	29.6	63.8	47.3	36.5
Gambela	7.9	14.2	14.5	21.2	27.7	32.5	27.5	29.9	30.7	43.5	28.2	22.4
Harari	26.9	29.5	40.2	18.5	13.7	12.6	17.6	21.2	22.5	37.0	35.5	24.6
Addis Ababa	51.7	69.4	74.3	22.0	14.8	10.3	15.6	7.9	11.0	10.7	7.9	4.4
Dire dawa	30.6	36.4	50.4	16.1	14.0	14.8	14.8	15.2	13.7	38.5	34.5	21.2
Total	6.8	9.1	12.0	11.4	16.7	22.7	21.6	24.8	28.0	60.2	49.5	37.3

Pearson chi2(30) = 5.5e+04 Pr = 0.000

Multidimensional poverty variation by sex of household head

The results show clearly discernible patterns across all household characteristics, and the differences are all statistically significant. While the proportion of non-poor and vulnerable people has been increasing over time, the proportion of destitute people has been rapidly declining across all household characteristics. For instance, the percentage of non-poor people has increased from nearly 7 percent in 2011 to 12 percent in 2019, indicating a 76 percent improvement (70 percent and 82 percent improvements for female-headed and male-headed households, respectively). During the same period, people in vulnerable groups increased from barely 11 percent in 2011 to nearly 23%, thereby implying an increase in vulnerability by 99 percent. We also find that more male-headed households are becoming vulnerable (118 percent) than female-headed households (44 percent). This finding contradicts the claims of Hernández and Zuluaga (2022), who concluded that female-headed households were more vulnerable than male-headed households in both rural and urban areas. We also found that the percentage of multidimensionally poor people increased from its lowest rate of nearly 22 percent during 2011 to its peak of 28 percent during 2019, implying an increase of 30 percent during the period with nearly equal percentages of male-headed and female-headed households.

Multidimensional poverty variation by rural and urban areas

As expected, the multidimensional poverty rate and its characteristics vary significantly by location. In 2011, only 0.8 percent of rural people were non-multidimensionally poor. However, this percentage increased to nearly 4 percent in 2019, implying an improvement of more than 300 percentage points during the study period. This was an astonishing improvement. In contrast, the percentage of non-multidimensionally poor urban areas remained almost unchanged during the study period. This finding can be interpreted in two ways. The first possible interpretation is that an increasing number of rural people were uplifted from poverty during the time compared to urban dwellers. The second possible interpretation could be that more multidimensionally

poor people migrate from rural to urban areas either to search for better jobs or because of a lack of arable land. Given the fact that our data show increasing deprivation in arable land in rural areas, it is highly likely that rural multidimensional poverty has been declining, mainly because relatively poor people are migrating to urban areas. The other finding supporting this line of argument is that even those rural people who have access to land and livestock are more likely to be multidimensionally poorer than others, as explained in one of our articles (in press).

It is important to note that 26 percent of urban households were vulnerable to multidimensional poverty compared to just 22 percent in rural areas during 2019. Thus, there are more statistically significant numbers of households in urban areas than in rural areas that do not currently live in multidimensional poverty but are at risk of doing so in the future unless preventive measures are taken. This finding contradicts the claims of Hernández and Zuluaga (2022), who conclude that rural households are more vulnerable to multidimensional poverty than urban households. We also found that there is a statistically significant number of rural households living in multidimensional poverty (44.2%) compared to nearly 19 percent in urban areas, which is consistent with (Hernández & Zuluaga, 2022) report. The policy implication is that it is necessary to implement poverty alleviation strategies that specifically target deprived 44% of the population in rural areas. On the other hand, policies aimed at preventing multidimensional poverty are necessary for urban households (26%) that are vulnerable to multidimensional poverty.

The percentage of destitute (extreme) poverty has rapidly declined across all household characteristics. Overall, this percentage declined from its peak of 60 percent in 2011 to its lowest of nearly 37 percent in 2019, evidencing 38 percentage point improvements over the same period of time with nearly equal improvement for both male-headed and female-headed households.

Multidimensional poverty variation by wealth status of households

There are alarming findings in terms of poverty characteristics across wealth quintiles. While there seems to be no improvement in the lowest wealth quintiles (poorest) in terms of escaping poverty, the vulnerability and multidimensional poverty of these groups have increased significantly over time. The vulnerability of the poorest groups increased from nearly 2.2 percent in 2011 to 6 percent in 2019, indicating a 173 percent increase in vulnerability. Similarly, the vulnerability of the poor group increased from nearly 4 percent in 2011 to 13 percent during the same period. In contrast, nearly 47 percent of the richest people were non-multidimensionally poor in 2011, and this rate rose to nearly 61 percent in 2019, with a 30-percentage improvement during the same period. Similarly, 25 percent of this wealth group was vulnerable to multidimensional poverty, which sharply declined to just 21 percent, demonstrating a 17-percentage improvement during the same period.

Nearly 91 percent of the poorest wealth group was destitute during 2011, and this rate moderately declined to nearly 73 percent during 2019, showing a nearly 20 percentage improvement during the period. In contrast, the rate dropped from 12 percent to 6 percent for the richest wealth group (44 percent improvement) and from 62 percent to 37 percent for the moderately poor groups (40 percent improvement) during the same period. These further clearly demonstrate that the poor are getting poorer, while the rich are getting richer in Ethiopia. This may be due in part to Ethiopia's lack of broad-based economic development and, in part, to the country's raging inflation, which hurts relatively poor people's economic bases. This claim is

evidenced by the fact that the average GDP contributions of the agriculture, industry, and service sectors during the last ten years were 38.8 percent, 22.4%, and 39.1%, respectively, while employment in each sector was 72.5 percent, 7.5%, and 20%, respectively (FDRE, 2021). This clearly indicates that growth in the Ethiopian economy mainly comes from the service sector, where disproportionately fewer people are employed, compared to the agriculture sector.

Agriculture plays a crucial role in reducing multidimensional poverty, especially in countries like Ethiopia. According to the World Bank (2008), GDP growth originating from agriculture is twice as effective in reducing poverty compared to growth from other sectors. This effect is more pronounced in agriculture-based economies like Ethiopia. The increased income in agriculture stimulates economic activity in other sectors, leading to overall poverty reduction. The Ethiopian government recognized this and introduced the agricultural development-led industrialization (ADLI) strategy in 2002, followed by various economic policies. However, recent economic growth trends in Ethiopia diverge from the ADLI strategy implemented over the past three decades (World Bank, 2008).

Multidimensional poverty variation by the Regional States

Our results show that exiting poverty is region-specific. The Benishangul-gumuz, Oromia, and Tigray regional states are the three regions where the majority of people escape multidimensional poverty during the three rounds of survey periods. In contrast, there seems to be no improvement in terms of non-poor households in the Afar and Somali states during this period. This is consistent with prior understanding that multidimensional poverty is location-specific (Alkire et al., 2017; Alkire & Santos, 2014; Ambel et al., 2015; Brück & Workneh Kebede, 2021; UNDP & OPHI, 2019).

Vulnerability to multidimensional poverty is also region-specific. SNNPR, Benishangul-gumuz, and Amhara regional states were identified with increasing vulnerability trends. Vulnerability increased from approximately 10 percent in 2011 to 27 percent in 2019, with an increased vulnerability of 172 percent during the SNNPR period. Similarly, the rate increased from 11 percent to 27.4 percent (149 percent increase) in Benishangul-gumuz and from 11.7 percent to 24.6 percent (110 percent increase) in the Amhara regional state between periods. In contrast, vulnerability to multidimensional poverty decreased from its peak of 22 percent to 10.3 percent (53 percent improvement) in the Addis Ababa city administration and from 18.5 percent to just 12.6%, showing a 32 percent improvement in Harari regional states.

Similarly, there seems to be wide variation in multidimensional poverty levels by region. Afar (81 percent), Somali (51 percent), and Amhara (45 percent) regional states are among the top three regions where the percentage of households in multidimensional poverty has been increasing over time, while Addis Ababa (29 percent) and Dire Dawa (7 percent) are areas where the rate has been rapidly declining.

In terms of regional data disaggregation, extreme multidimensional poverty has been declining across all regional states with varying percentages. Benishangul-gumuz (50 percent), Gambela (49 percent), Amhara (46 percent), and Tigray (44 percent) are the four regional states where extreme multidimensional poverty rapidly fell from 2011 to 2019. In contrast, Somali (11 percent decline) and Afar (18 percent decline) are the two regional states where extreme multidimensional poverty has been slowly dropping. These two regional states are areas where the percentage of extreme multidimensional poverty remains the worst. In the Somali regional state, extreme multidimensional poverty dropped slightly from its peak of 74 percent in 2011 to 65.6 percent in 2019. Similarly, the rate dropped from a peak of 72.3 percent to 59.6 percent

during the same period in the Afar region. This implies that the Somali and Afar regional states are hard-hit by chronic poverty compared to other regions.

Determinants of Multidimensional Poverty

Table 5 presents the determinants of multidimensional poverty in Ethiopia. The results show that multidimensional poverty is influenced mainly by the location of residence, sex of the household head, literacy of the individual, family size, age of the household head, land size, and region of residence. However, because the coefficients of the ordered probit fail to represent the magnitude of the explanatory variables' effects on the dependent variable (Greene, 2018), we discuss the marginal effects. As a result, marginal effects were interpreted based on signs and categories. This means that an estimated positive coefficient for a category indicates that increasing the variable increases the likelihood of being in that category. On the other hand, a negative coefficient indicates a lower likelihood of falling into that category.

Table 7. Determinants of Multidimensional Poverty in Ethiopia

Number of obs = 109,255
LR chi2(24) = 17823.22
Prob > chi2 = 0.0000
Log likelihood = -109429.7

Variables[40]	Coef.	se[a]	z	P>|z|	[95% Conf. Interval]	
Lives in a rural area	1.044***	0.015	69.350	0.000	1.015	1.074
Can read and write	-0.562***	0.007	-77.410	0.000	-0.576	-0.548
Female headed household	0.076***	0.010	7.730	0.000	0.056	0.095
Age of HH	-0.025***	0.001	-17.200	0.000	-0.028	-0.023
Age of HH squared	0.000***	0.000	10.190	0.000	0.000	0.000
Household size	0.087***	0.006	13.740	0.000	0.074	0.099
Household size squared	-0.002***	0.000	-4.240	0.000	-0.003	-0.001
Land size possessed	0.003***	0.000	14.620	0.000	0.003	0.004
Lives in Afar	0.332***	0.026	12.580	0.000	0.280	0.383
Lives in Amhara	0.093***	0.014	6.860	0.000	0.066	0.120
Lives in Oromia	0.098***	0.013	7.500	0.000	0.072	0.123
Lives in Somali	0.375***	0.020	19.090	0.000	0.337	0.414
Lives in Benishangul gumuz	0.006	0.015	0.410	0.682	-0.023	0.036
Lives in SNNPR	0.034***	0.013	2.670	0.008	0.009	0.059
Lives in Gambela	-0.252***	0.016	-15.320	0.000	-0.284	-0.219
Lives in Harari	-0.254***	0.018	-13.940	0.000	-0.289	-0.218
Lives in Addis Ababa	-0.692***	0.060	-11.520	0.000	-0.809	-0.574
Lives in Dire dawa	0.340***	0.023	15.040	0.000	0.296	0.384
/cut1	-1.500***	0.041			-1.579	-1.420
/cut2	-0.501***	0.040			-0.580	-0.422
/cut3	0.333***	0.040			0.254	0.412

***, **, * Stand for values statistically significant at 0.01, 0.05, and 0.1 levels respectively,

In the ordered probit models, each category has its own set of marginal effects and one fewer intercepts. These effects show how different factors influence the poverty status of households. Table 6 shows four of these effects. It's interesting to note that these effects align with the coefficients estimated by the model. Variables that are statistically significant in the model's coefficients are also show significance in the marginal effect estimates, except for the dummy variable representing Benishangul Gumuz, which isn't statistically significant (Greene, 2018).

Table 8. Estimated marginal effects of Ordered Probit model

Variables	Marginal Effects***							
	Non- MPI poor		Vulnerable to MPI		MPI Poor		Extremely MPI poor	
	dydx	se	dydx	se	dydx	se	dydx	se
Lives in a rural area	-0.059	0.001	-0.199	0.003	-0.155	0.003	0.412	0.006
Can read and write	0.032	0.001	0.107	0.002	0.083	0.001	-0.222	0.003
Female headed household	-0.004	0.001	-0.014	0.002	-0.011	0.001	0.030	0.004
Age of HH	0.001	0.000	0.005	0.000	0.004	0.000	-0.010	0.001
Age of HH squared	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Household size	-0.005	0.000	-0.017	0.001	-0.013	0.001	0.034	0.002
Household size squared	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	0.000
Land size (Hectare)	0.000	0.000	-0.001	0.000	0.000	0.000	0.001	0.000
Lives in Afar	-0.015	0.001	-0.058	0.004	-0.055	0.005	0.127	0.010
Lives in Amhara	-0.005	0.001	-0.018	0.003	-0.014	0.002	0.037	0.005
Lives in Oromia	-0.005	0.001	-0.019	0.002	-0.014	0.002	0.039	0.005
Lives in Somali	-0.016	0.001	-0.064	0.003	-0.063	0.003	0.143	0.007
Lives in Benishangul gumuz	*0.000*	*0.001*	*-0.001*	*0.003*	*-0.001*	*0.002*	*0.002*	*0.006*
Lives in SNNPR	-0.002	0.001	-0.007	0.002	-0.005	0.002	0.014	0.005
Lives in Gambela	0.020	0.001	0.053	0.003	0.028	0.002	-0.100	0.006
Lives in Harari	0.020	0.002	0.053	0.004	0.028	0.002	-0.101	0.007
Lives in Addis Ababa	0.081	0.011	0.148	0.012	0.034	0.003	-0.263	0.020
Lives in Dire dawa	-0.015	0.001	-0.059	0.004	-0.056	0.004	0.130	0.008

dy/dx discrete change for dummy variable is from 0 to 1

***, note that with the exception of dummy for Benishangul gumuz, all marginal effects were statistically significant at 0.01,

According to the findings, rural residents have a nearly 0.6 percent lower chance of escaping multidimensional poverty and a 41.2 percent higher likelihood of falling into the category of extremely multidimensional poverty than urban residents do. This result reaffirms the descriptive statistics, which show that multidimensional poverty is mainly dominated by rural areas. This finding is consistent with those of previous studies (Bersisa & Heshmati, 2021; Brück & Workneh Kebede, 2021; Dercon & Gilligan, 2008; Seff & Jolliffe, 2016). This result confirms the existence of a structural problem in Ethiopia's agricultural sector.

The probability of literate people falling into extreme multidimensional poverty is 22.2 percent lower than that of those who are illiterate. Conversely, the probability of literate people escaping multidimensional poverty was 3.2 percent higher than that of illiterate people. This finding is also consistent with the literature (Admasu et al., 2021; Ambel et al., 2015; Bersisa & Heshmati, 2021; Brück & Workneh Kebede, 2021; Dercon & Gilligan, 2008; Duclos et al., 2010; EEA, 2021; Seff & Jolliffe, 2016; Sulaimon, 2022). This demonstrates that education, while inherently a source of happiness, can help alleviate poverty (Bersisa & Heshmati, 2021).

Contrary to the descriptive statistics above, the model results show that female-headed households are more likely to fall into multidimensional poverty than their male-headed counterparts after controlling for other factors. The results show that female-headed households are 0.4 percent less likely to escape multidimensional poverty than their male-headed counterparts. Conversely, female-headed households are 3 percent more likely to fall within multidimensional poverty than male-headed households, after controlling for other factors. This could be because although female-headed households are in a better position in terms of education and health, they are at a disadvantageous position in terms of livening standard dimensions, as reported in one of our articles (in press). This means that, although female-headed households are relatively good in terms of short-term asset gains, they are deficient in terms of long-term assets. This is also evidenced by the fact that female-headed households are one percent less likely to be subjected to vulnerability and multidimensional poverty, whereas 3% are

more likely to fall within extreme multidimensional poverty. A higher chance of falling within extreme multidimensional poverty means that female-headed households are more likely to be trapped in chronic poverty than male-headed households. These results also confirm some prior research in Ethiopia using different datasets (Bersisa & Heshmati, 2021; Brück & Workneh Kebede, 2021; Dercon & Gilligan, 2008; Seff & Jolliffe, 2016).

The probability of households falling into extreme multidimensional poverty also varies by age. As the age of the household increases by one more year, the probability of escaping multidimensional poverty increases by 0.1%, after controlling for other factors. Similarly, the probability of such persons falling into extreme multidimensional poverty decreases by 10 percent. Thus, elderly people are less likely to be classified as having extreme poverty than younger people in Ethiopia. This could be because older people are more likely to have accumulated capital (more living standard dimensions) than younger people are. This result is similar to the findings of Bersisa and Heshmati (2021). To see whether the age effect is linear, we included age squared as one of the independent variables and found that the marginal effects are not economically significant(although statistically significant and positive).

Consistent with Bersisa and Heshmati (2021), we find that household size has a nonlinear effect on multidimensional poverty. Our model shows that multidimensional poverty initially increased with an increase in household size and then started to decline. This result is in line with demographic transition theory, which holds that while early population growth may have a negative impact on growth, it eventually starts to "pay dividends" as more people engage in the economy.

We also found that, although the marginal effects lack economic significance, an increase in hectares of arable land has a negative effect on multidimensional poverty. We showed that an increase of one hectare of arable land leads to a 0.1 percent higher chance of falling within extreme multidimensional poverty, after controlling for all other factors. This finding is consistent with the descriptive statistics reported above, and strongly confirms the existence of structural problems in the Ethiopian agriculture sector.

We proved that households in different parts of the country have varying chances of being multidimensionally poor. With the exception of the Gambella regional state, Harari regional state, and Addis Ababa city administration, the majority of the regional dummies show that households living in these regions are more likely to be extremely multidimensionally poorer than those living in the Tigray regional state (the reference group in this case). By contrast, households living in Afar, Amhara, Oromia, Somali, and SNNPR are more likely to be subjected to poverty and vulnerability to multidimensional poverty than individuals living in the Tigray region. Similarly, households living in these regional states (Afar, Amhara, Oromia, Somali, and SNNPR) are less likely to escape multidimensional poverty than people living in the Tigray region.

Conclusion and Policy Recommendations

This study calculates the Multidimensional Poverty Index (MPI) for Ethiopian Demographic and Health Surveys (EDHS) of 2011, 2016, and 2019 using the Alkire and Foster method. It explores poverty trends and influencing factors, aiming to inform targeted policies for poverty reduction and ensure inclusivity through subpopulation disaggregated analysis. Accordingly, the following conclusions and policy implications were drawn based on rigorous empirical findings:

1) The study highlights a worrisome trend where households at risk of multidimensional poverty are increasing, potentially leading to relapse into poverty. This underscores the importance of implementing policies that not only lift households out of poverty but also

prevent them from falling back into it. For instance, expanding productive safety net programs, particularly in rural areas where vulnerability is higher, could help strengthen the asset base of at-risk households and prevent them from slipping into poverty again.

2) Rural areas in Ethiopia exhibit higher rates of multidimensional poverty compared to urban areas. This emphasizes the necessity of tailored poverty alleviation strategies that specifically target the rural population. Such strategies could include investments in rural infrastructure, agricultural development programs, and access to education and healthcare services tailored to the needs of rural communities.
3) There's a potential risk of an increase in multidimensional poverty in urban areas due to various push factors, including urban housing issues and economic instability. Preventive measures such as urban housing reforms and efforts to boost urban economies are crucial to prevent this escalation of poverty. Additionally, maintaining macroeconomic stability and managing urbanization effectively can help create opportunities for urban residents and prevent them from falling into poverty.
4) Economic growth in Ethiopia has not been inclusive, with marginalized groups experiencing an increase in vulnerability and multidimensional poverty over time. To address this, comprehensive social policies focusing on human development, including social protection, healthcare, and education, are essential. These policies should prioritize the needs of the poorest and most vulnerable groups, ensuring that economic growth benefits everyone in society.
5) Female-headed households are particularly vulnerable to chronic poverty, highlighting the importance of empowering women economically. Policies aimed at promoting gender equality, improving access to education and healthcare for women, and facilitating women's participation in the workforce can help reduce poverty among female-headed households and promote their long-term economic stability.
6) Regional disparities further exacerbate multidimensional poverty, with certain regions facing higher poverty levels than others. Targeted interventions such as improving access to basic services like nutrition, education, and infrastructure in these regions are necessary to address these disparities and lift people out of poverty.
7) Household size has a complex relationship with poverty, suggesting the need for nuanced policy responses. Strategies such as revising population policies, promoting family planning, and improving healthcare and education systems can contribute to healthier and more productive populations, ultimately reducing multidimensional poverty over the long term.

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2.1.

2.2 ESG Practice in Emerging Capital Markets and The Role of Government: Lessons for Ethiopia, Amlaksetegn Zenebe

Senior Associate at Grant Thornton Advisory Ethiopia & Formerly Lecturer and Researcher at Jinka University
E-mail: amlaksetegn.zenebe@et.gt.com

Abstract

While some disagreements persist, the bulk of existing evidence proves that capital markets play a positive and robust role in fostering economic development. Cognizant of this, Ethiopia is now on the verge of inaugurating a formal Securities Exchange, overseen by Capital Market Authority. In capital markets around the globe, a growing number of private and public initiatives are promoting sustainable finance – preference towards investment products and services that consider typical Environmental, Social and Governance (ESG) issues – with an overarching goal to support the transition to a more sustainable and equitable economy. Companies listed (or intend to be listed) in these markets are reconsidering their corporate purpose from merely maximizing shareholder profit to creating long-term value benefiting all stakeholders and society at large. Consequently, ESG integration and disclosure have become priorities for securities regulators and stock exchanges.However, the adoption and success of ESG practices vary across economies. Compared to developed markets, emerging markets have been sluggish in advancing sustainable finance leading to little or no ESG compliance. The purpose of this study is to initiate a proactive discussion on ESG practice in Ethiopia's financial system. Drawing on narrative literature review method the study identified challenges such as lack of awareness and capacity, data scarcity and incomparability, and inattention from investors hinder effective ESG practice in emerging capital markets. It also attempted to document best practices in government's role via consistent governance, strong institutions, and enhanced regulatory oversight to overcome the above challenges and promote ESG practice in Ethiopia's soon-to-be-launched Capital Market.

Key Words: *ESG, Environment, Governance, Capital Markets, Developing Countries*

Introduction

General Background

Financial resources are a critical factor influencing the economic disparities between nations. While the precise relationship is debated, a strong positive correlation exists between financial development and economic growth (Beck & Levine, 2005). However, simply having financial resources isn't enough. Efficient mobilization and utilization are essential for maximizing their impact. This is where well-developed financial systems, including capital markets, come into play.

Capital markets channel large pools of capital for development and presence of one signal economic development in a country. Developed capital markets are demonstrably linked to robust economic development of countries (Jalata, 2014). Studies suggest a direct correlation between the size, efficiency, and depth of capital markets and nations' economic growth rate (Nazir et al., 2010). Emerging economies, in particular, can benefit significantly from fostering larger and more developed stock markets to achieve economic prosperity (Acquah & Salami, 2014).

Following a global trend, many African nations have made developing their capital markets a national strategy of economic development. With this they aim to restructure the financial sector, promote economic growth and wealth creation, and facilitate the privatization of state-owned enterprises (Acquah & Salami, 2014). These markets serve as a crucial source of investment for large and, in some cases, medium-sized companies, potentially fueling economic growth as seen in South Africa's experience (Odhiambo, 2010).

Laging behind fellow developing countries, Ethiopia has no formal capital market since the Addis Ababa stock exchange collapsed during the Derg regime (Bekele, 2021). However different business and non-business initiatives were pushing for establishment of capital market in Ethiopia driven by the belief it will fuel economic growth.

Proponents of capital markets for Ethiopia argue that a capital market would act as engine, mobilizing savings and channeling them towards productive investments. This in turn not only increases available capital but also fosters competition, potentially lowering borrowing costs. Additionally, efficient resource allocation reduces financial risks, promoting stability (Teklehaimanot, 2014). Beyond these general benefits, research suggests a developed capital market in Ethiopia can incentivize commercial banks, the current financial powerhouses, to adapt and become more efficient (Bekele, 2021). This would benefit both banks and the broader economy by attracting foreign investment, promoting innovation, and offering new financial tools (Zena & Tel, 2021).

While Ethiopia is just starting its endeavor towards making its new capital market work, capital markets around the globe are advancing in the complexity of financial products and the purpose they intend to serve. In these markets growing number of private and public initiatives are promoting sustainable finance which is couple of steps ahead of the traditional profit-oriented finance. Sustainable finance is a preference towards investment products and services that consider typical Environmental, Social and Governance (ESG) issues. Generally speaking, sustainable finance has an overarching goal to support the transition to a more sustainable and equitable economy. (Garcia et al., 2017)

Driven by rising awareness of environmental and social issues, ESG considerations are rapidly transforming the landscape of sustainable finance. Investors are increasingly integrating ESG factors into their decision-making, demanding investments that align with their values and beliefs. This shift is prompting companies to move beyond a purely profit-maximizing focus, recognizing the importance of creating long-term value for all stakeholders and society at large. As a result, ESG disclosure and integration are becoming priorities for regulators and stock exchanges, with ESG factors increasingly seen as crucial for risk management and asset valuation. This trend signifies a potential for ESG markets to influence capital allocation and promote sustainable and responsible economic growth (Rehman et al., 2021 and Martins, 2022)

Problem Statement and Significance of the study

ESG's multifaceted influence in capital markets, in addition to policy makers, has been captivating the attention of the global academia and development literature. Extensive part of the research, however, focused on developed economies and tried to address issues such as ESG's influence on sustainable finance (Eccles et al., 2014) investor behavior (Jin, 2022) and corporate practices (Nirino et al., 2021). Regarding capital markets in general, some studies also examined the role of ESG-compliant markets in fostering sustainable growth (Mardini, 2022) and the impact of regulations on ESG disclosure (Meng et al., 2023) among other topics.

However, to the best knowledge of the researcher, ESG practices specifically in Ethiopian financial sector or the economy in general are not formally explored and examined. A search on

academic databases on the issue gives only one study (Springer et al., 2023) that uses eastern industry zone as a case in exploring ESG implementation of Chinese projects in Africa. The vast majority of the remaining literature examines the social dimension of ESG under the theme of corporate social responsibility with an implied overlook of the interdependency between the three aspects we are concerned with (see for example Bushera, 2019; Zelalem et al., 2022; Haavorsen, 2023 and Kusakci & Bushera, 2023).

In relation to capital markets, studies conducted in Ethiopia are found to be more concerned with asking if the country really needs a stock market (Zena & Tel, 2021), is it ready to commence one (Teklehaimanot, 2014), how the country can establish a capital market (Ali, 2016) and the potential benefits as well as challenges of launching a functional capital market (Debessay & Harege-Work, 1994; Legesse, 2012; Jalata, 2014; Mulatu, 2016 and Bekele, 2021).

Founded on the firm believe that an efficient and contemporary capital market should be ESG compliant, this study investigates the potential for, and challenges to, implementing effective ESG practices within the soon-to-be-established Ethiopian stock market. While the market itself is not yet operational, a proactive approach offers valuable insights for policymakers and regulators. By analyzing successful strategies and potential hurdles faced by other emerging economies, this study aims to identify best practices that can be adopted from the outset in Ethiopia. Such proactive approach can contribute to building a strong foundation for responsible investment and sustainable growth within the Ethiopian market.

Furthermore, a significant knowledge gap exists in the Ethiopian context regarding the specific challenges of implementing ESG practices. Thus, this research seeks to fill this gap by highlighting challenges and opportunities that are unique to emerging economies and enrich the overall understanding of ESG in Ethiopian capital market. Furthermore, the study can inform future research endeavors and serve as a roadmap for various stakeholders and establish a baseline for future evaluations of ESG practices within the Ethiopian market as it matures. The author requests the readers to understand that the concepts capital market and stock market are used interchangeably due to the fact that both are in the developing stage in the developing countries and the capital markets in most of these countries only have stock markets.

Objectives of the study

This study aims to comprehensively analyze the state of ESG practices within emerging capital markets, with a specific focus on identifying challenges and role of government in overcoming them.Specifically, the study has the following objectives:

- To explore the ESG practice in emerging capital markets.
- To critically assess the key challenges that hinder effective ESG practices in emerging capital markets that can serve as a proxy for Ethiopian Capital Market.
- To investigate and analyze the roles and responsibilities of various stakeholders with special attention on government and regulators in promoting and facilitating effective ESG practices.

Methodology

This study adopts a narrative literature review approach because this approach is suitable for exploring areas with relatively limited knowledge available like ESG practices in emerging capital markets. Conventional systematic review approaches typically require existence of extensive research to identify patterns and trends through analysis (Greenhalgh et al., 2005). However, the scarcity of research regarding ESG practices in emerging economies poses challenges to conducting a systematic review and may potentially lead to limited and inconclusive findings (Baumeister & Leary, 1997).

The narrative review approach offers distinct advantages for this study. Firstly, it allows for a broader and deeper exploration of the existing literature on ESG practices in emerging markets (Grant & Booth, 2009). This broader scope is crucial for understanding established best practices and potential challenges that can hinder the proper practice of ESG in the to be opened Ethiopian capital market. Secondly, the narrative approach enables the inclusion of insights from other relevant resources, such as policy documents and industry reports, which might not be captured by traditional academic databases (McAlpine, 2016). This flexibility allows the study to paint a more comprehensive picture of ESG considerations in emerging markets.

Furthermore, the use of narrative approach allows for the incorporation of the researcher's own critical analysis and synthesis of the findings. Such subjective analysis can be particularly valuable in a new and evolving field, where identifying key themes and gaps in the knowledge base is crucial for future research directions (Grant & Booth, 2009).

Conceptual and theoretical Framework

Environment, Social and Governance (ESG) and ESG practices

Early ideas of social responsibility in business practices are where the concept of ESG originated. Though ideas of moral behavior toward employees and communities have existed throughout history, the rise of social activity in the 1960s gave rise to a more formal movement outlining these principles. During this time, socially responsible investing (SRI) emerged as a movement with the goal of excluding businesses that were involved in damaging behaviors or environmental destruction. As investors grew more determined to match their investment portfolios with their personal ideals, SRI grew over time to include a wider range of environmental and social factors (Kinder et al., ,2009).

A significant turning point occurred in 2004 when the UN Global Compact published the "Who Cares Wins" report, introducing the term "ESG" and emphasizing the long-term benefits of integrating these considerations into corporate strategy (United Nations Global Compact, 2004). This marked a crucial moment in the rise of ESG investing, which gained momentum due to growing awareness of climate change, social justice issues, and resource scarcity.

Ever since, ESG factors have emerged as a crucial lens through which investors and stakeholders evaluate a company's long-term sustainability and societal impact Going beyond traditional financial metrics, ESG considerations aim to capture a comprehensive perspective of a company's performance and potential risks. This broader viewpoint enables a deeper understanding of a company's capacity to generate and maintain value over time (Eccles et al., 2014).

ESG encompasses three interconnected dimensions that contribute to this comprehensive perspective: environmental, social, and governance. The environmental dimension centers on a company's interaction with the natural world. Key aspects within this dimension encompass strategies for mitigating climate change, efficient resource utilization, pollution management, and overall environmental impact. Companies with robust environmental practices demonstrate a commitment to sustainability and potentially mitigate risks associated with climate change, resource scarcity, and environmental regulations (Mardini, 2022).

The social dimension of ESG examines a company's relationships with its employees, customers, and the communities in which it operates. Components such as labor practices, diversity and inclusion, human rights, and community engagement fall under this category. Strong social practices foster a positive work environment, attract and retain talented individuals, and build trust with customers and communities. Conversely, inadequate social practices can result in reputational harm, employee turnover, and regulatory penalties. (Meng et al., 2023)

The last dimension, governance, focuses on a company's leadership structure, executive compensation, transparency in decision-making, and risk management strategies. Effective governance ensures accountability and safeguards the interests of stakeholders. Sound governance practices promote ethical business conduct, mitigate financial risks, and attract long-term investors. Conversely, weak governance practices can lead to scandals, financial mismanagement, and ultimately, a decline in shareholder value. (Torre et al., 2020)

ESG practices consist of two main components: disclosure and integration. The term integration refers to the deliberate incorporation of ESG factors into fundamental business operations, which include risk management, human resource management, and product development. This proactive strategy seeks to provide long-term benefit for a company's stakeholders, including shareholders, employees, communities, and the environment, going beyond simple regulatory compliance. (Li et al., 2021)

ESG disclosure, on the other hand, focuses on transparent communication of a company's ESG performance and practices. Because of this transparency, stakeholders such as consumers and investors can evaluate a company's adherence to ESG principles as well as its possible risk exposure to social and environmental issues. Disclosure can take various forms, including sustainability reports, integrated annual reports, and responses to ESG-specific questionnaires. Due to their recognition of the value of ESG disclosure in fostering investor confidence and market efficiency, regulatory agencies worldwide are progressively requiring or encouraging it (Meng et al., 2023)

ESG Practice in Capital Markets

The link between efficient ESG practices and market performance is gaining attention in capital markets. Research suggests a positive correlation between robust ESG practices and superior market performance. Companies operating in markets with strong ESG integration tend to experience higher stock returns and lower volatility, fostering a more stable and attractive investment environment (Derwall et al., 2005). Efficient ESG practices empower companies to effectively manage risks, attract a wider range of investors, and build long-term value, ultimately leading to improved market performance (Cheng et al., 2014).

Furthermore, capital markets that prioritize ESG considerations can cultivate a more diverse and robust investment landscape. Investors are increasingly drawn to sustainable investments, actively seeking companies with strong ESG performance. Markets that champion ESG tend to attract a broader pool of socially responsible investors, leading to heightened demand for securities from companies with robust ESG practices (Flammer & Bansal, 2017; Hong & Kacperczyk, 2009). This surge in investor interest translates to increased liquidity and potential valuation premiums for companies operating in markets with efficient ESG practices, contributing to their overall outperformance compared to markets lacking strong ESG integration.

In essence, capital markets that prioritize efficient ESG practices demonstrate superior performance. Efficient ESG practices are associated with higher returns, lower volatility, and increased investor interest, ultimately leading to a more robust and successful market environment. By embracing and integrating ESG considerations, capital markets can foster a space conducive to sustainable and responsible investment, creating a win-win scenario for both companies and investors (Hawn & Ioannou, 2016).

Looking at ESG practice from the companies' perspective, those prioritizing sustainability and responsible practices are well-positioned to flourish in the evolving ESG compliant landscape. A growing body of research suggests a positive link between strong ESG practices and financial

performance of companies, making ESG a critical factor for both businesses and investors. Companies committed to environmental stewardship, social well-being, and sound governance often demonstrate lower risk profiles and improved financial results (Gompers et al., 2003;). This correlation between ESG practices and financial success positions ESG as a crucial element for investors seeking to channel their capital towards sustainable and responsible firms (Khan et al., 2016).

Furthermore, ESG practices play a key role in risk management for capital market participants (Busch et al., 2016). By proactively integrating ESG factors into their strategies, companies can identify and address potential risks before they materialize. Environmental issues, such as climate change and resource depletion, can pose significant challenges. Sustainable practices enable companies to mitigate these risks, ensuring long-term operational resilience (Hawn & Ioannou, 2016). Effective governance practices further contribute to risk mitigation by promoting transparency, accountability, and ethical conduct, thereby reducing the likelihood of financial mismanagement or legal problems (Busch et al., 2016). In this way, ESG practices serve as a valuable tool for companies to safeguard their reputation, protect shareholder value, and maintain stakeholder trust (Flammer & Bansal, 2017).

Finally, ESG practices significantly influence access to capital and investor preferences within capital markets. Institutional investors and asset managers are increasingly integrating ESG factors into their investment decisions, recognizing the value proposition of sustainable investments. Companies demonstrating strong ESG performance are more likely to attract capital, benefit from lower borrowing costs, and experience higher market valuations (Flammer & Luo, 2017). This growing investor demand for ESG-focused investments offers companies a competitive edge, broadening their access to funding sources and strengthening their market position.

Role of government in capital markets

Equivalent to their economic benefits capital markets may play negative role to economic workings of a country if they happen to be unregulated or underregulated. With absence of proper regulation capital markets can lead to inefficiencies, financial instability, and impeded economic growth (Pinto, 1989; Latimer & Maume, 2014). The rationale for government involvement in capital markets is rooted in several theoretical perspectives that emphasize the need for regulation and oversight. Literature provides robust theoretical justifications for government intervention, highlighting the crucial role of supervision and regulation in mitigating risks and fostering a healthy capital market environment.

The major justification for active role of government in capital markets centers on the presence of market failures specific to capital markets. These failures, such as information asymmetry between issuers and investors, externalities associated with financial crises, and systemic risks inherent in interconnected financial institutions, necessitate government involvement. Pinto (1989) highlights the effectiveness of government regulations in addressing information asymmetry within capital markets. By mandating disclosure requirements and promoting fair competition, regulations can reduce adverse selection problems and enhance the efficient allocation of capital (Latimer & Maume, 2014).

Government intervention is also critical for maintaining stability within capital markets. Adrian and Shin (2010) argue that regulatory frameworks play a vital role in pre-empting financial crises and safeguarding the financial system. Capital adequacy requirements, risk management guidelines, and liquidity standards imposed by governments contribute to a more stable capital

market environment, ultimately protecting the flow of capital across the economy (Beirne & Fratzscher 2013).

Investor protection and market integrity are additional factors driving government intervention in capital markets. Dyck et al. (2019) emphasize the importance of regulatory frameworks in reducing information asymmetry and safeguarding investors from fraudulent activities. Government oversight also promotes transparency, disclosure, and fair practices within capital markets, thereby enhancing investor confidence and facilitating efficient capital allocation (Easterbrook & Fischel, 1984; Adrian and Shin, 2010).

As with the above intervention mechanisms and goals there is a growing recognition of the role government in enhancing ESG practices of capital markets. Governments can actively promote and incentivize ESG practices through regulatory frameworks, policies, and initiatives. There are theoretical and empirical evidences that highlight how government regulations and policies can shape ESG practices in capital markets, encouraging companies to adopt sustainable strategies and disclose relevant ESG information. By setting standards, providing guidance, and enforcing compliance, governments can create an environment that fosters ESG integration and contributes to long-term sustainability in capital markets. (Green, 2018; Oyewole, 2021; Alqubaisi & Nobanee, 2023)

Results and Discussion

Capital Markets in Emerging Economies

A capital market is said to be well-functioning and efficient if it thrives on a foundation of transparency, information accessibility, and efficient price discovery mechanisms. Efficient markets require transparency (Demirgüç-Kunt et al., 2013) and liquidity (Hasan et al., 2017) to enable informed decisions and minimize costs. Strong investor protection (Porta et al., 1998) further promotes market participation and efficient capital allocation for economic growth (Demirgüç-Kunt et al., 2013). Existence of all these characteristics collectively foster a stable, efficient, and attractive capital market environment.

However capital markets in emerging economies are characterized by higher volatility and risk compared to developed markets that exhibit the features mentioned above. According to (Hasan et al., 2017) emerging markets often experience greater fluctuations in stock prices and exchange rates due to factors such as political instability, economic uncertainty, and regulatory changes. These volatile conditions can pose challenges for investors seeking stable returns, but they may also present opportunities for higher returns on investments. Additionally, Farooq & Aktaruzzaman (2016) argue that emerging markets tend to have higher levels of information asymmetry and weaker investor protection mechanisms, which further contribute to the risk profile of these markets.

Capital markets in emerging economies are also characterized by a higher degree of informational asymmetry and corporate governance challenges. According to Claessens et al. (2002) emerging markets often face significant challenges in terms of corporate governance practices, including weak legal protection for investors, low disclosure standards, and insufficient enforcement mechanisms. These factors contribute to an environment of greater informational asymmetry between companies and investors, which can lead to mispricing of securities and hinder the efficient allocation of capital.

Another hallmark of emerging market capital market is the presence of liquidity constraints and shallower markets compared to developed economies. Research by Claessens et al. (2002) points to these limitations, which can lead to higher transaction costs, lower trading volumes, and

ultimately, reduced market efficiency. These factors create challenges for both domestic and foreign investors seeking to execute trades, diversify their portfolios, and access capital.

The problems and characteristics of emerging capital markets mentioned above will have implications for efficient ESG practice and compliance in these markets. High volatility, risk, shallow markets, high transaction costs, weak governance, and information asymmetry all create hurdles for ESG adoption due to short-termism, limited investment options, and unreliable ESG reporting. In the following section we enquire what these characteristics would bring to the emerging capital markets and how these hurdles must be addressed to promote effective ESG practices specially through government's involvement.

Challenges for ESG Practice in Emerging capital markets

Despite the progress in ESG awareness and adoption in emerging capital markets, significant challenges remain. Different researches (Garcia et al., 2017; Rehman et al., 2021 and Martins, 2022) demonstrate a rise in ESG integration by investors and disclosure by companies, reflecting a positive shift towards sustainability. However, these studies emphasize that the level of integration and disclosure varies significantly across countries and industries. The dimensions and the aspects of each dimension the ESG disclosures focus on also vary from some markets to the others depending on the reality and governments' attentions towards the issues.

Weak regulatory environment

The first critical challenge is the weak regulatory environment characterized by the absence of robust frameworks and enforcement mechanisms for ESG disclosure and practices. In the absence of strong regulatory frameworks and enforcement mechanisms for ESG disclosure and practices, companies face difficulties in establishing standardized reporting processes and ensuring accountability for their sustainability efforts (Singhania & Saini, 2023). This challenge reduces the transparency and comparability of ESG information, making it challenging for investors to make informed decisions based on reliable and consistent data (Gillan & Starks, 2003).

The Absence of Standardized Reporting

One peculiar characteristics of emerging capital markets is lack of standardized ESG reporting practices and this creates a significant hurdle for investors. Without a consistent framework, companies disclose their ESG data in varying ways, making it difficult to compare sustainability performance across different investment options (Bose, 2020). This absence of uniformity coupled with inconsistent ESG data landscape, further hinders effective evaluation by investors. Without clear guidelines, companies may have varied approaches to disclosing ESG information, making it difficult for investors to compare and assess sustainability performance consistently. Additionally, the lack of established ESG reporting frameworks in emerging markets leads to a lack of transparency and accountability and makes regulation difficult (Kotsantonis & Serafeim, 2019).

Preference of Short-Term Return Over Sustainable Business

A prevalent short-term focus and financing constraints present a formidable challenge in emerging capital markets, as companies prioritize immediate financial gains and short-term KPIs over long-term ESG considerations. These companies often face pressure to deliver consistent annual dividends to their shareholders and may prioritize short-term financial targets in their investment decisions. If they consider any ESG factor, at all, they may treat them as just one of many factors in the short run (Green, 2018). As a result, the integration of comprehensive ESG practices becomes less of a priority, hindering sustainable initiatives and impeding the alignment of business strategies with long-term social and environmental goals.

Data and Methodology Inconsistency

Data inconsistency poses a significant challenge in ESG practice, not only in emerging capital markets but also in advanced ones. The lack of consistency and diverse range of ESG data and measures employed, coupled with varying reporting practices among companies, hampers the ability to compare and accurately evaluate sustainability efforts by companies (Arun et al., 2022).

Another critical data related challenge comes from the process of benchmarking, where ESG data providers define peer groups for investments. The lack of transparency regarding the components and observed ranges of ESG metrics within these peer groups leads to inconsistencies across the market, undermining the reliability and trustworthiness of performance rankings. This is further exacerbated by disparities that arise from the different approaches used by ESG researchers and analysts to address substantial data gaps spanning various companies and time periods for different ESG metrics. These discrepancies in gap-filling methods result in significant disagreements among data providers, contributing to significant variations in ESG ratings (In et al., 2019; Kotsantonis & Serafeim, 2019).

Limited Availability of ESG Investment Products

The nascent nature of emerging capital markets and lower adoption of sustainable investing practices results in a limited range of investment products and services that consider ESG factors. This limitation narrows investor choices and impedes the integration of ESG considerations into their portfolios. The lack of ESG-compliant products and services in these markets can be attributed to several factors. One of the factors is a limited demand for such products, making it less economically viable for financial institutions to offer them. Furthermore, the available expertise, resources and regulatory environment may not provide sufficient incentives for the development of ESG products (Arun et al., 2022)

Knowledge, Infrastructure and Cultural Barriers

One significant challenge is the knowledge and awareness gap, where stakeholders lack understanding and expertise in ESG principles and practices. This can be attributed to limited availability and access to ESG-related educational resources and training programs, which further exacerbates the challenge of effective implementation and integration of sustainable initiatives (Hoang, 2018).

In many emerging markets, there is a notable lack of robust infrastructure, including renewable energy facilities, sustainable transportation networks, and efficient waste management systems. This infrastructure deficit presents a significant challenge to ESG practice, with specific implications for green and sustainable investments (Zhang et al., 2021). It restricts the availability and viability of investment opportunities aligned with ESG principles. Without the necessary infrastructure in place, investors face obstacles in allocating capital towards green projects and sustainable initiatives. The limited infrastructure also hampers the development of ESG-compliant products and services, hindering the growth of sustainable investment options.

The other challenge for ESG practices may stem from cultural and societal barriers, as well as limited investor demand for ESG investments. Cultural norms in certain societies may disregard environmental protection or social responsibility, creating resistance to embracing ESG principles. Moreover, investors in such societies may exhibit limited demand for ESG investments from. If there is insufficient attention to and demand for ESG-focused products and services, companies may perceive less incentive to prioritize ESG practices (Roy & Mukherjee, 2022).

Role of Government in ESG Practice promotion in the upcoming Capital Market

In the above section, we have discussed the potential challenges that are peculiar to emerging capital markets, and these challenges are likely to be encountered in the development of the Ethiopian capital market. This section, thus, presents a synthesized analysis of the literature (Claessens et al., 2002; Gillan & Starks, 2003; Farooq & Aktaruzzaman, 2016; Hasan et al., 2017; Green, 2018; Hoang, 2018; Kotsantonis & Serafeim, 2019; Rehman et al., 2021; Zhang et al., 2021; Martins, 2022; Arun et al., 2022; Roy & Mukherjee, 2022) on the of the possible roles the government can play to mitigate the harm these potential challenges could present to the soon to be opened Ethiopian capital market. For ease of presentation, we have categorized and presented them under three major outcomes of the government's involvement: strong institutions, consistent governance, and enhanced regulatory oversight.

Strong Institutions

Strong institutions play a crucial role in promoting and ensuring the effective integration of ESG practices in emerging capital markets. These institutions provide the necessary infrastructure, expertise, and oversight to support the development and implementation of ESG standards and initiatives. In the context of Ethiopia's Capital Market, the government shall focus on strengthening institutions to facilitate the adoption and enforcement of ESG practices.

The starting point for stronger institutions is through governments should invest in building the capacity and expertise of institutions responsible for overseeing the capital market. This includes regulatory bodies, industry associations, and other relevant organizations. By providing training, guidance, and resources, the government can enhance their understanding of ESG principles, methodologies, and reporting standards. This will enable these institutions to effectively monitor and evaluate ESG practices, ensuring compliance and driving continuous improvement.

Stronger institutions can also be realized by promoting industry collaboration and engagement among institutions, industry players, and other stakeholders. The government can facilitate this ideal collaboration and engagement by fostering dialogue and cooperation. It can also create an enabling environment for institutions to share knowledge, best practices, and experiences related to ESG practice. Such collaborations can lead to the development of industry-wide initiatives, such as ESG benchmarks, frameworks, and guidelines. It can also promote the exchange of information and expertise, strengthening the overall governance of ESG practices in the capital market.

The government plays a crucial role in promoting the development of strong institutions in the capital market through its involvement in research, data analysis, and investor protection. As a market with little to no knowledge foundation, the government should prioritize research initiatives and establish partnerships with academic institutions and research organizations to generate reliable and relevant data on environmental, social, and governance (ESG) performance. This initial investment in research enables the government to ensure evidence-based decision-making and enable institutions to assess the impact of ESG factors on their financial performance, risk management, and long-term value creation.

The government should also empower its institutions to enforce regulations that safeguard investor interests, particularly regarding ESG-related disclosures. By promoting transparency, fairness, and accountability in the capital market, the government can protect investors and build trust within the market. Additionally, the government can take the lead in educating investors

about the importance of ESG factors and their potential impact on investment returns. This can be achieved through awareness campaigns, investor education programs, and the provision of user-friendly ESG information, ensuring that investors are equipped with the knowledge they need to make informed decisions. In summary, the government's role in the capital market extends to promoting research, data analysis, and investor protection.

Consistent Governance

Well-functioning capital markets hinge on consistent governance, a principle that translates to a well-defined set of clear, predictable rules, regulations, and robust enforcement mechanisms. Through promotion of consistent governance in the capital market the Ethiopian government can realize a robust regulatory framework and standardized reporting requirements. These consistent frameworks will govern the disclosure, reporting, and integration of environmental, social, and governance factors into business operations and investment decisions of stakeholders in the capital market the country plans to establish.

The government can also encourage establishment of a standardized approach for evaluating and comparing ESG performance across different companies and investment portfolios that plan to be traded in the capital market. The establishment of consistent governance will also benefit the companies via clear and consistent guidance regarding their ESG reporting and disclosure obligations which reduces ambiguity and promotes transparency, allowing investors to make informed decisions based on reliable and comparable ESG data across companies. It will also have the tendency to foster accountability by mitigating the risk of "greenwashing" by misbehaving companies incentivize companies to accurately report their ESG practices and outcomes, ultimately reinforcing trust and credibility in ESG investing.

Enhanced Regulatory Oversight

Another key component the government should bring to the new ecosystem is enhanced regulatory oversight, which is essential for ensuring compliance with ESG standards and driving the integration of sustainable practices. Enhanced regulatory oversight requires a clear ESG reporting requirements, monitoring and enforcement, collaboration with international standards and continuous improvement and adaptation based on the learnings that develop through time.

The government, or particularly the capital market regulatory body, should establish clear and standardized ESG reporting requirements for companies operating in the capital market. These requirements should outline the specific ESG factors that companies need to disclose, along with the methodologies and reporting frameworks to be used. By providing clear guidance, the government can ensure consistency and comparability of ESG data, enabling investors to make informed decisions. These ESG standards and frameworks shall be devised in collaboration with regional and international bodies and organizations. By aligning national regulations with global best practices, the government can enhance the credibility and compatibility of ESG reporting and practices.

Regulatory bodies should also have the authority and resources to effectively monitor and enforce compliance with ESG standards. Therefore, the government shall allocate adequate funding and manpower to regulatory bodies to conduct regular audits and inspections. Predetermined penalties and sanctions should be enforceable on non-compliant companies to ensure accountability and deter unethical practices.

The regulatory oversight should be dynamic and responsive to evolving market conditions and emerging ESG issues. For this to happen, the government should periodically review and update regulations to reflect the latest developments in ESG practices. This can involve engaging with stakeholders, conducting consultations, and seeking feedback on the effectiveness of existing

regulations. Regular evaluation and improvement will ensure that regulatory oversight remains robust and relevant.

Summary

This research examined the challenges and opportunities surrounding Environmental, Social, and Governance (ESG) practices in emerging capital markets. The main goal was to analyze how these factors could influence the development of ESG practices in Ethiopia's soon-to-be-launched capital market.

Due to the limited research on ESG practices in emerging markets, a narrative literature review methodology was employed. This approach allowed for a thorough exploration of existing literature and the inclusion of insights from non-academic sources.

The study's key findings highlighted the significant challenges faced by emerging capital markets in adopting and integrating ESG practices. It also detailed the potential harm these challenges could bring to the soon-to-be-operational Ethiopian capital market. Additionally, the study explored the role governments can play in promoting ESG practices in emerging capital markets.

Conclusion and Recommendation

The development of the Ethiopian capital market presents a unique opportunity to implement ESG practices from the very beginning. This offers a chance to create a sustainable and responsible investment environment. However, this nascent market will also face challenges common to emerging economies.

Key hurdles include establishing a robust regulatory framework for ESG disclosure and enforcement. The market will need standardized reporting requirements to ensure transparency and allow for comparisons between companies. Encouraging a long-term perspective among companies to integrate ESG considerations into their strategies will be crucial. Additionally, addressing data inconsistency and methodological challenges is necessary for accurate ESG evaluation. Expanding the availability of ESG investment products and building stakeholder awareness are also important steps. Finally, the government must address infrastructure limitations and potential cultural resistance to ESG adoption to create a truly successful and sustainable capital market.

For policy makers this study recommends strong institutions, enhanced regulatory oversight and consistent governance. The Ethiopian government should invest in building expertise within regulatory bodies and foster knowledge sharing. Consistent governance through a robust regulatory framework and standardized reporting will promote transparency. Finally, enhanced oversight with clear ESG requirements, international collaboration, and ongoing updates will ensure compliance and adaptation to emerging sustainability issues.

For the academia community, this study calls for further studies to explore the financial impact of ESG practices on companies operating in the capital market and its ecosystem. Additionally, research into country appropriate and contextualized ESG metrics and the role of institutional investors in driving ESG adoption in these markets would contribute valuable insights.

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2.3 Digital Finance and Interbank Competition in Ethiopia, Dessalegn Shamebo[41], Tesfaye Chofana[1], Degela Ergano[1], and Tewolde Girma[1]

Asst.Prof. Department of Development Economics Ethiopian Civil Service University
E-mail: dessalegn4@yahoo.com

Abstract

Since the late 1970s, financial institutions have been computerizing their operations and internal processes which were labor-intensive and extremely paper-based. This enabled them to manage increasingly complex operations to be processed more efficiently and make banking profitable. The digitalization of banks has ignited heightened competition within the market. Accordingly, the objective of this study was to examine the trend of digital payment services and competition among commercial banks in Ethiopia. Doing this research is helpful for policymakers to design better policies that enhance digital readiness—to cope with competition from foreign banks and be more resilient. To attain this objective, we sourced secondary data from the National Bank of Ethiopia spanning the period from 2013 to 2022. To analyze the data obtained descriptive analysis was used. The findings revealed an overal upward trend in digital payment services in Ethiopia, both in terms of number and value per transaction, and it is expected to continue to grow in the coming years.The results have unveiled that CBE has maintained a stronghold in the mobile money market, primarily due to its substantial customer base, extensive branch network, and government support. These findings suggest there is unlevel playing field in the sector. Furthermore, the data demonstrates a notable surge in mobile banking adoption across Ethiopia, leading to intensified competition among commercial banks. CBE, which held dominance until 2019, now faces mounting pressure to expand its mobile banking services. In terms of internet banking, the research reveals that CBE lags behind private banks in terms of the number of subscribers. This discrepancy may be attributed to the frequent utilization of internet banking by private businesses and large corporations. As of June 2020, the number of ATMs, which were previously dominated by CBE, has been on a decline. This decline can be attributed to the proliferation of alternative digital financial services like mobile wallets and mobile banking, offering customers the convenience of making payments without the need for ATM withdrawals. Additionally, the interoperability of ATM service has contributed to this trend. In relation to POS CBE accounted 77.1% of the market share in 2016, which has dwindled to 39.4% by 2022. This decline can be attributed to the introduction of interoperable POS services facilitated by EthSwitch. This result implies banks are actively sharing infrastructure resources like ATMs and POS terminals. This phenomenon opens up opportunities for both collaboration and competition within the industry. Shifting focus to agent banking, CBE maintains a dominant position with a substantial share of approximately 67.7%. This stronghold is primarily a result of its strategic collaborations with microfinance institutions and its extensive presence in remote and underserved regions. Notably, the Cooperative Bank of Oromia stands out with a higher number of agents compared to other private banks, a feat achieved through close partnerships with unions and cooperatives operating in rural areas. Therefore, to advance digital payment services and foster healthy competition among commercial banks in Ethiopia, a comprehensive approach is imperative. This encompasses promoting

interoperability, encouraging innovation, increasing access to infrastructure, facilitating competition, promoting financial inclusion, and enhancing digital financial literacy.
Key words: *digital finance, digital payment services, and interbank competition*

Introduction

Background of the study

Technology has been recognized as the heart of economic growth and development since the path-breaking work of Joseph Schumpeter. It is a key driver of long-term growth through its positive impact on productivity, jobs, and economic resilience (Goldfarb & Tucker, 2019). With very few exceptions from countries that are rich in natural resources, most development in many countries comes from technological improvement. Digital technology is one form of technology that represents information in bits to generate, store, or process data, which can reduce several economic costs (Goldfarb & Tucker, 2019). In its modern form, digitalization begins during World War II (Ceruzzi, 2003). In the 1950s the real representation of information in bits emerged. Since then information processing and reproduction became widespread, especially during the rise of the internet (Goldfarb & Tucker, 2019).

Banks are operating in a complex and competitive environment. They are the most affected by digitalization. Digitalization leads to competition in the banking market. Advancement in technology in the sector is influencing the way financial services are provided. Fintech companies are growing and affecting the sector, resulting in intense competition. The competition is influencing the existing market structure. It is creating pressure on both the incumbent and new entrants. In some countries, it is bringing mergers and acquisitions (De Lis & Ortún, 2018). For instance, the number of Banks in Germany has been in a continuous decline despite the size of a total assets is increasing. Especially, after the financial crisis between 2007 and 2009, there has been a major change in the banking industry (Vives, 2019a). For example, in 2022, the top 10 largest banks by assets in the world are dominated by 5 Asia-based banks, a decade ago which was fully dominated by banks based in Europe or the United States (Khan et al., 2023). Among others, the main reason behind this is digital disruption arising from increased competition from technological advancement in the industry. Also, new players specialized in financial technology (FinTech) are entering the financial sector. Therefore, to cope with the fierce competition, banks are expected to transform themselves to be agile and competent to fit in the digital era.

There is an ongoing debate on the effect of digitalization on competition and stability. Proponents argue that digitalization leads to disruption and competition that results in efficiency. Providing digital financial services rather than traditional financial services to customers could result in less profit to the bank that does not adopt the technology than bank does (Vives, 2019b). This again induces the non-adopter banks to adopt the technology and be more cost-effective and efficient for their customers and themselves. Others argue that digitalization enhances the competitiveness of large banks as they have large initial investment and market share while making smaller and local banks exit the market (Liu, 2021). On the other hand, it is important to note that competition is also a source of instability in the banking industry. Intense competition may worsen the problem of excessive risk-taking. It aggravates the asymmetric information problem and leads to riskier portfolios and higher failure probabilities. More competition may reduce incentives to screen and monitor borrowers as the bank has less information (Vives, 2019a). That is, more rivalry can increase the chance that bad borrowers obtain credit by limiting the screening ability of each bank due to the winner's curse problem. This is so since more competition worsens the adverse selection problem. That is why banking is a highly regulated

sector for a long because of the role it plays in the economy as well as its vulnerability to a loss of public confidence and risks. This calls for a series of policy interventions to ensure financial stability.

In Ethiopia, the financial system is quite underdeveloped. Most economic transactions are cash-based. For example, in 2017, out of the total adult population who paid for utilities, 98.7 percent paid in cash (Alemu et al., 2021). This is quite far from neighboring countries like Kenya. Understanding this, the Council of Ministers ratified the National Financial Inclusion Strategy (NFIS) in 2016. To complement the strategy again the country has also developed the National Digital Payments Strategy in 2020 which allowed non-banking industries to provide financial services. The new strategy opened the way for Fintech to operate in the country. For example, Ethio Telecom's mobile money platform, telebirr, became the first Fintech platform in Ethiopia that is not owned by a financial institution to join the market. Despite all these efforts of the government, the penetration of digital financial services remains low. For example, in 2019/20, only 15.8 percent of the adult population had a mobile money account (Alemu et al., 2021). Among others, the main factors behind the low performance of the sector include low and erratic access to electricity, low ownership of mobile handsets, and limited competition. Despite the limited competition, there have been improvements to promote competition and ease unleveled playing field problems between providers of digital payment services. Even if there are different spheres of competition this study focuses on interbank competition in digital payment services among banks operating in Ethiopia.

Banks in developing countries are far from the technology frontier consequently they are not competent in the international market. The banking sector in Ethiopia is not exceptional to this fact. So far no financial institution has been in bankruptcy in the country because the sector has been closed to foreign operators for the reasons that the National Bank of Ethiopia (NBE) does not have the capacity to regulate and supervise foreign banks. As well the sector is under strong regulation of NBE. As part of a larger economic reform, in the early of September 2022, the Council of Ministries passed a bill to open the banking industry to foreign competitors to enhance competition, encourage innovation, and mobilize more resources. The opening of the sector to foreigners will expose the domestic operators to intense competition as foreign operators use sophisticated technologies. Any outcome that comes out of the competition from the entrance of foreign banks into the country should not be a surprise. Thus, doing this research is helpful for policymakers to design better policies that enhance digital readiness—to cope with competition from foreign banks and be more resilient. It helps to enhance the capacity of domestic banks to respond to competition through the use of more and frontier technologies. Therefore, it is important to understand the trend and the existing level of technology use and the prevailing competition in digitalization among domestic banks. This further helps to identify key bottlenecks in enhancing technological adoption and competition in the sector.

So far, most studies focus on competition between traditional banking and non-banking (Fintechs and Bigtechs). As per the knowledge of the researcher so far no study has been conducted on the trend of digitalization and interbank competition. This particular study focuses on the trend of digital payment services and competition among commercial banks in the provision of digital payment services in Ethiopia. This study tries to fill this knowledge gap. Doing such innovative economic researches helps to improve the livelihood of many in Ethiopia as it provides better policy inputs to enhance welfare of citizens. As well this study provides literature to the academics as there are limited researches in the area.

With the above set of understanding, the paper is organized as follows. Section two, discusses the method employed. Section three, presents the results and discussions. Section four, concludes and suggest some policy recommendations.

Methodology

General approach

The general methodology of this study considered identifying the trend of digital finance and interbank competition in Ethiopia using various approaches. To realize the objectives of the research both horizontal and vertical approaches were used to gather a wide range of information and divergent views about the trend of digital payment services and interbank competition from different stakeholders. To assess the trend of digital finance and interbank competition, a mixed method approach was employed. The study identified the key players, namely the National Bank of Ethiopia (NBE) and commercial banks as the source of data.

Specific methods/Approaches

In the interest of presenting a clear and coherently organized paper, once appropriate literature has been consulted tools were developed. Since the scoping is identified a set of data collection tools were designed to generate both quantitative and qualitative data. As a source of quantitative data both primary and secondary sources were used. Primary the study is based on secondary data obtained from National Bank of Ethiopia. This include reports of commercial banks over the last 10 years (2013-2022). To complement the secondary data, primary data was also obtained using **1) semi-structured survey questionnaire** from banks, and **2) Key informant interview guides** from NBE and commercial banks. These instruments were thematically organized and carefully framed to make sure that they have adequately addressed the objectives of the research and complement the secondary data.

Sampling procedure

Regarding secondary data, information on digital payment services and number of subscribers was obtained from all banks currently providing digital payment services. Since the number of banks currently operating in the market are limited, data was collected from banks actively working. This encompassed both first- and second-generation banks, while only a few of the third-generation banks were included as many of them are in the brick-and-mortar stage. Pertaining to qualitative information, data was obtained from 12 banks. These banks were purposively selected for a key informant interviews, representing each generation of banks.

Data analysis method

After collecting the data, it was checked carefully for missing values and inconsistencies. Descriptive statistics was used to analyze the quantitative data. Following data entry and cleaning procedures, the data was analyzed to produce descriptive statistics. The numerical data was presented using figures, graphs, and narrations in the report. To assess digital competitiveness of the banks in Ethiopia, the ratio of digital transactions to banks' total asset was used. Furthermore, to gauge the level of competition among banks in the provision of digital payment services, percentage share was used. The percentage share indicates the percentage of total subscribers to a given service by a given bank in relation to the overall number of subscribers to the service in the market. Furthermore, all the qualitative data was transcribed and checked for clarity and analyzed through both inductive (data-driven) and deductive (theory-driven) approaches to triangulate the result obtained from quantitative data.

Results and Discussion

Digital payment competitiveness of Ethiopia

Measuring the digital payment competitiveness of a country is a complex task requires considering a number of factors. However, there are some key indicators that can be used to evaluate a country's digital payment competitiveness. The most commonly used method of digital payment competitiveness is penetration of digital payment methods, which refers to the percentages of digital transaction.

Ethiopia's relative position in commonly used digital financial indicators was not satisfactory, at least at SSA standard. Digital financial access in Ethiopia remains low and less than the African average. Only 5.29 ATMs provide banking services for 100,000 people in Ethiopia which was less than the SSA average (6.94 ATMs) in 2021. According to data from the World Bank, the percentage of digital transactions to GDP in Kenya was approximately 43.4% in 2020, while it was approximately 7.4% in 2019 in Ethiopia. However, it is worth noting that the Ethiopian government has recently launched a series of initiatives aimed at promoting digital payments and increasing financial inclusion.

Compared to many African countries Ethiopia is lagging behind in digital payment competitiveness. For example, mobile money services such as M-Pesa have been widely adopted and have revolutionized the way people make payments and transfer money in Kenya. According to a report by the Central Bank of Kenya, mobile money transactions in the country reached a record high of US$ 109.9 Billion in 2022 (Markets, 2023). In contrast, Ethiopia has been slower to adopt digital payment services. For example, the total mobile money transaction was about 24 billion Ethiopian birr (approximately USD 470 million) in the same year. This low level of mobile money transaction is due to a number of factors, including limited access to mobile services, a low level of financial inclusion, a lack of infrastructure to support digital payments, low level of digital literacy, and limited number of providers. Recognizing this fact, the Ethiopian government has recently taken steps to promote digital payments and financial inclusion. In 2020, the government launched a national digital payment strategy aimed at increasing the use of electronic payment systems and reducing reliance on cash. The strategy includes initiatives such as expanding mobile and internet access, promoting financial literacy, and increasing the number of digital payment acceptance points.

The Ethiopian government has also made efforts to promote agent banking and expand financial inclusion. In 2017, the National Bank of Ethiopia issued regulations allowing banks to use agents to offer basic financial services to customers. Since then, a number of banks and other financial institutions have launched agent banking services in the country. Despite these efforts the performance is low. According to the Central Bank of Kenya (2022), the number of agent outlets was about 317,983 in 2022. While in Ethiopia it was about 82,424 in the same year, which is about 25% compared to Kenya. According to a report by the Central Bank of Kenya, agent banking transactions in Kenya reached Ksh 1.6 trillion (approximately USD 14.8 billion) in 2020. Whereas, the total agent banking transaction even in 2022 in Ethiopia was about 23 billion birr (approximately 445 million USD). There are still significant challenges to expanding agent banking in Ethiopia. These include a lack of infrastructure to support digital payments, limited access to mobile and internet services, and a low level of financial literacy among many potential users.

The Trend of digital payment services in Ethiopia

To provide both diverse and quality digital financial services, it is important to ensure a competitive ecosystem that facilitates entry into the market, the development of innovative digital products, and high-quality and value-for-money services which in turn enhance financial inclusion (Mazer & Rowan, 2016). This section examines the trend of digital payment services in

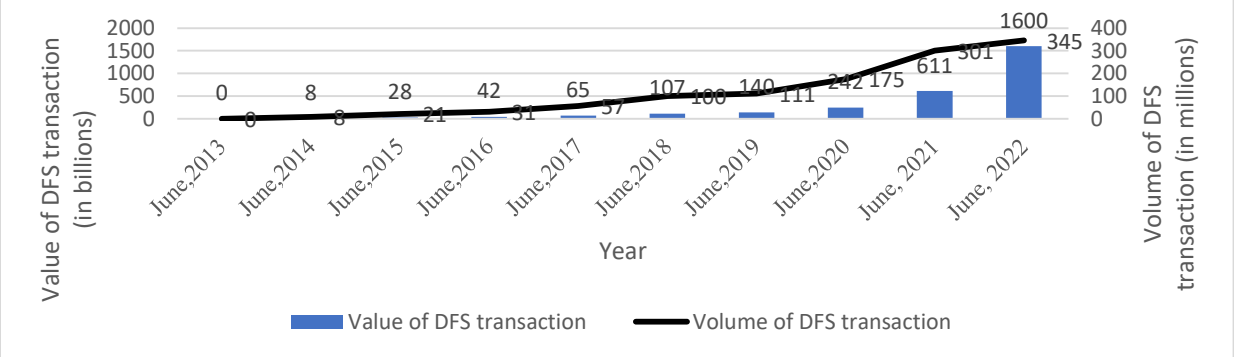
Ethiopia, including the number of subscribers, volume of transaction, and value of transaction of the digital payment services. Additionally, competition on the provision of digital payment services, specifically focusing on mobile wallet, mobile banking, internet banking, ATMs, PoS, and agent banking subscription among commercial banks are presented and discussed.

A digital payment is made without withdrawing cash principally in two ways: using credit or debit cards or using a mobile phone or the internet. Making a digital payment using internet or a mobile phone can take different forms. Some use a smartphone app from their financial institution or one from a third-party payment provider linked to their account, while others make a payment directly from their mobile money account. Some also make digital payments directly on the website of their financial institution or a third-party payment service provider (Demirgüç-Kunt et al., 2022).

There are a number of methods to measure the trend of digital payment services of banks. Firstly, the transaction volume and value of digital payments processed by banks can be a key indicator. An increasing trend in the transaction value and volume of digital payments suggests that the banks are investing in and expanding their provision of digital payment services. Secondly, the availability of digital payment methods offered by banks can provide insights into the trend of digital payment services. If banks are offering a wide range of digital payment methods implies, they are investing more in digital payment services. Thirdly, the customer adoption rate of payment services can be used to measure the trend of banks' digital payment services. Increasing adoption rates suggest that customers are using and relying more on the banks' digital payment services. In Ethiopia banks are the main providers of digital payment services. To show the trend of digital payment services number of digital transaction and the ratio of value digital payment service to their total asset are used.

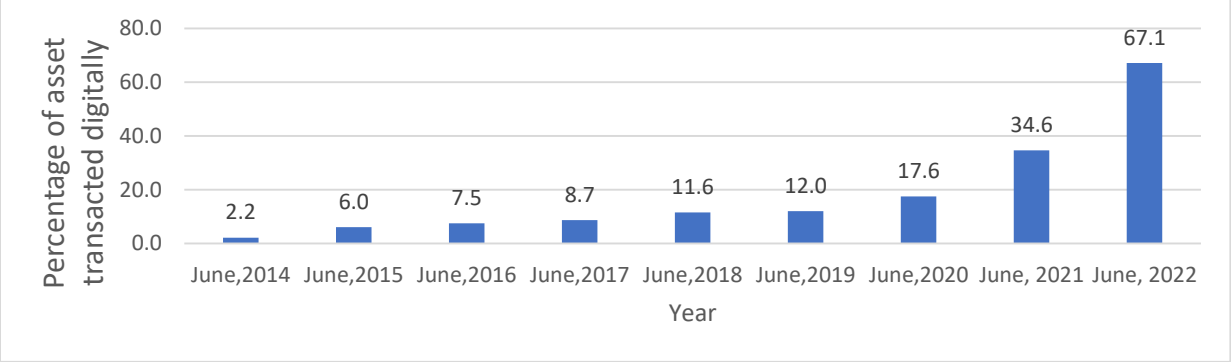
Figure 3.1. Shows the trend of number of digital payment and value of transaction between June 2013-june 2022. As the figure shows both value and volume of transaction are increasing. The graph also shows both the volume of transaction and the value per transaction has been increasing. The volume of transaction reached to 345 million in 2022 from what it was 8 million in 2014. This figure is low compared to Kenya which experienced 14.1 billion transaction only using mobile payments even in 2020. The value of transaction in 2022 reached to 1.6 trillion. The value per transaction which was 929 birr in 2014 has increased to 2032 birr in 2021. Interestingly, the value of transaction increased more than double (127%) from 2021 to 2022. These results imply that in overall, the trend of digital payment services both in terms of value, volume, and value per transaction in Ethiopia is on the rise, and it is expected to continue to grow in the coming years.

Figure 3.1. The trend of number and value of digital payment services transaction in Ethiopia



As figure 3.2 shows, in Ethiopia there has been a significant increase in the use of digital payment services by banks despite digital payment service use is a recent phenomenon. It was more or less stable up until June 2019, during which only 11.6% of the total asset of banks was transacted digitally. This figure has grown to more than five times and reach to 67.1% in June 2022. The ratio of digital transaction to total asset has accelerated its rate to 67.1% in 2022 from 34.6% in 2021. This result implies there is a great move towards using digital payment services in Ethiopia. Such dramatic change in use may arise because of an interplay of factors. This trend could be attributed to several factors, including the government's push towards a cashless economy, the increasing use of mobile devices, and the availability of various digital payment options such as mobile wallets, mobile banking, internet banking, PoSs, agent banking, and the recent pandemic (COVID-90). This result also shows banks are investing heavily on digital payment services to provide a rage of payment options to their customers. This has contributed to the growth of digital payment services in the country.

Figure 3.2. The trend of value of digital transaction as a percentage of assets of banks in Ethiopia between 2014-2022



Decomposing further the value and volume of digital transaction and number of subscribers for each service, analysis was made.

Mobile money/wallet

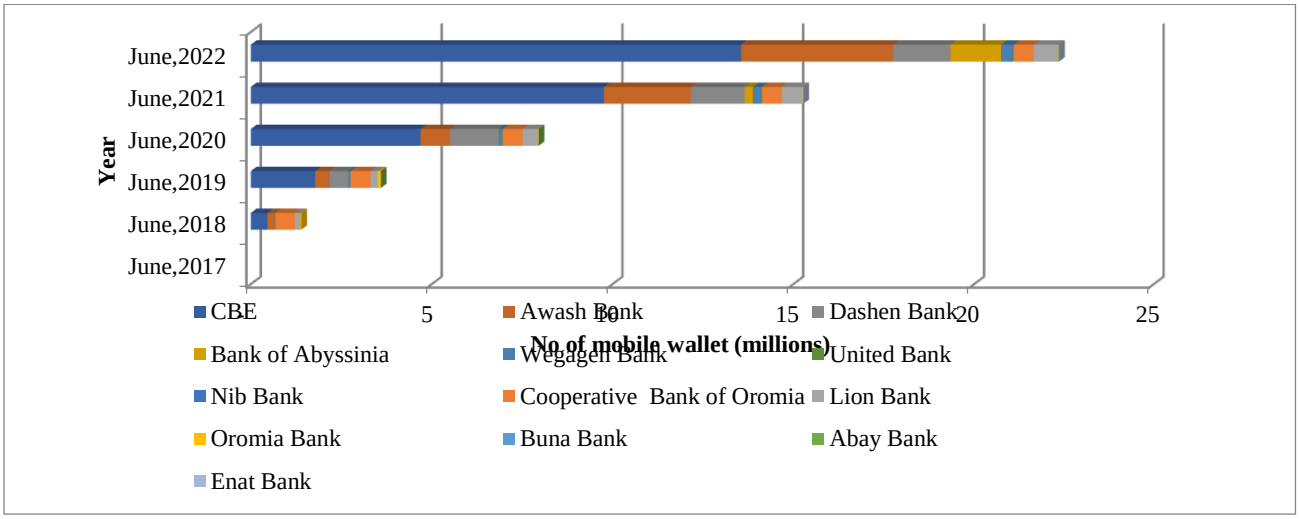
Mobile money is one of the principal components of digital financial services that facilitate digital payments, offering access to payments, transfers, and a range of other products like credit, savings, and insurance. These services offer consumers secure, convenient, and cost-efficient solutions. They are becoming drivers of financial inclusion across many developing countries (Mazer & Rowan, 2016). Mobile money does not require internet access nor a high-value mobile phone (a smartphone). Interestingly, mobile money has become an increasingly popular way of conducting financial transactions in Africa. According to a report by GSMA, mobile money transactions in Africa reached $456.3 billion in 2020 (Andersson-Manjang & Naghavi, 2021).

In Ethiopia, the country's first mobile money service, M-Birr, was introduced in 2013 by five MFIs. Following this, in 2015, Lion International Bank and Somali Micro Finance Institution launched a mobile service called HelloCash. . In December 2017, CBE introduced CBE-Birr, a mobile phone-based money transfer platform. Additionally, in July 2018, Dashen Bank launched Amole, another mobile phone-based money transfer platform. Presently, mobile money accounts are linked to a bank account so that money can easily be transferred from bank account to a mobile money account using a mobile phone. This integration has not only encouraged bank account holders to utilize mobile money services but has also motivated mobile money users to open bank accounts (Alemu et al., 2021).

Although mobile money services have been present in many African markets earlier, they are a relatively recent addition to Ethiopia's digital financial services landscape. For instance, M-Pesa,

a prominent mobile money provider in Kenya by Safaricom, was launched in 2007, whereas in Ethiopia, it was introduced in 2018. Notably, among the commercial banks in Ethiopia, Zemen Bank, Berahn Bank, Addis Bank, and Debub Global Bank do not offer mobile money services. The data revealed that the share of mobile wallet subscribers by commercial bank of Ethiopia is increasing. CBE's share, which stood at 32.86% in June 2018, has risen to 60.6% in 2022 (see Figure 3.3). Among private commercial banks, Awash International Bank holds the leading position in terms of subscribers. Its share has grown from 13.8% in 1918 to 18.8% in 2022. Similar to its dominance in market share, with 63.2% in deposits and 63% in assets, CBE also enjoys a dominant position in the mobile money market. This dominance is expected to continue in the future due to its large customer base, extensive branch network, and support from the government. The government has granted special privileges to CBE, allowing it to manage utility payment services, government employee salaries, and housing savings schemes, unlike private commercial banks. These services contribute to the expansion of CBE's customer base and the growth of its mobile money subscribers. These findings suggest that the banking industry in Ethiopia experiences weak competition in the mobile money sector due to an uneven playing field (Alemu et al., 2021).

Figure 3.3. Number of mobile wallet subscribers among commercial banks in Ethiopia, June 2013/June 2022

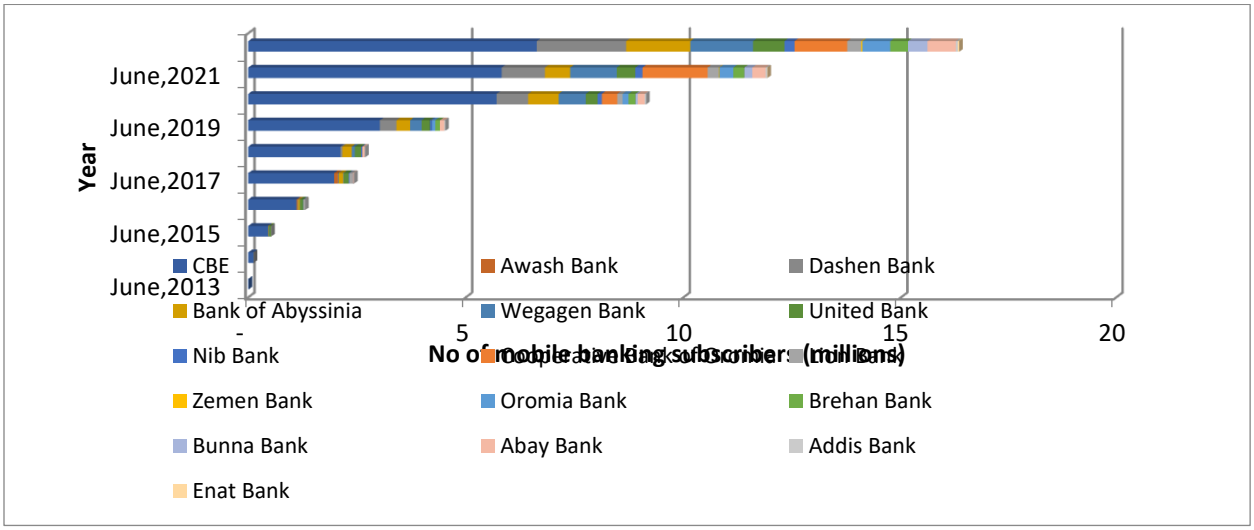


Mobile banking

Mobile systems have provided the opportunity to reach the banking services on our pocket 24/7 or the service in our table (Balkan, 2021). Depending on the feature provided in applications, the products and services provided in the mobile banking are different. Mobile banking enables users to access their accounts, conduct financial transactions such as transfers and payments, inquire about balances, and receive instant SMS notifications for any transaction.It is important to note that mobile banking relies on an internet or data connection to the mobile device.

Figure 3.4 show the trend and distribution of mobile banking among commercial banks in Ethiopia. The trend shows there has been a rapid increase in the use of mobile banking in Ethiopia. This growth has led to intense competition among commercial banks in the provision of internet banking services. As the figure shows the service was dominated by CBE until 2019. Since then, the share of private commercial banks in the provision of mobile banking service is increasing. for example, the share of CBE decreased to 40.5% in 2022 from what it was 48.8% in 2021. This result implies CBE is under pressure in offering more mobile banking services.

Figure 3.4. Number of mobile banking subscribers among commercial banks in Ethiopia, June 2014-June 2022

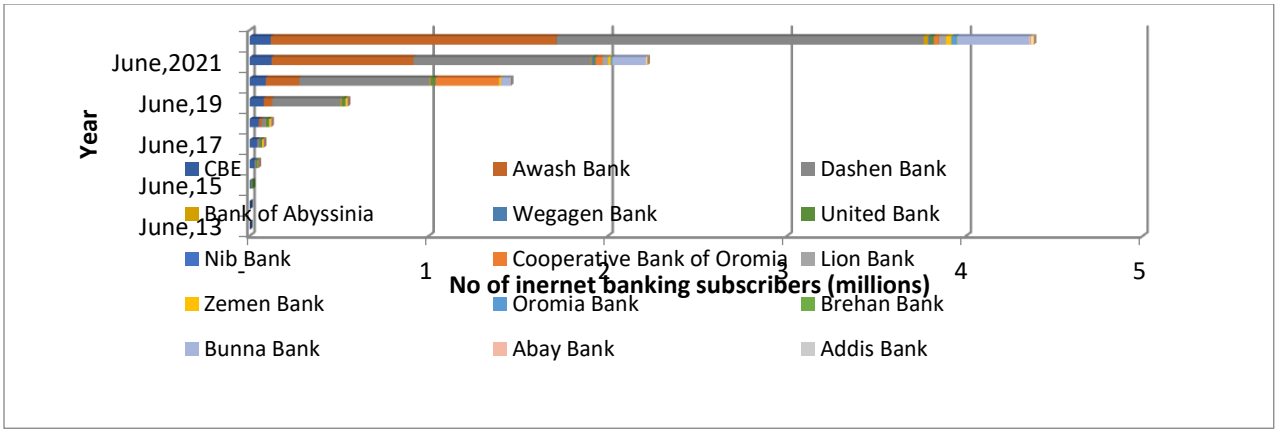


Internet banking

Internet banking is a crucial digital financial service offered by banks, allowing customers to perform various banking activities online, which were traditionally done at bank branches. These activities include checking balances, making transfers, accessing mini statements, viewing detailed transactions, and conducting online payments such as bill payments.

Since 2008 there has been internet banking in Ethiopia. Except Debub Global Bank, all commercial banks provide internet banking services. United Bank was the first to introduce it, and later all other banks joined the service. Contrary to other financial services, the number of internet banking subscriber in Commercial Bank of Ethiopia is quite low. Interestingly, the number is high among private banks. Among the private banks, Dashen, Awash, and Bunna banks are the leading in the number of subscribers. The figure shows there has been a rapid increase in the use of internet banking. As more people in the country are gaining access to the internet and mobile phones, the demand for online banking services is growing. This has led to intense competition among commercial banks to offer the most innovative and convenient internet banking services to their customers.

Figure 3.5. Number of internet banking subscribers among commercial banks in Ethiopia, June 2013-June 2022

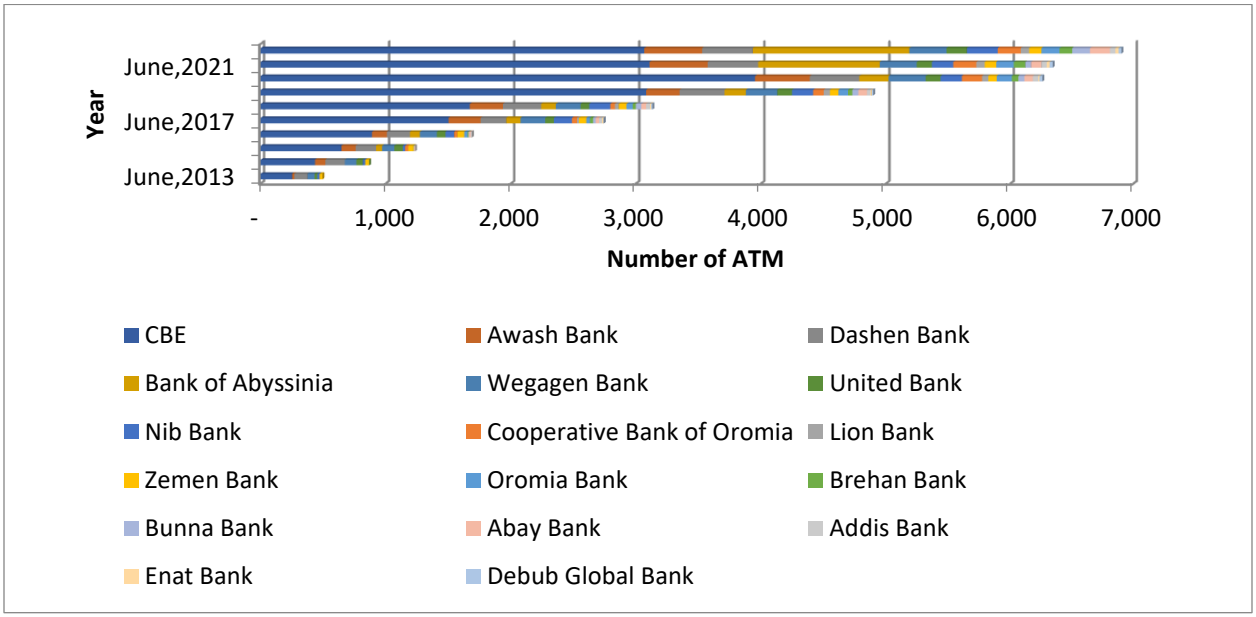


ATMs

In Ethiopia the first digital payment service was provided in the form of ATMs in 2001 by CBE, with eight machines in Addis Ababa. In Ethiopia various types of services are provided using ATMs, such as cash withdrawal, balance inquiry, and transfer. They do not provide cash deposit services. Currently ATM services are provided by all commercial banks operating in the country. As figure 4.4.1 shows, the number of ATMs has been increasing. As of June 2022, there were 6902 ATMs in the country. However, the growth of ATMs in the recent past was not as before. Up until June 2021 the volume of ATMs transaction has been increasing.

Figure 3.6 shows number of ATMs among commercial banks. As the figure shows CBE has large number of ATMs since 2013. Even if it has large number of ATMs, the number it has is declining Since June, 2020. This potentially is because of expansion of other digital financial services, like mobile wallet, mobile banking and others which enabled customers easily pay without withdrawing cash from ATMs.

Figure 3.6. Number of ATMs among commercial banks in Ethiopia, June 2013-June 2022

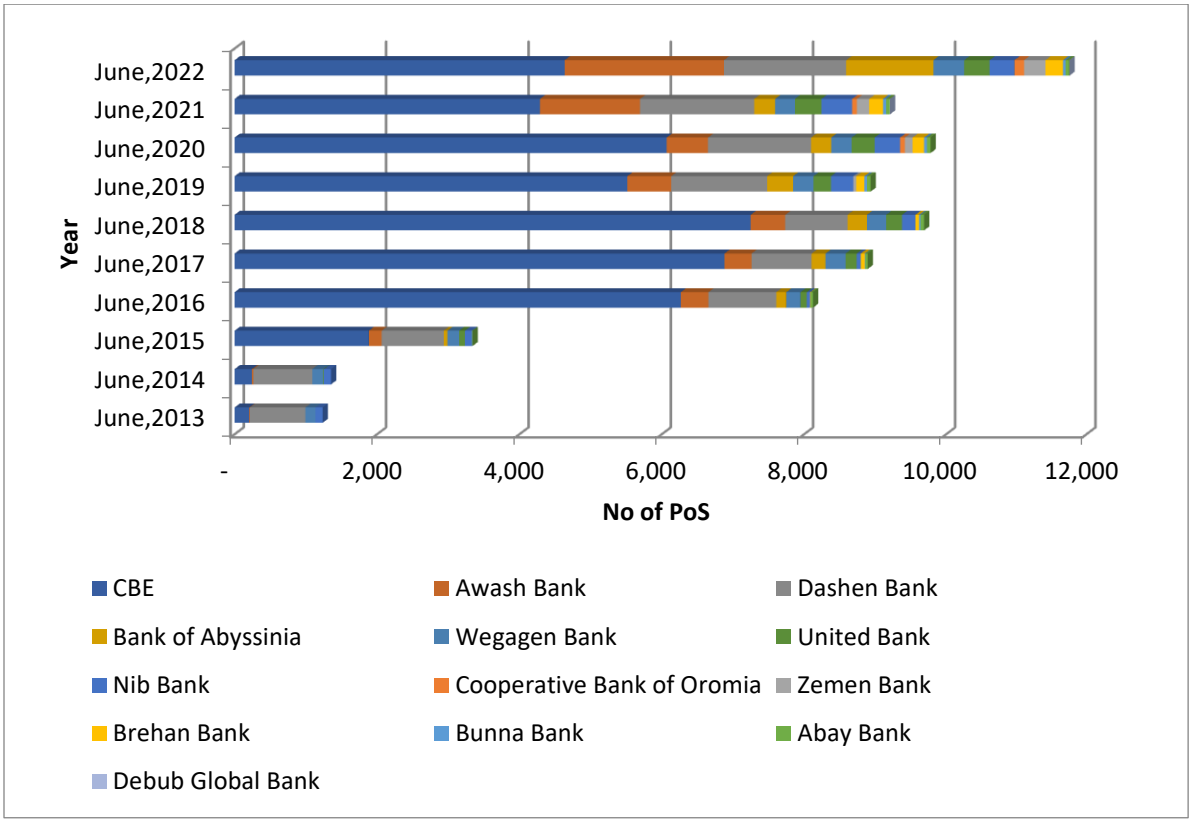


POS

POS is used to make payments. The CBE introduced POS terminals in 2012, deploying around 206 as a pilot in different locations. Except four banks in Ethiopia all commercial banks have POS terminals in different commercial areas. The number of POS terminals reached to 11,760 in June 2022 from 1,236 in June 2013.

Figure 3.7 shows number of POS among commercial banks. As the data shows in 2013 and 2014 the share of Dashen bank was the high. After 2015 the share of CBE POS subscribers started to grow significantly. However, again its share started to decline after 2020 again. The share of CBE's was about 77.1% in 2016 and this has reduced to 39.4, almost half, by 2022. This decline may be attributable to interoperability of POSs services by EthSwitch.

Figure 3.7. Number of POS among commercial banks in Ethiopia, June 2013-June 2022



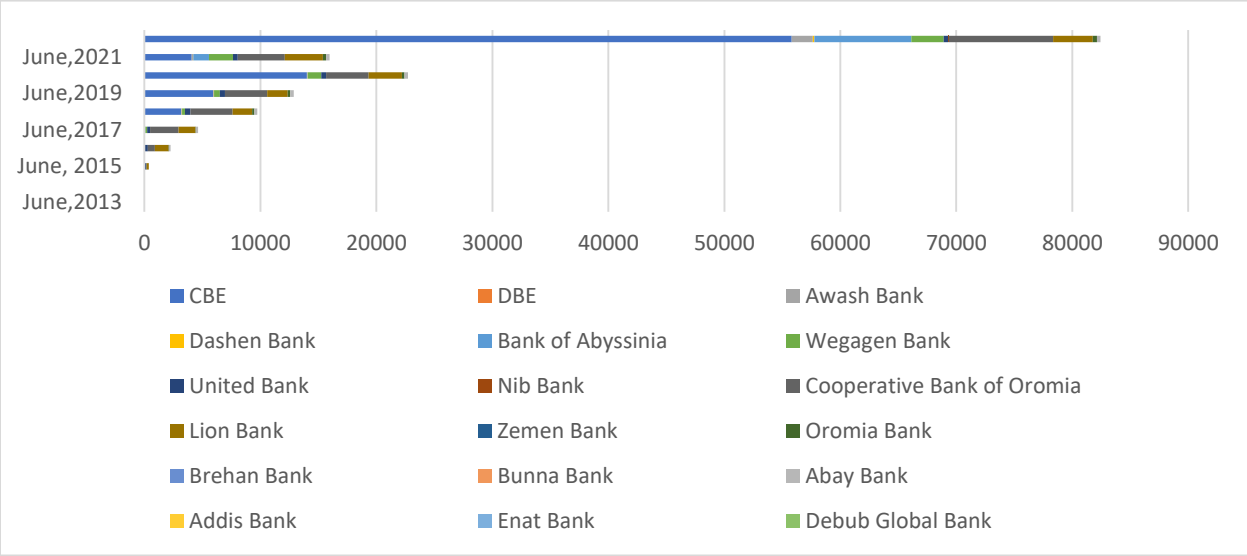
Agent banking

Agent banking refers to conducting banking business on behalf of the financial institution through an agent using various service delivery channels. Agents of banks provide financial services like traditional banks. Agent banking requires partnering with agents to reach out to remote areas in the country. Particularly, its role in enhancing financial inclusion is quite significant. It brings banking services closer to people in remote and underserved areas, as well as reducing the cost and time required to access financial services. Agents provide various financial services. These include account opening, bill payments, cash deposit, cash withdrawal,

balance inquiry, transfers (make and receive payments), mini statement, and opening mobile wallet.

As the figure below shows number of agent banking in Ethiopia has been consistently growing up moderately until 2020. In 2021 there was a decline in agents. However, the number of agents has shown a significant growth in 2022. Particularly, in 2022 the service is disproportionately dominated by CBE as it constitutes about 67.7% of the agents. CBE has more agents currently as it is working with microfinance institutions, and it has many bank branches in remote areas. Also, cooperative bank of Oromia has more agents than other private banks as it is working with unions and cooperatives that works in rural areas.

Figure 3.8. Number of agent banking among commercial banks in Ethiopia, June 2013-June 2022



Conclusion and Recommendation

Conclusion

Digital payments have several contributions in the economy. Digital payments enhance the amount of saving and financial security, reduce the cost of receiving payments, reduce crime, and increase financial inclusion. Digital payments are cheaper than receiving payments in cash. It encourages use of additional financial services such as credit and insurance. However, equally it is important to note that the introduction of digital payments is accompanied by risks to consumers, such as fraud and phishing scams targeting accounts, over indebtedness in digital credit, and customers receiving incomplete or incorrect information on the fees and costs of financial products (Demirgüç-Kunt et al., 2022).

Effective competition in the provision of digital payments among banks may enhances financial inclusion in a number of ways. Accordingly, the objective of this study was to examine the trend and evaluate the level of digital payment competition among commercial banks in Ethiopia.

For more than a decade, in Ethiopia the provision of digital financial services (DFS) has been limited to financial institutions. Since the mid of 2020 the NBE issued two directives that permit non-financial institutions to provide DFS (including DPS) (NBE, 2020a, 2020b). The entrants of new banks and new operators can enhance competition and innovation which again improve the quality and penetration of digital financial services.

Measuring the digital payment competitiveness of a country is a complex task requires considering a number of factors. In this study, particularly penetration of digital payment methods such as mobile money, mobile banking, internet banking, PoSs, and ATM and agent banking were considered. Also, to measure the level of competition among banks in the provision of digital payment services percentage share was used. It represents the percentage of total subscribers to a given service by a given bank in relation to the total number of subscribers to the service in the market.

The result revealed, the state-owned commercial bank of Ethiopia have stronger competitiveness and higher strength of digital finance development. This is because for long the banking industry has been controlled by government of Ethiopia which resulted still insufficient competition. The result revealed that CBE has natural monopoly. Because of high start-up costs or economies of scale of technologies in digital payment services result in significant barriers to entry for other banks. To show the trend of digital payment services, number of digital transaction and the ratio of value of digital payment service to their total asset was used.

The data revealed both the value and volume of digital transaction in Ethiopia are increasing. The result also indicated a rise in the number of transactions and the value per transaction per subscriber. In 2022, the volume of transaction reached to 345 million, from where it was 8 million in 2014, reflecting significant growth over the past five years. However, it is worth noting that this volume is relatively low compared to Kenya, which recorded a volume of 14.1 billion transactions solely through mobile payments in 2020. Furthermore, the value of transactions in Ethiopia reached to 1.6 trillion birr in 2022. The value per transaction, which stood at 929 birr in 2014, has increased to 2032 birr in 2021. Interestingly, the value of transaction increased more than double (127%) from 2021 to 2022. These results indicate an overal upward trend in digital payment services in Ethiopia, both in terms of number and value per transaction, and it is expected to continue to grow in the coming years.

In Ethiopia, the use of digital payment services provided by banks has experienced a significant increase, despite being a recent phenomenon. It was more or less stable up until June 2019, with only 11.6% of the total assets being transacted digitally. However, this figure has since grown more than fivefold, reaching 67.1% by June 2022. The figure has accelerated its rate of growth to 67.1% in 2022 from 34.6% in 2021. This result implies there is a great move towards using digital payment services provided by banks in Ethiopia.

Mobile money is one of the principal components of digital payment services offered by commercial banks in Ethiopia, providing a convenient and accessible alternative to traditional banking. Over the past year, the number of active mobile money accounts in Ethiopia has doubled, surpassing 43 million, making it one of the largest mobile money networks in the world (Insight, 2022). Since its introduction in 2018, the number and volume of transactions through mobile money increased significantly. Within five years, between June 2018 and June 2022, the number of mobile money subscribers has grown more than 15 times. The data revealed that the share of mobile wallet subscribers by CBE reached to 60.6% in 2022. CBE enjoyed the mobile money market dominance, because of its large customer base, number of branches, and support from the government. CBE is privileged by the government by being the sole provider of certain services too. These findings suggest that the banking industry in Ethiopia experiences limited competition in the mobile money sector due to an uneven playing field (Alemu et al., 2021).

Mobile banking services allow customers to access financial services from their homes or offices. In rural areas, traditional banks are often inaccessible due to distance and cost, making

mobile banking a convenient alternative for many people. Since 2008 mobile banking has been operational in Ethiopia. The data showed since 2019 the popularity of the platform is growing. As of June 2022, it has more than 16.39 million customers. This resulted from increased adoption of mobile and online banking services by consumers and businesses. Yet this is low compared to the number of mobile subscribers for a country having 120 million people. The data indicated the value of mobile banking transaction per subscriber has increased from 7,482.24 to 71,212.96 birr between 2020 and 2022. Also, the amount of money per transaction increased from 5883.36 to 13,220.48 between 2020 and 2022. This implies that mobile banking users are increasingly engaging with mobile banking apps. Various factors contribute to this impressive growth, including limited access to traditional banking services, widespread mobile phone usage, and the expansion of e-commerce and digital services. Additionally, the pandemic (COVID-19) has expedited the adoption of mobile banking as a means to minimize physical contact and reduce the risk of infection (Bank, 2021). Above all, the growth of e-commerce has facilitated digital payment through mobile banking. The trend shows there has been a rapid increase in the use of mobile banking in Ethiopia. This growth has led to intense competition among commercial banks which was dominated by CBE until 2019. The share of CBE declined from 48.8% to 40.5% between 2021 and 2022. This implies CBE is under pressure in offering more mobile banking services.

Internet banking helps to conduct financial services via internet almost every service that are provided traditionally through branches of banks. In June 2013, the number of internet banking subscribers in Ethiopia stood at a mere 215, but by June 2022, it had soared to 4.4 million The proliferation of mobile phones and increased internet accessibility has prompted many individuals to adopt internet banking as a convenient means of managing their finances. All commercial banks provide internet banking services except recently joined banks. Notably, the number of internet banking subscribers in the CBE remains relatively low compared to private banks. The dominance of internet banking by private banks may be attributed to the fact that it is frequently utilized by private businesses and large firms. This has fostered intense competition among commercial banks to provide innovative and user-friendly internet banking services to their customers.

Banks have placed ATMs in various locations to provide customers with a convenient access to cash at any time. In Ethiopia ATMs offer a range of services, including cash withdrawal, balance inquiry, and transfers. Currently, all commercial banks operating in the country, except for recently established ones, provide ATM services. As of June 2022, there were a total of 6,902 ATMs available nationwide. However, the growth rate of ATMs has slowed down compared to previous years. From June 2014 to June 2021, the volume of ATM transactions steadily increased from 8.1 million to 225.6 million. Nevertheless, in June 2022, there was a notable decrease in transaction volume. This decline can potentially be attributed to the rise of mobile money and mobile banking services, which have reduced the necessity for cash. Despite having large number of ATMs, the number of ATMs it has been declining since June 2020. This decrease can potentially be attributed to the expansion of alternative digital financial services, such as mobile wallet and mobile banking, which offer customers the convenience of making payments without needing to withdraw cash from ATMs. Additionally, the interoperability of ATM service has contributed to this trend.

POS service enables customers to make payments at various locations. Except four banks in Ethiopia all commercial banks have POS terminals. The number of POS terminals has experienced significant growth, increasing from 1,236 in June 2013 to 11,760 in June 2022. Until

2018, the number of POS transactions remained relatively stable. However, starting from June 2019, there was a notable surge in the number of transactions, despite irregularities. The value of POS transactions did not exceed 7.4 billion birr until 2021. However, in 2022, the value of transactions skyrocketed to 62.17 billion birr. One of the key factors contributing to this substantial growth in transaction value is the expansion of interoperable POS services. In 2016, CBE's POS subscribers accounted for approximately 77.1% of the market share, but by 2022, this figure had dropped to 39.4%, nearly half of its previous level. This decline may be attributed to the introduction of interoperable POS services by Eth Switch. This result implies that nowadays, due to interoperability, banks are sharing infrastructure such as ATMs and POS terminals, creating opportunities for cooperation and competition through Eth Switch.

Agent banking refers to the provision of banking services through authorized agents on behalf of financial institutions. By June 2022, Ethiopia had over 82,424 active agent outlets, which was approximately half the number in Kenya. Notably, CBE dominates the agent banking market with a share of approximately 67.7%, primarily due to its collaboration with microfinance institutions and extensive presence in remote areas. Additionally, the Cooperative Bank of Oromia has a higher number of agents compared to other private banks, as it works closely with unions and cooperatives operating in rural areas.

Recommendations

In general, enhancing digital payment services competition among commercial banks in Ethiopia requires a comprehensive approach that includes promoting interoperability, encouraging innovation, increasing access to infrastructure, facilitating competition, promoting financial inclusion, and enhancing digital financial literacy.

1. ***Enhance interoperability:*** There is a need to enhance further interoperability of digital payment services so that newly emerging banks can share the infrastructure of the incumbent banks which further enhance competition. Governments can mandate interoperability between different digital payment systems to promote competition and increase consumer choice. This means that users of one digital payment system should be able to transact with users of other systems seamlessly.
2. ***Increase access to infrastructure:*** Government has to invest in the development of digital infrastructure, such as high-speed internet connectivity and mobile networks, power to support the growth of digital payment services in remote areas. There is a need to bridge technological divide. This can be done through enhancing access to reliable and high-quality internet service, then shift the focus from access to use of technology.
3. ***Foster beneficial competition, while managing the risks:*** Government needs to promote healthy competition among commercial banks by creating a level playing field. This can include reducing the regulatory burden on new entrants, promoting mergers and acquisitions, and encouraging entrants of foreign banks to the sector. Private banks need to have equal access to providing digital payment service like that of the government banks.
4. ***Promote financial inclusion:*** Governments can promote financial inclusion by supporting the use of digital payment services among underbanked and underserved populations. This can include creating policies and programs that promote access to mobile phones and other digital devices. There is a need to expand agent banking which is important to enhance financial inclusion especially for the rural and underserved population. Thus, banks need to work in expanding agent banking which is quite relevant to be provided with mobile money services.

5. ***Enhancing digital literacy*:** Digital literacy can increase awareness about digital payment services and their benefits. This can encourage more people to use digital payment services, creating a larger customer base and increasing competition among commercial banks. Digital literacy can help individuals understand how to protect themselves from online fraud and scams. This can increase consumer confidence in digital payment services, promoting their use and driving competition among commercial banks. Digital literacy can increase demand for digital services, driving competition among commercial banks to offer better and more innovative digital payment services to meet the needs of consumers.

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2.4 Nexus Between Natural Resource Endowments and Economic Growth in Selected African Countries, Meshesha Zewdie

Lecturer, Department of Development Economics and Management Ethiopian Civil Service University

Email: mesheshazewde@gmail.com

Abstract

The role of natural resource endowments to economic growth in Africa is mixed and inconclusive in both empirical and theoretical literature. Accordingly, using World Bank data sets from 46 selected African countries for the years 2000 to 2022, this study examined the nexus between economic growth and natural resource dependence in Africa. We used the system generalized method of moment and dynamic panel threshold regression to analyze the data. The findings of the two-step sys-GMM moment regression using 'xtabond2' revealed that when the institutional quality variable is added and excluded from the model, natural resource rent impacts economic growth negatively, but when the institution is excluded, the impact is greater. Estimation with the interaction variable of natural resource dependence and institutional variable included to the model, natural resource dependence impacts economic growth positively. The result of the DPTR using "xthenreg" revealed that when the threshold value of natural resource dependence is ≤1.73% of gross domestic product, natural resource rent has a positive impact on economic growth, and has a negative impact when the threshold value is above 1.73%. Similarly, when the threshold value of institutional quality is ≤0.277, natural resource impacts economic growth negatively and significantly; however, above the threshold level (0.277), the impact is positive and significant. In conclusion, natural resource endowment is a curse or a blessing to economic growth when associated with low- and high-quality institutions, respectively. Thus, building strong institutions and diversifying economies from resource-based to learning-by-doing sectors helps to minify the adverse impact of resource dependency on economic growth.

Keywords: *natural resource, economic growth, institutional quality, dynamic panel, Africa*

Introduction

The contribution of natural resource endowments in economic growth and development is being a source of discussion in the economics literature. Economic progress concentrating on the

export and extraction of natural resources grow at relatively slow rates (Badeeb et al., 2017; Sachs & Warner, 1995). Contrarily, natural resource endowments were noted by early development economists (Rostow,1961; Watkins, 1963) as having the ability to spur economic growth by drawing capital from foreign creditors, directing primary sector rent towards profitable ventures, and preventing poverty.

To justify the slower economic growth of countries which are endowed with resource and the opposite link between economic growth and natural resource dependence, economists and politicians have developed contemporary theoretical explanations. Their argument can be divided into two categories: market method argument attached to the Dutch disease, and political argument about the quality of institution and looking for rent (Van Der Ploeg, 2011). The Dutch disease hypothesis places more emphasis on the function of markets than on procedures carried out through political institutions. The Dutch disease mechanism can have an impact on resource movement and spending following a resource shock. The effect of resource movement explains the shift of resource from other sectors, say, manufacturing to the resource sector of which higher marginal productivity existed. The spending effect describes natural resource rent crowds out other sectors of economy, and therefore natural resource rents are unfavorable to growth (Papyrakis & Raveh, 2014; Van Der Ploeg, 2011).

From an institutional standpoint, curse from natural resource (hereafter, NRD) applies to nations with low quality institutions. NRD can promote extended growth and development in the presence of strong institutions. Strong institutions may have an impact on the growth effects of resource rent, and the institutional context of a country affects both rent-seeking and returns to entrepreneurial activity. They contend that resource booms in economies with "grabber-friendly" institutions cause labor to move from production to rent-seeking, which is detrimental to overall growth, whereas resource booms in nations with "producer-friendly" institutions enhances production (Mehlum et al., 2006).

As to the link between NRD (it is the revenue collected from natural resource) and economic progress in the continent, theories point out that, the contribution of NRD on economic growth is inconsistent. Resource blessing theories suggests that NRD has a favourable outcome on economic growth. This is because the discovery of new resources and the revenue generated from them help governments address important socioeconomic concerns like unemployment, poverty, health, and infrastructure(Akweny et al., 2017; Alpha & Ding, 2016), while the resource curse hypothesis has argued that NRD leads nations to grow slowly and pushes them to poverty and conflict(Faha, 2021; D.H. Kim & Lin, 2017; Moti, 2019; Sini et al., 2021).

Likewise, practical studies on the association between economic growth and NRD have demonstrated mixed and inconclusive findings (Badeeb et al., 2017; Chapman et al., 2015; Cockx & Francken, 2016). Empirical studies conducted in Africa have shown the unfavorable impact of NRD on economic growth (Bhattacharyya & Collier, 2014; Cockx & Francken, 2016; Jalloh, 2013). For example, Angola, Nigeria, Mali, and DRC have plentiful natural resources but still grappling with slow rates of economic growth (Jalloh, 2013; Saremi & Nezhad, 2014). Conversely, other studies have found that rent from resources has a positive impact(Alpha & Ding, 2016; Bah, 2016; Moshiri & Hayati, 2017). For instance, resource-rich countries like Namibia and Botswana have implied remarkable economic growth rate (Arezki et al., 2011; Raboloko, 2019), while countries with scarce of resource like Rwanda and Ethiopia have showed faster economic progress.

Additionally, the threshold level of NRD and institutional quality(hereafter INTSQ) on the nexus between NRD and economic growth have not been adequately investigated, few

researches have been conducted on the static panel threshold regression (Dramani, Abdul Rahman, Sulemana, & Owusu Takyi, 2022; Epo & Nochi Faha, 2020) and limited empirical evidences existed in Africa to determine what level of NRD and INTSQ is a curse or blessing to African economic growth using the recent dynamic panel threshold model(hereafter DPTM) formulated by Seo and Shin(2016) that allows the threshold variables can be endogenous, helps to overcame the limitation of the existing literature of exogeneity assumption.

Hence it is plausible to conclude that there is no clear-cut statistical or theoretical link between NRD and economic growth based on the aforementioned empirical and theoretical debates. This contradiction may result from the use of various cross sections, periods, differentiated independent variables, and dissimilar proxy variables for measuring economic growth, such as GDP growth rate(Boschini et al., 2013) and RGDPC (Kakanov et al., 2018; Sarmidi et al., 2014). The contribution of NRD on economic growth in Africa is continued to be a research topic as the rate of exploitation and utilization of resources varies among countries and periods, so that ambiguous and inconsistent findings has been reported by researchers, and this blatantly demonstrate a disagreement research gap (Miles, 2017). This shows the importance and worthwhileness to conduct a study on this topic to contribute to filling the existing disagreement research gaps.

Thus, this study examined the nexus between NRD and economic growth in 46 selected African countries out of 54 over the period 2000 to 2022, using the resource curse and rent-seeking theories as a theoretical framework and the dynamic panel and dynamic threshold panel models as an analytical model. Specifically, this study aimed to: i) examine the impact NRD on economic growth; ii) identify the role of INTSQ on the nexus between NRD and economic growth; and iii) analyze the DPT level of natural resource rent and INTSQ on economic growth. The rest part of the study is presented as follows: Part 2 explains methods and materials; Part 3 presents results and discussion; and Part 4 forwards the conclusion and policy implications of the study.

Methodology

Data Types and Sources

To meet the specific objectives outlined in this study, secondary annual panel data were collected from 46 African countries out of 54 between the years 2000 to2022. The choice of countries and years was founded on the presence of better data with fewer missing values, and we excluded 8 African countries with higher missing data. We, therefore, sourced secondary data from the World Bank's World Development Indicator (WDI) and World Governance Indicator (WGI). The research design used was descriptive and explanatory, with a quantitative research approach.

Dynamic panel model specification

Dynamic panel data model was preferred to static panel data model because it assists us to solve the diversity of the entities and the endogeneity of the variables by using many instrumental variables. In addition, the existence of a "lagged dependent variable" among the regressor is a feature of dynamic relationships (Baltagi, 2005; A. C. Cameron & Trivedi, 2005; Roodman, 2009). The use of the "lagged dependent variable as explanatory variable is in line with the work of Arellano and Bond(1991), Arellano and Bover(1995), and Blundell and Bond (1998)" , in which they used lagged endogenous terms as a technique to eliminate the correlation issue between the variables, y_{it}, and $y_{i,t-1}$. The general dynamic panel model has the form:

$$y_{it} = \alpha_i + \gamma y_{i,t-1} + x'_{it}\beta + \varepsilon_{it} \quad (1)$$

Where y_{it}: dependent variable for country i at time t, $y_{i,t-1}$ "lag of the dependent variable", γ is constant, $x'_{it}$is independent variable of country i at time t, β is coefficients, α_i is unobserved country-specific time-invariant heterogeneity, ε_{it}, is a random term.

Most of the panel data models utilizes a one-way error component model for the disturbances with $\epsilon_{it} = \alpha_{it} + u_{it}$. A two-way effects model permits the intercept to change over the entities and over time which is represented as $\boldsymbol{\epsilon_{it}} = \boldsymbol{\alpha_i} + \boldsymbol{\gamma_t} + \boldsymbol{u_{it}}$where $\boldsymbol{\alpha_i}$ denotes the unobservable individual-specific effect, $\boldsymbol{\gamma_t}$ time-specific effects, and $\boldsymbol{u_{it}}$ the remainder disturbance (Baltagi, 2005; Verbeek, 2017).This study applied a one way error component model of dynamic panel (DPM) and dynamic panel threshold model(DPTM).

RGDPC is the dependent variable in constant 2015 USD (D.H. Kim & Lin, 2017; Raheem et al., 2018; Shahbaz et al., 2019; Tiba & Frikha, 2019) used as proxy variable for economic growth. The choice of regressor depends on the empirical works of Sachs and Warner (1999), Uddin et al.(2017), Tang and Bundhoo (2017), Dwumfour and Ntow-Gyamfi (2018), Kakanov et al.(2018), Tiba and Frikha (2019) and Vespignani et al.(2019). The square of NRD was added to the model to analyze the non-linear effect of NRD on economic growth. Besides, the interaction terms of NRD and INSTQ was introduced to the equation (2) to explore the role of strong institutions on the nexus between NRD and economic growth. Equation (2) was also estimated excluding institutional quality to investigate the linear impact of NRD on economic growth. The DPM is specified as:

$$\ln RGDPC_{it}=\delta_0+\delta_1 \ln RGDOPC_{i,t-1}+\delta_2 \ln NRDG_{it}+\delta_3 \ln NRDG^2_{it}+\delta_4 \ln FCEG_{it}+\delta_5 FDIG_{it} +\delta_6 \ln OPNG_{it} +\delta_7 \ln LABF_{it} +\delta_8 INSTQ_{it} + \delta_9 INF_{it} + \delta_{10} \ln CRED_{it} + \delta_{11} \ln NRDG_{it}*INSTQ_{it} + \mu_i +\varepsilon_{it} \quad (2)$$

Where: ln is natural logarithm; $RGDPC_{it}$ is real gross domestic product per capital of the it^{th} country at year t, i= 1, 2, …,46, t = 2000, 2001, …, 2022, $\ln RGDPC_{it-1}$ is a one period lagged values of of RGDPC; NRD_{it} is of natural resource dependence measured as "the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents" in current US$ as a share of GD (WDI,2023); $\ln NRDG^2$ is the square of NRD; $FCEG_{it}$ is final consumption expenditure, and is measured as the total of government and private final consumption expenditures as a percentage of GDP in current US$; $FDIG_{it}$ is foreign direct investment. It is computed as the net inflow in the balance of payment in the current US$; $OPNG_{it}$ is trade openness and computed as the percentage share of the sum of exports plus imports in the current US$; $\ln LABF_{it}$ is the natural logarithm labor force, which is made up of individuals who are at least 15 years old and provide labor for economic activities.

$INSTQ_{it}$ is institutional quality index which is composed of "control of corruption (COC), government effectiveness (GEF), political stability and absence of violence (PSAV), regulatory quality (ROQ), rule of law (ROL), and voice and accountability (VAC)" (WGI, 2023). All of these indicators had a value spanning from –2.5 (weak institutional quality) to + 2.5 (strong institutional quality). To facilitate analysis, these indicators were converted into a single positive index with a value range between 0 and 1. This was achieved by dividing the sum of the "maximum and actual values" by the difference between the "maximum value and minimum value". Then, INSTQ index was computed by taking the un-weighted mean of each indicator after conversion. Accordingly, a value close to zero denotes poor institutional quality, whereas a value near one denotes strong institutional quality; $\ln NRDG_{it}*INSTQ_{it}$ is interaction of $\ln NRDG_{it}$ and INSTQ; INF_{it} is inflation which is calculated as "the ratio of GDP in the current local currency to GDP in constant local currency"; $CRED_{it}$ is domestic credit, and measured as total credit given to private sectors as a percentage of GDP; μ_i is constant, δ_i are coefficients to

be estimated, $\varepsilon_{it} \sim N(0, \sigma 2)$ is a random term, μ_i and $\boldsymbol{\varepsilon}_{it}$ is independently and identically distributed.

To eliminate bias resulting from unobserved country-specific effects, possible "endogeneity bias", and when the regressors are not severely exogenous (Roodman, 2009), we use the dynamic panel data estimators. If we apply any of static panel model regress equation (2), it can lead estimates to be biased, inefficient and inconsistency due to the possibility of correlation between the "lagged value of the RGDPC" and the error terms. Therefore, the use of the Generalized Method of Moment (GMM) to regress equation (2) yields unbiased, consistent, and efficient estimates for the population parameter as it allows us to use more instruments to control endogeneity problems. Consequently, Arellano and Bond (1991), Arellano and Bover(1995), and Blundell and Bond (1998) designed the Generalized method of moment for a condition with small periods (T<25) and large data samples (N>25).

GMM estimator can be of diff- GMM and sys- GMM. Diff- GMM was developed by Arellano and Bond (1991) by altering equation(2) into a first-difference to drop the nation-specific effect. Similarly, simultaneity bias can also be cleared by using lagged levels of the regressor as instruments. Nevertheless, the use of lagged levels of independent variables in difference GMM estimators may be a weak instrument to solve the endogeneity problem and might resulted in a wrong implications if the dependent variables are constant (Acemoglu & Robinson, 2008; Arellano & Bover, 1995). Moreover, the first difference estimator entails data transformation by subtracting the past value of variables from its current values and may lead to information loss(Blundell & Bond, 1998).

To avoid the shortcomings of diff- GMM, Arellano and Bover (1995)and Blundell and Bond (1998) have created a sys-GMM estimator that combines the difference and level equations. Hence, "variables in differences are instrumented with the lags of their levels, while variables in levels are instrumented with the lags of their differences" (Bond et al., 2001) and this gives us unbiased, efficient, and consistent estimates, so that, the sys-GMM estimator is the weighted average of the difference and the level coefficients specified in equation(3) and (4).

System GMM allows us to do the estimation through one-step and two-step estimator options. For large sample sizes like the one we used in this study, a two-step estimator produces an estimator with greater efficiency than a one-step estimator (Arellano & Bover, 1995). The estimation was undertaken by "xtabond2" (Roodman, 2009). This estimator introduces more options in the use of instruments than "xtdpdsys"(Labra & Torrecillas, 2018). With reference to the works of Arellano and Bover (1995)and Blundell and Bond(1998), the system GMM is specified as level(3) and difference equations(4):

$$\ln RGDPC_{it}=\delta_0+\delta_1 \ln RGDOPC_{i,t-1}+\delta_2 \ln NRDG_{it}+\delta_3 \ln NRDG^2{}_{it}+\delta_4 \ln FCEG_{it}+\delta_5 FDIG_{it+}\delta_6 \ln OPNG_{it} +\delta_7 \ln LABF_{it}+\delta_8 INSTQ_{it}+\delta_9 INF_{it}+\delta_{10} \ln CRED_{it}+\delta_{11} \ln NRDGit*INSTQ^{it}+\mu_i+\varepsilon_{it} \quad (3)$$

$$\Delta \ln RGDPC_{it} = \delta_0 +\delta_1 \Delta \ln RGDOPC_{i,t-1}+\delta_2 \Delta \ln NRDG_{it} +\delta_3 \Delta \ln NRDG^2{}_{it} +\delta_4 \Delta \ln FCEG_{it} +\delta_5 \Delta FDIG_{it} +\delta_6 \Delta \ln OPNG_{it} +\delta_7 \Delta \ln LABF_{it} +\delta_8 \Delta INSTQ_{it} + \delta_9 \Delta INF_{it} + \delta_{10} \Delta \ln CRED_{it} + \delta_{11} \Delta \ln NRDG_{it}*INSTQ_{it} +\varepsilon_{it} \quad (4)$$

Dynamic Pane Threshold Model

The initial PTM suggested by Hansen (1999) is relevant to static panel model demands threshold variables to be exogenous. This model cannot be applied to dynamic panel data. Hence, by expanding the Hansen (1999) model, Seo and Shin (2016) developed the DPTM to

circumvent the limitations exogenous threshold variables of the static panel threshold model. The DPTM allows both threshold variable and regressor can be endogenous and uses the first diff-GMM approach to estimate coefficients. We used this model to examine whether or not the impacts of NRD and INSTQ variables on economic growth vary with their values. The DPTM is specified as:

$$y_{it} = (I, x'_{it})\theta_1 I\{q_{it} \leq \gamma\} + (I, x'_{it})\theta_2 I\{q_{it} > \gamma\} + \mu_{it} + \varepsilon_{it} \quad (5)$$

Where: y_{it} dependent variable (economic growth), x'_{it} is a set of time-varying independent variables including the lagged dependent variable, I{.} is the indicator function showing the regimes outlined by the threshold variable, q_{it} is the threshold variable, γ is the threshold parameter, θ_1 and $\theta_2$are the coefficients attached with the lower and upper regimes respectively, μ_{it} the unobserved individual fixed effect, ε_{it} the error term. Considering NRD and INSTQ as a threshold variable, their threshold effect is specified as (6 &8):

$$\begin{aligned} \text{lnRGDP}_{it} = {} & \psi_1 \text{lnRGDOPC}_{i,t-1} + \beta_{11}\text{lnNRDG}_{it} + \beta_{21}\text{lnFCEG}_{it} + \beta_{31}\text{lnFDIG}_{it} + \beta_{41}\text{lnOPNG}_{it} + \\ & \beta_{51}\text{lnLABF}_{it} + + \beta_{61}\text{INFit} + \beta_{71}\text{lnCRED}_{it} + \mu_i + \varepsilon_{it} \text{ if } \text{NRDG}_{it} \leq \gamma \\ & \psi_2 \text{lnRGDOPC}_{i,t-1} + \beta_{12}\text{lnNRDG}_{it} + \beta_{22}\text{lnFCEG}_{it} + \beta_{32}\text{lnFDIG}_{it} + \beta_{42}\text{lnOPNG}_{it} + \\ & \beta_{52}\text{lnLABF}_{it} + + \beta_{62}\text{INFit} + \beta_{72}\text{lnCRED}_{it} + \mu_i + \varepsilon_{it} \text{ if } \text{NRDG}_{it} > \gamma \end{aligned} \quad (6)$$

$$\begin{aligned} \text{lnRGDP}_{it} = {} & \psi_1 \text{lnRGDOPC}_{i,t-1} + \beta_{11}\text{lnNRDG}_{it} + \beta_{21}\text{lnFCEG}_{it} + \beta_{31}\text{lnFDIG}_{it} + \beta_{41}\text{lnOPNG}_{it} + \\ & \beta_{51}\text{lnLABF}_{it} + \beta_{61}\text{INSTQ}_{it} + \beta_{71}\text{INFit} + \beta_{81}\text{lnCRED}_{it} + \mu_i + \varepsilon_{it} \text{ if } \text{INSTQ}_{it} \leq \gamma \\ & \psi_2 \text{lnRGDOPC}_{i,t-1} + \beta_{12}\text{lnNRDG}_{it} + \beta_{22}\text{lnFCEG}_{it} + \beta_{32}\text{lnFDIG}_{it} + \beta_{42}\text{lnOPNG}_{it} + \\ & \beta_{52}\text{lnLABF}_{it} + \beta_{62}\text{INSTQ}_{it} + \beta_{72}\text{INFit} + \beta_{82}\text{lnCRED}_{it} + \mu_i + \varepsilon_{it} \text{ if } \text{INSTQ}_{it} > \gamma \end{aligned} \quad (8)$$

Variable description and source

Description, expected sign and sources of both the dependent and independent variables used in the analytical model specification was detailed in table 1.

Table 1: Variable description, expected sign and source

Variables	Description	Exp.sign	Source
Dependent variable			
RGDPC	Real Gross Domestic Product per capita (constant 2015USD)	-	WDI, 2023
Independent variable			
$\text{RGDPC}_{i,\,t-1}$	A year lag of Real Gross Domestic per capita	-/+	WDI, 2023
NRDG	Total natural resource rent (% of GDP)	-/+	WDI, 2023
FDIG	Foreign direct investment(net inflow)	-/+	WDI, 2023
OPNG	Trade openness (% of GDP)	+	WDI, 2023
LABF	Labor force, total	-/+	WDI, 2023
FCEG	Final consumption expend (% of GDP)	-/+	WDI,2023
INF	Inflation (annual %)	-/+	WDI, 2023
CRED	Domestic credit to the private sector (% of GDP)	-/+	WDI, 2023
INSTQ	Institutional quality(index)	-/+	WGI, 2023

Source: Own formulation,2024WDI="World Development Indicator", WGI= "World Governance Indicator"

Results and Discussions

Descriptive Statistics

The statistical description of variables used in the study was depicted in table 2. All sampled countries had RGDPC mean value of 2489.41, with minimum value of 255.1 for Ethiopia in 2003 and maximum value of 1647.36 for Seychelles in 2020 (all values in constant US dollars). NRD has a mean value of 11.74% as a percentage share of GDP; the lowest value was 0.0024%

in 2019 for Mauritius, and the highest was 88.59% in 2000 for Equatorial Guinea, using current US dollars. In current U.S. dollars, Equatorial Guinea's final consumption expenditures in 2005 and Chad's in 2002 had minimum and maximum values of 16.713% and 140.81% of GDP respectively, with a mean value of 83.76%.

INTSQ consists of six indicators, each having a range of values from 0 to 1. The mean of the INTSQ was 0.3672. Mauritius had the highest institutional quality index (0.674) in 2014, while Libya had the lowest (0.1188) in 2019. The mean value of trade openness in current USD is 54.42% of GDP; the minimum value is 7.81%; labor force's mean value is 8,513,257, with minimum and maximum values of 121,592; the mean net investment inflow in current US dollars is 8.17e + 8, Angola registered the lowest net inflow of FDIG in 2017, while South Africa recorded the highest net inflow in 2021. Similarly, the average rate of inflation was 12.889% and domestic credit has a mean value of 20.604% of GDP in USD. The scatter graph in figure 1 which was fitted with institutional quality values for sampled countries from periods 2000 to 2022 also indicated an inverse relationship between NRD and INTSQ.

Table 2. Descriptive statistics of variables

Variables	Obs	Mean	Std.Dev	Min	Max
RGDP per capita	1058	2489.41	3030.06	255.10	16747.36
NRD	1058	11.74	11.70	0.0024	88.59
Final Consumption Expd	1058	83.76	16.55	16.713	140.81
Openness	1058	54.42	28.85	7.81	175.38
Labor force	1058	8513257	1.13e+07	121592	7.33e+07
Foreign Direct Investment	1058	8.17e+08	2.03e+09	-7.40e+09	4.07e+10
Inflation	1058	12.889	86.018	-24.847	2630.123
Domestic Credit	1058	20.604	22.426	0.0016	142.422
Institutional Quality	1058	0.3672	0.1136	0.1181	0.6741

Sources: Authors computation, 2024

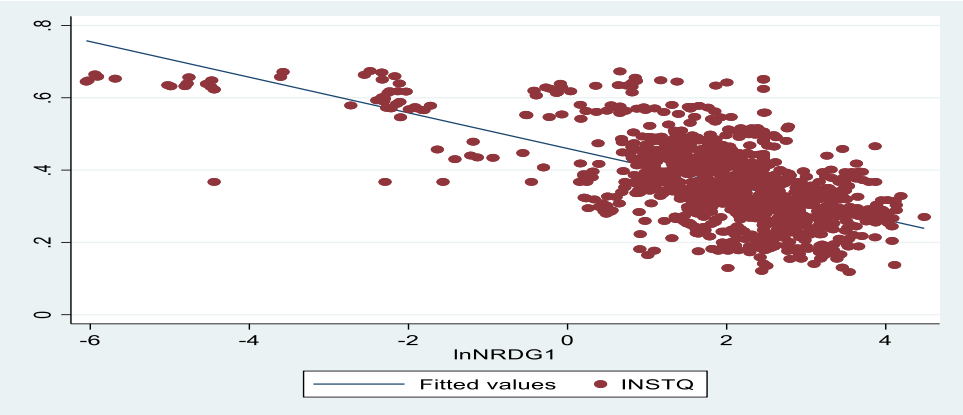

Fig 1. Association between NRD and INTSQ

Figure 2 below revealed trends of RGDPC and NRD for the sampled African countries from 2000 to 2022. Countries implied a close to constant economic progress over the years whereas NRD showed a slight increased trend over the years. However, countries like Botswana, Mauritius, and Morocco showed increased rent from natural resources after 2015.

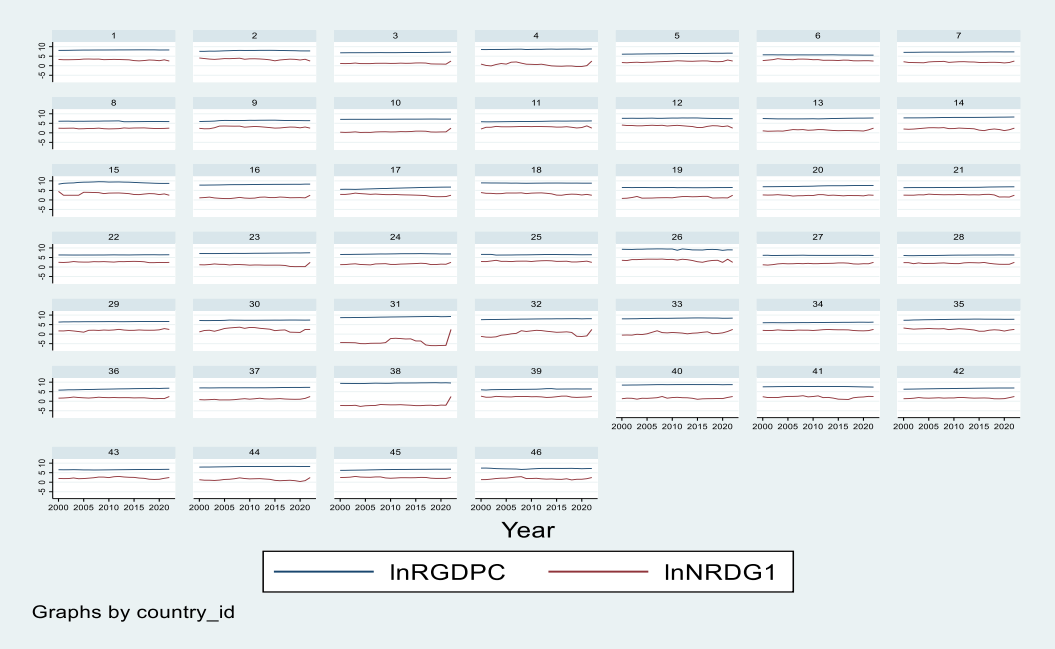

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Fig 2. Trends of Economic growth and NRD from 2000 to 2022 Note: "1. Algeria 2. Angola 3. Benin 4. Botswana 5. Burkina Faso 6. Burundi 7. Cameroon 8. Central African 9. Chad 10. Comoros 11. Congo, Dem. Rep. 12. Congo, Rep. 13. Cote d'Ivoire 14. Egypt, Arab Rep. 15. Equatorial Guine 16. Eswatini 17. Ethiopia 18. Gabon 19. Gambia 20. Ghana 21. Guinea 22.Guinea-Bissau 23. Kenya 24. Lesotho 25. Liberia 26. Libya 27. Madagascar 28. Malawi 29. Mali 30. Mauritania 31. Mauritius 32. Morocco 33. Namibia 34.Niger 35. Nigeria 36. Rwanda 37. Senegal 38. Seychelles 39. Sierra Leone 40. South Africa 41. Sudan 42. Tanzania 43. Togo 44. Tunisia 45. Uganda 46. Zimbabwe"

Econometric Analysis

Impact of NRD on economic growth

Findings of the two-step system generalized method of moment using the "xtabond2" estimator was presented in table 3. The Arellano-Bond test for AR (2) is greater than the probability level of 0.05 implying no serial correlation among regressors. The Hansen test of over-identification restriction also showed that the probability level is higher than 0.05, and indicating that all restrictions of over-identification are valid. Similarly, the number of instruments for all estimation options was less than the number of countries, which again indicates instruments used as groups were valid.

In the system GMM framework, the coefficients estimated from the model can be interpreted in terms of their immediate effects on the economic growth in the short run, whereas the long-run coefficients capture the overall effect of the explanatory variables on the explained variable. The long-run GMM estimates can be generated from the short-run result only for statistically significant variables. In the context of sys- GMM, the long-run coefficients can be estimated by considering the "lagged value of the dependent variable" (L.lnRGDPC). It is computed as "β_k – [1-θ]" using the "*nlcom*" estimator in STATA 17, where β_k the coefficient of the significant independent variable and "θ" is the coefficient of lagged RGDPC.

The first estimation was conducted by including institutional quality variable (model 1). This option is needed to check the impact of NRD on economic growth when the INSTQ is included. The second option shows the direct impact of NRD on economic growth when the institutional

variable is excluded from the regression (model 2). The estimation result from both options illustrated that the lag of RGDPC is significant at a 1% probability level. This implies that the economic growth of the current period is influenced by the growth of the preceding period. It also indicates that the nexus between NRD and economic growth is dynamic. The same finding was coincides with the findings of Abdulahi et al.(2019)and Sini et al.(2022).

With the institutional variable included (model1) in the analytical model, NRD has negative coefficient and significant at the 10% level., A 1% rise in NRD is associated, on average, with a 0.0094% decline in economic growth in the short run, Ceteris paribus. This finding corresponds with the results of D. H. Kim and Lin(2017), Adika (2020), Sini et al.(2022), and Badeeb et al.(2017) and contradicts with the findings of Bah(2016), Belarbi et al.(2015) and Katoka and Dostal(2022) in which their result showed a positive contribution of NRD on economic growth. Similarly, a 1% increase in the NRD resulted in, on average, economic growth decline by 0.2331% at a probability level of 1% in the long run (Table 4). This demonstrates that the long-run (0.231) adverse impact of NRD on economic growth is greater than the short-run (0.0094) impact.

When an institutional quality variable is excluded from the estimation (model 2), NRD has a negative coefficient and is significant at the 1% level. A percentage rise in NRD, causes, on average, economic growth to fall by 0.0139% in the short run, keeping all other factors as it is. Our finding is in agreement with the results of Shahbaz et al. (2019) and Saeed(2021). On the other side, lnNRDG has a negative coefficient and is significant at a 1% level in the long run. Thus, a percentage increase in NRD is linked with a decrease in economic growth, on average, by 0.323% in the long run, *ceteris paribus* (Table 4). This shows natural resource rent has a larger negative impact on economic growth in the long run than in the short run.

Estimates with and without the institutional quality variable suggest that NRD has an adverse impact on economic growth; however, the impact of NRD on growth is lessened (0.0094) when the institutional variable is added in the model than when it is excluded (0.0139). This highlights the significance of strong institutions in the nexus between NRD and economic growth. This finding validates the resource curse hypothesis in African countries over the years 2000 to 2022.

Institutional quality has a positive coefficient and is significant at a level 5%, as presented in Table3 (model 1). As of interpretation, *ceteris paribus*, a unit change in the INSTQ is therefore linked to an average increase in economic growth of 8.42% in the short run. Our finding is accorded with a study finding done by Boschini et al.(2013) and Torres et al.(2012). Likewise, a unit change in the INSTQ makes a 208.8 percentage change in economic growth in the long run, representing a higher long-run impact on growth, with a positive sign and a 1% significant level. This revealed that improvements in the institutional variable contribute largely to economic growth in the long run than in the short run (Table 4).

Final consumption expenditure has a negative coefficient and is significant at a level of 1% in both the model 1 and model 2. It can be interpreted as a percentage increase in final consumption expenditure makes economic growth decline by 0.1013% and 0.1102% respectively in the short run. Our finding concurs with the results of (Hayat, 2019) and is not in agreement with the findings of Test(2011) and Blaževski (2018). This implies government expenditure might be diverted from development-contributing programs to non-development concerns. Besides, more private consumption expenditure may be incurred on imported goods and services and capital goods. Concerning trade openness, it has a positive coefficient and significant at a level of 5%. A 1% change in trade openness resulted in a 0.029% and 0.033% increase in economic growth in

the short run in both the model 1 and model 2 respectively. This finding corresponds with the findings of Epo & Nochi Faha (2020), Naser (2020) and L. Cameron (2017).
In estimation with INTSQ added, foreign direct investment has a positive coefficient and is significant at the 10% level. Ceteris paribus, a one percent surge in FDI boosts economic growth by 0.0194% in the short run. Our estimate is in agreement with the results of Nguyen et al.(2018), and Hayat(2019).However, it disagreed with Sini et al.(2022) finding. FDI has an insignificant impact on growth in the long term. In contrast, FDI has an insignificant impact on economic growth when the institutional variable is dropped from the model. Consequently, countries should place a greater emphasis on other sources of growth, such as domestic investment, and identify other factors that may have an impact on FDI's contribution.

Impact of NRD on economic growth with interaction and square term

The regression results of the interaction and square term of NRD was presented in Table 3. To recognize the function of strong institutions on the nexus between NRD and economic growth, we made an interaction of NRD with INSTQ. When the interaction variable (NRDG*INTSQ) is included in the model (model 3), the result of the two-step sys-GMM showed that NRD is significant and has positive impact on economic progress at a probability level of 5%. It can be interpreted as a percentage change in natural resource rent resulted in, on average, a 0.1414% change in economic growth in the short run, ceteris paribus, whereas in the long run, a percentage change of NRDG will make economic growth to change by 2.703 % at 5% level (Table 4), illustrating the greater impact of NRDG on economic growth than in the short run. A study by Nzié and Pepeah (2022) also indicates that NRD has a positive effect on economic growth in the long run and no effect in the short run for resource endowed countries of Africa. In the same estimation, the INTSQ has a positive coefficient and has significant impact on economic growth at a 5% level in the short run.
The interaction term (NRDG*INSTQ) impacts economic progress significantly and negative at a probability level of a 5% in both the short run and long run. Our finding is consistence with the works of Xu et al.(2019) and Raggl (2017) and contradicts with the findings of Nzié and Pepeah (2022) which their finding showed that the interaction term has a positive coefficient in the short and long run. This implies when the interaction term and institutional variable are estimated together in the model, NRDG influences economic growth positively and is in support of resource blessing hypothesis. This indicates that countries need to build strong institutions to reduce the negative impact of NRD on economic growth.
When the square value of NRD is involved in the analytical model, the estimates of the quadratic effect (model 4) revealed that NRD impacts economic growth negative and significant at 10% level in the short run and has a larger negative impact on economic growth in the long run at 5% significant level (Table4). Its square term is insignificant in affecting economic growth.
The exact test for the non-linear relationship was tested by "*utest"* which was proposed by Lind & Mehlum (2010) indicated the occurrence of a monotone relationship (t-value=1.43 and p=0.0793). This monotone relationship between NRD and economic growth detects the possibility of the presence of a dynamic threshold effect. To this end, the findings in Table 5 of the DPTM bootstrap's linearity test confirmed the presence of threshold effect (p=0.00).
Besides, final consumption expenditure and FDIG have negative and positive influences on economic growth at probability level of 1% and 10% respectively with quadratic terms incorporated in the model. Our finding matches with findings of Raggl(2017) who found a negative and significant effect of final consumption expenditure on economic progress.

Dynamic panel threshold estimates

Based on the work of Seo and Shin (2016), the DPTM was regressed based on the "xthenreg" command in STATA 17 software. The "utest" statistical test detects the presence of a monotone relationship between NRD and economic growth. This shows that searching for the threshold effect using the square term has limitations because it imposes a prior restriction that the effect of the threshold variable(TV) on the dependent variable needs to be monotonically and symmetrically increasing and decreasing with the level of the TV (Narayan & Narayan, 2010).

Regression results of a DPTM using an institutional variable and NRD as threshold variables were presented in Table 5. When NRD is considered as a TV, the threshold(r) parameter has a value of 1.73%, such that about 36.7% and 63.3% of the observations fall into the lower and upper regimes of NRD. The coefficient of lagged real GDPC is positive and significant at a level 1% for the low percentage of natural resource rent per GDP (lower regime). However, it has a negative coefficient for the higher percentage of NRD per GDP (upper regime) and is significant at a 1% probability level. This illustrated that the previous year of economic growth enhances the subsequent lower regime economic growth and retards the upper regime economic growth in the current year. Similar to this, when an institutional variable is utilized as the threshold variable, lagged DGRPC has a similar interpretation.

Table 3: A two-step System GMM estimates

Variable	Model 1	Model 2	Model 3	Model 4
	coef	coef	Coef	coef
Lag-Real GDP per capita	0.9597***	0.9569***	0.9476***	0.9568 ***
	(0.0192)	(0.0162)	(0.0142)	(0.0209)
Natural resource rent	-0.0094*	-0.0139***	0.1414**	-0.0257*
	(0.0049)	(0.0048)	(0.0593)	(0.0129)
NRDG_Sqr	-	-	-	0.2857
	-	-	-	(0.1983)
NRDG*INSTQ	-	-	-0.3067**	-
	-	-	(0.1328)	-
Institutional quality	0.0842**	-	0.7362**	0.0852
	(0.0395)	-	(0.2974)	(0.2379)
Domestic credit	0.00026	0.0010	0.0028	-0.0026
	(0.0031)	(0.0033)	(0.0041)	(0.0017)
Final consumption expen.	-0.1013***	-0.1102***	-0.0619*	-0.0844***
	(0.0241)	(0.0191)	(0.0315)	(0.0199)
Trade openness	0.0290**	0.0334**	0.0029	0.0287*
	(0.0142)	(0.0138)	(0.0224)	(0.0164)
Foreign direct Invest.	0.0194*	0.0194	0.0248	0.0145*
	(0.0110)	(0.0124)	(0.0184)	(0.0079)
Labor force	0.0019	0.0018	0.0011	-0.0091
	(0.0031)	(0.003)	(0.010)	(0.0095)
Inflation	-0.00006	-0.00006	-0.00009	-0.00005
	(0.00005)	(0.0001)	(0.00008)	(0.00006)
-cons	0.1545	0.2332	-0.2890	-0.6388
	(0.3375)	(0.03505)	(0.4994)	(0.4911)
F-Statistics: P- value	0.000***	0.000***	0.000***	0.000***
No. of Obs.	1012	1012	1012	1012
No. countries	46	46	46	46
No. Instruments	45	44	45	45
AR (2): p-value	0.885	0.962	0.548	0.843
Hansen J-test: p-value	0.325	0.321	0.220	0.243

Source: Own Computation, 2024. ***, ** and * significant at 1%, 5% and 10% respectively. Figures in bracket represent standard error. All variables are in natural logarithm form except institutional quality index and inflation. Model 1 is with institutional variable, Model 2 is without institutional variable, Model 3 with interaction term and model 4 is with square of NRD.

Table 4. Long run two-step system GMM result generated with 'nlcom' estimator

Variable	With institution	Without Institution	Interaction	Quadratic
	coef	coef	Coef	
NRD	-0.233***	-0.323***	2.703**	-0.5959**
	(0.065)	(0.217)	(1.143)	(0.2441)
LnNRDG*INSTQ	-	-	-5.861**	-
			(2.404)	-
Institutional quality	2.088*	-	14.069**	-
	(1.143)		(5.661)	-
Final consumption exp	-2.51***	-2.561***	-1.184*	-1.9547**
	(0.740)	90.72)	(0.636)	(0.9928)
Openness	0.721***	0.778***	-	0.6663*
	(0.242)	(0.0620)	-	(0.3826)
Foreign direct Invest.	0.482	-	-	0.3362
	(0.349)	-	-	(0.2818)

Source: Own computation, 2024. ***, ** and * significant at 1%, 5% and 10% respectively. Figures in brackets represent standard error, and all variables are in natural logarithm form, except intuitional quality.

NRD impacts economic growth positively and significantly at a 1% level when its percentage share of GDP is less than or equal to 1.730 % (lower regime) and impacts economic growth negatively when its share of GDP is greater than 1.730 % in the upper regime. The mean RGDPC below this threshold level is 7.61 USD, and above the threshold level is 7.07 USD. This showed that economic growth will decrease as the ratio of NRD to GDP rises and that nations with greater natural resource endowments will observe lower economic growth than those with fewer natural resource endowments. This finding supports the resource curse hypothesis. Final consumption expenditure, foreign direct investment, and inflation have negatively impacted economic growth at the lower value of NRDG and impacted more quickly and significantly at the higher value of NRDG.

When institutional quality is used as the threshold variable, the threshold parameter is 0.277 with 21% and 79% of the observations falling into the lower and upper regimes of an institutional quality variable. The finding indicated that NRD impacts economic growth negatively and significantly when the INTSQ is less than or equal to 0.277 (lower regime) and has significant and positive impact on economic growth when the INSTQ variable is greater than 0.277 (upper regime) at the 1% level. Below the threshold level of INTSQ, natural resource dependence has a mean value of 2.71% of GDP and a mean value of RGDPC of 7.03 USD while above the threshold level; NRD has a mean value of 1.65% of GDP and RGDPC has a mean value of 7.34 USD. This implies that nations with weak INSTQ depend largely on NRD and score lower RGDPC whereas nations with robust INSTQ are relatively less dependent on NRD and have higher RGDP. Abdulahi et al. (2019) and Sarmidi et al. (2014) found a matched result to our findings. This indicates that for African nations with robust institutions, NRD has a favourable impact on economic growth. Hence, NRD is therefore, a blessing for nations with robust institutions. At the lower regime of INSTQ, the institutional variable itself impacts economic growth negatively and significantly, whereas at the upper regime, it impacts economic growth positively and significantly. This shows that strong institutions are needed to enhance economic growth.

Inflation and final consumption expenditure had significant negative effects on economic growth in the lower and upper regimes of institutional quality variables. Domestic credit had a positive and negative impact in the lower and upper regimes of the INSTQ variable respectively. Foreign direct investment has a positive impact on economic growth in the lower regimes of the INSTQ variable, but it has a negative impact on economic growth in the upper regimes.

Conclusion and Policy Implications

Africa switched over from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) starting in 2015 emphasizing sustainable management and effective use of natural resources. However, the contribution of NRD on economic growth in Africa is mixed and inconclusive in both empirical and theoretical literature. Thus, by using a World Bank data set from 46 selected African counties spanning from 2000 to2022 and System GMM and dynamic panel threshold regressions, we examined the nexus between NRD and economic growth.

Consequently, the two-step system GMM estimation indicated that NRD impacts economic growth negatively and significantly with and without inclusion of institutional variable in the analytical model specification. However, the negative impact of NRD is higher when the institutional variable is excluded from estimation implying that the INSTQ plays a greater role on the nexus between NRD and economic growth. This finding supports the resource curse hypothesis in the continent. The interaction variable (INSTQ*NRD), impacts economic growth

positively and significantly in the short and long run. This revealed the importance of strong institutions to make NRD contribute positively to African economies. This finding is in support of the resource blessing theory.

Table 5. Dynamic panel threshold regression result

Variable	Natural resource rent		Institutional variable	
	Coef	std. err	Coef	Std. err
Lower regime, % of obs($q_{it} \leq \delta$)	36.7%	-	21%	-
Lag-RGDPC	0.9380***	0.0725	0.5939***	0.0523
NRD	0.1116**	0.0443	-0.1074***	0.0271
INSTQ	-	-	-2.8550***	0.8327
Domestic credit	-0.0318	0.0257	-0.0603***	0.0199
Final consumption expd.	-1.0604***	0.1946	-0.1983***	0.0647
Openness	0.0408	0.0464	0.0687	0.0453
Foreign direct Invest.	-0.4887**	0.2249	0.4536**	0.2198
Labor force	0.0282	0.0373	0.1712***	0.0507
Inflation	-0.0002***	0.00006	-0.0004***	.00007
Upper regime, % of obs($q_{it} > \delta$)	63.3%		79%	
Lag-RGDPC	-0.2387***	0.0629	-0.1361***	0.0495
NRD	-0.2809***	0.0394	0.0932***	0.0229
INSTQ	-	-	3.1946***	0.8146
Domestic credit	0.0088	0.0349	0.1068***	0.0185
Final consumption expd.	0.6019***	0.2141	-0.3771***	0.1195
Openness	0.1954***	0.0417	0.0013	0.0633
Foreign direct Invest.	0.6437***	0.2357	-0.5296**	0.2492
Labor force	0.0821***	0.0254	0.0779**	0.0334
Inflation	0.0005***	0.0001	-0.0008**	0.0003
-cons	-17.163***	4.858	12.3050**	4.9690
Threshold (r)	1.730***	0.2194	0.277	0.0193
Test of Linearity (boots trap p-value	(0.000)	-	(0.000)	-

Source: Own Computation, 2024. *** and** significant at 1%, 5% and 10% respectively. NRD and INSTQ are threshold variables. All variables are in natural logarithm form except institutional quality index and inflation

Regression from the DPTM implied the presence of a threshold value. When the threshold level of NRD is ≤1.73% of GDP, NRD impacts economic growth positively and has a higher mean of RGDPC, whereas, above the threshold value, NRD contributes to economic growth negatively and has a lower RGDPC compared to the lower regime. This implies that as the percentage share of NRD in GDP rises, economic growth is negatively impacted by natural resource rent. This finding also agrees with the resource curse hypothesis. Likewise, when the threshold level of the INSTQ index is ≤ 0.277, NRD contributes negatively to economic growth while it impacts economic growth positively above the threshold value. This depicted that strong institutions are important to make NRD contribute positively to economic growth.

Finally, we conclude that nations endowed with natural resources need to build strong institutions to make NRD a blessing for their economic progress. Additionally, shifting economies from resource-based to learning-by-doing sectors helps to lessen the negative effects of natural resource rent, particularly for nations with weaker institutions. This is because nations with relatively strong institutions had lower NRD to GDP shares (1.65%) and higher RGDP (7.34 USD) than nations with weaker institutions, which had the highest NRD to GDP shares (2.71%) but lower RGDPC (7.03 USD). This study did not estimate the threshold level of NRD and INSTQ in each country. We also consider natural resource endowment in aggregate form. Therefore, future research will be required to estimate the country-specific threshold level and analyses the disaggregated impact of NRD on economic growth using recent data.

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2.5 Parallel Foreign Exchange Market in Ethiopia: Triggers, Trends and Defining Features, [1]Mekonen Kassahun (PhD) [1]Semira Hussen (PhD)

Asst. Prof, Ethiopian Civil Service University
E-mail: kassahunmekonen15@gmail.com

Abstract

Assessing, Parallel Foreign Exchange Market in Ethiopia it's; triggers factors trends and defining Features, is important where the country is higher affected by; the shortage of foreign currency with official reserve rate less than three weeks of import, widespread black market for foreign exchange and high parallel premium. Therefore, this study tries to investigate of Parallel Foreign Exchange Market in Ethiopia its triggers trend, and defining futures. This research is a type of both cross sectional and time series explanatory research design and its approach is mixed method approach. In this study both primary and secondary data have been employed. To select the samples both probability and non-probability method of sampling was used. The data employed for this analysis consists of primary data from importers, exporters, producers, commercial bank officers, NBE officers and currency trader's perceptions collected through structured questioners, and secondary obtained from the National Bank of Ethiopia, commercial banks, Ministry of Finance and IMF and World Bank data bases and different manuals, policies, rules and directives. The data was analyzed using both descriptive and inferential statics. Based on the finding obtained from both primary and secondary data we can conclude that, due to governments fiscal policy, exchange rate policies, low capability and commitment to enforce lows of NBE in particular and the government in general, lack of transparency of NBE, low participation of stakeholders in design and implementation of foreign exchange directives and polices and high control and restriction of foreign exchange results to the emergence and widespread in its coverage parallel/black market for foreign exchange in Ethiopia. This in return results in declining the import capacity of the country and in turn it affects consumers, the private sector, government revenue, and the economy at all negatively. Thus, the Ethiopian government should commit to implement its policy by participating the respective bodies and giving relative independence for the NBE to design and implements its policies properly

Introduction

The prevalence and growth of parallel foreign exchange markets was primarily seen as an issue in less developed nations, and it was considered as one indicator of economic instability. The existence of dual exchange rates, one in the official market and another, significantly divergent rate in the parallel market, is regarded as a primary driver of resource misallocation, which ultimately impedes economic growth (Pinto, 1989; Morris, 1995). However, governmental efforts to narrow the gap between the official and parallel exchange rates, as evidenced by the experiences of various countries, may exacerbate economic instability and further fuel inflationary pressures (Pinto, 1989).

According to Lindauer (1989) "a parallel market for foreign currency is defined as the structure generated by excess demand for foreign exchange in response to government controls over foreign currency allocation. Foreign exchange parallel markets can be classified as legal and illegal. Legal parallel markets are purposefully created by governments to address balance of

payment crises by establishing dual foreign exchange markets for different transactions. The objective of creating a legal parallel market is to control short-term domestic price increases due to the depreciation of the local currency by maintaining some degree of control over capital outflows and international reserves (Miguel and O'Connell, 1995). Conversely, illegal parallel foreign exchange markets emerge as a consequence of extensive government controls on foreign exchange and restrictions on citizens' access to foreign currencies. These illegal parallel markets for foreign currency have been referred to as curb markets, black markets, underground economies, fragmented markets, and segmented markets. Bagachwa and Naho (1994) attempt to differentiate illegal markets from black markets, where illegal parallel markets involve illegal production or trade of goods and services, and they are considered alternatives to legal foreign exchange markets. On the other hand, "black market" activities involve the production or distribution of goods and services that are strictly forbidden by the government, including arms dealing, narcotics trafficking, and all sorts of illegal transfers.

Legal parallel foreign exchange markets are rarely found, except in a few developing countries. For instance, in the 1980s, following temporary capital outflows resulting from balance-of-payments crises, certain Latin American countries adopted legal parallel foreign exchange markets by implementing a dual exchange rate system. Another example of a developing country that adopted a dual foreign exchange system is South Africa. In 1985, South Africa imposed capital controls, following immense capital outflows, and introduced a dual exchange rate system. However, the parallel premium remained modest, with only a median premium of 4.4% (Nita and Kamin, n.d.). Nevertheless, in most African countries, including Ethiopia, parallel markets were less associated with legal parallel foreign exchange markets and more closely related to illegal ones.

The reasons for the existence and development of parallel foreign exchange markets vary across countries, depending on factors such as their level of economic development, the government's role in foreign trade and foreign exchange markets, the amount of foreign exchange receipts, and the availability of foreign exchange reserves, among others. For instance, Agénor and Montiel (1996) suggest that capital controls and trade controls are the major reasons for the development of parallel foreign exchange markets in middle-income and low-income countries, respectively. On the other hand, Nita and Steven Kamin's (n.d.) study indicates that parallel foreign exchange markets can exist only when governments impose certain trade barriers, quantitative restrictions, and high tariffs. While such measures may affect the demand or supply of foreign currencies, they will not be the main reason for the existence of parallel foreign exchange markets as long as the government does not impose foreign exchange controls and rationing.

Like many developing countries, one of the reasons for the emergence of a parallel foreign exchange market in Ethiopia is trade restrictions and foreign exchange controls. This creates excess demand over the available supply and this creates inefficiency in the foreign exchange market. This situation has persisted for a relatively long period and may continue to exist in the future as long as the current policies and practices remain in place. Historically, the emergence of a parallel foreign exchange market in Ethiopia can be traced back to 1975 onwards. Particularly until 1992, the Derg regime followed a foreign exchange regime characterized by administrative control, fixed rates with surrender requirements, exchange rationing, and currency inconvertibility. This fixed exchange rate, coupled with high inflation rates, appreciated the value of the Birr in the official market, which in turn deteriorated export performance and import capacity. As the country's import capacity declined, illegal and franco-valuta imports emerged, which in return created a parallel foreign exchange market to finance both imports and other

foreign exchange payments. This resulted in further depreciation of the Birr on the parallel market. Consequently, the premium between the parallel and official exchange rates widened to reach around 360 percent in 1991/92.

The country's exchange rate policy did not change until October 1992, when a major devaluation of the Birr occurred. In the following years, major policy instruments were designed and implemented, including current account liberalization, removal of import licensing requirements, allowing the opening of retention accounts, transferring export licensing to commercial banks, establishing forex bureaus to buy and sell foreign exchange in the retail market at freely negotiated rates, banning franco-valuta imports, and making concerted efforts to halt illegal trade. Owing to those measures and others, the parallel premium saw a sharp reduction to less than 2 percent by the end of 2002/03. However, currently, the parallel market premium has reached almost 66%, and it shows also an increasing trend and this creates an inflationary spiral in the country. Therefore, understanding the trends, triggering factors, and defining its features are crucial to address this issue in Ethiopia, which is the main purpose of this research.

Statement of the problem

According to Lindauer(1989) "a parallel market for foreign currency is defined as the structure generated by excess demand for foreign exchange in response to government controls over foreign currency allocation. Foreign exchange parallel markets can be classified as legal and illegal.

The factors that are responsible for the emergence and development of parallel foreign exchange markets vary across countries. For example, Agénor and Montiel (1996) suggest that capital controls and trade controls are the major reasons for the development of parallel foreign exchange markets in middle-income and low-income countries, respectively. On the other hand, Nita and Steven Kamin's (n.d.) study indicates that parallel foreign exchange markets can exist only when governments impose certain trade barriers, quantitative restrictions, and high tariffs.

Empirical studies in different countries on the triggering factors of parallel market and determinant factors on the gap between official and parallel exchange rate (premium) come up with different results. For example, a study by May(1985) in Ghana find that the parallel rate was principally determined by four factors including; the level of the official exchange rate, strength of government’s enforcement in the parallel market, exogenous increase/decrease in export revenue and exogenous decrease/increase in the value of imports. Furthermore, Mbire (1997) in his study in Uganda also found that there is close relationship between exchange rate policy and inflation. Elbadawi (1994) on his study in Sudan on the factors that determine premium found that, it was largely determined by the flow of remittances from Sudanese workers in foreign countries, particularly from the Middle East. On the other hand, Azam and Debrée (1991) find that the main determinants of the parallel rates in Ghana, Nigeria, and Zaire were; money supply, producer prices, import quotas and import and export prices.

Ethiopia's parallel foreign exchange market emerged partly due to an overvalued exchange rate, according to WB and IMF reports. These multilateral bodies recommended that by adopting a more competitive exchange rate, the Ethiopian government could boost export competitiveness and alleviate foreign exchange shortages. Further evidence suggests that pegging the nominal exchange rate at an overvalued level fosters informal foreign exchange markets. This amplifies pressure on the government to implement controls or undertake substantial devaluation, which can ultimately impede economic growth.

While theoretical and empirical literature exists on the triggering factors behind the emergence of parallel foreign exchange markets and premiums, there is limited theoretical and empirical research on their effects on economic performance, fiscal performance, and inflation. From the scant empirical literature, Pinto (1991) analyzed the fiscal and inflationary impacts of exchange market unification, emphasizing the implicit taxation of exports. He found that the parallel premium acts as an implicit tax on export earnings repatriated through official channels. Similarly, Chibber and Shafik (1991) indicated that official devaluation in Ghana had a positive budgetary effect that was anti-inflationary. Morris (1995) also investigated the macroeconomic implications of parallel foreign exchange markets and found that official exchange rate devaluation reduced money creation and inflation in Uganda during the 1980s.

Arguably the most comprehensive analysis of the effects of parallel exchange systems in developing countries is the World Bank study examining eight nations: Argentina, Ghana, Mexico, Sudan, Tanzania, Turkey, Venezuela, and Zambia. A synthesis of these studies by Kiguel and O'Connell (1995) revealed that high premiums were tolerated for extended periods in most cases, adversely impacting allocative efficiency and economic growth. Generally, the authors deemed the microeconomic costs stemming from resource misallocation outweighed the macroeconomic benefits of safeguarding reserves and curbing inflation. Additionally, in most cases, evidence pointed to exchange rate losses. The substantial premiums proved detrimental to exports and growth, offering scant insulation from external shocks.

In Ethiopia, consumer prices surged 37% in April 2023, primarily driven by skyrocketing food and fuel costs. In response, the government implemented various policy measures, including reducing government spending and limiting foreign exchange allocations to the private sector. Due to foreign exchange shortages and the persistent premium between official and parallel exchange rates, the private sector's competitiveness in both domestic and international markets has been severely impacted. Consequently, private entities more affected by the foreign exchange scarcity resort to alternative mechanisms, including legal avenues like non-resident (diaspora) foreign currency accounts and illegal means through the parallel market. As a result, the parallel market has expanded its reach over time, progressively widening the gap between official and parallel rates, undermining the National Bank of Ethiopia's ability to conduct monetary policy and maintain tight control over the foreign exchange market. Furthermore, reports from the IMF and other organizations indicate that foreign currency shortages are likely to persist long-term.

For several reasons, research on the trends, triggering factors, and defining features of Ethiopia's parallel foreign exchange market is of interest. First, the persistent parallel market is potentially a key driver of higher inflation and loss of foreign exchange earnings. This research can contribute to bridging existing knowledge gaps and informing policy action. Second, although the Ethiopian government has implemented various measures, including current account liberalization and other macroeconomic policies to minimize the parallel market's significance, its persistence and impact have continued to widen over time. Further empirical investigation could guide progress toward realizing a unified foreign exchange market and minimizing the parallel market's existence and narrowing premiums. Third, there are divergent views on parallel markets' economic impacts. Some researchers argue they harm economies by creating social and economic costs (Nowak, 1984). Others contend that in economies with exchange controls and restrictions, parallel foreign exchange markets can foster competition and enhance banking

system efficiency. Therefore, identifying the pros and cons of parallel foreign exchange markets, another focus area of this research, can aid policymakers in selecting optimal policies.

Having in mind the above significance, this research tries to investigate trends, triggering factors and defining features of parallel foreign exchange market in Ethiopia, by employing both secondary and primary data collected from different sources; including domestic commercial banks, importers and exporters, the general public, NBE, IMF, WB, CSA, data bases etc.

Objective of the research

The general objective of this research is to examine the trends, triggering factors and defining features of parallel foreign exchange market in Ethiopia

Specific objectives

a) To assess trends of parallel foreign exchange market in Ethiopia.
b) To examine factors leading to the emergence and growth of parallel foreign exchange market in Ethiopia.
c) To identify the sources of supply to Ethiopia's parallel foreign exchange.
d) To examine existing policies and identify required polices to control parallel foreign exchange market and to bring unified foreign exchange in Ethiopia.

Methodology

Research Design and Approach

This research is a type of time series and cross-sectional explanatory research design with mixed method approach. From the mixed method we follow the quan-qual approach and concurrent triangulation method. We use the mixed methods in order to base knowledge claims on pragmatic grounds employing strategies of inquiry that involve collecting both quantitative and qualitative data either concurrently or sequentially to best understand research problems (Creswell 2003,).

Data: Type, Source and collection method

This study utilized both primary and secondary data sources. Primary data was obtained from National Bank of Ethiopia employees, private and public commercial bank staff, importers, exporters, and the general public. Secondary data sources included databases from the Central Statistical Agency, National Bank of Ethiopia, Ministry of Finance, Ministry of Tax and Customs, World Bank African Development Indicators, and the International Monetary Fund.

The instruments employed to collect primary data were structured questionnaires, semi-structured interviews, and focus group discussion guides. To gather secondary data, checklists were prepared. The secondary data was further supplemented through the review of policy documents, rules, regulations, published and unpublished materials, research works, and journal articles.

Sampling Technique and sample size determination
Sampling Techniques

This research employs both probability and non-probability sampling methods. For probability sampling, a multi-stage approach was utilized. Systematic random sampling was employed to select respondents from the National Bank of Ethiopia, importers, and exporters.

Regarding non-probability sampling, purposive sampling was used to select participants from the Commercial Bank of Ethiopia, as it is the sole public bank exerting significant influence on the foreign exchange market. Furthermore, to gather respondents from the general public, snowball sampling was necessary, as parallel foreign exchange market activities are conducted covertly, making it difficult to identify specific respondents in advance. Finally, purposive sampling was applied to select respondents for interviews and focus group discussions. For the questionnaire part bank officials, employees, owners, forwarders, police officials, citizens and employees and officials from Ministry of justice will be included. The respondents for interview were selected purposefully those who have better knowledge concerning the current parallel foreign exchange market in Ethiopia.

Sample size

Since it is difficult in advance to know the exact number of the population, thus, the sample size was calculated based on the formula which is helpful for unknown population. Thus, based on this formula the total sample size is 1200. Qualitative data for this study was collected via FGDs and KII. The key informants included for this research where, from 6 private banks 5 from each, 8 from CBE, 8 from NBE, 10 from importers, 10 from exporters, 3 from police officers, 3 from forwarders, and 3 from Ministry of Justice and total of 75 KIA will be conducted. Those participants will be selected based on their knowledge and their position in the institution.

Method of Data analysis, Descriptions of Variables and Model Used

The data obtained through various data collection instruments first will be coded, edited and finally summarized into tables and figures, so that the analysis will be meaningful and interpretation of that results will make it easy and we can draw conclusions and recommendations.

In this study, both qualitative and quantitative data analysis techniques were used. The quantitative data will be analyzed using both descriptive and inferential statistics. In the qualitative analysis the data obtained through interview, FGD and document will be analyzed using narration, descriptions, explanations, interpretation etc.

Model and variables description for the effect of foreign exchange and macroeconomic policies on parallel foreign exchange Market

For effective analysis, this research adopts a simultaneous equation model (taking all variables that determine both demand and supply of foreign exchange). The demand for parallel foreign exchange market comes from the need to import goods through illegal channels and illegal transfers while the supply comes from illegal exports and foreign remittances through this market (Brempong, 1994). Accordingly, the time series econometrics model employed in this research: specified the parallel foreign exchange rate as a function of depreciation of the official exchange rate (DNE) to proxy the devaluation effect, broad money supply (M2), illegal trade (IT) proxies by error and omission of the balance of payments, foreign exchange availability (FEA), export tax (ET), import tariffs (MT), expected punishment for being participating in the parallel market (DEP) proxies by exchange control dummy variable as there is no data to capture the expected punishment and the level of foreign exchange reserves of the central bank (FR(-1)).

$$\text{Log (PP)} = \beta 0 + \beta 1 \text{logDNEt} + \beta 2 \text{logM2t} + \beta 3 \text{logITt} + \beta 4 \text{logFEAt} + \beta 5 \text{logETt} + \beta 6 \text{logMTt} + \text{B7DEPt} + \beta 8 \text{logFRt (-1)} + \varepsilon t$$

Results and Discussion

The questioner was distributed to 1200 samples and out of them 1094 is filled, and the 1081 questioner was properly filled and employed for the analysis. The questions were presented in a randomized order, to counter order effects. To deal with missing data, all respondents who did not answer 10% of the questions was excluded from the analysis. A data quality check was performed on completion time, consistency of answers, and straight lining and, on the basis of these criteria's; only 13 respondents were excluded due to irrelevant answer were provided. In order to incorporate ideas and perception of all concerned bodies, the data was collected from bank officials (26.69%), exporters, importers and producers (72.30), and parallel exchange market participants (1.01%).

In order to ensure the validity of instruments in this research we employ construct validity. Construct validity was tested through convergent and discriminant validity. Convergent validity refers to the extent to which a measure correlates, or converges, with other measures of the same construct and it is measured by the average variance explained (AVE) and its value between the constructs should be equal to, or exceeds, 0.5 (Hair et al., 2016). And as it is shown in appendix I the AVE scores for all constructs in the model were above 0.5, which meets the requirement for achieving convergent validity. To assess the discriminant validity, we try to examine the correlation matrix among constructs. Specifically, the AVE of each latent construct should be higher than the construct's highest squared correlation with any other latent construct (Fornell and Larcker, 1981) and the results indicate that all constructs in this research meet those criteria.

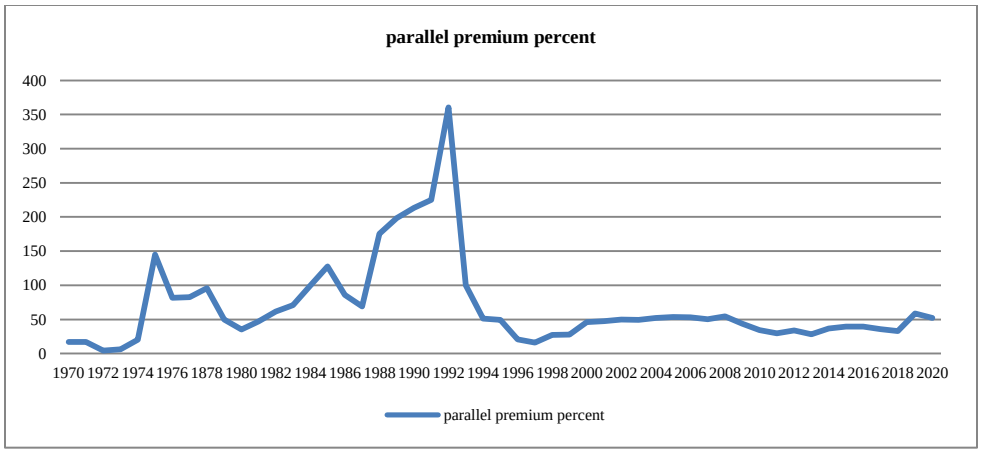
To assess the reliability of the instrument we use Cronbach's alpha. In this study, the analysis of reliability indicates all constructs were internally consistence with Cronbach's alpha exceeding 0.70.

Result

History of Parallel Foreign Exchange Market in Ethiopia

The Ethiopian economy prior to 1974 is characterized by macroeconomic stability, the existence and effect of parallel foreign exchange market in the Ethiopian economy is not apparent. However, after the introduction of socialist economy in 1974 the foreign exchange policy was characterized by exchange control and fixed exchange rate which in turn resulted in the appreciation of the Birr in the official foreign exchange market. As the official foreign exchange market appreciated the export performance of the country was reduced from 1974 to 1991 and also import capacity was reduced from. As import capacity of the country declined, importers use illegal and Franco-valuta imports, and this is one reason for the expansion of parallel foreign exchange market in Ethiopia. When the parallel foreign exchange market further widens its depth and coverage, birr will be further depreciated and in effect the gap between the parallel and official exchange rate widened to reach around 360 percent in1991/92(NBE and IMF data base).

Graph: 1. Parallel premium in percent (the difference between parallel and official rate)



However after 1994, when the government partially liberalized the financial market by taking important measures such as; current account liberalization, import licensing requirements, opening retention account, the establishment of foreign exchange bureaus by commercial banks, banning of franco-valuta imports and the government's efforts were made to minimize illegal trade the gap between the parallel and official foreign exchange market shows a sharp decline(2 percent by the end of 2002/03). But in 2020; the parallel premium is around 53% which means the parallel/black market rate is 52% higher the official exchange rate (in graph above).

Graph: 2. Comparison between Parallel/Black Market Rate and Official Rate

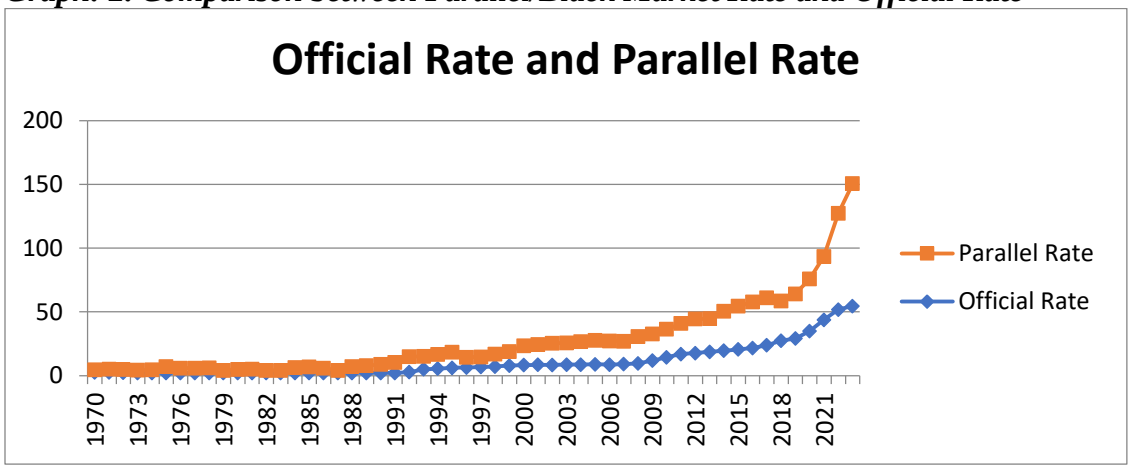


Figure 1. Trends of annual official and parallel exchange rate

Theoretical in any country when parallel foreign exchange market exists; it assumed that the parallel market exchange is expected to depreciate more than the official exchange rate. But as we can see from the grph, in Ethiopia especially in the past 20 years the opposite is true where the parallel market rate is bay far appreciated than the official rate. The existence of the parallel market rate at appreciated rate is totally contradictory to the above theory. However, as the parallel foreign exchange market in Ethiopia having long history and illegal trade is a norm, people are already established confidence on the parallel market; therefore it is not possible to persuade them to use the official market having long delay in allocation and by far low rate than the official rate. In other words, the NBE requires to shorten the time span for the allocation of foreign exchange and to depreciate the official rate more significantly than the parallel market to persuade people to use the official the parallel market.

Respondents perception on the extent, source of demand and means of transfer of parallel/black foreign exchange market in Ethiopia

When respondents are asked to estimate the volume of foreign exchange circulated in Ethiopia, as it is presented in the table one below; 73% of importers, exporters and producers, 63.7% of Commercial bank and NBE officials and 51% of informal Currency traders perceive that it is larger than the formal market for foreign exchange. Meanwhile 15.9% importers, exporters and producers, and 15.8% Commercial bank and NBE officials perceive that it is by far less than the formal market for foreign exchange. Contrary to importers, exporters and producers (2.2%), and Commercial bank and NBE officials (15.1%), 49% of the informal currency traders perceive that the volume of transactions in the black market is almost equal to the volume of transaction in the official foreign exchange market.

Consequently, respondents from those three categories were asked to rate from the given alternative about the source of demand for foreign currency in the parallel foreign exchange market. And the result obtained from importers, exporters and producers presented in the table below revealed that; they use the foreign currency obtained from the black market for legal imports purpose, followed for; illegal imports purpose, capital flight purpose, portfolio diversification purpose, and residents travailing abroad for different purpose according to their order. From this we can understand that, dominantly business men use the black market for importing goods and services legally. This can indicate us that, due to shortage of foreign currency in official market, importers purchase foreign currency from the black market at higher price and this could be on reason for the highest rate of inflation on imported goods in Ethiopia.

On the other hand, officers from commercial banks and NBE believe that, the demand for foreign currency in the black market emanates; first for the purpose of illegal imports, followed by, for the purpose portfolio diversification purpose and residents travailing abroad using for different purpose according to their order. Contrary to the business men and banks officials, black market currency traders believe that, demand for foreign currency from the black market derives first from residents travailing abroad followed for capital flight purpose. Thus, even though there is difference in rating between bank officials and business men, but both agree on the use of black market for illegal import purpose. However, the high demand of foreign currency by citizens traveling abroad, indicate us that the NBE directives and officials give less focus on allocating enough amount of foreign exchange for citizens travelling abroad especially for medical, education and other important purposes.

Table one:Respondents perception on the extent, source of demand and means of transfer of parallel/black foreign exchange market in Ethiopia

		Importers , exporters and producers		Commercial bank and NBE offal's		Currency traders	
		N	%	N	%	N	%
Amount of the black market in Ethiopia	It is larger than the formal market for foreign exchange.	522	73.0	186	63.70	42	51
	It is lower than the formal market for foreign exchange.	114	15.9	46	15.8	0	0
	It is almost equal to the formal market for foreign exchange	16	2.2	44	15.1	41	49
	I do not have any idea	63	8.8	16	5.5	0	0
	missing	7	0.9	0	0	0	0
	Total	719	100.0	292	100.0	83	100
Source of demand	Legal imports purpose	304	42.5	51	17.5	13	15.7
	illegal imports purpose	177	24.8	84	28.8	3	3.6

	portfolio diversification purpose	76	10.6	63	21.6	0	0
	capital flight purpose	92	12.9	38	13.0	28	33.7
	residents' travel abroad	54	7.6	56	19.2	39	47
	others	12	1.7	0	0.0	0	0
	Total	715	100.0	292	100.	83	100
The_ transaction takes_place	Through Cash	562	78.6	208	71.2	53	63.9
	Through checks	61	8.5	14	4.8	0	0
	transactions in foreign currency notes are some-times completed abroad	85	11.8	64	21.9	30	36.1
	others	9	1.2	6	2.1	0	0
	Missing	2	0.3	0	0	0	0
	Total	719	100.0	292	100.0	83	100

With regard to the means of exchange in the parallel market, as it is shown in the above table all the three groups of respondents rate; first exchange in the form cash domestically and second transactions of the foreign currency notes was completed abroad and the payment in domestic currency was done in Ethiopia. The transaction which was done domestically in the form cash exchange implies that there is excessive illegal export of goods, illegal remittance and residents and non-residents and tourist who entered the country convert their foreign currency in to local currency in the black market and this could due to low enforcement capability of the central government and persistence of corruption.

On the other hand, foreign currency exchanged abroad and payment made in domestic currency inside the country indicates us that the country losses a significant amount for foreign exchange and this could be due to, under-invoicing of export, the existence of diaspora account and the possibility of importing goods and services using franco-valuta. This problem is related with problems of NBE policies and directives.

Respondents perception on the dominant actors in the parallel foreign exchange

When respondents are asked to rate according to their role in the black market from the given alternatives, importers, exporters and producers; rated; illegal traders, currency smugglers, and importers as 1st, 2nd, 3rd, and 4th according to their order. On the other hand commercial bank and NBE officials consider illegal traders, importers and retail traders as the main actors in parallel/black market for foreign exchange in Ethiopia.

In contrast to respondents from business and bank officials, currency traders indicate that in the parallel/black foreign exchange market importers, illegal traders and distributers are the main actors. Form this result we can observe that importers were considered by all those three groups as the main actors in the parallel/black market even though their role differs from group. To use the foreign currency obtained from the black market, importers are forced to send the foreign currency to other countries illegally and use it to import goods and services by using either the diaspora account or franco-valuta. Thus, the NBE directives related with diaspora account and franco-valuta is some of the factors that are responsible for the persistence of black foreign exchange market in Ethiopia.

Table: Two Respondents Rating on the Dominant Actors/Players in the Parallel Foreign Exchange Market in Ethiopia

		Importers . exporters and producers		Commercial bank and NBE		Currency traders	
		N	%	N	%	N	%
dominant actors in the balck market[a]	importers	324	45.8	118	14.0	30	36.1
	exporters	168	23.7	75	8.9	3	3.6
	traders	205	29.0	116	13.7	12	14.5

	distributers	99	14.0	65	7.7	17	20.5
	Those travellers who travel for different purpose	260	36.7	86	10.2	0	0
	Currency Smugglers	336	47.5	79	9.4	0	0
	Illegal traders	410	57.9	153	18.1	21	25.3
	Commercial banks	118	16.7	36	4.3	0	0
	Diplomat	111	15.7	40	4.7	0	0
	officers	175	24.7	70	8.3	0	0
	others	39	5.5	6	0.70	0	0

Respondents perception on the major place of transaction, and dominant currency transacted/transfer in parallel/black foreign exchange market

With regard to the area where the highest volume of black foreign currency transaction takes place, 60.7% of respondent from business rate Addis Ababa first, followed by Moyle (10.5%) and Sudan border (10.3%). Since most respondents from business are from Addis Ababa, they consider Addis as the main place for black foreign exchange market. On the other hand, respondents from commercial banks, NBE and currency traders rated; Addis Ababa, Togo-Chali and Moyle as the main place where foreign currency transacted in the black market according to their order and this reflects to what is on the ground. Majority of the respondents from all groups also perceive that US dollar was the dominant currency transacted in the black market

Table: Three Respondent's perception on the place and currency type mostly transacted

		Importers, exporters and producers		Commercial bank and NBE officials		Currency traders	
		N	%	N	%	N	%
The_highest _level_ of _transaction_ takes_place	Addis Ababa	435	60.7	113	38.7	63	75.90
	Togo Chale	59	8.2	94	32.2	13	15.7
	Moyale	75	10.5	51	17.5	7	8.4
	Sudan border	74	10.3	4	1.4	0	0.0
	Regional capitals	45	6.3	21	7.2	0	0.0
	others	29	4.0	9	3.1	0	0.0
	Total	717	100.0	292	100.0	83	100.0
the_dominant_foreign_currency	US dollar	580	80.7	193	66.1	83	100
	Euro	77	10.7	46	15.8	0	0.00%
	Pound	42	5.8	42	14.4	0	0.00%
	Yuan	11	1.5	11	3.8	0	0.00%
	Yen	0	0.0	0	0.0	0	0.00%
	others	7	1.0	0	0.0	0	0.00%
	Missing	2	0.3	0	0	0	0
	Total	719	100.0%	292	100.0	83	100.00%

Respondents perception on the means of transaction/transfer of currency in the parallel/black foreign exchange market

When respondents were asked to give their opinion on the way foreign currency obtained through black market was transferred and from the result presented in table below, we can observe a significant difference among respondent from business, bank officials and currency traders. For example respondents from the business indicate the main means of transfer of black money is through; network of domestic and foreign money brokers, domestic money brokers,

informal hawala system, Ethiopian airline workers, government officials and foreign travellers ordered according to their level of participation.

What is new from this finding is business men's perception on the role of government officials and Ethiopian airline workers participation in the circulation of black money and requires critical investigation and action. On the hand, bank officials and currency traders believe that, the dominant means of black money circulation was done through network of domestic and foreign money brokers and domestic money brokers. This finding is also in line with above finding where significant number of foreign currency payment is done in foreign countries but the local currency is paid domestically, thus, this why remittance in Ethiopia decline from time to time.

Table:Respondent's perception on the main actors in circulating black money

		Importers. exporters and producers		Commercial bank and NBE officers		Currency traders	
		N	%	N	%	N	%
means of transaction of black market[a]	Informal Hawala system	320	45.5	52	17.7	0	0
	Domestic money brokers	366	52.0	62	21.1	21	25.3
	network of domestic and foreign money brokers	453	64.3	70	23.8	49	59
	Through Ethiopian airline workers	257	36.5	20	6.8	0	0
	Foreign travellers	162	23.0	12	4.1	0	0
	Currency smugglers	0	0	0	0	13	15.7
	Tourist	131	18.6	34	11.7	0	0
	Diplomats	123	17.5	15	5.1	0	0
	government officials	202	28.7	27	9.8	0	0
	others	59	8.4	0	0	0	0

Determinates of Black Foreign Exchange Market in Ethiopia

Respondents Perception on Factors that were Responsible for the Emergence and Persistence of Black Foreign Exchange Market in Ethiopia

Like many developing countries, in Ethiopia pervasive trade restrictions and foreign exchange controls create disequilibrium in the goods and foreign exchange market and this could be one reason for the emergence and persistence of parallel foreign exchange market (Agenor 1996).

To examine respondent's perception who have directly and indirectly involved in the parallel/black market on the reasons for the emergence of black foreign exchange market in Ethiopia, this research raises questions related; to policy and its implementation, illegal trade and governments fiscal policy. Respondents perception with regard to policy related items, as the result is presented in table four below revealed that; 60.9 %, and 54.9% of respondents from business, 60.7% and 40.4% of respondents from the banks and 97.6% and 100% of respondents from currency traders believe that the emergence and persistence of black foreign exchange market in Ethiopia is due to; government controls, permits, quotas and licenses and underdeveloped financial sector respectively. Furthermore, 58.8% of the respondents from the business and 46.9% from banks believe that, the NBE and other government polices gap that give strong incentives for traders and importers to smuggle and present fake invoices were raised as some of the reason for the emergence and persistence of black foreign exchange market in Ethiopia. ,

Table:Four Respondent's perception on the factors responsible for the emergence and persistence of black Exchange market in Ethiopia

Reason for the emergence and persistence of black market in Ethiopia	Respondents from	Strongly agree		Agree		Neutral		disagree		Strongly disagree		Total
		N	%	N	%	N	%	N	%	N	%	N
NBE is inability, or unwillingness, to meet all the demand for foreign exchange	business	247	36.1	188	27.5	83	12.1	90	13.2	76	11.1	684
	Banks	91	31.2	28	9.6	47	16.1	62	21.2	37	12.7	292
	Currency traders	51	61.4	32	38.6	0	0.0	0	0.0	0	0.0	83
governments low will and capacity to enforce laws	business	260	38.7	236	35.2	58	8.6	59	8.80	58	8.6	671
	Banks	74	25.3	106	36.3	21	7.2	28	9.6	22	7.5	292
	Currency traders	52	62.7	29	34.9	2	2.4	0	0.0	0	0.0	83
Ineffective enforcement of tax laws	business	293	41.7	106	15.1	95	13.5	98	13.9	111	15.8	703
	Banks	101	34.6	16	5.5	50	17.1	36	12.3	78	26.7	292
	Currency traders	0	0	0	0	54	65.1	12	14.5	17	20.4	83
having incentives to smuggle and present fake invoices	business	213	30.2	202	28.6	116	16.4	93	13.2	82	11.6	706
	Banks	75	25.7	62	21.2	44	15.1	43	14.7	58	19.9	292
	Currency traders	0	0	0	0	75	90.4	8	9.6	0	0	83
rent-seeking and smuggling	business	307	43.3	201	28.3	89	12.6	71	10.0	41	5.80	709
	Banks	145	49.7	70	24.0	32	11.0	29	9.9	12	4.1	292
	Currency traders	34	40.9	15	18.4	34	40.9	0	0	0	0	83
high government expenditure which requires foreign exchange	business	215	30.3	180	25.4	103	14.5	120	16.9	91	12.8	709
	Banks	70	24.0	49	16.8	49	16.8	62	21.2	56	19.2	292
	Currency traders	0	0.0	52	62.7	31	37.3	0	0.0	0	0.0	83

underdeveloped financial sector	business	203	28.5	188	26.4	95	13.3	112	15.7	114	16.0	712
	Banks	68	23.3	50	17.1	40	13.7	59	20.2	70	24.0	292
	Currency traders	34	41.0	49	59.0	0	0.0	0	0.0	0	0.0	83
government controls, permits, quotas and licenses	business	285	40.3	153	21.6	122	17.2	96	13.6	52	7.30	708
	Banks	105	36.0	72	24.7	50	17.1	44	15.1	16	5.5	292
	Currency traders	52	62.7	29	34.9	2	2.4	0	0.0	0	0.0	83
excess demand for a commodity subject to legal restrictions on import and sales	business	325	45.8	152	21.4	111	15.7	78	11.0	43	6.10	709
	Banks	113	38.7	73	25.0	47	16.1	35	12.0	18	6.2	292
	Currency traders	34	41.0	49	59.0	0	0.0	0	0.0	0	0.0	83
monetization of the fiscal deficit(covering of government debt through printing money)	business	275	39.1	180	25.6	130	18.5	81	11.5	37	5.30	703
	Banks	93	31.8	81	27.7	50	17.1	36	12.3	23	7.9	292
	Currency traders	2	2.4	51	61.4	30	36.1	0	0.0	0	0.0	83
lack of independency of the NBE in issuing and monitoring polices	business	234	33.0	163	23.0	98	13.8	98	13.8	116	16.4	709
	Banks	192	65.8	98	33.6	2	0.6	0	0	0	0	292
	Currency traders	34	41.0	29	34.9	20	24.1	0	0.0	0	0.0	83
high_tax	business	219	31.0	154	21.8	112	15.9	103	14.6	118	16.7	706
	Banks	124	42.5	68	23.3	37	12.7	31	10.6	22	7.5	292
	Currency traders	49	59.0	34	41.0	0	0.0	0	0.0	0	0.0	83
high rate of Inflation	business	315	44.6	165	23.4	95	13.5	73	10.3	58	8.20	706
	Banks	97	33.2	73	25.0	65	22.3	30	10.3	24	8.2	292
	Currency traders	0	0.0	51	61.4	32	38.6	0	0.0	0	0.0	83
conflict and lack of stability	business	215	30.2	235	33.0	127	17.8	75	10.5	61	8.60	713
	Banks	61	20.9	65	22.3	43	14.7	42	14.4	74	25.3	292
	Currency traders	17	20.5	66	79.5	0	0.0	0	0.0	0	0.0	83

With regard to policy and directives implementation problems, as indicated in table four above respondents from business indicated that; the governments low will and capacity to enforce laws, excess demand for a commodity subject to legal restrictions on import and sales, NBE is inability, or unwillingness to meet all the demand for foreign exchange, and lack of independency of the NBE in issuing and monitoring polices was considered as the main implementation problems according their order, and could have their own effect on the emergence and persistence of the black market for foreign exchange.

On the other hand respondents from the commercial bank and NBE, lack of independency of the NBE in issuing and monitoring polices, excess demand for a commodity subject to legal restrictions on import and sales, governments low will and capacity to enforce laws and NBE is inability, or unwillingness to meet all the demand for foreign exchange was rated according to their order for they play in the emergence and in increasing the volume of transaction in the parallel foreign exchange market. Contrary to the perception of respondents from business and banks, currency traders indicate that all the above implementation problems almost equally contribute for the black market. Thus, even though there is difference in order, but majority of

the respondents from all groups of respondents believe the implementation gap had significantly contribute for the emergence and in increasing the volume of transaction in the parallel/black market for foreign exchange.

Theoretically, one of the factors that have its own contribution for the existence of black market for foreign exchange is smuggling. With this regard when respondents are asked to give their agreement or disagreement on the statement "rent-seeking and smuggling are the main reason for the existence black market for foreign exchange", majority of the respondents from; business (71.6%), banks (73.7%) and currency traders (50.3%) strongly agree and agree on the statement.

The other factor that is expected to have its own role in the emergence and persistence of black foreign exchange market is the government fiscal policy and its implementation. With this regard four items was included in this research. And result presented in the table above revealed that, majority of business respondents (52.8%) and bank respondent (65.85%) strongly agree and agree on the statement "high taxes have significant role in the black market for foreign exchange". Since most of the time tax evasion is the outcome of high tax rates and the money obtained through tax evasion is expected to circulate illegally in the black market.

The second variable that is included in this research to capture the government fiscal policy variables that can have effect on the black market for foreign exchange is the ineffectiveness of tax laws enforcements. With this regard, only respondents from the business around 68% believe that the Ethiopian tax authority failure to enforce the tax rule properly is one reason for the existence of black foreign exchange market. This is because; failure to enforce the tax rule properly can lead to tax evasion and the evaded money is automatically transmitted to the black market.

Consequently, as the government of Ethiopia continuously runs budget deficit, for example 16.82% in 2020*, 5.09% in* 2018, 47.02% in 2017, and 42.02% 2016, the way it covers the deficit has its own implication on the existence and persistence of black market for foreign exchange. One mechanism to cover the budget deficit is through monetization of the fiscal deficit or covering of government debt through printing of money in which theoretically it is assumed to have strong relationship with inflation and overvalued exchange. This overvalued exchange rate in turn results in deterioration of export and shortage of foreign currency and increase the demand for black market. With this regard when respondents are asked whether the current black market for foreign exchange is affected due to the monetization of the fiscal deficit, majority of respondents from; business (64.7%), banks (59.5%) and currency traders (63.8%) strongly agree and agree on the statement.

Regression Analysis on the Determinates of Parallel/Black for Foreign Exchange

Regression Results

Before we are going to analyze the empirical result obtained from the time series regression model, we try to test the time series regression model tests which were presented below:

Test of non-stationary

Just like any economic time series data, data related to the determinants of parallel foreign exchange market demonstrates trending behavior or they may non-stationarity in the mean. In time series analysis the most common ways of removing trends is differencing. To do this we can use the unit root tests that can help us to determine the trending data is first differenced or not.

Table: Five.Unit root test with trend and intercept term

ADF		
Variable	**Level**	**Difference**
paralpremium	-3.456	-3.798*
illegtrade	3.234	4.951*
impotax	2.485	4.546*
forreserve	-2.021	-4.342*
budgdefic	2.322	4.904*
moneysupply	3.057	3.667*
availforexch	- 2.257	-4.342*
depecation	-2.223	-3.889

critical value at 5%= 3.600

*implies significance at 5%

The unit root test is tested using the Augmented Dick Fuller (ADF) test and the result revealed all the variables are non-stationary at level and stationery at first difference at 5% significance level.

Co-integration Test

A co-integration test is used to test if there is a correlation between several time series data's in the long term. Co-integration tests is used to capture where two or more non-stationary time series are integrated together in a way that they cannot deviate from equilibrium in the long term(Engle and Granger 1987).To test the co-integration test in this research we employ the Engle-Granger Two-Step method by using the Augmented Dickey-Fuller Test (ADF) to test for stationarity units in time series. Thus if the time series is co-integrated, it indicates that the residuals are stationary.

Table: six *Unit root test with trend on residuals*

Dickey-Fuller test for unit root Number of Observation = 40

Test statistics	1 percent critical value	5 percent critical value
-6.334	-3.689	-2.619

MacKinnon approximate p-value for Z(t) = 0.0000 ***= is significant the 1 percent significance level

ADF(test statistic -6.334)

critical value at 5%= -3.600

Thus, the result in the above table indicates that, the variables are co-integrated which shows us the existence of long run equilibrium and it is possible to use the Error Correction Model (ECM).

In order to determine lag structure we use different information. To use those information criteria we employ the selection rule that minimizes the criteria (Pesaran and Shin, 1999).

Table: Seven. Test results on the lag structure

Lags	No. obs	AIC	SC	HQ	FPE
3	40	-3.135	-2.217	-2.785	0.047
2	40	-3.169	-2.487	-2.908	0.043
1	40	-3.277	-2.826	-3.104	0.038
0	40	-3.112	-2.889	-3.026	0.045

Based on the Ackakie Information Criteria we decide to include 1st lag and employ the unrestricted version of the ECM model.

Long run result

The result obtained from the regression analysis presented in table below indicates most of the variables included in this research has confirmed in line with the expected level and direction of effect on the parallel/black premium which is the proxy variable of the parallel exchange market in Ethiopia.

Table: Eight Regression result

Dependent Variable: Parallel premium	
Explanatory Variables	Long run coefficients
Constant	35.675
illegtrade	0.023 (2.98)**
impotax	0.188 (0.590)
forreserve	-0.641 (-7.27)***
budgdefic	0.122 (-3.45)
moneysupply	0.189 (1.978)
availforexch	-0.6874 (-2.978)**
depecation	-0.324 (2.522)**
R square value =	0.72
DW =	1.09
F value =	42.568(0.000)
Numbers of observation =	40

Note:

***=significant at 1 percent level significance,

**= significant at 5 percent level

Numbers in brackets are t-values of the corresponding variables

Form the regression result we found that, the effect of import tax on the parallel premium is insignificant (b_1 = -0018, t= 0.590). However, theories indicate that, high import tax has positive and significant effect on the parallel premium due to importers are expected to under-invoice of their imports. According to this theory the transmission mechanism from high tax to high parallel premium is, in order to avoid certain part of the tax, importers under-invoice their imports and try to cover the difference from the black market which in turn raises the demand for foreign exchange in the black market and finally increase the parallel premium rate. However in our finding we found insignificant effect may be due to two reasons; the first is; as we have seen in the descriptive analysis part of this research importers use under-invoicing not for the purpose of tax evasion rather for the purpose of importing more goods from the officially approved amount foreign exchange. The second reason is high import tax are assumed to increases the parallel premium is through increasing illegal trade or smuggling to escape from those high taxes. So from this we can also understand that there is no direct relationship between import tax and parallel premium rather it is indirect relationship or in other words its relationship is mediated by illegal trade.

To measure the effect of smuggling on the parallel premium, this research use illegal trade as proxy for smuggling and found significant but weak relationship (b_2 = 0.023, t= 2.98). Out of many reasons, one reason for the supply of foreign exchange in the parallel market to increase is due to smuggling of goods and services, under-invoicing of exports, and over-invoicing of imports. On the other hand, when there is smuggling, smugglers import goods and sell domestically in local currency and they convert the local currency in the black market, thus it increases the demand for foreign exchange in the black market and in turn increases the parallel premium.

The amount amount of foreign exchange reserve has negative and significant (b_3 = -0.641, t= -7.26) effect on the parallel premium. In line with this respondent from NBE and commercial banks also indicate that, when the government gets aid and borrow money from abroad the countries amount of foreign exchange reserve goes beyond the required amount, thus there is a tendency to decrease the gap between the official rate and the black-market rate.

High government deficit which is covered through monetization increase the growth of money supply, which leads to high inflation and then high parallel premiums. Our finding is also in line with the hypothesis, where budget deficit has positive and significant (b_4 = 0.122, t= -3.45) long run effect on parallel premium.

Money supply will increase has also positive and significant long run relationship (b_5 = 0.189, t= 1.978). Which means an increase in the money supply surges the parallel premium through the demand for foreign exchange market, since foreign currency becomes relatively more attractive in the long-run in time of inflation.

The availability of foreign exchange obtained through the official channel, including; foreign aid, foreign borrowing, revealed that, in the long run it affects the parallel premium negatively and significantly (b_6 = -0.6874, t= -2.978).

In this paper devaluation is measured through deprecation of the official exchange rate, and the result of this research is also in line with the hypothesis; where deprecation of the official exchange rate was affected parallel premium negatively and significantly (b_7 = -0.324, t= 2.522).

Short-Run Result

As it is indicated in the table below, unlike to the long-run result, the short run result indicted that in addition to the other variables import tax has significant and negative effect on the parallel premium. Which implies that log of the parallel premium is determined in the short run by; illegal trade, import tax, availability of foreign exchange, foreign exchange deprecation, and one year lag of; fiscal deficit, money supply and foreign exchange reserve with different level of effect but with expected sign

Table: Nine Short Run Regression Result

Dependent Variable: Parallel premium	
Explanatory Variables	Long run coefficients
Constant	-0.4326 (-2.5746)
illegtrade	0.334 (3.01)**
impotax	0.5523(3.342)**
Forreserve(-1)	-3.553(-4.25)**
Budgdefic(-1)	2.433 (4.521)**
Moneysupply(-1)	2.362 (4.223)**
availforexch	-3.114 (-4.564)**
depecation	-1.233(-3.443)**
ECM(-1)	-0.442(-4.891)**
R square value =	0.64
F value =	21.552(0.0000)

Numbers of observation = 40
Note:
***=significant at 1 percent level significance,
**= significant at 5 percent level
Numbers in brackets are t-values of the corresponding variables

From the finding we can see that the extent of one year lagged foreign exchange reserve have the highest effect on decreasing the parallel premium (about 3.5%). This shows us that the availability of foreign exchange reserve above the critical threshold level can decrease the parallel premium because importers demand for parallel for foreign exchange decreases due to increase the foreign exchange allocation and decrease governments computation for the foreign currency especially if the reserve is enhanced due to foreign aid and borrowing.

The second important determinate of parallel premium is the availability of foreign exchange. And this finding shows us a clear sign where shortage of foreign currency is one of factors that highly contributes to the emergence and persistence of parallel market for foreign exchange. The other important finding from this research is the role of one period lagged budget deficit on the parallel premium. As it is indicated in the above table, budget deficit is ranked third in its effect on the parallel premium. This implies us that the government Ethiopia covers its budget deficit through monetization of the deficit (through printing money) and this will automatically transmitted to inflation which decreases the purchasing power of domestic currency. Thus, citizens prefer to hold money in foreign currency and this increase the demand for parallel/ black market for foreign currency which in turn widens the gap between official and parallel exchange rate.

Consequently, the effect of one year lagged domestic money supply has also considerable effect on the parallel premium that contributes around 2.4% increase in the parallel premium. The money supply which is created through printing money and excess liquidity of banks will create excess demand in the market and if not off-sated by proportional increase in the availability of foreign exchange, it generates high demand for foreign currency from the parallel market. Deprecation of foreign exchange which is the proxy variable of devaluation has also negative and significant effect on the parallel premium. When domestic currency is depreciated it is expected to improve the competitiveness of the exportable goods and this can improve the export capacity and foreign exchange earnings. Increase in the foreign exchange earning reduces the demand for foreign exchange in the parallel market and finally reduces the gap between official and parallel foreign exchange.

Theoretically smuggling and high import tax are assumed to have high effect on parallel premium. However, in our finding they have positive and significant but their level of effect is less compare to the other variables. On the hand the effect of import tax on parallel premium is weak due to insignificant direct relationship rather it is indirect mediated by other variables.

Finally, the result presented in the above table indicates that, there is high speed of adjustment of the short run shock which is represented by the coefficient of the Error Correction Model (ECM). The coefficient ECM shows us that around 44.2 % of the short run shock is adjusted with one year.

Conclusion and Recommendation

Conclusion

Assessing, Parallel Foreign Exchange Market in Ethiopia it's; triggers factors trends and defining Features, is important where the country is higher affected by; the shortage of foreign currency with official reserve rate less than three weeks of import, widespread black market for foreign exchange and high parallel premium. Therefore, this study tries to investigate the current practice of Parallel Foreign Exchange Market in Ethiopia and analyzing by indigenizing its history, factors that are responsible for its emergence, its determinants, it source of foreign currency, its effect on consumers, private sector, government finance and overall, the economy.

Based on the finding obtained from both primary and secondary data we can conclude that, due to governments fiscal policy, exchange rate policies, low capability and commitment to enforce lows of NBE in particular and the government in general, lack of transparency of NBE, low participation of stakeholders in design and implementation of foreign exchange directives and polices and high control and restriction of foreign exchange results to the emergence and widespread in its coverage parallel/black market for foreign exchange in Ethiopia. This in return results in declining the import capacity of the country and in turn it affects consumers, the private sector, government revenue, and the economy at all negatively.

The analysis also shows that, in Ethiopia parallel premium is increasing from time to time due to high demand for parallel/black market for foreign exchange. The demand for the parallel market is increasing from time to time due to; shortage of foreign currency, long queue to get foreign exchange, and citizen's portfolio diversification motive. Thus, if this trend continues it make it hard for the government in the short run to narrow the gap between official and parallel rate and in the long run to weaken the parallel, market by creating a unified exchange rate.

With regard to the determinants of the black market for foreign exchange which is represented by the proxy variable parallel/black premium, the regression result indicated that, in the long run except import tax all the variables of interest have significant effect on the parallel premium with expected sign.

On the other hand, in the short run which is captured by the single equation Error Correction Model (ECM), revealed that all the variables of interest including import tax have significant effect on the parallel premium with the expected sign. The sort run disequilibrium will be adjusted in the long run with high speed of adjustment, where 44% of current disequilibrium will be adjusted within one year.

Recommendation

Based on the finding we can conclude that:

- Governments fiscal policy should be guided to minimize the fiscal deficit and should be in the threshold level sated by the parliament
- Exchange rate policies requires partial liberalization,
- NBE should enhance its capability and commitment to enforce laws regulation and guidance's by improving the skill and capacity of its employees by recruiting better professionals and de-politicizing its appointment of officials and its experts
- Giving relative independence of NBE in order to design and implement its policies
- Ensuring transparency of NBE and commercial banks in allocating foreign exchange,

- participation stakeholders in design and implementation of foreign exchange directives and polices

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2.6 Factors Affecting Public Financial Management in Eastern Ethiopia Dire Dawa, Harar and Jigjiga Administration,

Mekonnnen Dibu[1]*, Mekonnnen Megersa[1] and Endale Moges[1]

[1]Department of Management, College of Business and Economics, Dire Dawa University
E-mail: mekonnendibu084@gmail.com

Abstract

Ffinancial management is sensitive to the public since it affects the living standards of the society and achieving their goals. Thus, effective and efficient financial management in the public sector is a necessity. Accordingly, this study aimed at examining factors affecting public financial management among 331 sample respondents from public sectors in Eastern Ethiopia (Dire Dawa, Jigjiga and Harar) by using a purposive sampling method. Primary data collected through questionnaires & focus group discussion. Descriptive and inferential statistics are used as a method of data analysis. The finding revealed that budget planning and process, leadership, and controlling factors have effect on public financial management significant and positive followed by policy reforms, financial literacy and accounting reporting respectively. In conclusion the administrations lack active participation of the stakeholders, committed leadership, strong controlling, policy reform, skills and etc. Hence, it is recommended that government should take measures focusing on improving the budget planning and process, leadership commitment and capacity, controlling system, policy reforms, financial literacy and reporting system by the engagement of the stakeholders.

Key Words: Budget, Controlling, Leadership, Literacy, Policy, Public Financial Management and Reporting

Introduction

Public financial management, (hence forth PFM) is the overall arrangement for planning, directing, monitoring, organizing, and controlling of the economic resources of an organization, with a view efficient accomplishment of the public goods (Immaculate, 2016). It is important component in managing the internal components' function of the public management, and in improving management efficiency in the public sector (Greener, 2013; Chado, 2015). It is concerned with the economic behavior of government with regards to the methodologies, rules, regulations and policies that shapes the budgeting, forecasting, governing the inflow and outflow of funds in order to maximize the objective of the institution since effective institutions and systems of PFM play a critical role in the implementation of national policies, poverty reduction, for equitable and efficient utilization of national resources. So, the overarching objectives of PFM include aggregate fiscal discipline, operational and allocative efficiency (Piatti-Fünfkirchen and Schneider 2018). Thus, effective financial management starts with planning and budgeting, and requires strengthened project selection, prioritization, project management, and improve the link between policy objectives, budget credibility, better extent of local government monitoring and evaluation, comprehensiveness of the information, reliable and timely information (Allen and Tommasi 2001).

PFM is the ways governments manage public resources, and it has impact on the economy and society, both in the processes and governments use to manage their money. The success of governments depends on its effectiveness how effective they are at financial management and the outcome achieved from financial flows, in the short, medium and long term (Bandy & Metcalfe 2021). Thus, public finance has contribution for steady state economic growth, price stability, economic stability, equitable distribution, proper allocation of resources, balanced development, promotion of export, and infrastructural development (Shwor, 2020).

The quality of financial management on developing countries has been growing especially countries of the sub-Saharan Africa, because of the efficient use of funds related with finance management system and PFM is important to improving the quality of public service outcomes, and how funding is used to address national and local priorities, the availability of resources for investment and the cost effectiveness of public services since general public have greater trust in public sector organizations (ACCA, 2010). In all parts of the world local authorities play an increasingly important role in the delivery of fundamental basic public services (UN-Habitat 2015). However, they are facing increasingly bigger challenges as a result of rapid and chaotic urbanization and the increase in urbanization requires effective PFM as a possible resource for poverty reduction and sustainable growth. To do so understanding the determinants PFM helps achieving a balanced urban system which would certainly become a necessary focus for government as it would offer an opportunity for increasing market integration by facilitating exchanges and the division of labor, and facilitating diversification in the non-agricultural sector (MUDHc 2014). To make their difference levels of peoples' standard of living and sustainability of society government policies that has the potential for effective and efficient utilization of government budget and finance. Therefore, sound & effective management of finance system is the most important factors in ensuring countries' competitiveness, to provide for the financial efficiency, to improved service delivery, transparency, accountability, to achievement of the

goals, to contribute to long-term economic success, for good governance and coherence of public authorities' activities at different levels (Padilla et al. 2012; Transtec, 2017).

Countries worldwide are experiencing internal as well us external pressures to restructure their public sectors that helps to solve financial management problems, to create public confidence in government, and to adapt to social and economic trends (Lynn, 1999). Thus, Ethiopia is pursuing a comprehensive reform of its PFM systems under the umbrella of the Civil Service Reform Project (CSRP) that includes administrative, legal, financial, labour reforms by focusing on legal framework, existing systems, hybrid approach, budget, accounts, reporting, automation replicates, and strong manual controls over commitment (Muhammed, 2014). In this regard Ethiopia has historically had a strong civil service culture that has survived the changes in government and governance structures and commitment to the methods of public service is high and historically there have also been low levels of corruption in terms of rent seeking; such behavior is not culturally acceptable even though the practices currently different (Abdu 2014). However, Ethiopia audit report shows no improvement in finance administration. Even though, implementing financial management practice is a challenge in all countries, but it is serious in resource constrained countries like Ethiopia (All Africa reports 2016). Ineffective and inefficient utilization of public finance is highly visible, which may leads to misplaced projects; poor learning environment and performance which lead fail the government objective of attaining vision (Lucy, 2016).

For instance, the House of Peoples' Representatives of the Ethiopian parliament approved a budget yearly for regions. But, it difficult to conclude the public funds are used to finance the provision of public services, and how service delivery contributes to service improvement objectives, and in developing countries, traditionally, public sector financial management intended with circumventing wastage and wasteful spending, especially the loss of public money through various forms of corruptions as cited by (Abdu, 2014). Therefore, PFM reforms should be seen as a change management programme and one of the key factors to delivering change effectively is to start at the top and have the right leadership in place for strength, support and direction.

Know days the increment of the heightened media attention, societal demands by their citizens, and critical of government inefficiencies in service delivery (Central, 2010), the demand for infrastructure and services challenged the government in the developing world (Yemisrach and Mulugeta, 2012). Thus, public institutions worldwide are under pressure to deliver improved and integrated services and increase efficiency as cited in Abayneh (2018). Even though it is the duty of the government to provide services with resources barely equal to the task such governments faced with the challenge of finding ways to provide infrastructure and services within their limited financial resources. Also, finance is considered as blood vessel for every development activity and due this the government has been working to improve its financial management system by formulating clear and comprehensive financial management laws, directives and guidelines that could be applied across the country (MoFED 2009). There is serious complaining still from the majority of people concerning poor services provided to them which is mainly due to poor practice of PFM although such attempt was encouraging. Also as noted in all Africa.com 6 JUNE (2015), Audit Report indicates there no improvement in public finance administration and over two billion birr remained unaccounted for the Office of the Federal Auditor General has released the 2013/14 fiscal year audit report and most audited federal offices had failed to show any progress while over two billion birr remained unaccounted for among federal institutions. In

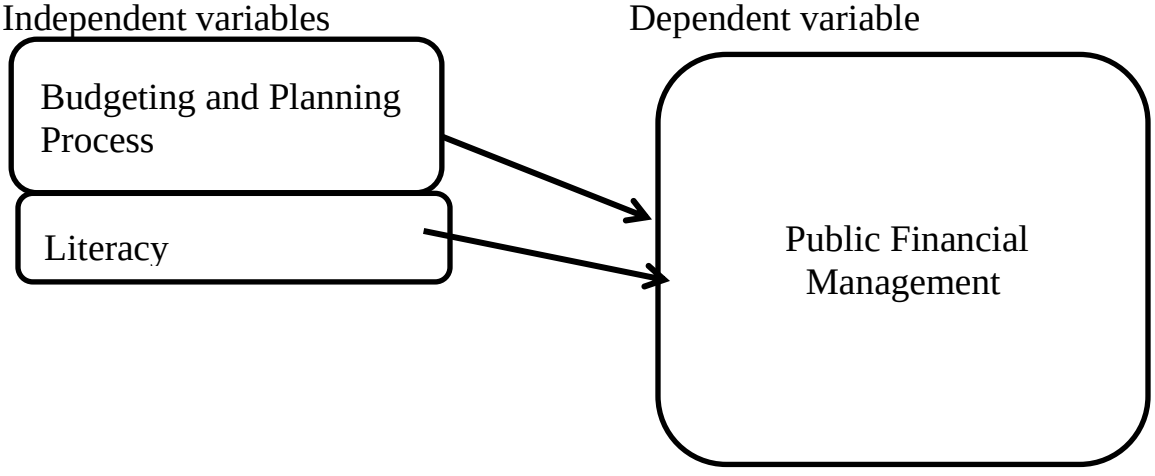
addition, some of the public finance in Ethiopia was not properly supported the development programs. Directly or indirectly some of it was embezzled, not properly utilized, and there was high government expenditure in non-planned activities and these results there is high budget deficit in most of the public sectors. As stated in the Annual progress report for ULGDP II for EFY (2016/17) Dire Dawa, Harar and Jigjiga cities are the least performing cities including accountability and transparency. Also, there are problems that raised by community includes poor financial reporting practice, weak internal control system & financial administration, unethical relationship with vendors of basic supplies and rush spending of budget at the end of budget year. Thus, determining and minimizing the factors affecting PFM is necessary for the development of any organization, its existence and determinant to socio-economic development at large.

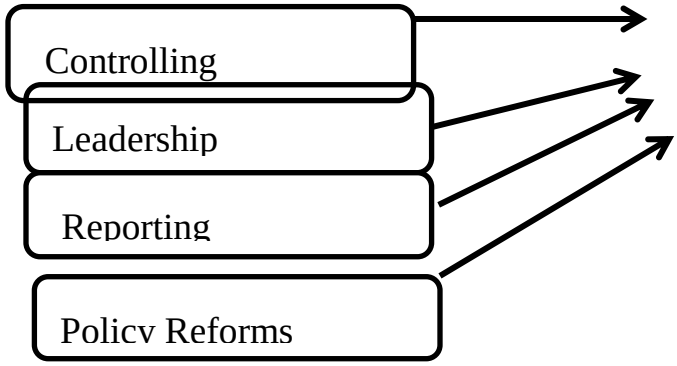
Some researchers identified the factors like budgeting and expenditure management, accountability and financial reporting, and auditing have their own constraints to deliver fundamental basic public services (Visser and Erasmus, 2013), and internal control systems influences financial management of public sector (John et al.,2014). Study in Agricultural Department of North Shewa Zone Administration, Amhara National Regional State on the determinants of effective PFM shows budgeting, accounting and reporting, internal control, external auditing, and leadership are the factors for effective PFM (Abayneh 2018). Also there are some studied on factors affecting PFM; by focusing on specific sectors like educational institutions like (Esther (2015); Asegid (2015); Lucy (2016); Munge, Kimani & Ngugi (2016); Stanley, (2017); Nguyena, Vietb and Loanb (2021). But as far as the researcher's knowledge concern there is few studies conducted in examining factors affecting PFM focusing on urban public sectors and limitation in their methodology. Therefore, the researchers are aimed and motivated to examine the effect of budget planning & process, financial literacy, financial controlling, leadership, financial reporting and policy reforms factors on PFM in Eastern Ethiopian.

Conceptual Framework

The conceptual framework for this study depicting in Figure 2.1 indicate there is a potential relationship between the six independent variables and the dependent variable.

Fig 2.1 Researchers (2023) Conceptual framework based on Literature sources:





Methodology

Description of the study area

This study focuses in Eastern Ethiopian in Dire Dawa, Jigjiga, and Harar administration. These cities are performing different infrastructure using the government budget, the community and ULGDP finance sources. The cities selected purposively by levels of the city administration for the region and the budgets usage compared to the others eastern cities to examine the factors affecting PFM in the administrations in Eastern Ethiopian.

Research design

The researchers have used explanatory and descriptive survey research design, since it is preferable for studies that deal with large number of people' about their attitudes and opinions towards the specific issue, events or phenomena to address the stated objectives, to measure and describe the level of influences of the independent variables on the PFM.

Target population

In this study 1125 target population was drawn from the public sectors in three Eastern Ethiopia cities those who directly participate in PFM from health, education, micro enterprises, municipality, renenueand finance economy offices since most of the finance has been utilized by these sectors as per the cities 2022 annual report.

Sampling techniques and sample size

Sampling Techniques

The researchers used purposive sampling method to select sectors and respondents like experts, office heads, and process owners since they are implementing the government policies, strategies, and have much information about the PFM in their respective sectors.

Table 3.1 Numbers of Target population

List of sectors	**Employees &stakeholders for Each city.**			
	Dire Dawa	Harar	Jigjiga	Remark
Finance and economy	120	80	95	
Education,	83	72	76	
Municipality	75	42	63	

Health	74	53	65	
Micro enterprises	90	73	64	
Revenue	85	68	75	
Total	442	320	363	1125

Source: Own sources 2023

Sample size

To determine sample size the researchers were used Yamane (1967) formula $N = N/1 + n(e)2$ Where; n = minimum sample size N = Population size = 1125, e = Margin of error = 5% $= \frac{1125}{1+1125(0.05)^2} =$ 295 respondents selected proportionately and 36 respondents were selected for focus group discussion to triangulate the data obtained from the questionnaires. Hence, totally, 331 respondents have formed the sample size for this research.

Sources of data and Data Collection Techniques

The researchers used both primary and secondary sources of data. Thus the primary sources of data which collected by well-designed questionnaires for quantitative analysis and focus group discussion was used for qualitative analysis. Also published books, journal articles and unpublished data from each city administration concerning sectors, annual report, and plan are used as secondary sources of data.

Methods of Data Analysis and Interpretation

Quantitative data had been analyzed through the descriptive statistics & inferential statistics and the qualitative data has been analyzed along with quantitative presentation to supplement each other. Since the variables are continues, multiple regression used to indicate the relationship of the dependent variable PFM and independent variables (Appropriate planning& budgeting, literacy, controlling, leadership, financial reporting and policy reforms. So the model and its specification is; $Yi = \beta0 + \beta1X1 + \beta2X2 + \beta3\ X3 + \beta4X4 + \beta5X5 + \beta6X6 + u$

Where: Y is the response or dependent variable effective PFM

X1= budgeting & appropriate planning, X2= financial literacy, X3= financial controlling, X4= leadership X5= financial reporting, X6=policy reforms are independent variables. β0 is the intercept term- constant which would be equal to the mean if all slope coefficients are β0 ,β1, β2, β3, β4, β5 and β6 are the coefficients associated with each independent variable which measures the change in the mean value of Y, per unit change in their respective independent variables.

Validity and Reliability Test

Reliability and validity are indicators of the quality of research work. Reliability is indicating the consistency of a set of measurements (Coakest and Stees 2007). So, the researchers have adapted questioners from literature and cheeked through Cronbach's Alpha since the alpha readings near 0.9 represent highly consistent scale and 0.3 reflect little (Nunnaly1978). Also, the multiple regression assumption was tested before proceed to the data analysis. In addition to ensure the reliability of the data collection instrument and the objective researchers were conducted 10% pilot before distributed all questionaries' to the respondents, by asking to rate the effect on ordinal of 1 to 5 ranging as 1= strongly disagree, 2 =disagree, 3= undecided, 4= agree and 5 strongly agree and interpreted the respondent's responses.

Table 3. 2 Chronbach's Alpha results

	Variables	Chronbach'sAlpha	Number of items
Independent	Leadership	.998	5
	Budget planning and process	.994	7
	Financial literacy	.839	6
	Financial control	.996	10
	Financial report	.982	5
	Policy reforms	.997	5
Dependent	Public Financial Management	.999	7

Source own survey of 2023

Results and Discussion

Response Rate

Table 4. 1 Response Rate

No	Item	Response rate	
		No	Frequency
1	Sample size	295	100
2	Collected	286	96.9
3	Remain uncollected	9	3.1

(Sources: Own survey Resluts 2023)

The objective of this study is to examine factors affecting PFM in case of some selected Eastern Ethiopia (Dire Dawa, Harar and Jigjiga administration). To do so, from the above table 4.1, out of 295 questionnaires are distributed, 286 (96.9%) were collected while 9(3.1%) of the questionnaire not collected. Thus the analysis made based on the 286 questionnaires responses obtained from the three city administrations.

Descriptive & Inferential Statistics Results

In the study descriptive statistics, and Pearson's product moment correlation coefficient and regression analyses were used to achieving the objectives.

Table 4.2 Descriptive Statistics variables

Variables	Mean	Std. Deviation	N
Public Financial Management	4.6818	0.60999	286
Leadership	4.57	0.6215	286
Financial literacy	4.708	0.59689	286
Financial Report	4.5895	0.70589	286
Policy Reforms	4.486	0.5726	286
Budget planning and process	4.5549	0.62809	286
Financial Controlling	4.47	0.646	286

(Sources: Own survey results, 2023)

The descriptive result presented in the table 4.2 budget planning and process factors shows that the mean scores value 4.5549 with standard deviations value of .62809. With respect to the leadership factors results shows the mean scores value 4.570 with standard deviations value of .6215. Regarding policy reforms factors the mean scores value 4.4860 with standard deviations of .57260. The financial literacy factors result shows the mean scores 4.7080 with standard deviations of .59689. Also, financial reports factors result show the mean scores 4.5895 with standard deviations of .70589.. On the other impediment, according to focused group discussions in the administrations, budgets planning and process, leadership, financial controlling, policy reforms, financial literacy and financial reporting are the major problems raised as a factor for PFM.

Table 4.3 Descriptive Statistics for Each Administration

Name of City	Variables	Mean	Std. Deviation	N
Dire Dawa	Public financial management	4.6818	.63436	110
	Leadership	4.564	.6429	110
	Financial literacy	4.7061	.60407	110
	Financial Report	4.5927	.72387	110
	Policy Reforms	4.4727	.58591	110
	Budget planning and process	4.5636	.65703	110
	Financial Controlling	4.45	.672	110
Harar	Public financial management	4.6237	.67428	93
	Leadership	4.538	.6846	93
	Financial literacy	4.6810	.63496	93
	Financial Report	4.5183	.74556	93
	Policy Reforms	4.4731	.61840	93
	Budget planning and process	4.5054	.68562	93
	Financial Controlling	4.42	.681	93
Jigjiga	Public financial management	4.7470	.48998	83
	Leadership	4.614	.5140	83
	Financial literacy	4.7410	.54676	83
	Financial Report	4.6651	.63254	83
	Policy Reforms	4.5181	.50271	83
	Budget planning and process	4.5990	.51482	83
	Financial Controlling	4.53	.569	83

From these indicated the mane and standard deviation in the above table 4.3 budgets planning and process factors, leadership factors, financial controlling factors, policy reforms factors, financial literacy factors and financial reporting factors have highest potential effect on the PFM in the administrations.

Table 4.4 Pearson's correlation coefficient

Sig. (1-tailed)	PFM	Leadership	Literacy	Reporting	Policy	Budget planning	Control	
Pearson Correlation	PFM	1			.			
	Leadership	.748	1					
	Literacy	.621	.414	1				
	Report	.612	.551	.301	1			
	Policy	.625	.432	.5	.341	1		
	Budget planning	.765	.596	.413	.503	.493	1	
	Controlling	.643	.577	.352	.471	.382	0.459	1

a. Predictors: (Constant), Control, Literacy, Report, Policy, Budget planning, Leadership
b. Dependent variable Effective PFM

(Sources: Own survey results, 2023)

The study analysis proves that, there is a positive correlation between all independent variables and PFM. Thus, as it is clearly indicated in the above table 4.4, there is strong positive and

significant relationship between budget planning & process and PFM (r =.765, p < .01), leadership and PFM (r = .748, p < .01), and controlling and PFM (r = .643, p < 0.01), at 95% confidence level. And policy reforms and PFM (r =.625, p < .01), and literacy and PFM (r = .621, p < .01), and reporting and PFM (r =.625, p < .01) in the second category. This shows at a 5% level of significance budget planning & process, leadership, controlling, policy reforms, literacy and reporting respectively plays a significant role in determining the PFM in Eastern Ethiopian (Dire Dawa ,Harar, and Jigjiga Administration).

Table 4.5 Multiple Linear Regressions Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					R Square Change	Sig. F Change	
1	.914a	0.835	0.831	0.25048	0.835	.000	1.888

a. Predictors: (Constant), Control, Literacy, Report, Policy, Budget planning, Leadership
b. Dependent Variable: PFM

In the model summary table 4.5 shows the linear combination of the independent variable was related to the dependent variable significantly, R = 0.912, R square = 0.832 adjusted R square = 0.831. In this R value 0.914 tells that the overall independent variables have strong influence on the PFM. R-square value indicates that 83.5% of variation on PFM is explained by the variables that are formulated independent.

Table 4.6 Regressions Analysis Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-0.762	0.15		-5.065	.000	-1.058	-0.466
	Leadership	0.234	0.035	0.239	6.788	.000	0.166	0.303
	Literacy	0.225	0.03	0.22	7.499	.000	0.166	0.284
	Reporting	0.107	0.027	0.124	4.04	.000	0.055	0.16
	Policy	0.158	0.033	0.149	4.87	.000	0.094	0.223
	Budget planning	0.311	0.032	0.32	9.631	.000	0.247	0.374
	Controlling	0.156	0.029	0.165	5.298	.000	0.098	0.214

a. Predictors: Control, Literacy, Report, Policy, Budget planning, Leadership
b. Dependent Variable: PFM

Source own survey 2023

The regression coefficients indicate the mean amount of change in the dependent variable due to a unit change in the factoring variable holding other variables constant. Thus, higher unstandardized coefficients beta value has the higher contribution for the effect on PFM. Based on this all the independent variables (budget planning and process, leadership, controlling, policy reform, literacy and report at (Sig. = .000) are statistically significant and have a positive effect on PFM. The beta coefficient of the model in table 4.6 indicates the constant is -.762, whereas the unstandardized beta value for the predictor variables (Budget planning and process, leadership, control, policy reform, literacy and reporting) are .311, .234, .156, .158, .225 and .107 respectively with the P–values are less than 0.05. This indicates a statistical significance at

the 5% level of significance, which shows the explanatory power of the model; the independent variables and dependent variables are highly related. Accordingly, the result equation of Model, is $Y = -0.762 + 0.311X_1 + 0.234X_2 + 0.156X_3 + 0.158X_4 + 0.225X_5 + 0.107X_6$
Where Y is Public Financial Management, X_1 Budget planning and process, X_2 is leadership, $X_3$is control, X_4ispolicy reform, $X_5$is literacy, and X_6 reporting.

Conclusions

Now days the environment is competitive and turbulent, and the success of organizations highly depends on the effective utilization of their human capital and FM. In this regard for the public sectors in Ethiopia in general the sources of budget and funds are from the federal, regional and local administration for the public service and projects to deliver services for the community. So based on the data analysis the factors affecting PFM in the Eastern Ethiopia in some selected sectors (Dire Dawa, Harar, and Jigjiga) administration includes the following points.

- Setting SMART objectives, developing comprehensive budget plan, credibility of the budget process, appropriate budget preparation and planning are the problems in the sectors and these are factors that affected PFM in Eastern Ethiopia.
- The study also revealed that, lack of political and technical committed leadership, making the environment conducive for implementation, existence of poor communication and coordination role in the sector are the factors that affected PFM.
- In financial statement auditing regularly by an independent auditor and correcting the findings, lack of carries out annual audits and monitoring how public finance is utilized by all involved departments and persons, lack of control and audit personnel who have high integrity and ethical values are the factors that affected the PFM.
- Also due to lack of policy reforms like strengthening external audit of the public sector, cash management, lack proclamation, regulation and directive in PFM lack of program performance-based budgeting, lack of adaptive and inclusive processes finance reform are the factors that affected the PFM.
- With respect to literacy, lack of personnel with requested knowledge & capacity of staff, lack of adequate technical skill in the sectors and due to decision-making rests (depends) with few officers are the factors that affected the PFM.
- Also lack of strong system of development of accounting reporting system, lack of up-to-date & development accounting records and reporting system, lack of monthly reporting and bank reconciliation, lack of completeness of financial statements and lack of timely and quality performance reports are the factors that affected the PFM.
- Lastly but not least, due to these factors there are problems like lack of properly set performance indicators public financial management in the sector, clearly outlining the expected expenditures, lack of organized report & misallocation of funds, lack of adequate financed and delays of the projects from expected time are factors affecting the administration PFM in the sectors.
- Therefore, the above findings indicate that in PFM in eastern Ethiopia (Dire Dawa, Harar, and Jigjiga) administration budget planning and process, leadership, controlling, policy reform, financial literacy and reporting related factors are affected the PFM respectively.

Recommendations

The public finance is the blood vessels for economic development and has a vital role in offering services, constructing infrastructures, poverty reduction, and employment generation in

developing countries like Ethiopia. Therefore, on the basis of the analysis the following recommendations are forwarded for the administration.

- Improving the involvement, consultation, and encouraging community participation in planning and resource allocation by establishing an independent committee who are in charge of monitoring and evaluation starting budget planning to evaluation of the PFM performance at least semi-annually is vital because active participation of the residents in needs identification, planning and implementation process in PFM, helps in promoting transparent and participatory decision making, ensuring service delivery and achieving growth for the citizens.
- It is important that if the governments use outcome-based budgeting to make link between the allocation of resources and the effective delivery of public services and programs.
- Create training opportunity at least annually for the employee's by using in the surrounding University academic staff by making a significant investment in public sector finance professionals to fill skill gap.
- Improve the political and technical commitment of the leadership that helps to create a kind of trust between the stakeholders, the community and the government by taking continuous feedback on the progress of PFM towards the achievement of the goals of the administration.
- Improve the controlling system and mechanisms by ensuring clear and coherent support in PFM and focus holistic financial Policy reforms that increases transparency and accountability.
- Provide technology-based reporting, by adopting high quality accounting reporting and technical training on E- financial management for the employees.

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2.7

2.8 Gender Inequality in Youth Employment in Urban Ethiopia:Trends and Policy Implications, Selamawit Weldeselassie[1]and Tsega Gebrekristos[2]

[1]Asst. Prof. Department of Policy Studies, Ethiopian Civil Service University
Email: yeded2004@gmail.com
[2]Asst.prof., Africa Institute of Governance and Development, Ethiopian Civil Service University
Email: tsegagi@gmail.com

Abstract

The issue of employment for youth and women is of special matter of concern as these groups tend to be disadvantaged in the labour market. This paper attempts to investigate the changes in distribution of youth labour participation and wage gaps in urban market based on gender. The study employed a mixed quantitative and qualitative research approach. The cross-sectional data of UEUS collected annually, over the 2003 to 2018 period and NLFS collected over the years 1999 to 2021 by CSA, are used as sources of quantitative data. Further, qualitative data is collected from 10 key informants in government institutions. Results show that wage employment is dominated by male workers over the last two decades, vulnerable employments and unpaid family works are dominate by the young female which hinders young female from access to information. The gender wage gap has been widening over the last two decades that means the young female workers have not been gaining benefits from the labor market. The wage gap was more due to unexplained factors than the explained ones (differences related with choice of industry and occupation, education and potential experiences). Therefore, government interventions should be placed to discouraging societal norms and values that promote gender discrimination, enhancing opportunities for women in formal employment, apply coercive measures to enforce policies to minimize attitudes and practices resulting in employment gender wage gap, create accessible information dissemination system for young women.

Keywords: *Gender, Inequality, employment, youth, urban, policy*

Introduction

Youth employment and gender parity in employment are among the main development challenges for many countries. Youth and women are considered to be deprived groups in the labour market that employment becomes an issue of significance for them (Koehler, 2013). For Sub-Saharan Africa, in 2020, the young male employment-to-population ratio estimate was about 42% compared to female employment-to-population ratio of 38%[42]. Ethiopia is not an exception: where young employment to-population ratio for female is 39.9% and for male 60.6% in 2020 (CSA, 2020). The deprivation of women in social, economic and political activities affects economies negatively as empowering women is empowering the society (Doepke & Tertilt, 2010).

The Ethiopia's economy has been enjoying strong economic growth with average growth rate of 9.8% between 2008 and 2019 (WB, 2020). Poverty has significantly reduced from 55% in 2000 to24% in 2020 (WB, 2016; 2020). The economic growth was limited to low productivity agriculture and service sectors (Mezgebo, 2021) and without the required structural

[42]Source: www.data.worldbank.org/indicators, accessed on May 21, 2022.

transformation in the economy, which diminishes prospects of finding decent jobs in the long run (Gollin et al., 2016; Fox and Kaul, 2017).

On the other hand, the Ethiopian youth labour contributes 70% of the total 115 million population in 2021 (Mulata, 2021). Owing to the high fertility rate, one third of the world's youth population is expected to live in Sub-Saharan Africa by 2050 (AfDB, 2015). Ethiopia's population is predominantly young and the urban areas reflect the youth bulge. Over the last decade, with the high population growth, Ethiopia has created a reservoir of youth people for the labour market. This is particularly evident with supply of youth labour in urban areas rising at 11% annually (Woldehanna et al., 2019). These facts show that the youth population is increasing overtime but the effects of such trends on youth employment and gender inequality is less understood.

Thus, this study examined the changes in distribution of youth labour participation in urban market based on gender and gender pay gap thereof. Studying the dynamics in distribution of youth employments in the urban market, and if the labour market values the same skill differently depending on gender of the worker will help to characterize behaviour of the labour market and will offer in puts in designing policy interventions aimed at harnessing the benefits of youth bulge. Therefore, this study aims to answer the following research questions:

1. What are the youth employment outcomes and patterns across occupations/sectors based on gender?
2. What are the determinant factors affecting Labour market outcome?
3. What is the magnitude and dynamics of gender wage gap across public/private sectors?

Youth unemployment

Youth unemployment has been widely investigated in the economic literature and the approaches can be grouped into two depending on whether they analysed from a microeconomic and macroeconomic perspective. The macroeconomic viewpoint examines aspects of youth unemployment using the overall features of youth labour markets. These mainly include aggregate demand, size of the youth labour force and youth wage (O'Higgins, 2001). A decrease in aggregate demand leads to a decrease in demand and the youth are more vulnerable to be laid off because they have often jobs with limited employment protection or they are inexpensive for firms to fire (Bell and Blanch flower, 2011a). At times of economic recession, firms stop hiring which affects more the youth because they account for the majority jobseekers (Shimer, 2012).During periods of crises, firms may become more selective and exclude young candidate due to lack of experience (Chouldhry et al., 2012). Additionally, evidences show that youth are inefficient in searching jobs (Bell and Blanchflower, 2011b) which has consequences of joblessness and the pace of recovery is slower for the youth than that of adults (ILO, 2010). This notion has important implication as the slow recovery might have differential impact depending on gender of the young worker because female youth often have limited access to information in the developing countries context.

But under similar macroeconomic circumstances, without diminishing of their importance, it is interesting to understand why some youth have employed in better paying jobs while others cannot which is also the focus of this study. Difference in the characteristics of youth individuals could affect the chances of finding a job, the microeconomic perspective. The influence of gender and birthplace on youth labour outcomes is widely known the literature (e.g. Msigwa, 2013; Escudero and Mourelo, 2013). However, human capital endowment is often considered as the principal determinant of employment. Individuals endowed with better education or professional experiences are more appropriate to be successful when searching for jobs (Mincer,

1974). Indeed, employers used education credentials to select potential workers because better-educated candidates can be trained for specific jobs at a lower cost and quickly (Thurow, 1975) and can adjust and performer better under changing conditions (Schultz, 1975). Although educational attainment is often the direct proxy to measure human capital, it is important to note that young people lack other important components. The knowledge acquired through formal education is not sufficient for firms because it not directly transferable into productive soft skills (Carmeci and Mauro, 2003). Rahman et al. (2020) found that skill mismatch as the main attribute to youth unemployment. Additionally, factors such as gender, marital status, geographic location and education are the main attributes to youth employment outcome differentials in Tanzania (Msigwa and Kipesha, 2013; Ndagijimana et al., 2018).

Significance of Gender equality in youth employment

John Ward, Bernice Lee, Simon Baptist & Helen Jackson (2010) pointed out that equipping women is very imperative because of their contribution to the forthcoming generation and labor market. Some of the results they have found out in their study are: the more women are empowered with education the more they contribute value to the economy, greater opportunities given to women to control household resources would enhance the human capital of the upcoming generations as women most likely spend their resources on children than their men counterparts, better family planning and maternal health access improves the number of women who participate in the labor force as a result the labor market becomes more competitive, minimizing gender gap in the labor market makes it more competitive due to the participation of talented and capable women and the increment in the number of women policy makers in parliament are associated with statistically significant decrease in corruption practises . Generally, they have argued that gender equality enhances economic growth in a human capital perspective that empowering women inevitably contributes much to the economy of countries as they constitute almost half of the population.

(Chen, 2004) in his study found out that society/family especially mother's level of awareness or culture have impact on women education access and women education level would have impact on their employment level. Women's participation in the labor force would improve development and vice versa.

Gender wage gap and its Determinants

The literature on labour market groups the skill structures as supply side and demand side factors. The supply side factors include of the individual's measurable human capital skills such as education and experience. Mincer (1974) argues experience and education play key roles in productive capacity. Education and experience are often positively associated. Jobs that require relatively higher level of education tend to require higher job experiences as revealed by entry requirements and experience-wage premiums (Tahlin, 2007). Young people are relatively better educated and less experienced but often less competitive in high-skill jobs than in low-skill jobs. Nonetheless, understanding the dynamics of youth people transition to work and the gender differences in employability would be important to fill knowledge gaps in policy-relevant issues.

The gender wage gap is persistent and significant in the labour market due to the discrimination, differences in value of the non-observed productive capacities. This is often manifested as the sectoral segregation and/or occupational discrimination. The sectoral segregation – described as the magnitude and manner in which wage distribution of women and men varies across sectors – is supposed as potential source of the gender wage gap (Gibbon and Katz, 1992; Abowd et al., 1999). Similarly, the gender wage gap could arise due to specific characteristics of employers linked to occupational discrimination – meaning when workers with identical productivity

characteristics receive unequal incentive. In both types of discriminations, the non-observed productive capacities of workers potentially play a major role in the inter-industry gender wage differentials. However, the existence of these wage differentials still remains unresolved puzzle (Hartog et al., 1999).

In the African labour market, however, it is important to differentiate between the private and public sector. The public sector is small, relatively regulated and values human capital endowments equally assuming the recruitment/promotion process remains transparent while the private sector is free of those regulations. Furthermore, the public sector is likely affected by political interference while the private sector is subject to profit motives and free of political constraints. The customs and traditions may significantly affect the labour market and put the women workers at disadvantage. There are also cases where companies exclude women from certain better paying jobs known as "masculine" job (Zellner, 1972). Hence, the discrimination coefficient is expected to be higher in the private sector and contributes to low remuneration of women in the private sector.

Methodology

Descriptive and explanatory mixed methods research design was employed and used quantitative and qualitative data from secondary and primary source. The quantitative source data was the national survey from the NLFS and UEUS of Ethiopia, carried out annually by the CSA. The NLFS has collected cross-sectional data from a sample of households in four rounds in 1999, 2005, 2013 and 2021. The UEUS also collects nationally representative cross-sectional data from all urban centres annually since 2003.

This study used a sub-sample of NLFS and UEUS datasets[43] that cover 1999 to 2021.It is important to note that during the period 2003-2018, Ethiopia has achieved strong economic growth and administered with same governance system. Each dataset captures information on individuals' demographic characteristics, trainings, employment and job on urban centers[44].

The analysis used a sub-sample of the NLF and UEUS focusing on youth within the age of 15-34. Based on the findings from the quantitative data analysis, primary data was collected from 10 higher experts of MoWSA and MoLS.

Descriptive statistics and inferential statistics were applied to analyse the quantitative data. An econometric model was adapted to estimate the gender wage gap and examine the sources of the gap that include the trends. The qualitative data was transcribed and coded and classified into themes as per their thematic thoughts and content analysis was used to analyse the data.

Estimation Models

Employment Outcome Model

The youth labour force is group into four employment outcomes such as inactive, unemployed, self-employed and employed. The employment outcomes are categorical but cannot be ordered

[43] The annual surveys were carried out on a sample of urban households selected via stratified random sampling. The dataset provides employment unemployment details of individuals in the household such as wage, sector, occupation, and human capitals related characteristics. The main advantages of the dataset are: (1) employment and earning information of the individuals is provided and (2) the same information is repeated over time but not from the same individuals.

[44] Urban centers are any locality having a municipal administration or a population size of 2,000 or more inhabitants of which 50% of its labour forceis engaged in non-agricultural activities (FDRE, Council of Ministers Regulation No.374/2016)

in a meaningfully way. To understand the contributing factors for employment status, the multinomial logistic regression has been applied with four level values: 1 if inactivity; 2 if unemployed; 3 if self-employed; and 4 if employed. This model makes possible to estimate how individual attributes influence the probability of belonging to any of the four employment categories.

The model is represented as follows:

$$Y_i^* = \beta X_i + \varepsilon_i \qquad (1)$$

Where $Y_i^*$the unobserved latent variable,X_i is individual's characteristics, $\varepsilon_i$is the error term randomly distributed and mutually independent. We applied equations (1) for female and male youth separately to identify the factors that affect employment outcome.

Gender Wage Gap Model

The most commonly applied, in the gender pay gap, is the Mincer (1974) human capital earning function model. Applying simple wage regressions to the Mincer model helps to understand the relationship between earnings, schooling and experience. Using the estimated wage regressions, then the parts that are explained and unexplained by differences in endowments can be decomposed to solicit if the market values same skills differently. The simple earning equation is given as

$$\begin{cases} \ln W_{if} = \beta_f X_{if} + \in_{if}, & if\ individual\ i\ \text{is}\ female \\ \ln W_{im} = \beta_f X_{im} + \in_{im}, & if\ individual\ i\ is\ Male \end{cases} \qquad (2),$$

which is estimated using ordinary least squares. The variable $\ln W_i$ is the logarithm of wage per hour of individual i and the vector of variables X includes individual characteristics related to human capital. The last term is the error term which captures unobserved characteristics and assumed not correlated with the observed variables in the vector X. From the regression of the separate equations, the predicted mean wage is computed as $\overline{lnW_f} = \overline{X_f}\beta_f$ and $\overline{lnW_m} = \overline{X_m}\beta_m$ respectively for female and male. Similarly, it can be computed the average wage of female if they were remunerated equally to men using the parameter estimate of male (β_m)which is given as

$$\overline{lnW_f^*} = \overline{X_f^*}\beta_m \qquad (3)$$

The Oaxaca –Blinder decomposition, used to compute the difference in the mean log wages of men and women, is derived from the previous equation (3) and given as

$$\begin{cases} \overline{lnW_m} - \overline{lnW_f} = \left(\overline{lnW_m} - \overline{lnW_f^*}\right) + \left(\overline{lnW_f^*} - \overline{lnW_f}\right) \quad \text{OR} \\ \overline{lnW_m} - \overline{lnW_f} = \left(\overline{X_m}\beta_m - \overline{X_f}\beta_m\right) + \left(\overline{X_f}\beta_m - \overline{X_f}\beta_f\right) \end{cases} \qquad (4)$$

The overall decomposition can be rearranged as

$$\overline{lnW_m} - \overline{lnW_f} = \left(\overline{X_m} - \overline{X_f}\right)\beta_m + \overline{X_f}\left(\beta_m - \beta_f\right) \qquad (5)$$

The first part in the right-hand side represents the explained while the second part represents the unexplained part of the difference in mean log wage. the same decomposition was repeated for years 2003, 2010 and 2018 to observe how the factors behave overtime in gender pay gap.

Trends in Youth labour Outcome

Following the ILO (1990) labour market outcome definition, we grouped the youth labour market outcome broadly into three such as employed[45], neither employed nor in education or

[45] The employed group can be further divided in wage employment and vulnerable employment

training (NEET)[46], and student[47]. Over all, the results as presented in Table 1 show that youth employment has been growing although at a slower pace. But the employment gains have been accrued more to male than to female because the proportion of young female has decrease from 47.10% in 1999 to 43.31% in 2021. Wage employment is dominated consistently by male workers over the last two decades. However, female youth workers are overrepresented in the vulnerable employments and unpaid family works. Female youth workers consist of 61.14% of the vulnerable employments in 1999 which reduced to 51.68% in 2021.

When we look at the student group of the labor force, the third level in terms of labour market outcome, the overall participation has improved from 18.77% in 1999 to 25.5% in 2021. However, the proportion of female youth is consistently lower than that of male though the gap gets narrow slowly. For instance, about 16.37% of the students were female in 1999 and it has increased to 23.95% in 2021. Despite of the fact that there is improvement in access to education, the impact on youth employment is scanty. The increment in the number of youth having access to education has caused educated unemployment owing to the poor education quality and entrepreneurial skills of the educated (Broussard and Tekeleselassie, 2012; Serneels, 2004). The key informant interview with an expert in MoWSA also corroborates with the findings that well educated people have tendency to be dependent on formal wage employments, which are scarce, rather than creating their own jobs.

The trends in youth labour market outcomes depicted in Figure 1shows that the employment trends that has been observed in 1999 seems to repeated in 2021. In 1999, the proportion of youth (both sexes) employed in vulnerable employments was the highest whereas in 2005 and 2013 those in wage employment was the highest. These positive developments seem to be reversed in 2021 because the gap between the wage and vulnerable employment has varnished and more importantly of the proportion of female youth workers in the vulnerable employments outpaces those in the wage employment.

The CSA, UEUS (2018) result is in line with the finding of this study that shows the proportion of women employed in the informal sector[48] was 28.2% which is higher than their male counterparts which is 17.1%. The CSA survey has not considered persons engaged in private household works in either the formal or informal employment. This shows that women are highly engaged in the vulnerable/informal sector that is a sector full of challenges and vulnerable to natural and manmade shocks.

Though vulnerable employment offers the youth the capacity to cover day to day expenses, studies show that vulnerable employment is considered to provide low and irregular productivity and earnings as a result limited savings for unforeseen business or natural catastrophes. Moreover, they are deprived of social protection rights and other employment benefits and rights (Getahun, 2022; Guven and Karlen, 2020; ILO, 2013; Gebre-Egziabher and Yemeru, 2019).

The key informant interviews with MOLS experts show that the youth particularly women are not being benefited from sustainable employment opportunities because of poor information

[46] Those in NEET group includes unemployed, inactive or being engaged in house work.

[47] Students are individuals in pursuing their study

[48] According to MoLSA (2020) there are two criteria used to classify employment as formal or informal/vulnerable in Ethiopia: 1. having financial book account that records monthly income statement and balance sheet, 2. having license for the business enterprise. Therefore, to be considered as a worker in a formal sector, employed people are expected to satisfy at least one of the above criteria.

dissemination systems, burdens in their homes and community norms &values that urge women to stay at home rather than going out looking for a job around.

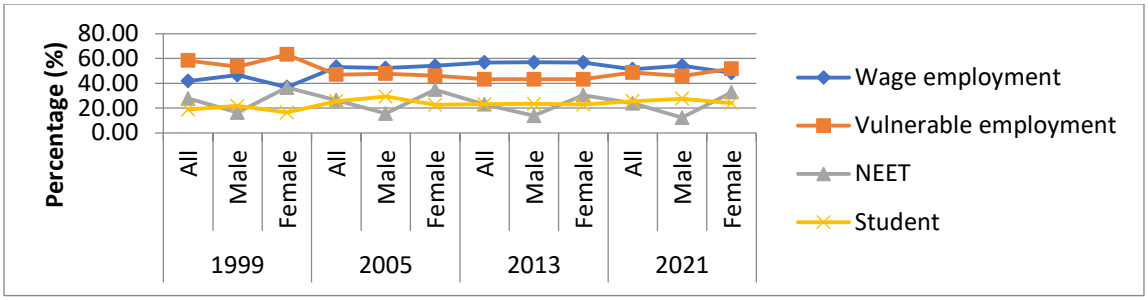
Moreover, the tendency of the unemployed urban youth to use the opportunities provided by government such as Public Employment Services is poor particularly among women. Out of 1,770,294 respondents of the urban employment unemployment survey (2018) only 69,120 (3.9%) and 5,194 women (0.29%) are registered and have unemployment card (MoLSA, 2020). ILO (2008) also argues that the effectiveness of the Ethiopian Public Employment Services is very limited due to ineffective and inefficient labour market information system, limited capacity and job search skills.

Table 1: Youth labour market outcome by gender

	1999			2005			2013			2021		
	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female
Employed	**53.49**	**61.71**	**47.10**	**48.15**	**55.10**	**42.55**	**53.94**	**62.85**	**46.66**	**50.60**	**60.21**	**43.31**
Wage employment	***41.75***	***46.56***	***36.86***	***53.10***	***52.23***	***54.00***	***56.79***	***56.84***	***56.75***	***51.33***	***54.18***	***48.32***
Permanent Employee	17.19	21.52	12.77	18.19	20.66	15.62	28.59	29.67	27.41	29.00	29.82	28.15
Temporary Employee	0.00	0.00	0.00	25.30	20.98	29.81	19.40	17.11	21.90	13.24	12.62	13.90
Contract Employee	3.27	4.21	2.32	5.04	5.41	4.66	5.48	5.99	4.92	3.99	4.36	3.60
Casual Worker	18.39	17.49	19.31	3.34	4.00	2.66	3.15	3.93	2.29	4.94	7.23	2.54
Others	2.71	3.11	2.30	0.60	0.58	0.62	0.18	0.14	0.22	0.15	0.15	0.14
Vulnerable employment	***58.25***	***53.44***	***63.14***	***46.90***	***47.77***	***46.00***	***43.21***	***43.16***	***43.25***	***48.67***	***45.82***	***51.68***
Self-employed	39.32	37.93	40.73	33.61	36.14	30.97	33.15	36.04	29.98	34.00	37.21	30.60
Contributing unpaid labour	18.93	15.51	22.42	13.29	11.63	15.03	9.98	7.12	13.12	14.68	8.61	21.08
Sub Total	*26321*	*13278*	*13043*	*23810*	*12157*	*11653*	*28293*	*14812*	*13481*	*22859*	*11735*	*11124*
Neither Employed nor in Education or Training	**27.75**	**16.44**	**36.53**	**26.28**	**15.63**	**34.85**	**23.00**	**13.83**	**30.49**	**23.90**	**12.25**	**32.73**
Unemployed	20.16	14.17	24.82	19.38	13.56	24.06	15.60	11.85	18.66	13.58	9.21	16.89
Inactive or housework	7.58	2.27	11.71	6.90	2.07	10.79	7.40	1.97	11.83	10.32	3.04	15.84
Sub Total	***13654***	***3537***	***10117***	***12994***	***3448***	***9546***	***12067***	***3258***	***8809***	***10795***	***2388***	***8407***
Student	**18.77**	**21.85**	**16.37**	**25.57**	**29.27**	**22.60**	**23.06**	**23.32**	**22.84**	**25.50**	**27.54**	**23.95**
N	**49210**	**21516**	**27694**	**49451**	**22062**	**27389**	**52455**	**23566**	**28889**	**45172**	**19490**	**25682**

Source: Authors computation using NLFS data of 1999, 2005, 2013, and 2021 from CSA

Figure 1: Trends in youth labour outcome by gender



Source: Authors computation using NLFS data of 1999, 2005, 2013, and 2021 from CSA

Trends in Gender Wage Gap

Full time employees, individuals who work at least 13 weeks in six months, are considered in the analysis. As discussed above, we applied Oaxaca-Blinder decomposition to estimate difference between the average log wage of young women and men in 2005, 2010 and 2018. In doing so, we identify to what extent the wage gap is associated with differences in the average characteristics of women and men in each year. Similarly, we also identify the extents of the unexplained portion of the gender wage gap which captures discrimination against female workers and gender differences in productive characteristics not accounted by the explanatory variables.

The decomposition results for each year are presented in Table 2. The gap in gender gap has increased over time, which shows the rate rising from 20.36% in 2003 to 36.08% in 2018. This widening wage gap indicates that young female workers have been gaining little from the labour market opportunities of the last two decades. In 2003, an average young female worker has been paid 20% lower than that of the male counterpart and about 1.37% the gap is due to explained factors – (differences related with choice of industry and occupation, education and potential experiences) – whereas the unexplained factors contributed about 18.37% the difference.

The wage gap due to explained differences in female and male characteristic has also increased from 1.37% in 2003 to 13.22% in 2018. However, the unexplained portion of the gender wage gap is persistently larger than the explained. In 2018, for instance, of the 36.08% wage gap 20.18% comes from the unexplained part. The unexplained portion of the wage gap signals differences in value of the non-observed productive capacities of the worker or presence of systematic discrimination female workers in the market. The key informant interview with an expert in the MoWSA corroborates with this finding that there are prejudices in considering the youth especially women as incompetent, which may be is the cause for paying lower wage to them in the private sector.

Table 2: Decomposition results of gender log wage by year

	2		2010		2	
	L	***% of***	***Log***	***%***	***L***	***%***
P	1		1.19974		1	
P	1		1.45576		1	
T	0	20.36	0.26601	3	0	3
D						
E	0	1.37	0.10503	1	0	1
U	0	18.73	0.16099	1	0	2

Source: Authors calculation based on data from CSA's UEUS of 2003, 2010 & 2018.

We decomposed the explained part of the wage gap further to understand contribution of the attributes. The results in Table 3 indicates that education, particularly having degree and above,

and construction industry have the highest contribution in explaining the wage gap in 2010. The contributions of both attributes have reduced by in 2018.

Table 3: Decomposition of Gender Wage Gap in 2003, 2010 and 2018 (UEUS)

	2003	2010	2018
Explained			
Age	0.022	0	0.060*
Potential experience	-0.041**	0.028***	-0.[illegible]**
Marital status	0.005	0.003	0.004*
Years of Schooling	0	-0.012*	0
Education Degree	0.017***	0.041***	0.002
Education Diploma	0.002	-0.021***	-0.002
Public Sector	-0.024**	-0.001	-0.[illegible]**
Firm Size	-0.005	-0.017***	-0.002
Occupation			
Mangers	0.019**	0	0.012**
Professionals	0.018**	0.002	0.022*
Technicians	-0.042***	0.036***	-0.[illegible]*
Clerks	-0.076***	0.029***	-0.[illegible]**
Services and Sales	-0.005	0.001	0.005
Skilled Agriculture	0	-0.031***	0
Crafts & related	0.056***	-0.036***	0.010**
Plant Machine	0.037***	0.007	0.026**
Industry			
Mining	0.001	0.001	0.002
Manufacturing	0.006	0.003	-0.001
Electric, gas, etc.	0.007	0.001	0
Water, sewerage	-0.003	-0.001	0
Construction	0.066***	0.028***	0.024**
Wholesale & Retail	-0.001	0	0
Transport & Storage	0.028**	0.026***	0.012
Accommodation &	-0.001	0.031***	0.025**
Information &	0.001	0	-0.001
Finance & Insurance	-0.005	-0.003	-0.002
Real estate	0	0	-0.001
Prof., Scie. & Tech.	-0.008	-0.001	-0.001
Admin & support	-0.027**	0	0.002
Public & Defense	0.018*	0.005	0
Education	-0.039***	-0.009	-0.002
Health & Social	-0.019*	-0.005	0.002
Art & entertainment	0	0	0.002
Other Services	0.005	0.001	0
Household Activities	0	0	0.001
Total	0.014	0.105***	0.124**
Unexplained	0.172***	0.161***	0.184**
Total Gap	**0.185*** **	**0.266*** **	**0.308*** **
Observations	12517	15934	15393

Determinants of Youth labor Outcome

Multinomial regression was carried out to shed light on individual features that influence youth labour outcomes in each year and also for both sexes separately to capture if the factors differ based on gender of the worker. We exclude individuals identified as students from the analysis. The estimation results are reported in Table 3, Table 4 and Table 5 for all youth, female youth and male youth respectively.The results show that the likelihood for female to be unemployed is higher compared to their male counterparts while the opposite is true for being engaged in wage employment or self-employment (Table 3). Individual's educational attainment has shown a persistently significant positive influence on wage employment or unemployed compared to being inactive. In all the years, acquiring higher level education (mainly Diploma, TVET and University Degree) has significant positive effect on the likelihood of being engaged in wage employment and similar pattern is observed on being unemployed. However, the role of education in the likelihood of being engaged in self-employment than being inactive is negative. These results suggest that individuals with higher level of education are either wage employees or actively seeking for employment instead of engaging in vulnerable employment.

The other important demographic factors are individual's marital status and age group. The likelihood for the older youth cohort (25-34) to be in the labour force is significantly higher. This means the older youth cohort is active in the labour force compared to the youth of 15-24 ages. Similarly, individuals with marital status of never-married have higher probability to be out of the labour force.

We run a separate regression for both sexes to capture if the attribute of labour outcome are different depending gender of the worker. Table 4 presents estimation results of female youth. Attributes related to the age cohort and marital status exhibit similar influence with the estimation results of the pool sample but at varying magnitude and significance. The likelihood to be in the labour force is higher for the married compared to the never married. Female in the older youth age groups have significantly high probability to be in the labour force. Those with higher level of educational attainment are more likely to be wage employment whereas those with secondary education are more likely available to start work than being inactive.

Similar to the female youth, males in the older youth cohort have higher probability of being in the active labour force than being inactive compared to those in the 15-24 ages (Table 5).Having higher level of education increases the likelihood being in wage employment and lowers the chance of being in self-employment. Regarding to the relationship between the level of education and type of employment, the result of key informant interview with a higher official in MoWSA supports the quantitative data analysis result. He explained that people at the lower level education status are keener towards self-employment and Vulnerable employment than the youth graduated from Universities. Moreover, he said the University graduates expect more from Government than focussing more on self-efforts. The increased access to education in Ethiopia has created the issue of educated unemployment due to low education quality and poor job creation (Broussard and Tekeleselassie, 2012). Serneels (2004) also supports this finding that unemployment in Ethiopia is intense among relatively well-educated people who look for a well-paid job, especially a public sector job but most of those public sector job seekers never get one. Getnet (2003) also argues that high rate of labour supply increase associated with the poor macroeconomic conditions and urban sector performance are the pushing factors to youth unemployment problem in urban Ethiopia.

Youth male marital shows slightly different influence on the labour outcome. Being married increases the likelihood to engage in self-employment or being available for employment but not important for the probability to engage in wage employment except in 1999.

Table 3: Multinomial *logit* Estimation results, the entire sample of Youth

		1999	2005	2013	2021
Base group: Not in labor force					
	Female (ref. male)	0.277***	0.367***	-0.009	0.077*
	Ages 25-34 (ref. ages 15-24)	1.070***	1.074***	1.183***	1.042***
	Educational Status (Ref. Primary)				
	Secondary	0.353***	0.885***	0.152***	-0.225***
	Post-Secondary	0.703***	0.033	0.984***	0.787***
	University	1.198	0.905*	0.076	0.105
	Marital Status (Ref. Never Married)				
	Currently Married	0.814***	0.928***	0.720***	1.027***
	Divorced	1.069***	0.973***	1.642***	1.572***
Unemployed	Widowed	1.155***	1.168***	1.036***	1.815***
	Separated	0.915***	0.951***	1.464***	1.080***
	Live together			1.280***	1.482***
	Constant	-1.348***	-1.467***	-1.353***	-2.284***
	Female (ref. male)	-0.671***	-0.758***	-0.945***	-1.054***
	Ages 25-34 (ref. ages 15-24)	1.636***	1.511***	1.710***	1.438***
	Educational Status(Ref. Primary)				0
	Secondary	-0.419***	0.018	-0.390***	-0.530***
	Post-Secondary	-0.664***	-1.125***	-0.048	-0.468***
	University	0.036	0.07	-1.065***	-0.907***
	Marital Status (Ref. Never Married)				0
Self Employed	Currently Married	0.947***	0.981***	0.899***	1.085***
	Divorced	1.891***	1.608***	2.141***	2.193***
	Widowed	1.795***	2.029***	1.714***	2.330***
	Separated	1.651***	1.276***	1.767***	1.476***
	Live together			1.450***	1.303***
	Constant	-0.670***	-0.432***	-0.478***	-1.239***
	Female (ref. male)	-0.876***	-0.469***	-0.679***	-0.911***
	Ages 25-34 (ref. ages 15-24)	2.027***	1.886***	1.815***	1.745***
	Educational Status(Ref. Primary)				
	Secondary	0.549***	0.757***	-0.097**	-0.224***
	Post-Secondary	2.892***	0.289***	1.732***	1.617***
	University	4.076***	3.360***	1.430***	1.095***
	Marital Status (Ref. Never Married)				0
Employed	Currently Married	0.940***	0.778***	0.535***	0.791***
	Divorced	1.891***	1.440***	1.856***	1.894***
	Widowed	1.540***	1.598***	1.376***	1.728***
	Separated	1.557***	1.152***	1.560***	1.530***
	Live together			1.384***	1.551***
	Constant	-1.055***	-1.116***	-0.845***	-1.419***

	Observations	37921	41666	46852	39532

Note: Significance levels: *significant at 10%, **significant at 5% and significant at 1%.
Source: Authors estimates based on NLF 1999, 2005, 2013 and 2021

Table 4:Multinomial logit Estimation results, Female Youth only

		1999	2005	2013	2021
Base group Not in labor force					
Unemployed	Ages 25-34 (ref. ages 15-24)	1.761***	1.598***	1.763***	1.957***
	Educational Status(Ref. Primary)				
	Secondary	0.171***	0.693***	0.229***	-0.252***
	Post-Secondary	0.434*	-0.210***	1.137***	0.813***
	University	1.662	0.88	0.247*	0.058
	Marital Status (Ref. Never Married)				
	Currently Married	0.801***	0.643***	0.733***	1.399***
	Divorced	0.147	0.136	1.045**	0.896**
	Widowed	0.578	0.506	-0.186	0.979
	Separated	-0.351	0.695	1.970*	0.84
	Live together			1.273	1.399
	Constant	-1.019***	-1.127***	-1.459***	-2.449***
Self Employed	Ages 25-34 (ref. ages 15-24)	2.235***	1.882***	2.353***	2.179***
	Educational Status(Ref. Primary)				0
	Secondary	-0.602***	-0.117*	-0.372***	-0.603***
	Post-Secondary	-1.100***	-1.377***	0.004	-0.656***
	University	-0.066	-0.176	-1.222***	-0.910***
	Marital Status (Ref. Never Married)				
	Currently Married	2.091***	2.002***	2.101***	2.575***
	Divorced	0.941***	0.823***	1.464***	0.969***
	Widowed	0.619	1.071	0.25	1.392
	Separated	0.54	1.396**	2.796***	1.162*
	Live together			2.378***	2.099**
	Constant	-0.836***	-0.532***	-0.800***	-1.591***
Employed	Ages 25-34 (ref. ages 15-24)	2.638***	2.316***	2.529***	2.616***
	Educational Status(Ref. Primary)				
	Secondary	0.235***	0.609***	-0.001	-0.233***
	Post-Secondary	2.298***	-0.014	1.660***	1.307***
	University	4.225***	3.251***	1.390***	1.128***
	Marital Status (Ref. Never Married)				
	Currently Married	2.229***	2.102***	2.091***	2.579***
	Divorced	1.075***	0.550*	1.431***	0.968***
	Widowed	0.563	0.969	0.202	0.671
	Separated	0.458	1.170**	2.824***	1.532**
	Live together			2.524***	2.758***
	Constant	-1.128***	-1.275***	-1.252***	-1.845***
	Observations	18854	20376	22316	18213

Note: Significance levels: *significant at 10%, **significant at 5% and significant at 1%.
Source: Authors estimates based on NLF 1999, 2005, 2013 and 2021

Table 5: Multinomial logit Estimation results, Male Youth only

		1999	2005	2013	2021
Base group Not in labor force					
	Ages 25-34 (ref. ages 15-24)	0.695***	0.726***	0.863***	0.571***
	Educational Status (Ref. Primary)				
	Secondary	0.496***	1.003***	0.106*	-0.215***
	Post-Secondary	0.946***	0.224***	0.846***	0.697***
	University	-13.172	0.346	-0.142	0.088
	Marital Status (Ref.Never Married)				
Unemployed	Currently Married	0.942***	1.090***	0.910***	1.259***
	Divorced	1.352***	1.300***	1.857***	1.900***
	Widowed	1.444***	1.478***	1.379***	2.216***
	Separated	1.261***	1.153***	1.569***	1.366***
	Live together			1.418***	1.657***
	Constant	-1.287***	-1.335***	-1.343***	-2.212***
Self Employed	Ages 25-34 (ref. ages 15-24)	1.219***	1.225***	1.307***	1.006***
	Educational Status(Ref. Primary)				0
	Secondary	-0.291***	0.129*	-0.386***	-0.493***
	Post-Secondary	-0.317	-0.847***	-0.148	-0.466***
	University	0.533	1.008	-0.787***	-0.936***
	Marital Status (Ref.Never Married)				0
	Currently Married	0.639***	0.681***	0.657***	0.694***
	Divorced	2.021***	1.730***	2.238***	2.277***
	Widowed	2.009***	2.169***	1.933***	2.371***
	Separated	1.833***	1.202***	1.628***	1.452***
	Live together			1.145***	1.028**
	Constant	-1.131***	-1.056***	-1.123***	-1.859***
Employed	Ages 25-34 (ref. ages 15-24)	1.570***	1.515***	1.337***	1.232***
	Educational Status(Ref. Primary)				
	Secondary	0.860***	0.880***	-0.164***	-0.300***
	Post-Secondary	3.521***	0.566***	1.837***	1.760***
	University	3.373**	3.249***	1.391***	0.930***
	Marital Status (Ref.Never Married)				
	Currently Married	0.299***	0.106*	-0.087	0.009
	Divorced	1.919***	1.530***	1.779***	1.796***
	Widowed	1.637***	1.631***	1.485***	1.673***
	Separated	1.652***	1.079***	1.252***	1.281***
	Live together			0.809**	0.710*
	Constant	-1.693***	-1.353***	-1.123***	-1.861***
	Observations	19067	21290	24536	21319

Note: Significance levels: *significant at 10%, **significant at 5% and significant at 1%***.
Source: Authors estimates based on NLF 1999, 2005, 2013 and 2021.

Conclusion

The overall youth employment has been increasing despite of the fact that the employment has been benefiting the young male than the young female. Moreover, wage employment is dominated consistently by male workers over the last two decades, vulnerable employments and unpaid family works seem to be left to the young female.

The gender wage gap has been widening over the last 15 years, which indicates that the young female workers have not been gaining benefits from the labor market the same as the young men. The wage gap was more due to unexplained factors than the explained ones (differences related with choice of industry and occupation, education and potential experiences). The unexplained factors of the wage gap are indicators of the prevalence of judgements based on non-observed productive capacities of the worker or presence of systematic discrimination female workers in the labor market.

Policy Implications

- Government needs to install proactive youth employment policies and programs to engage the youth in the labor market as the number of labor force entering in to the labor market every year is very large
- Government should work to minimize the impact of societal norms and values that encourage discrimination based on gender.
- Information dissemination system regarding the labor market should be improved to reach out young female who are engaged in household works.
- To minimize the burden of young female in taking care of their children, public as well as private Day care services should be provided.
- government should apply its coercive power to enforce policies that outlaw gender-based discriminations

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2.9 Salient Attributes To Continued Inflation In Ethiopia: Domestic Realities Versus Transnational Spillover Effects, [1]Wondewosen Getaneh & [2]Mebtu Mengesha

[1]Asst.prof.Development Economics, Ethiopian Civil Service University
E-mail: gwondie21@gmail.com
[2] Lecturer,Development Economics, Ethiopian Civil Service University
E-mail: mebtmama@gmail.com

Abstract

Inflation is a major challenge for the Ethiopian Economy. It has been persistent and reached more than 30 percent in 2023. In June 2023, both food and non-food inflation were above 30%, leading to a decrease in the purchasing power of households. More than 80% of the survey respondents agreed that the prices of both food and non-food items have increased and will continue to do so for the next five years. To tackle inflation, various measures such as tariff and tax exemptions, import subsidies, applying the Franco-valuta scheme, price controls, import substitution, increasing reserve requirements, reducing government loans, and establishing Sunday markets have been implemented. However, despite these efforts, inflation remains high. It does not seem to respond, which is consistent with the views and perceptions of approximately 90% of our survey respondents. Hence, this study has identified the public perception of inflation and contributing factors and recommended policy actions to address the challenge. Macroeconomic indicators were used to determine factors contributing to inflation using the ARDL model. Survey respondents shape the public perception of the continued inflation. Accordingly, the analysis revealed that, on average, the rate of inflation has been declining by an average of 1%, which can be attributed to real economic growth. However, it has been inconsequential compared to the existing level of inflation. On the other hand, the Export of basic commodities and imported inflation have contributed to increased inflation. Therefore, the government needs to strengthen the supply side of the economy, facilitate smooth logistics, promote import substitution, and restrict the export of basic products to reduce the inflation rate.

Keywords*: Inflation, Economic growth, Imported Inflation, money supply, Import substitution*

2.9.1 Introduction

Over the past two decades, Ethiopia has achieved remarkable economic growth, but it has been accompanied by a high inflation rate (Atinafu, 2020; Ndikumana et al., 2021). Inflation is one of the Ethiopian economy's major macroeconomic challenges (Abdurahman, 2022). According to Ndikumana et al. (2021), the average inflation rate of the Ethiopian economy is above 10%, a ceiling set by the national development plans. The official inflation record was 2.4% up to 2004 and 15.1% after that. Specifically, since 2020, there has been a spike in the price of goods and services related to the increased government spending related to the armed conflict in northern Ethiopia. Agricultural production contractions and supply chain disruptions induced by the successive shocks have further aggravated the mounting inflation levels in the country.

Regarding food inflation, the highest food inflation rate recorded so far is nearly 42% in February 2022, but at a general inflation level of 33.6% (Abdurahman, 2022). Based on the official CSA report, inflation on food items is 54% of the general inflation. Changing prices of edible oil, bread, and non-alcoholic beverages contributed to much of the inflation on food items (CSA, 2022). The report also shows that the inflation rate differs across regional states. While

Harari regional state scored the highest food inflation in the country, Addis Ababa had the minimum food inflation with 35.9% by the year 2022.

The rate of inflation in Ethiopia has both domestic and foreign sources. Devaluation and weak domestic food supply are the major contributing factors to food inflation and overall inflation (Abdurhaman, 2022). Drought and civil war have exacerbated inflation. In 2007, the government depreciated the domestic currency by 28% to promote exports, resulting in upward pressure on inflation. Similarly, Gadisa (2021) budget deficit and national debt. They both are found to increase inflation in the long run. A similar justification was also provided by Atinafu (2020). According to the author, the key source of inflationary pressure in Ethiopia is deeply rooted in the government financing of deficits. In addition, he has also concluded that the monetary component of inflation is due to money growth.

Complementarily, global events and price changes might contribute to upward inflation in Ethiopia. For example, Abdurahman (2022) claimed that the Ukraine-Russia conflict has contributed to the rise in inflation. These two countries are major producers and exporters of wheat, edible oil, and agricultural inputs.

As a result, the government has been taking fiscal, monetary and structural policy measures to curb inflation. The policy measures include tariff and tax exemptions, import subsidies, the Franco-valuta scheme, price controls, import substitution and establishing Sunday markets. In addition to the above, various fiscal and monetary policies were introduced and implemented. These include raising the minimum reserve requirement for banks from 5 to 10 percent, doubling the statutory reserve requirement for commercial lenders and increasing the amount of foreign currency banks should remit.

However, these measures do not seem to work. The economy is continually suffering from a high inflation rate. Hence, there is a growing need to identify contributing factors at the micro, meso, macro, and global levels. Disaggregating these factors will help devise fine-tuned and targeted policy options. Therefore, it is important to identify more determining factors that may have contributed to the sustained inflation of the economy by considering both micro and macroeconomic variables.

Various empirical works, such as Loening et al., (2009); Geda and Tafere, (2011); Haji and Gelaw, (2012); Gofere, (2013); Altasseb, (2015); Bane, (2018); Nigusse et al. (2019); Bedada et al., (2020); Melaku, (2020); Atinafu, (2020) and Abdurahman, (2022), investigated factors determining inflation,None of these studies considered the micro realities and perceptions of inflation in Ethiopia. Owing to this gap, the current study is of twofold importance: one, it combines the micro and macro-level realities of inflation; two, it identifies the contribution of the domestic and international drivers to sustained inflation in Ethiopia. Considering this motive, the following research questions will be addressed in the study at hand.

Therefore, the study is poised to answer the following questions.

- What are the basic characteristic features of sustained inflation in the Ethiopian economy?
- How does the public perceive a continued level of inflation?
- What are the domestic and transnational factors that are causing the continued inflation in Ethiopia?

Methodology

The methodology involves distinct methods for both the micro and macro data. The survey was conducted to understand public perception of the ongoing inflation in the country, while the macroeconomic data enables us to distill the domestic and international factors that are responsible for sustained inflation in the country. Accordingly, a survey is conducted in Addis

Ababa and two regional cities [Harar and Gambella]. Addis Ababa is the largest economic center of the country and, at the same time, experienced the lowest inflation in 2021, while Harar, followed by Gambella, recorded the lowest rate of inflation (CSA, 2022). The study has applied a mixed research approach with concurrent triangulation design, allowing the primacy quantitative approach and integration of the data either at the analysis or interpretation stage (Creswell et al., 2003).

Households living in Addis Ababa, Harar and Gambella are the sample frames from where sample respondents were selected using a two-stage technique. First, kebeles were selected using geographical representation then random household respondents were identified randomly. Cochran's (1963) sample determination formula is employed to select the 802 respondents from the three cities. The survey data is collected using structured questionnaires. Descriptive statistics is employed to analyze the data from the survey. On the other hand, macroeconomic data is also collected, mainly from WB and IMF, and the ARDL model is utilized to conduct macroeconomic-level analysis. In the ARDL model, the dependent variable of the study is the annual rate of inflation. Both macroeconomic variables and imported inflation, as a weighted average of inflation from importing partners.

Characteristics of our respondents

In this section, we present some of the descriptive statistics of the demographic characteristics of the study respondents. 28 percent of the respondents are aged under 29. We also notice that most of the surveyed respondents are between 30 and 44, accounting for 46 percent. It is also observed that those aged between 45 and 54 and 55 and above account for 19 and 7 percent, respectively.

When we consider gender, the survey result confirms that most of the respondents are male (59 percent). Females accounted for 41 percent. Even though the number of females is low compared to that of males, we can still say there is a good representation of the former. The result also revealed that most of the sampled respondents are married, comprising 55 percent, followed by the never-married category at 43 percent. In household headship, we observe that more than half of the respondents (51 percent) are head of the family, and this is because in our study, we have focused on household-level data, and we gave preference to the head of the family in his or her presence during the survey period. In terms of family size, a large share (60 percent) of participants reported having a family size between 4 and 6. In fact, this interval of family size is where the Ethiopian national average family size, 4.6 and 4.7 in 2016 and 2019, respectively, lies (CSA & Macro, 2016; EPHI and ICF, 2021). About 26 percent of the respondents replied that they have a family size of 3 members or less.

In terms of human capital information, our survey data revealed that about one-third of the respondents (30 percent) completed TVET-level education, followed by nearly a quarter (23 percent) who reported college diploma completion. It is also observed that about 15 and 19 percent of the participants replied they have gained secondary school (grades 9–12) and first-degree education, respectively. From the educational profile, we see that there is a concentration in post-secondary education, which may, somehow, indicate national progress in the education system. The survey result shows that private organization and self-employment embraces the leading share in employment status, accounting for 38 and 27 percent, respectively. On the other hand, 13 and 15 percent of the participants in the survey were reported as unemployed and government employees, respectively.

Stylized Facts on Current and Future Inflation in Ethiopian: Evidence from Survey Result

Gasoline prices have been one of the litmus papers of inflation in the Ethiopian economy. The increase in the price of Gasoline is likely to be followed by the increase in prices of other commodities. The respondents have confirmed this hypothesis. About 86 and 85 percent of the respondents replied that they perceive the price of gasoline will increase after twelve months and five years, respectively when compared to its current price. Only a small number of participants replied that the price of gasoline would be the same or decline after a year and five years than its current price.

When we see the perceptions of respondents for the house prices, 86 percent of the participants have reported that the price of the house increased than it was a year before. When asked how it could be after twelve months and five years, 86 and 81 percent of the respondents, respectively, reported that the price of the house would increase. Similarly, 87 percent of the participants perceived that the price of food items increased at a faster rate than it was a year before. About 4 percent of the respondents perceived that it has increased at a moderate rate.

The public perception of inflation dictates that food and non-food item prices will likely continue. 67% of the respondents believe that the price increase in commodities is likely to continue both in the short run and in the long run.

Furthermore, almost 90% of the respondents believe that government measures were very bad in curbing inflation. This implies that the government's approval level on its application of policies and their effectiveness is minimal. Only 0.6% believe that the government has done a good job addressing the country's continued inflation level.

Table 4.2: How Society Perceives the Prices of Major Items in Ethiopia

		Count	Column N %
Gasoline Prices during the next five years compared to now	Increase	684	85%
	Decrease	22	3%
	Same	6	1%
	Don't know	89	11%
Gasoline Price during the next twelve months compared to now	Increase	693	86%
	Decrease	20	2%
	Same	4	0%
	Do not know	84	10%
Current house price house compared to a year before	Increase	654	86%
	Same	16	2%
	Decrease	1	0%
	Do not know	86	11%
Price of house like yours in the next twelve months	Increase at a rapid rate	640	81%
	Increase at a moderate rate	36	5%
	Remain about the same	4	1%
	Decrease at a moderate rate	111	14%
	Decrease at a rapid rate	0	0%
	Don't know	0	0%
Price of house like yours in the next five years and after	Increase	642	81%
	Same	39	5%
	Decrease	5	1%
	Don't know	107	13%
Price of food items now compared to a year before	Increase at a rapid rate	700	87%
	Increase at a moderate rate	32	4%
	Remain about the same	7	1%
	Decrease at a moderate rate	1	0%
	Decrease at a rapid rate	0	0%
	Don't know	44	5%
Price of food items in a year and after	Increase at a rapid rate	660	82%
	Increase at a moderate rate	43	5%
	Remain about the same	4	0%
	Decrease at a moderate rate	5	1%
	Decrease at a rapid rate	0	0%
	Don't know	91	11%

Causes of inflation: Auto regressive error correction approach

The following macroeconomic variables were considered as determinants of inflation. Other traditional determinants of inflation are ignored due to perfect multicollinearity.

The above shows that the country's average inflation rate is 12.85%, the highest recorded in the last 24 years. It has shown sustained growth over a long period of time. This level of inflation is usually linked to low purchasing power, low savings and investment, and high uncertainty in the business environment, which has pushed away both domestic and foreign direct investments.

On the other hand, the country has achieved an average growth rate of 5% with a maximum growth rate of 10.4% and a minimum of -6.4%. Despite the uncertainties caused by the inflationary pressure, the economy prospered by 5%.

Similarly, imported inflation is represented by the average weight of the inflation rate of importing partners. Therefore, the average inflation rate of China, the USA, and India is approximately 3.6%. This is big enough to affect the country's inflation rate.

Finally, exports are measured as a percentage of GDP. As can be seen from the above table, the average export as a percentage of GDP for the last 24 years has been approximately 8%. Considering the productive capacity of the country, the higher the share of exports to GDP, it has

VAR lag-order selection criteria

The number of explanatory variables will be decided in choosing the optimal lag length.

Lag-order selection criteria

Sample: 2002 thru 2022 Number of obs = 21

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-212.599				10692.2	20.6285	20.6717	20.8274
1	-194.406	36.387	16	0.003	9003.46	20.4196	20.6355	21.4144
2	-179.634	29.543	16	0.021	12353.2	20.5366	20.9252	22.3272
3	-148.344	62.58	16	0.000	5240.46	19.0804	19.6417	21.6668
4	-65.465	165.76*	16	0.000	48.8337*	12.711*	13.445*	16.0932*

* optimal lag

Endogenous: inf GDPPC inpinf exp

Exogenous: _cons

Based on the above table, the optimal lag length for the above model is 4, considering all the information criteria indicated in the above table.

ARDL Model

An auto-regressive distributive lag approach is utilized to determine local and international factors that affect the rate of inflation in Ethiopia. This method is ideal for showing the long-run

and short-run affecting factors of the rate of inflation in Ethiopia. Therefore, the following sections show the results independently.

a. Short-run determinant factors of inflation

The ARDL model is used to show the determinants of inflation in the short run. The estimated model is presented as follows. Four important variables with their optimal lags are considered to determine the rate of inflation.

The result of the model is given as follows.

ARDL (4,4,3,4) regression Dependent Variable: Rate of inflation	
Explanatory variables	Coefficient (Std. error)
L1.Inflation	-1.1274***(0.0729)
L2. Inflation	-1.2340***(0.0691)
L3. Inflation	-0.9314***(0.0666)
Export of commodities	0.3994(0.2479)
L. Export of commodities	-1.8659**(0.2575)
L2. Export of commodities	1.8191**(0.1829)
L3. Export of commodities	1.3556**(0.1913)
Imported inflation	10.1456***(0.5376)
L. Imported inflation	14.8543***(0.5321)
L2. Imported inflation	8.0671***(0.755)
GDP per capita growth	-1.9659 ***(0.1033)
L. GDP per capita growth (L1)	-2.0292***(0.1046)
L2. GDP per capita growth	-0.8739***(0.0735)
L3. GDP per capita growth	-1.2846***(0.044)
Constant	16.2113**(2.3242)
No. of observation R-squared Adj. R-squared Loglikelihood Root MSE	21 0.9998 0.9982 7.1449 0.5580

*** significant at 1%, ** Significant at 5%, * Significant at 10%

Accordingly, past inflation levels, export, imported inflation, and GDP per capita are significant in affecting the current inflation level of the country.

Past level of inflation

The average level of inflation in Ethiopia from 1998 to 2022 is 12.84%, which is double-digit and among the highest in Ethiopian history. Looking at the average trend of inflation over time, it has been continuously increasing. Therefore, the assumption of an intertemporal causal relationship is justified. The current year's inflation rate is 1.12% less when compared with last year and 1.23% less than the inflation rate two years ago. Accordingly, the result confirms an intertemporal relationship between the level of inflation at different periods. Even though their study does not show the causal effects of past inflation levels with the present inflation level, Bolhuis et al. (2022) claimed that past inflation levels are more or less the same as the present level of inflation. They estimated the core current level of CPI in the US economy, and they concluded that it is similar to what the economy has experienced some time in the past.

Export of commodities

The effect of commodity exports on the Ethiopian inflation rate is mixed and non-conclusive. Current exports are insignificant in affecting inflation, while past inflations have negative and positive effects. Looking at the effect of past exports on inflation dynamics, they have shown a diminishing effect on the current level of inflation. This might be attributed to the hypothesis that the export of commodities in the past might have increased the supply of goods and services available to the domestic market, which can reduce inflation. However, the overall effect of exports on the current level of inflation is multifaceted. This is because of various factors that determine the effect of exports on inflation, including the nature of exports at different time periods and the pressure it puts on the domestic market for commodities.

Imported inflation.

Countries can face inflation due to international changes in the price of commodities. To capture this variable, the weighted average of the inflation rate of the country's importing partners is considered. Since 2016, Ethiopia has been importing commodities from three major countries. 33.1% of its imports are from China, 8.2% from the United States, and 7.4% from India. The remaining imports are from different countries. Therefore, measuring the imported inflation is based on the weighted average of the inflation rate of the three countries. At a 5% significance level, having an optimal lag of 2, imported inflation has been positively significant in pushing the inflation level of the country up. In other words, the increase in the average inflation rate in China, the United States, and India has an increasing effect on the country's inflation rate. Specifically, keeping other factors constant, Ethiopia's current inflation level is subject to the average combined inflation of the three countries mentioned above. What makes things worse is that the average level of inflation in the past two years also played a significant role in increasing the current level of inflation. This finding proves the estimation result by Durevall et al. (2013). They found out that movements in international food and goods prices, measured in domestic currency, significantly affect the price of commodities in the country.

Growth rate of the country

In the short run, the GDP per capita growth rate negatively affects the country's inflation rate. That means the higher the growth rate, the lower the inflation rate. The consistent growth rate the country has achieved in the past three consecutive years contributed to reducing the country's inflation rate. This implies that as GDPPC growth increases, successive future inflation rates decrease. This is because the country's growth rate will help the economy produce more and increase economic activity.

b. Long-run determinants of inflation in Ethiopia

Long run rate of inflation		
Explanatory variables	Coefficient	Std. Err.
Inflation (t-1)	-0.3329**	0.0701
Export of commodities	-3.4657	1.2441
Imported inflation	-69133	3.3249
GDP per capita growth	4.5127*	1.177
Constant	16.2113**	2.3242

** Significant at 5%, * Significant at 10%

As indicated in the above table, the long-run effect of the variables is given. Accordingly, unlike the short-run results, in the long run, only the Lag value of inflation and GDP per capita growth affect the country's inflation rate.

Conclusion and Recommendations

The study aimed to understand the basic characteristic features of sustained inflation in the Ethiopian economy and public perception of it and identify the domestic and transnational factors causing the continued inflation in the country. To this end, both micro and macro-level data are utilized.

Accordingly, the country has been experiencing the highest-ever recorded level of inflation (12.85%) for the last 24 years. This has reduced people's purchasing power, reduced savings and investment, and increased uncertainty in the business environment, pushing away both domestic and foreign direct investments.

To identify the short-run and long-run determinants of inflation, the ARDL model is utilized. Hence, in the short run, past inflation levels, export, imported inflation, and GDP per capita are significant in affecting the current inflation level of the country. The past three years of inflation have had a decremental effect on the current level of inflation. In other words, inflation has shown an up-and-down trend for the last 24 years. However, on average, recently, it has shown a declining stage with a very small margin.

On the other hand, the effect of the export of commodities on the Ethiopian inflation rate is mixed and non-conclusive. Current export is insignificant in affecting inflation, while past inflations have negative and positive effects. On the other hand, imported inflation has a multi-year effect on the country's inflation rate.

Accordingly, the government shall push for the maximum possible GDP per capita growth rate to reduce inflation. This suggests that a proactive approach to bringing economic growth can effectively curb inflationary pressures. Nonetheless, the study underscores the importance of considering historical inflation patterns and sustained GDP per capita growth for long-term inflation management.

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2.10. The Effect of Urban Local Government Development Program on Enhancing Service Delivery and Household Livelihoods: Evidence from Selected Small Towns in the Amhara region, Ethiopia, Abeje Ewunetu

Lecturer,Department of Development Economics and Management, Ethiopian Civil Service University
Email: aewunetu@gmail.com

Abstract

For Ethiopia, creating jobs and fostering economic growth in urban areas are top priorities. Thus, the GoE established the ULGDP to enable cities to realize their full potential for service delivery and job creation. However, little is known about the program effect. In light of this, the purpose of this study is to determine the effect of urban local government development program on enhancing service delivery and household livelihoods. To determine the project impact, the study analyses the results between local governments involved in projects and those who are not (using the propensity score matching methodology). Consequently, the descriptive analysis shows that, with an average score of 2.5 out of 5, ULGs demonstrate reasonably fair levels of urban services in terms of efficient function allocation, local control over administration and service delivery, and local financial autonomy and management. However, they tend to lack meaningful and effective political leadership. The analysis further shows that the program, funded by ULGDP, created 1684 jobs in Program City (Motta), with a significant portion of women and unskilled labour. The results from econometrics analysis also find that the livelihoods asset capital index of project ULG households was found to have increased positively and significantly as a result of the program. The livelihood assets index mean difference between ULG households in projects and those in non-projects, based on propensity score, ranges from 11% to 19% after matching. It is, therefore, recommended that scaling up be put in place to assist non-supported ULGs.

Key words: *Effect, Urban Local Government, Service Delivery, Job Creation, Livelihood*

Introduction

Today, 56% of the world's population, or 4.4 billion inhabitants live in cities. By 2050, this trend is predicted to double, and almost seven out of ten people will reside in cities (WB, 2023). However, urbanization brings challenges (increased demand for jobs, basic services, affordable housing, and functional infrastructure, including transportation networks) (Boex et al., 2016). The majority of urban growth occurs in developing countries, leading to the urbanization of poverty (UN-Habitat, 2003, Duflo et al., 2012). This necessitates urgent government action to regulate urbanization (Tegegne & Edlam, 2019). The literature suggests that urban local governments are the primary decision-makers and service providers (Boex and Simatupang 2015). The success of countries in achieving sustainable growth, responsive governance, and social inclusion is thus linked to their urban areas (Boex et al., 2014). However, when poorly managed and neglected, cities can become hubs of poverty, traffic congestion, and social tension. In Ethiopia, the urban local government institutional systems and infrastructure have not kept pace with the rapid urbanization (WB, 2018). Infrastructure is not managed efficiently and the coverage is also low; inadequate management of municipal finances; and poor governance practices (ADB, 201, WB, 2018). Consequently, government of Ethiopia and the World Bank introduced ULGDP as urban development policy tool. The WB has been assisting the government in its efforts to strengthen capacity throughout the country's (ULGs) to enable them

to meet their responsibilities effectively. This partnership has been conducted through a series of projects. The first phase of the program, from 2008 - 2014, focused on resolving the capacity and infrastructural gaps that existed in 18 ULGs. From 2014 to 2018, ULGDP II encompassed 44 cities, most current version, the Urban Institutional and Infrastructure Development Program (UIIDP), encompasses all 117 cities. Hence, this study was focused on service delivery, livelihood improvements, and job creation to analyse the real effect of ULGDP II.

While ULGDP is widely implemented, much less is known about its effectiveness in reaching the stated goal. As a result, as the ULGDP comes to an end, there is a lot of debate regarding whether the program's expected impact on local development will be realized. Following these, few studies (Wedajo et al., 2014, WB, 2018) are conducted but their focus was on the projects practice and challenge. Despite these efforts, a key gap remains examining the effect of urban local government development program on enhancing service delivery and household Livelihoods. Given this, there is a need to research on the issue, so as to evaluate the effectiveness of the project. Therefore, this study was tried to bridge the empirical gap by conducting empirical research on the issue. Hence the fundamental research question is;

- What is the effect of urban local government development program in enhancing service delivery and household Livelihoods? Specifically, the study aims to;
  - Assess the effect of ULGDP on service delivery improvement of urban local governments
  - Examine the effect of ULGDP on the livelihood improvement of residents

Literature Review

The patterns of urbanization and characteristics of urban centres hold the potential to enable effective service provision or serve as impediments to service delivery effectiveness. One such characteristic is high population density, which indicates that demand for public services is relatively spatially concentrated. High population density can enable effective local service provision by reducing transportation costs and allowing savings from scale economies (Glaeser 2011). However, too much density as in the case of overpopulated and poorly located informal settlements presents congestion and related service delivery challenges.

These interrelated factors can multiply the externalities associated with urban services, heighten political aspects of service delivery, and create intensified opportunities for rent-seeking of various kinds (Jones, Cummings, and Nixon 2014). Urban areas are complex environments with rapidly growing populations that are heterogeneous in terms of identity groups and income levels.

For many African and some Asian countries, urban employment is concentrated in the low-income, informal sector, resulting in fewer urban residents that could constitute a viable tax base to fund urban service provision (Resnick, 2014). This often segregates the population both physically and in terms of their ability to pay for services that are considered by some to be basic needs. This leads to a diversity of providers, formal and informal, that serve the needs of varied income groups within cities. This situation can compensate for suboptimal public services by providing choice, but the presence of many different service providers creates a challenge for policy coherence as well as oversight and monitoring.

With regard to the impact of local governance in urban service delivery outcomes, much of the urban literature assumes that urban local governments are the key decision makers and key service delivery providers in their jurisdictions. For instance, it is often assumed that the presence of a dynamic mayor is a key ingredient in effective urban services and the wider success of an urban area (Barber, 2013).

In reality, little is known about the specific impact of local governance on urban service delivery outcomes. There is growing evidence suggesting that urban local governments in many developing economies are quite constrained in their ability to manage or deliver urban local services by multilevel governance arrangements (Boex and Simatupang 2015). There are also services with particular characteristics that might dictate the type of institutional arrangements, such as the water sector, which is highly monopolistic in nature partly because of the high degree of sunk costs and potential for economies of scale. Such a sector might require a higher degree of centralization for aspects such as regulating water quality, while other aspects such as transport and delivery might be more localized.

Many common factors contribute to making cities competitive. In these regards, in Ethiopia, The ULGDP provides funds for investment in infrastructure and non-infrastructure activities (training, publications, upgrading of supplier capabilities, etc.) for participating urban local governments to enhance competitiveness of cities and trigger local economic growth. The exact role that the local government plays in achieving sustainable economic development, stronger urban public services and inclusive governance is poorly understood. The absence of consistent measures of urban performance and urban institutions has limited the ability of policy makers and researchers to understand the impact of specific urban institution and local policy decisions on urban performance.

Previous efforts have generally sought to capture the performance and institutions of urban areas in specific sectors or specific policy areas, such as urban economic competitiveness, urban governance, urban public financial management, or citizen participation (Boex *et al.,* 2014). This study supplements these existing efforts by providing a framework for assessing the roles that ULGDP contribute to the ability of a local government to deliver urban services and job creation in an efficient, inclusive and responsive manner. Empirical data demonstrate that the productivity of urban economies is at least two or three times higher than that of the non-urban sector (ADB, 2020).

Methodology

Study Design

To effectively and properly respond to the research questions, this study was employed a mixed research approach involving descriptive and explanatory research designs. An explanatory research design was employed to study the effect of ULGDP (intervention variable) on the various outcome variables such as livelihood assets and service delivery by establishing cause-effect relationships between these variables.

Data Source and type

Both quantitative and qualitative types of data were collected from primary and secondary sources. The primary data was collected from households and urban local government experts through interview and questionnaire. Secondary data was collected through reviewing pertinent literature from various source including journal articles, books, government reports and documents, and other relevant materials.

Sample Size and selection Technique

The study was done in two urban local governments (Mota (supported by ULGDP) and Bichena city administration) in the Amhara region. A total of 718 sample households were selected from the two ULG‘s. the sample size was determined by using the formula proposed by (Krejcie & Morgan, 1970):

$$n = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

Where, n= the sample size,
X^2= significance level (usually 1.96 for 95% confidence level),
N is population size,
P is a proportion of impacted population (expressed as decimal), and
d is degree of accuracy or margin of error (5%).

According to CSA 2013 estimation, there are 53,739 households in the selected ULGs (33,500 in ULGDP supported and 20,739 in non-supported ULG). Hence the proportion of affected households will be 33,500 /53,739 =0.62 (62%).

n (***treatment)*** $= \frac{(1{,}96)^2(53{,}739)(0.62)(1-0.62))}{(0.05)^2(53{,}739-1)+(1.96)^2(0.62)(1-0.62)}$ =359

Therefore, 359 households from Mota will be randomly selected as treatment households for survey. The same way from ULG that don't have the program, the sample size proportion will be 20 739/53,739= 0.38 (38%).

n (***control***) = $\frac{(1{,}96)^2(53{,}739)(0.38)(1-0.38))}{(0.05)^2(53{,}739-1)+(1.96)^2(0.38)(1-0.38)}$ = 359

Therefore, 359 households from Bichena will be randomly selected as control households for survey. Households exposed to or affected by the program and having similar basic observable characteristics (treatment group) to the unexposed/unaffected ones (comparison) but differ only in an intervention will be matched by using PSM model. Hence, the total number of participants (total sample size) for this study is 718.

Two urban local governments are selected based on being the program beneficiary (as treatment group) and by having similar basic observable characteristics to the exposed/affected ones (comparison). I stratified ULGD into affected (have ULGDP program) and non-affected (those did not have the program).

Method of Data analysis

For this study both quantitative and qualitative methods were employed to undertake the process of data analysis. In analysing the quantitative data, the researcher was used both inferential and descriptive statistical tools. Propensity Score matching model will be employed to determine the relationship that will exist between dependent and independent variables.

Propensity Score matching model was employed to determine the relationship that will exist between dependent and independent variables. ULGs exposed to or affected by the program and having similar basic observable characteristics (treatment group) to the unexposed/unaffected ones (comparison) but differ only in an intervention (ULGDP) will be matched by using PSM model.

Outcome variables (Impact indicator variables)

Outcome variables are variables which resulted from access to ULGDP. A livelihoods asset capital index of households was used as an outcome variable to measure livelihood assets status of households. These standardized indexes will thus use as outcome variables in the PSM model.

Impact indicators: the impact/ livelihood indicators used in this study were: Household livelihoods Assets index (financial, physical, human and social capital): Households were asked detailed questions about current ownership different productive assets, schooling enrolment of families in the households, monthly income and saving, and participation in formal and informal group.

This impact indicator was assumed that ULGDP improve household 's livelihood asset capital.

Results and Discussion

Descriptive analysis

Descriptive statistics of different variables used in the analysis measured in terms of some demographic and other wealth indicators. The average household size and age of the household head of the total sample were 1.8 and 18-30 years respectively. 373 (52 percent) of the survey households is male headed and the remaining 47.98% is female headed.

Here are some differences between project participant and non-participant households (ULGDP). Overall, demographic characteristics suggest that households in project areas are better than those in non-project LGAs. This is confirmed by answers on their monthly income. Not only are demographic characteristics very different between project and comparison areas, but responses on income is also consistently better in project areas.

With regard to monthly saving, on average, project area households save 749 birrs. And those households in non-project LGAs on average save 185 birr.

Table 1: Summary of Variables Used in the Impact Analysis

ULGDP = non-project ULG

Variable	Obs	Mean	Std. Dev.
Family size	361	2.049861	.9084551
Sex	361	.0465374	.4994919
Education	361	2.966759	.9273635
Average monthly income	361	3362.604	1571.65
Average monthly saving	361	185.7064	298.0093
ULGDP = project ULG			
Variable	Obs	Mean	Std. Dev.
Family size	356	1.676966	.8321889
Sex	356	.5758427	.49491
Average monthly income	356	6442.978	1892.664
Average monthly saving	356	749.5067	799.5067

Source: survey 2023

The effect of ULGDP on service delivery improvement

The study profiles two cities, each collecting institutional information on four city services across five institutional dimensions of service delivery. Chart1 below shows descriptive statistics for the urban service delivery assessment scores of both cities and for all four urban services (SWM, water, road and sanitation) combined.

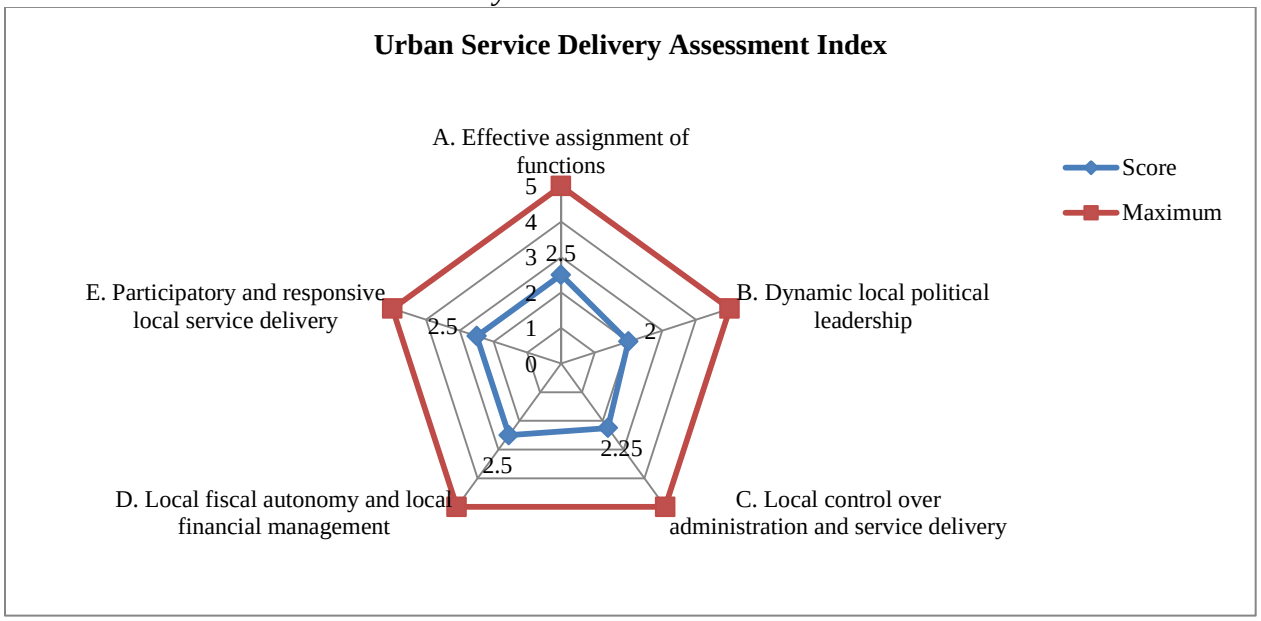
As shown in the chart, the average assessment score across all services and cities is 11.75 out of 25 points (or slightly less than half the total possible points). Given that the scoring of the different indicators, the data suggest that cities in the sample on average are weakly empowered over the delivery of urban services within their jurisdiction. It is obvious that regardless of whether the legislative frameworks mandate a decentralized form of government, cities tend to have limited political, administrative, and fiscal autonomy.

For instance, if the city is unable to set appropriate tariff levels for water service provision, or if it is unable to authorize the firing of underperforming staff, the quality of urban service will almost inevitably depend entirely on the decisions and actions of higher-level officials.

The most obvious finding of the study is that urban local governments exhibit relatively good levels of urban services in terms of effective allocation of functions, local control over administration and service delivery, local financial autonomy, and local financial management (average score of 2.5 out of 5). But they tend to lack meaningful and effective political leadership. For example, most cities do not have a publicly and formally disclosed performance framework and seldom apply it in practice.

For instance, in the study area, the executive power to deliver services is vested in mayors, the fact that these mayors are appointed and cannot be held accountable. Hence, the quality of urban service will almost inevitably come to depend not on the decisions made by local government leaders, but rather, on the decisions and actions of higher-level officials.

Chart 1: Urban Service Delivery Scores across all urban services



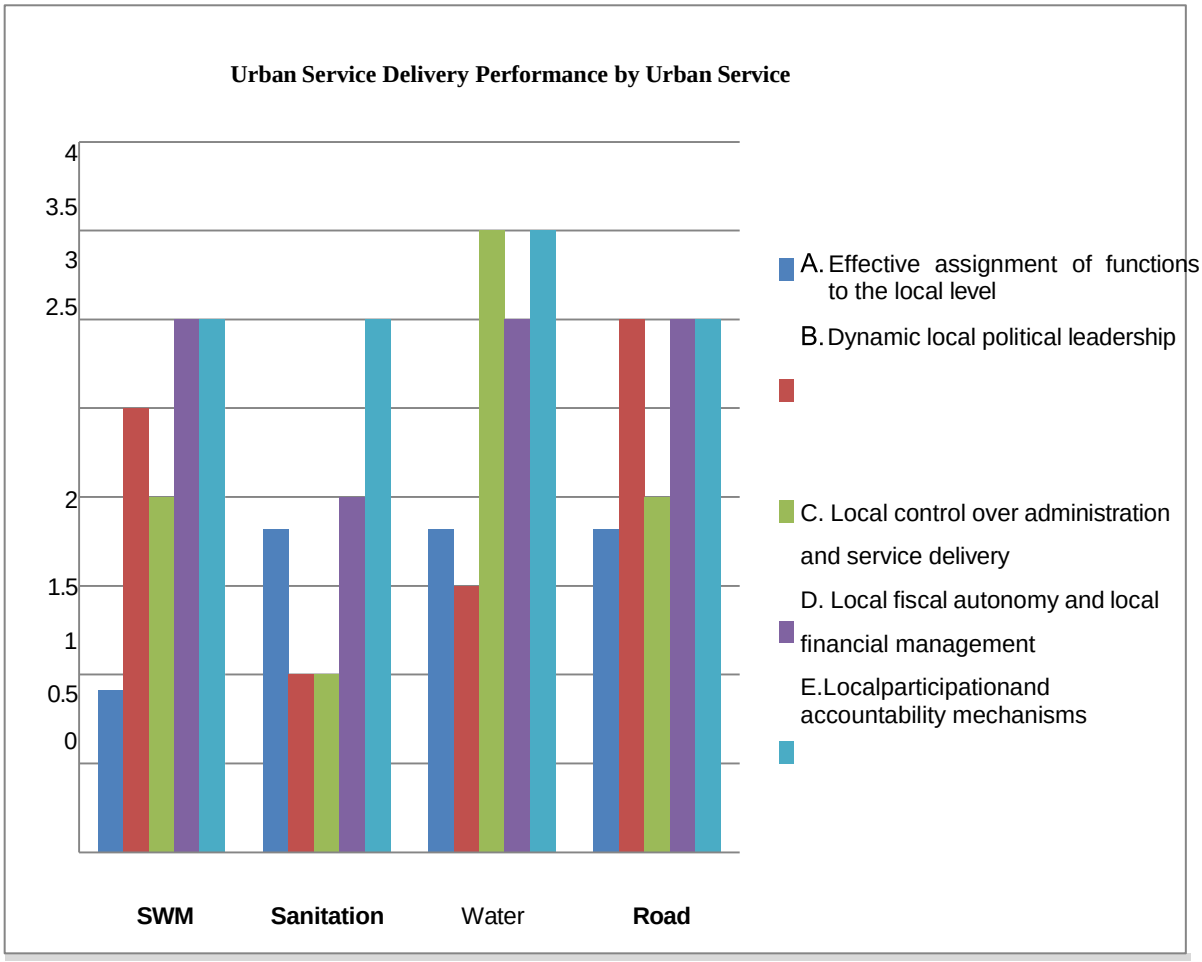
Source: survey 2023

The next sub-section considers how institutional dimension scores vary across the four different urban services considered by this study, While SWM, water, sanitation and road all are all basic urban services with a direct and positive impacts on the welfare and productivity of urban residents. There are fundamental conceptual and practical differences between the ways in which their delivery is organized within cities.

When we compare the effectiveness of urban service delivery institutions across all urban services being considered, the researcher finds that water gets significantly higher scores, followed by Road, SWM and Sanitation. This implies that cities are generally more empowered for the provision of water services.

In terms of institutional dimensions, water service ‘s high average score is largely driven by local control over administration and service delivery followed by close averages for fiscal and administrative institutions. This implies that water is widely accepted as a quint essential locally provided service. This is because there is often a strong push to provide drinking water below cost for equity reasons, and access to drinking water is generally considered an essential huma

Chart 2: Urban service delivery performance: score by urban servic
Source: survey 2023
Further, while the provision of water and sanitation services generally go hand in hand, the



sanitation sector appears to have significantly lower administrative autonomy and far less functional assignment of responsibilities than water service. The magnitude of these dimension scores suggests that the institutional arrangements around service provision are likely to have a significantly limiting effect on the role of urban local governments in achieving effective urban service.

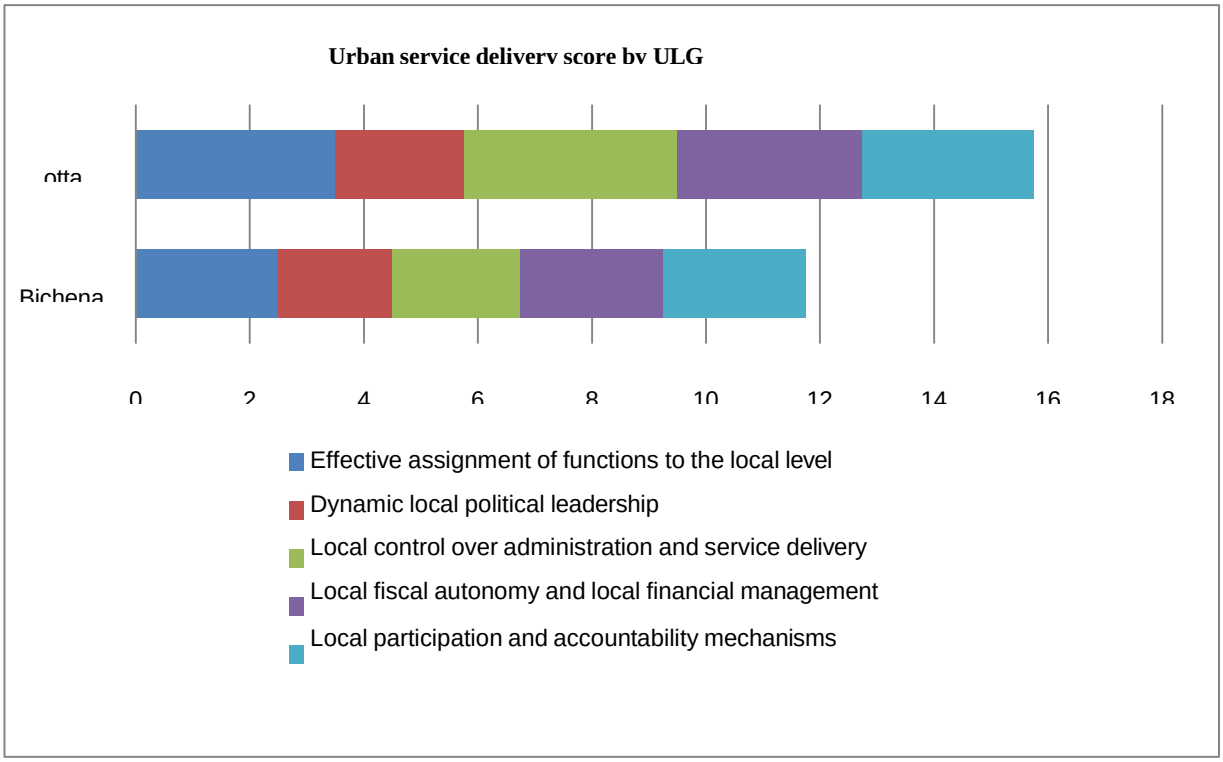
Although local governments typically have a reasonable degree of autonomy in managing urban services, regional officials still tend to exert a relatively high degree of control over the urban local government's administrative and fiscal resources, thus constraining the ability to deliver better service.

Another element that undermines urban local service delivery is the relative ineffectiveness of effective assignment of functions to the local level and local political leadership. The scoring of these indicators across the city sample provided the lowest average of 1.75 and 2 respectively.

In chart 3, we observe interesting ULG level variations in the five dimensions of urban service delivery institutions, as measured across all urban services. As shown in chart, improved local service delivery is often an accompanying positive externality from having empowered local governments. Project (Motta) ULG score high on different performance indicators, which is reflective of the powers and control given to local governments in city. This happens may be

because of the capacity building effort by ULGDP.

Chart 3: Urban service delivery performance: score by urban local government



Source: survey, 2023

In the focus group discussion, officials in project ULGs recognize the project as the main source of capacity training and budget support for infrastructure. Interviewees in project areas report the project as the agency most supporting capacity building while in comparison ULGs the main agencies reported as supporting capacity building are regional and zonal sectors and community-based organizations.

The contribution of ULGDP on job creation

The results suggest that urban infrastructure sub-projects have great potential to act as centers of economic benefit for the unemployed. In terms of job creation, sub-projects aimed at building cobbled streets (and to a lesser extent drainage and urban greening) funded under ULGDP II are creating income opportunities for unemployed youth. At the country level, the program has created about 160,000 jobs per year through labor-intensive work such as cobblestone roads.

The study show that significant full and temporary jobs were created by the program: A total 1684 jobs have been created in Program city (Motta) as a result of the investments initiated and funded by ULGDP, especially for the local youth and unskilled workers. It should be underlined that most infrastructure investments have a large share of women, youth and un- skilled labor, involved in project implementation as well. Permanent jobs are the number of people in the cooperatives that were contracted for the construction, while temporary jobs are the number of daily laborers (for example, jobs created at the quarry sites that supply stones for cobblestone road work).

The study revealed that registered unemployed persons, particularly vulnerable groups like women, and the disabled, were grouped into cooperatives at the Kebele level, and provided with free technical and business training, and offered cobbled street contracts.

Table 2: jobs created through ULGDPII

Item	Number
No. of people employed through works under ULGDP II	157
Temporary jobs created under ULGDP supported infrastructure works.	1523
Total	1684

Source: survey, 2023

Focus group discussion also confirmed this idea that the program helps them to improve their livelihood. The income generated by the cobblestone work and support from the MSE office has enabled many workers to become sustainable self-employed after the completion of the cobblestone work. Examples of these new livelihoods include brick making, welding, retail, urban farming, and bajaj (three-wheeled vehicles).

Econometrics Analysis

To see the impact, the researcher used Propensity Score Matching (PSM). In order to estimate the causal effect of the project on areas that received it, i used areas that did not receive the program as counterfactuals. Since the project was not randomly assigned to ULGs, I selected comparison ULGs that were likely to be similar to the ones receiving the program across a range of observable indicators. Under the assumption that these areas are valid counterfactuals (i.e., they would have followed similar trajectories in the absence of the program), assessing whether the project had an effect on the outcomes of interest is equivalent to examining whether areas that received the program had a differential change in outcomes, when compared to the comparison areas. The dependent variable in the impact assessment analysis takes the value of 1 if a household life in project (ULGDP) ULG and 0 otherwise. For estimation results of the propensity score matching, logit model, logistic regression was used. The common support option has been selected and the balancing property is satisfied.

The effects of ULGDP on the household ‘s livelihood

This section presents and discusses the estimation results of matching estimators of household livelihood assets and all estimations are bootstrapped standard errors. The researcher used ATT and t- value columns to evaluate the impact indicators. Four matching methods, radius matching, the nearest neighbor and Kernel matching methods were used to estimate the impact. Comparing results across different matching methods can reveal whether the estimated project effect is robust (Khandker et al., 2010).

It was hypothesized that, ULGDP improve household wellbeing and asset ownership. By and large, these results do support the hypothesis that urban local government development program increase household ‘s physical capital index in areas that receive the program. ATT based on all matching estimators were positive and significant (at 1% level of significance). Taking into account the significant estimators, the mean difference in physical asset ownership index between households in project ULG and non-project ULG household ‘s ranges from 11 to 19%. This result is a clear indication that households in the program are benefiting thereby improving their livelihood asset own

Hypothesis for financial capital stated that the program has a positive impact on amount of household income. As expected, the researcher found that, the mean difference in social capital

index between households in project ULG and non-project ULG household ‘s ranges from 11 to 18%. This effect was statistically significant at 1% significance level.

It was also hypothesized that the program has positive impact on social capital. The result also showed the existence of positive impact between social capital and the program. All the matching estimators show that the mean differences in household social capital (participation in formal and informal groups) between program households and non-program households were statistically significant (at 5% and 1% level of significance). Taking into account the significant estimators, the mean difference in social capital index between households in project ULG and non-project ULG household’s ranges from 16 to 19%.

Conclusions and Recommendations

The objective of the study was to identify the effect of urban local government development program on enhancing service delivery and job creation. From the analysis of the data, the following conclusions were identified.

The key finding of this study is that although there are variations between the two urban local governments depending on service, the average score on the urban service delivery institutional dimensions is low. Regional governments often assign service delivery responsibilities to urban local governments, but their reluctance to transfer authority and lack of local participation negatively impact service delivery. It appears that Political economy forces, rather than technical capacity, are more significant in determining institutional empowerment and effective provision of urban services. On the effect of ULGDP on enhancing service delivery and job creation, the study shows that significant full and temporary jobs were created by the program.

In addition, the study investigated the effect of ULGDP on enhancing a household’s livelihood. In this regard, the results demonstrate that the program positively and significantly improved the livelihood of project ULG households as measured by the livelihoods asset capital index. After matching, the mean difference in livelihood assets index between project and non-project households, based on their propensity score, ranges from 11% to 19%. The positive and significant impact of the ULGDP on livelihood asset capital is an inspiring indication of the importance of the program in improving the livelihood of the poor.

Generally, this study's findings reveal that ULGDP is an important tool for increasing urban households' livelihood efforts and development processes in urban areas. Therefore, an assessment of the counterfactual scenario where the Program is not introduced and the potential economic impact of the Program shows a strong rationale for the proposed intervention.

It is, therefore, recommended that scaling up be put in place to assist non-supported ULGs. In terms of policy implications, it is useful to recognize that the greatest progress needs to be made in the assignment of functional responsibilities to local governments.

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2.11Mapping the spatial disparities of Community-Based Health Insurance Scheme utilization in Ethiopian administrative zones: Multilevel and Spatial Analysis on 2019 Ethiopian Demographic Health Survey, Yikeber Abebaw [1], Solomon Sisay [1], and Seyifemickael Amare[1]

1Lecturers, Department of Statistics, Debre Tabor University,
Debre Tabor, Ethiopia
Gmail: ykebera@gmail.com

Abstract

Community-based health insurance (CBHI) program has been implemented in Ethiopia since 2011. In Ethiopia, easily preventable communicable diseases are still a major public health problem. However, health-seeking behavior and access to modern health care are low. The study aims to map the spatial disparities of Community-Based Health Insurance Scheme utilization in Ethiopian administrative zones.Data from the Ethiopian Mini Demographic and Health Survey 2019 were used. The Kilduff Sat Scan version 9.6 software was utilized to apply the Bernoulli model. To consider the nested structure of the data, a multilevel logistic regression analysis was conducted on a nationally representative sample of 8,663 households, which were nested within 82 zones. A significance level of $p < 0.05$ with a 95% confidence interval was employed for the analysis. It was found that 20.2% of Ethiopian households utilize the scheme. There were spatial differences in the scheme enrollment among households across the country's administrative zones (Global Moran's I = 0.213149, P-value 0.001). 81 significant clusters were identified (RR = 3.67, P-value < 0.001). The age of household heads, the number of household members, having land for agriculture, having a mobile phone, owning livestock, herds of farm animals, the wealth index, and region had a significant association with community-based health insurance enrollment. The random-effects analysis revealed statistically significant variation in the scheme enrolment among Ethiopian administrative zones.community-based health insurance coverage was relatively low and has spatial variations across zones in the country. Individual and community-level factors were both significant predictors of household enrolment in community-based health insurance. More studies should be required to better understand why these characteristics may impact household enrolment in the plan. Furthermore, the Ministry of Health, health bureaus, and other relevant organizations

should prioritize zones with poor health insurance coverage to increase health system finances and intervene on issues that negatively influence household CBHI membership.

Keywords: *Ethiopia; Individual-Level Factor; Community-Level Factor; Health Insurance; Multilevel analysis; Special Analysis; zone.*

Introduction

Community-based health insurance (CBHI) ensures affordable healthcare, promotes equitable access to quality healthcare, enhances financial security, and promotes social cohesion. It is an appropriate method for achieving universal health coverage (UHC) (Geferso & Sharo, 2022). However, out-of-pocket (OOP) healthcare payments result in less usage of healthcare services and higher catastrophic healthcare costs. Some countries have implemented CBHI plans to reduce out-of-pocket expenditures and enhance access to healthcare services, particularly for individuals living in rural areas or working in the informal sector (Umeh & Feeley, 2017).

Globally, over 930 million individuals spend at least 10% of their household income on health

care, and over 100 million people are being forced into extreme poverty each year due to out-of-pocket health care spending (WHO, 2021). A CBHI is a pre-paid technique of assisting underprivileged households in managing their finances. In low- and middle-income countries, CBHI is becoming popular to improve healthcare usage while preventing households from financial disasters caused by OOP medical expenses (Ranabhat, Kim, & Singh, 2017). Due to economic constraints, many African and other developing countries cannot provide skilled and inexpensive health services, and their health financing is dependent on external funding (Geferso & Sharo, 2022). In many developing countries, OOP expenditure is the most common form of paying for health care, which can lead to poverty and financial catastrophe for individuals impacted (Habib, Perveen, & Khuwaja, 2016). In Africa, the catastrophic nature of healthcare finance mechanisms for the poor, mainly the rural population, has been a major problem. OPP accounted for more than 40% of total health spending, resulting in a lack of finance for healthcare (Minyihun, Gebregziabher, & Gelaw, 2019).

In Sub-Saharan African countries, OOP costs can be a serious obstacle to receiving adequate health care (Artignan & Bellanger, 2021). For the informal sector population in SSA countries, the CBHI scheme is implemented in most countries. Despite this, enrollments and renewals of CBHI membership in SSA remain stubbornly low (Shewamene et al., 2021).

In Ethiopia, several easily preventable communicable diseases still plague the public health system. However, health-seeking behavior and access to modern health care are low (Atnafu, Tilahun, & Alemu, 2018). In 2011, the government of Ethiopia introduced CBHI schemes specifically targeted at the agriculture and informal sectors (Mekonne, Seifu, Hailu, & Atomsa, 2020). The implementation aimed to alleviate the financial burden caused by unanticipated OOP payments. Health sector expenditures in Ethiopia are dominated by out-of-pocket spending. According to the Ethiopian Health Ministry, private health expenditures in 2013 were 90.6% OOP (FMoH, 2014). Ethiopian Demographic and Health Survey (EDHS) 2016 shows that Health insurance coverage is extremely low (CSA, 2016).

In the past, the World Bank and the World Health Organization have pushed for lower out-of-pocket expenditures and universal health care. The 2030 Sustainable Development Goals (SDGs) emphasize ensuring that everyone should have access to high-quality health care without suffering economic difficulties (De Maeseneer et al., 2020). However, on current trends, UHC will not be achieved by 2030. The overall aim of CBHI implementation in Ethiopia is to achieve equity in healthcare delivery and financial protection for the population, especially those in rural and underserved areas (Nageso, Tefera, & Gutema, 2020). Despite Ethiopia's implementation of the CBHI scheme since 2011, enrollment rates are still very low and are affected by multiple factors (Abdilwohab et al., 2021). Thus, more research on CBHI enrollment was required. Further studies have been conducted regarding the utilization of CBHI in Ethiopia. However, these studies did not take into account the random effects or variations in CBHI enrollment between zones. Additionally, there is limited published literature that extensively covers the overall coverage of CBHI at the country level in Ethiopia.

CBHI Scheme implementation varies geographically, especially in the implementation of the program at zone administrative. However, no research identifies the scheme implementation variations at the zonal level. Various projects and programs are implemented within the zone administration. The administration works to improve the living standards of the people in the zone by promoting economic growth and sustainable development. However, the actual implementation of CBHI may vary across different zones based on regional policies, priorities, and local needs. Conducting spatial and multilevel analysis at the zonal level in Ethiopia offers advantages in terms

of comprehensive representation, spatial context, policy relevance, and resource allocation. These advantages enhance the accuracy, applicability, and effectiveness of research outcomes, supporting evidence-based decision-making, targeted interventions, and equitable development at the zonal levels. Therefore, to assess the geographic heterogeneity in health insurance coverage, hotspots (low health insurance coverage areas), and related factors among Ethiopian households, studying the spatial pattern of CBHI scheme implementation at the zonal level is important. Furthermore, planning community-based initiatives in zones with known hotspots of poor health insurance coverage and efficiently allocating scarce resources depends on an understanding of the spatial variation of health insurance coverage. Thus, to fill the existing gap, this study aimed to assess the spatial disparities of Community-Based Health Insurance Scheme utilization prevalence and determinants across Ethiopian administrative zones.

Research Questions

Having this statement of the problem, the following research questions were answered**:**

1.Which area is spatially highly risk area

2.Does the community-based health insurance scheme implementation among zones in Ethiopia spatially cluster

3.Which determinant factor are association with community-based health insurance scheme implementation among in Ethiopia?

Objectives of the Study

General Objectives

The main objective of this study is to map the spatial disparities of Community-Based Health Insurance Scheme utilization in Ethiopian administrative zones.

Specific Objectives:

1. To identify areas with high risk on community-based health insurance scheme implementation in Ethiopia.

2. To investigate the proportion of variation in community-based health insurance scheme implementation across zones in Ethio

3. To identify the relationship between community-based health insurance scheme implementation and determinant factors in Ethiopia.

Methodology

Study design, setting, and periods

Among Africa's countries, Ethiopia has the second-largest population. A community-based cross-sectional study was carried out in Ethiopia from March to June of 2019. Ethiopia's administrative structure is organized into four levels: regions, zones, woredas (districts), and kebele (wards)(Wubneh, 2017). For administrative purposes, the country is divided into nine regions , two administrative cities and a total of 83 zonal administrative areas. Zones serve as a second-level subdivision within Ethiopia, situated below the regions and above the woredas or districts. However, there are 83 zones, of which 77 were sampled, and the remaining 6 were non-sampled zones for community-based health insurance coverage in the 2019 EMDHS data. Map 1 shows the Ethiopian zones with the 2019 EMDHS enumeration areas.

Data collection procedures, Data source and population

The source of data for the study was the Ethiopian Mini Demographic Health Survey (EMDHS)

data. The data was extracted from the EMDHS household data set. After permission was granted via an online request explaining the purpose of our study, we downloaded secondary data and the shapefile from the DHS website (www.dhsprogram.com). By using the original EDHS dataset, which contains EA-level data, we review the dataset to identify the zonal codes associated with each EA. These codes indicate the administrative zone to which each EA belongs. This information is typically available in the dataset and can be used to establish the link between EAs and their respective zones. The detailed sampling procedure has been presented in the full EMDHS 2019 report (EPHI, 2019).

Study Variable and Measurements

Outcome variable

The CBHI enrollment classified as either "No" (0) or "Yes" (1) is the outcome variable.

Independent Variables

The study investigated several independent variables, which were categorized into individual and community-level factors. The individual-level factors included the sex of the head of the household, ownership of a mobile phone, possession of agricultural land, ownership of livestock, herds, or farm animals, possession of a radio, wealth index, participation in the safety net program and receiving cash or food, education level of the household head, age of household heads, number of household members, and number of children aged 5 and under. Residents and regions were also taken into account as community-level factors.

Data management and Statistical analysis

In the analysis, STATA version 15, ArcGIS version 10.8, and SaTScan version 9.6 were used.

Spatial autocorrelation

For spatial autocorrelation and hot spot detection, Arc GIS 10.8 software was used. Ethiopian administrative zones were analyzed based on spatial autocorrelation (Global Moran's I) statistics. A Moran's I value close to -1 indicates that data is dispersed, a value near +1 indicates that data is clustered, while a value of 0 indicates that data is randomly distributed (Soltani & Askari, 2017).

Hot spot analysis

Using CBHI enrollment percentages within each zone, the hot spot analysis was performed. Hot Spot Analysis (Getis-Ord Gi* statistic) shows the clusters spatially with either hot spots or cold spots based on the z scores and significant p-values (Liyew, Sisay, & Muche, 2021).

The spatial interpolation

Collecting reliable data in all parts of the country to understand the burden of various events is very expensive and time-consuming (Tessema & Animut, 2020). The spatial interpolation technique predicts CBHI enrollment for unsampled areas based on sampled clusters. Several unselected locations in Ethiopia are also of interest to the EMDHS survey in terms of CBHI utilization. We used the geostatistical ordinary Kriging spatial interpolation technique to predict unsampled clusters.

Spatial scan statistics

To identify statistically significant clusters of CBHI utilization/enrollment among households, we utilized a Bernoulli-based model with spatial scan statistics. Kuldorff's SaTScan version 9.6 software was employed for this purpose. The scanning window moved across the study area, considering households not enrolled in the CBHI program as cases and households enrolled in the CBHI program as controls. This approach allowed us to fit the Bernoulli model and determine the

geographical locations of significant clusters. With the circular shape of the window, the default maximum spatial cluster size of 50 % of the population was utilized as an upper limit, allowing both small and large clusters to be discovered. Clusters that contained more than the maximum limit were ignored. The most likely clusters were selected using p-values and likelihood ratio tests based on 999 Monte Carlo replications (Liyew et al., 2021).

The Ethiopian Demographic and Health Survey (EMDHS) data had a hierarchical structure, with households being at level 1 nested within the administrative zones at level 2. We used a multi-level logistic regression analysis technique. The crude odds ratio was estimated using bi-variable multilevel logistic regression analysis and those variables, which were statistically significant at p-value =0.25, were considered in the multivariable study. To identify factors associated with the outcome variable, we utilized the Adjusted Odds Ratio (AOR) with a 95% Confidence Interval (CI). In the multivariable multilevel logistic regression analysis, independent variables with a p-value less than 0.05 were considered statistically significant and were considered to be associated with the outcome variable.

This analysis included the display of four models. The model I was fitted without any explanatory variables. Individual-level characteristics were examined in Model II, while community-level factors were examined in Model III. Furthermore, a community-level characteristic was considered simultaneously in Model IV. The random effect in our analysis measured the variation in CBHI enrollment of households across zones. This variation was expressed through the Intraclass Correlation (ICC), which quantifies the extent of heterogeneity in CBHI enrollment between zones. Based on the total variation between clusters, the ICC was calculated.

Results and Discussions

Socio-demographic and economic characteristics

A total of 8,663 households were included in the study. Out of these, 72.6% were male respondents. Regarding mobile phone ownership, 68.8% of the households owned a mobile phone. On the other hand, 71.2% of the households did not have a radio. In terms of livestock ownership, 60.2% of the households owned livestock, herds, or farm animals. Approximately half of the households (51.4%) had land for agricultural purposes. Moving on to the education level of household heads, nearly half (47.7%) of them were not educated. Among all the households, 31.3% had a primary education status, while the remaining 21% had a secondary education or higher.

Based on the study findings, 30.1% of the households had the richest wealth index, while 24.2% had the poorest wealth index. Furthermore, 83.1% of the households were not receiving cash or food from the safety net program. In terms of household size, 42.3% of the households had between four and six members. Additionally, half of the households (50.1%) did not have any children aged five or under.

Regarding residence, 69.5% of the households were rural residents. Lastly, the study found that 20.15% of the participants were enrolled in the Community-Based Health Insurance (CBHI) scheme. This indicates that a proportion of the study participants had access to this form of health insurance coverage (See Tables 1). This study found that 20.15 % (95%CI: 0.1931, 0.2099, P-value= 0.000) of participants were enrolled in the CBHI scheme.

*Table 1: Characteristics of the respondents from the Mini-EDHS 2019 study (n= 8663***).**

Study variables with category	Enroll in CBHI				Total	
	Yes		No			
	N	%	n	%	n	%
Sex of head of household Male	1352	21.5%	4939	78.5%	6291	72.6%
Female	394	16.6%	1978	83.4%	2372	27.4%
Has mobile telephone No	550	20.3%	2154	79.7%	2704	31.2%
Yes	1196	20.1%	4763	79.9%	5959	68.8%
Has land for Agriculture No	489	11.6%	3719	88.4%	4208	48.6%
Yes	1257	28.2%	3198	71.8%	4455	51.4%
Owns livestock, herds, or farm animals No	415	12.0%	3037	88.0%	3452	29.8%
Yes	1331	25.5%	3880	74.5%	5211	60.2%
Has radio No	1259	20.4%	4911	79.6%	6170	71.2%
Yes	487	19.5%	2006	80.5%	2493	28.8%
Wealth index	256	12.2%	1837	87.8%	2093	24.2%
Poorest Poorer Middle Richer Richest	336	23.9%	1069	76.1%	1405	16.2%
	435	33.9%	850	66.1%	1285	14.8%
	377	29.6%	897	70.4%	1274	14.7%
	342	13.1%	2264	86.9%	2606	30.1%
Receiving cash for food from the Safety Net Program	1319	18.3%	5877	81.7%	7196	83.1%
No	427	29.1%	1040	70.9%	1467	16.9%
Yes						
Education level of household head No Education	950	23.0%	3178	77.0%	4128	47.7%
Primary Secondary and above	579	21.3%	2136	78.7%	2715	31.3%
	217	11.9%	1603	88.1%	1820	21.0%
Age of household heads 15-34 ages	400	13.3%	2599	86.7%	2999	34.6%
35-54 ages	792	22.5%	2733	77.5%	3525	40.7%
55-74 ages	449	26.3%	1257	73.7%	1706	19.7%
>=75 ages	105	24.2%	328	75.8%	433	5.0%
Number of household members 1-3 members	507	16.6%	2544	83.4%	3051	35.2%
4-6 members	854	23.3%	2814	76.7%	3668	42.3%
7-9 members	345	20.5%	1334	79.5%	1679	19.4%
>=10 members	40	15.1%	225	84.9%	265	3.1%
Number of children 5 and under No child	861	19.8%	3479	80.2%	4340	50.1%
1-2 Children	847	21.6%	3077	78.4%	3924	45.3%
>=3 children	38	9.5%	361	90.5%	399	4.6%
Residence type	310	11.7%	2335	88.3%	2645	30.5%
urban Rural	1436	23.9%	4582	76.1%	6018	69.5%

Figure 2: Spatial autocorrelation analysis of CBHI coverage in Ethiopia, 2019 EMDHS data. The enrollment coverage of community-based health insurance (CBHI) in Ethiopia exhibited a spatial pattern characterized by spatial clustering. The Global Moran's I statistic was calculated to be 0.213149 (z-score = 5.000591, P-value < 0.001), indicating the presence of significant spatial hot spots and cold spots in different zones of Ethiopia. With a z-score of 5.000591, the probability of this highly clustered pattern occurring by random chance was less than 1%. A higher level of significance is reflected in the bright red and blue colors of the tails (Figure 2).

Hot spot (Getis-Ord Gi*) analysis

The red color represents the intense clustering of a high (hot spot) proportion of households with CBHI enrollment coverage in Ethiopia. Tigray (eastern, south, and central zone), Amhara (East Gojjam, West Gojjam, South Gondar, Central Godar, South Wello, North Wello, and Waghemira), the western part of Afar, and the southern part of Benishangul Gumuz Regional States of Ethiopia had the highest CBHI enrollment coverage, whereas Dire Dawa, Harari, Gambella, eastern Oromia, and the southwestern part of Somalia Regional States of Ethiopia had the lowest CBHI coverage (Figure 3).

Figure 3: Hot spot analysis of CBHI coverage across the regions in Ethiopia, 2019 EMDHS data

Spatial SaTScan analysis of households CBHI enrollment across the region

Enrollment coverage for the CBHI was grouped into primary (most likely) and secondary clusters. CBHI coverage spatial clusters were identified with spatial scan statistics from the 2019 Ethiopian Demographic and Health Survey. There were 81 significant clusters in the analysis that encompassed both high-performing and modest-performing areas in terms of CBHI coverage.

Table 2: Significant SaTScan spatial scan clusters for Enrolling CBHI coverage across the region in Ethiopia, 2019 mini DHS

Type of cluster	Significant Enumeration Areas (clusters) detected	Total # of population	Total # of cases	RR	LL	Coordinates /Radius	P-value
Most likely cluster	83, 82, 57, 84, 56, 78, 58, 59, 54, 81, 74, 61, 60, 62, 75, 53, 9, 22, 18, 70, 76, 23, 65, 20, 71, 7, 13, 2, 8, 14, 21, 72, 55, 24, 85, 1,5, 51, 79, 63, 12, 19, 52, 11, 165, 80, 46, 29, 17, 44, 6, 25, 73, 162, 77, 66, 36, 3, 64, 45, 16, 10, 163, 4, 67	1859	874	3.67	463.180247	(12.322718 N, 37.959425 E) / 265.25 km	<0.0001
Secondary cluster[b]	173, 196, 192, 198, 199, 204, 191, 197, 190, 189	292	119	2.1	33.52	(6.272978 N, 36.862733 E) / 124.08 km	<0.0001
Secondary cluster[b]	116, 203	57	40	3.54	33.46	(7.531183 N, 38.662596 E) / 34.42 km	<0.0001
Secondary cluster[b]	103, 104	57	36	3.18	25.1	(7.648661 N, 39.688764 E) / 61.78 km	<0.0001
Secondary cluster[b]	69	28	22	3.94	22.14	(9.577575 N, 39.728117 E) / 0 km	<0.0001
Secondary cluster[b]	250	29	18	3.1	12.11	(9.227458 N, 42.199756 E) / 0 km	0.0024

Sixty-five of the clusters were most likely (primary cluster), while sixteen were secondary. The Statistical analysis centered on (12.322718 N, 37.959425 E) / 265.25 km, RR = 3.67, and log-likelihood ratio (463.18 at p-value 0.0001) revealed that the primary cluster was located in Tigray,Amhara, and SNNP. It showed that households in the spatial window had 3.67 times higher CBHI enrollment coverage than those outside it (Table 2 and Figure 4).

Spatial interpolation

The spatial Bayesian kriging interpolation analysis predicted high CHBI scheme enrolled areas For households CBHI coverage in Ethiopia. Prediction of high CHBI scheme enrolled areas was indicated by blue color. A central part of Oromia, eastern Tigray, and western and northern Amhara regional states were predicted as higher CHBI scheme enrolled areas compared to other regions. Households in these areas were vulnerable to high CBHI scheme coverage in Ethiopia. On the other hand; households in Somalia, Gambela, Afar, Benishangul Gumuz, Dire Dawa, and Addis Ababa were identified as vulnerable to poor CBHI scheme coverage in Ethiopia (figure 5).

Multilevel logistic regression analysis

To assess the influence of individual characteristics and community-level factors on household enrollment in CBHI, a two-level mixed-effect logistic regression analysis was conducted. This statistical approach allows for the examination of both fixed effects, which measure the association between the variables, and random intercepts, which account for the variability within CBHI utilization households (Table 3). In the analysis, several models were used to examine the factors influencing household enrollment in the CBHI program. The results showed that a combination of individual-level and community-level factors had the highest preference for predicting enrollment in the program. In the initial empty model, it was found that 44.28% of the total variance in the odds of CBHI enrollment could be attributed to variations between different clusters based on their characteristics. In Model II, only individual-level variables were included. In Model II, ICC indicated a variance in CBHI enrollment that was 41.78% accounted for by community differences. In Model III, only community-level variables were included. According to Model III's intraclass ICC, community variations could be responsible for about 20.58% of the variation in CBHI enrollment. Model IV, the ultimate model, simultaneously included features at the individual and community levels. According to Model IV's ICC, community variations could account for 20.15% of the variation in CBHI enrollment. The cluster variability decreased when more models were added. Consequently, it was determined that the combined model, which took into account both community and individual-level variables, was the most effective for estimating the enrollment of households in the community-based health insurance scheme.

Table 3: Multilevel logistic regression analysis of individual and community-level factors.

Characteristics Fixed effects	Model I	Model II AOR(95%CI)	Model III AOR(95%CI)	Model IV AOR(95%CI)
Has mobile telephone No(ref) Yes		1 1.32(1.12, 1.56)		1 1.35(1.14,1.60)
Has land for Agriculture No (ref) Yes		1 1.50(1.25, 1.80)		1 1.42(1.18, 1.71)
Owns livestock, herds, or farm animals No (ref) Yes		1 1.59(1.31, 1.92)		1 1.55(1.28, 1.88)
Wealth index Poorest(ref) Poorer Middle Richer Richest		1 1.04(0.83, 1.30) 1.45(1.15, 1.84) 1.59(1.23, 2.04) 1.06(0 .78,1.43)		1 1.00(0.80, 1.25) 1.39(1.10, 1.76) 1.52(1.18, 1.95) 1.07(0.77, 1.50)
Education level of household head no education(ref) Primary Secondary and above		1 1.12 (0.95,1.31) 0.90(0.72,1.13)		1 1.11(0.95,1.30) 0.90(0.72, 1.13)
Age of household heads 15-34 ages(ref)		1		1
35-54 ages 55-74 ages >=75 ages		1.45(1.22,1.73) 1.70(1.38, 2.11) 1.37(1.00,1.88)		1.45(1.22, 1.72) 1.70(1.37, 2.10) 1.37(1.00, 1.88)
Number of household members 1-3 members(ref) 4-6 members 7-9 members >=10 members		1 1.24(1.05,1.47) 1.18(0.94, 1.47) 1.24(0.80, 1.92)		1 1.26(1.06, 1.49) 1.20(0.96, 1.50) 1.30(0.84, 2.02)
Number of children 5 and under No child(ref) 1-2 children >=3 children		1 1.15(0.98, 1.34) 0.68(0.45, 1.03)		1 1.14(0.98, 1.33) 0.70(0.46,1.06)
Region Tigray(ref) Afar Amhara Oromia Somali Benishangul-Gumuz SNNPR Gambela Harari Addis Ababa Dire Dawa			1 0.025(0.01,0.09) 1.66(0.59,4.67) 0.22(0.08,0.56) 0.02(0.01,0.07) 0.08(0.02,0.32) 0.21(0.08, 0.55) 0.07(0.02, 0.25) 0.18(0.02,1.33) 0.22(0.08, 0.64) 0.09(0.01, 0.65)	1 0.03(0.01, 0.12) 1.58(0.57, 4.39) 0.16(0.06, 0.41) 0.06(0.01, 0.08) 0.07(0.02, 0.29) 0.18(0.07, 0.47) 0.07(0.02, 0.27) 0.17(0.02, 1.25) 0.25(0.09, 0.70) 0.09(0.01, 0.69)
Residence urban (ref) Rural			1 1.98(1.65,2.40)	1 1.18(0.90,1.55)
Random effects	Model I	Model II	Model III	Model IV
Community variance (SE) ICC (%)	2.61 44.28	2.39 41.78	1.85 20.58	0.82 20.15
Model fitness Log-likelihood AIC BIC	-3361.91 6727.83 6741.97	-3229.04 6496.07 6630.34	-3298.31 6622.62 6714.49	-3193.93 6447.87 6659.87

Key: *Ref = reference categories, AOR = adjusted odds ratio, AIC =Akaike Information Criteria, BIC = Bayesian Information Criteria, CI = Confidence Interval, and ICC = Intra Class Correlation.*

As compared to households without agricultural land, households with agricultural land were 1.42 times more likely to enroll in the CBHI scheme (AOR = 1.42; 95% CI= (1.18, 1.71)). In comparison to household heads without mobile phones, those who owned mobile phones were 1.35 times more likely to enroll in the CBHI scheme (AOR = 1.35; 95% CI= (1.14, 1.60)). Households that owned livestock, herds, or farm animals were 1.55 times (AOR = 1.55; 95% CI= (1.28, 1.88)) more likely to enroll in the CBHI scheme compared to households without such assets. Household heads in the 35-54 age group were 1.45 times more likely to enroll in the CBHI scheme (AOR = 1.45; 95%= (CI 1.22, 1.72)) compared to households with heads in the 15-34 age group. Similarly, household heads in the 55-74 age group were 1.70 times more likely to enroll in the CBHI scheme (AOR = 1.70; 95% CI= (1.37, 2.10)) compared to households with heads in the 15-34 age group. Households in the poorer category were found to have the same likelihood of enrolling in the CBHI scheme compared to the poorest households (AOR = 1.00; 95% CI= (0.80, 1.25)). However, households in the middle category were 1.39 times more likely to enroll in the CBHI scheme (AOR = 1.39; 95% CI= (1.10, 1.76)), and households in the richer category were 1.52 times more likely to enroll (AOR = 1.52; 95% CI = (1.18, 1.95)) compared to the poorest households. Moreover, families with four to six people had 1.26 times (AOR=1.26; 95% CI= (1.06, 1.49)) higher likelihood of enrolling in the CBHI scheme than households with one to three members. In the end, it was found that households from the Tigray region were more likely to enroll in CBHI programs than those from the Afar, Oromia, Somali, Benishangul-Gumuz, SNNPR, Gambela, Addis Ababa, and Dire Dawa administrative regions. However, there was no statistically significant difference in CBHI program enrollment between the Amhara, and Tigray regions and the Harari region, and Tigray regions. The interpretation of all the significant variables was after controlling for other variables.

Discussion

The 2019 Mini Demographic and Health Survey, which was carried out in Ethiopia, provided the data for this investigation. The findings of this study revealed that the Amhara and Tigray regions had the highest rates of CBHI enrollment. Additionally, there were spatial variations in the distribution of CBHI enrollment among households across the country, as indicated by the Global Moran's I statistic (Global Moran's I = 0.213149, P-value =0.001).

The study found significant spatial disparities in the utilization of CBHI schemes across the Ethiopian administrative zones. Some zones exhibited high utilization rates, indicating that the CBHI schemes were effective and widely adopted in those areas. However, other zones showed low utilization rates, suggesting that the CBHI schemes were not effectively reaching and serving the population in those regions.

The finding of this study showed that the enrollment rate in CBHI was significantly higher among households owning land for agriculture. This study was consistent with another study conducted in Kwara State, Nigeria (Babatunde, Oyedeji, Omoniwa, & Adenuga, 2016), which found that households that farmed the most were the most likely to enroll in CBHI programs. Furthermore, this study was in line with the previous study in Savannakhet Province, Lao People's Democratic Republic (Sydavong & Goto, 2019), which shows that agricultural production was positively related to the CBHI scheme. The reason for this could be that the accessibility of farmland could yield a daily income stream that would facilitate the payment of insurance costs. This study was in contrast with a study done in the Lao People’s Democratic Republic (Sydavong & Daisaku,

2018), which found that the scale of farmland had no discernible impact on the implementation of CBHI. This difference by be due to local culture, socioeconomic conditions, availability of healthcare services, and the design and effectiveness of the CBHI program.Mobile phone ownership among household heads significantly increased the number of people who signed up for the CBHI program. This is in line with the studies conducted in Ethiopia (Fetene, Mengistu, & Aschalew, 2023; Moyehodie, Mulugeta, & Amare Yilema, 2022), which show the household head with a mobile phone positively affected the enrollment of households in the CBHI scheme.

Ownership of livestock, herds, or farm animals had a significant positive impact on CBHI scheme enrollment. This study was in line with the previous studies (Sydavong & Goto, 2019; Yilma et al., 2015). This may be justified by the fact that livestock, herds, or farm animals can serve as valuable assets that can generate income through various means, such as selling milk, meat, or other animal products. This financial stability enables households to afford health insurance premiums and prioritize enrollment in CBHI. Household head age is a significant predictor of CBHI enrollment rate, with household heads aged 35-54 and 55-74 being more likely to have a higher CBHI enrollment rate compared to younger household heads. This study was in line with the previous studies (Atafu & Kwon, 2018; Babatunde et al., 2016; Iqbal et al., 2017), it suggests that CBHI enrollment was positively and significantly impacted by the age of the household. This study disproved a previous Ethiopian study (Bayked, Kahissay, & Workneh, 2021), that found age is not an essential factor for joining in the CBHI system. The observed disparity in CBHI enrollment rates between older and younger household heads may be attributed to the higher likelihood of older individuals to prioritize securing health insurance at a lower cost. This inclination is driven by their desire to ensure access to safe healthcare services.

The wealth index, which had a positive effect on households' CBHI enrollment, was another factor that affected the CBHI membership of households. Compared to households in lower wealth quintiles, those in the wealthier quintile had a higher likelihood of enrolling in the CBHI. This finding is in line with the previous studies in rural south-western Uganda, and Nepal(Bhusal & Sapkota, 2021; Nshakira-Rukundo, Mussa, & Cho, 2021), and in Nigeria, Ethiopia, and Ghana(Babatunde et al., 2016; Bayked et al., 2021; Tawiah, 2015), which reveals that compared to the poorest households, the wealthiest households used the CBHI program. This study was not in line with the previous study in Ethiopia (Kado, Merga, Adem, Dessie, & Geda, 2020). The discrepancy in findings between the two studies could potentially be attributed to variations in socioeconomic status and experiences with health insurance. Households consisting of 4 to 6 members had a greater likelihood of enrollment in the CBHI scheme compared to households with 1 to 3 members. These findings agreed with earlier research conducted in Ethiopia, and Pokhara-Lekhnath metropolitan, Kaski (Bayked et al., 2021; Paudel, Subedi, & Baral, 2019). This may be because if households had larger family sizes, there is an increased likelihood of at least one member of the household falling ill, which in turn enhances the probability of enrolling in health insurance. However, this contradicts the previous studies in Ethiopia, Nigeria, and Nepal (Babatunde et al., 2016; Bhusal & Sapkota, 2021; Eseta, Lemma, & Geta, 2020). This contradiction may be due to cultural norms, socioeconomic factors, and the design of the CBHI program itself. Moreover, geographical location was the key predictor of health insurance enrollment. Compared to households in the Tigray area, those living in Afar, Oromia, Somali, Benishangul-Gumuz, SNNPR, Gambela, Addis Ababa city administration, and Dire Dawa city administration had a smaller chance of enrollment in the CBHI program (Moyehodie et al., 2022). This may be due to Addis Ababa and Dire Dawa being the most densely populated cities, households may find it more convenient to use employer-sponsored health plans or private health

insurance plans, or they may prefer to use private healthcare institutions to receive high-quality healthcare. This study was in line with previous studies in Nepal, and Ethiopia (Bhusal & Sapkota, 2021; Kebede et al., 2020). There are also spatial disparities in CBHI scheme enrolment across the Ethiopian administrative zones. This may be due to Households from Zones with better healthcare infrastructure, including hospitals, clinics, and primary healthcare centers, or with effective administrative structures,streamlined processes, and efficient enrollment mechanisms, who may be more likely to enroll in the scheme. In contrast, Administrative zones with higher poverty rates or lower income levels may have lower enrollment rates due to financial constraints. Therefore, socio-cultural differences, socio-economic disparities, and variations in the quality of healthcare services provided are the potential reasons for enrolment variation among administrative zones.

Conclusions

The study identified geographic differences in household enrollment in CBHI schemes. The statistical significance of the variation in community-based health insurance enrollment between zones was demonstrated by the random-effects model study. The study identified significant spatial disparities in the utilization of CBHI schemes in Ethiopian administrative zones. Amhara and Tigray have the highest CBHI enrollment numbers. In contrast, lower CBHI membership rates were seen in Afar, Oromia, Somalia, Benishangul-Gumuz, SNNPR, Gambela, Addis Ababa city administration, and Dire Dawa city administration. The age of household heads, number of household members, having land for agriculture, having a mobile telephone, owning livestock and herds of farm animals, wealth index, and region had a significant effect on CBHI scheme enrollment. Zones or regions with low health insurance coverage must be given priority by the Ministry of Health, health bureaus, and other pertinent authorities. This prioritizing can support the financing of the health system and make it possible to implement interventions to address issues that have a negative influence on households' enrollment in CBHI.

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2.12 Growth Determinants, Challenges, and the Role of Micro and Small Enterprises in Debre Birhan City, Ethiopia, Zewdu Adefris

Lecturer, Department of Development Economics, Ethiopian Civil Service University
Email: zewd12@yahoo.com

Abstract

Micro and small enterprises (MSEs) are vital components of the economic landscape in Debre Birhan City, Ethiopia. This study examines the factors influencing the growth, challenges, and role of MSEs in the city. Through primary data collection from MSE owners/operators, key determinants such as the gender, level of education, and family business background of MSEs owners/operators, ownership structure of MSEs, start-up size, market opportunities, and competition from the informal sector were identified as crucial drivers of MSEs growth in the city. However, challenges such as insufficient working capital, limited market linkage, inadequate working premises, lack of technical skills, and inadequate infrastructure and services were found to impede the expansion of MSEs in the city. Despite these challenges, MSEs in Debre Birhan City play a significant role in generating employment, creating wealth, reducing poverty, satisfying customers, and promoting local entrepreneurship. To capitalize on these opportunities and address the challenges faced by MSEs, local authorities and relevant stakeholders must collaborate to create an enabling environment that fosters entrepreneurship, provides access to finance, provides working premises, and improves infrastructure. By addressing these factors, MSEs in Debre Birhan City can realize their full potential as engines of economic growth and job creation. This study provides valuable insights for policymakers, stakeholders, and supporting organizations looking to support the sustainable development of MSEs in Debre Birhan city.

Keywords: *Factors influencing growth, Challenges, Role, Micro and small enterprises, Debre Birhan City*

Introduction

Given Ethiopia‘s high unemployment and poverty figures and the expected roles of MSEs, the government has in the past devised policies and incentives for the development of MSEs. MSEs are recognized as important vehicles of economic growth, employment creation, income generation, and poverty reduction and provide opportunities for entrepreneurial sourcing, training, development, and empowerment. Therefore, MSEs hold a significant place in Ethiopia's development agenda. Despite the government's efforts to promote the growth of MSEs in the country, numerous factors and challenges continue to influence their development.

In a study conducted by Haftom Haile et al. (2014), it was found that factors such as access to credit from formal financial institutions, availability of infrastructure, and access to suitable operating premises significantly affect the growth of MSEs. Additionally, a study by Habtamu et al. (2013) in Mekele City suggests that the gender of the manager, initial investment in the business, location, and sector of operation play a crucial role in deciding the growth of MSEs. As noted by Berihu (2017), various factors such as the age of the operator, age of the enterprise, access to credit, initial capital amount, market competition level, government policies, training

availability, operator's gender, technology utilization, and market access significantly affect the performance of MSEs in Godere Woreda of Gambella Regional State, Ethiopia. MSEs face many challenges that hinder their sustainability and best contribution to the economy. The research findings highlight that insufficient startup capital, regulatory issues, limited infrastructure, unfair competition, lack of training, credit constraints, and technology skills gaps negatively affect MSE performance (Berihu, 2017). Similarly, Tekabe's (2019) study found factors such as insufficient funding, absence of suitable workspaces, marketing challenges, infrastructure deficiencies, ineffective management techniques, and various technological, entrepreneurial, and regulatory obstacles as detrimental to MSE performance.

Despite the importance of MSEs, there is a lack of comprehensive research specifically focusing on factors influencing their growth in Debre Birhan City. This gap in the literature hinders stakeholders from implementing targeted interventions to support the sustainable development of MSEs in the city. While some past research surveys conducted on MSEs in Ethiopia, they have primarily focused on challenges and performance at the organizational level, explaining the relationships between MSEs' performance and internal factors or combined internal and external factors. Thus, there is a need for a detailed examination of the specific challenges met by MSEs in Debre Birhan City. Understanding these challenges is crucial for designing effective support mechanisms. Examining factors that can positively or negatively affect the future growth of MSEs in the city is crucial for sustainable economic development. Assessing the role of MSEs in Debre Birhan City is vital for strategic planning and policy formulation. Given these considerations, this study looks to examine the growth determinants, challenges, and the role of MSEs in Debre Birhan City, Ethiopia, have been a topic of interest due to their substantial contribution to the local economy.

Literature Review

Theoretical Literature Review

Definition of micro and small enterprises

Micro and small enterprises are defined based on the number of employees they have, with variations in definitions across different contexts. The United Nations Industrial Development Organization (UNIDO) defines microenterprises as those with fewer than 5 employees and small enterprises as those with 5 to 19 employees in developing countries (UNIDO, 2002).

In Ethiopia, the Micro and Small Enterprise Development Policy and Strategy (MSEDS) of 2016 provides specific criteria for categorizing enterprises. Microenterprises in Ethiopia are defined as businesses employing no more than 5 individuals, including owners and family members, with total assets not exceeding ETB 100,000. In the industrial sector (including manufacturing, construction, and mining), microenterprises employ a maximum of five persons with total assets not exceeding ETB 100,000. In the service sector (retail trade, transport, hotel, tourism, and information technology and maintenance services), microenterprises employ a maximum of five individuals with total assets not exceeding ETB 50,000. On the other hand, small enterprises in Ethiopia employ between 6 and 30 people with total assets ranging from ETB 100,001 to ETB 1,500,000 in the industrial sector and between ETB 50,001 and ETB 500,000 in the service sector.

Assessing the Growth of Micro and Small Enterprises

The success of enterprises is commonly evaluated based on factors such as increased turnover, expanded workforce, and changes in sales volume (Kolvereid and Isaksen, 2006; Papadaki and Chami, 2002, as cited in Mesfin, S.K., 2015). While various metrics can be used to measure the growth of small businesses, the most often used indicator is the change in the number of

employees since start-up (Holmes and Zimmer, 1994; Liedholm and Joan, 1989, as cited in Mesfin, S.K., 2015). This metric is preferred due to its simplicity, ease of recall over time, and lack of need for adjustment. Consequently, the standard measure of small enterprise growth typically changes in workforce size from the establishment phase (Liedholm and Mead, 1999; USAID, 2002, as cited in Mesfin, S.K., 2015).

Mead and Liedholm (1998) proposed an alternative formula for calculating annual employment growth in small enterprises as follows:

- Average annual growth rate (simple average):
  [(current employment-initial employment)/initial employment]/enterprise age
- Average annual growth rate (compound):
  [(current employment/initial employment) ($^{1/\text{final age}}$)] - 1.

However, Dockel and Ligthelm (2005), Everett and Watson (1998), and USAID (2002), as cited in Mesfin, S.K. (2015), argue against solely relying on employment figures to measure growth. They highlight potential biases arising from overlooking alternative indicators such as changes in sales, outputs, or assets. This is because the seasonal nature of employment, prevalence of part-time workers, and the use of unpaid family labor. Critics also point out that job quality may not necessarily align with employment growth figures (Huang and Brown, 1999, as cited in Mesfin, S.K., 2015). As a result, they propose considering the average change in sales as an alternative measure of enterprise growth.

Despite differing viewpoints, the significance of employment as a key measure of small enterprise growth stays undisputed. Assessing growth through employment figures reflects not only the performance and profitability of enterprises but also their contribution to job creation (Timmons, 1999, as cited in Mesfin, S.K., 2015). Various methodologies exist for calculating employment growth rates, ranging from simple annual averages to compound rates. While some studies focus on total employment changes since start-up, others emphasize the importance of consistent measurement using established criteria (Goedhuys, 2002; Liedholm, 2001; USAID, 2002, as cited in Mesfin, S.K., 2015; Liedholm and Mead, 1999).

Factors and obstacles influencing the Performance of Micro and Small Enterprises

According to Roy and Wheeler (2006), the performance of micro and small enterprises can be influenced by various factors such as the extent of training received by micro entrepreneurs (both formal and informal), their level of experience and years in business, knowledge of the market, ability to differentiate through pricing, quality, or other factors, product diversification, access to necessary resources and technology, level of planning, ability to anticipate future trends, and the entrepreneur's economic status. Conversely, obstacles to progress and development in the MSE sector encompass inadequate market knowledge and training, limited access to capital, and a lack of cooperation among potential business partners.

Workneh's (2007) study highlighted constraints faced by MSEs including lack of capital, market access, unfavorable policies, inadequate infrastructure, insufficient training, governmental structures and processes. Similarly, Adil's (2007) research in Addis Ababa found incorrect government intervention, capital shortages, location disadvantages, lack of market access, and inadequate display facilities as major hindrances to MSE development. Dereje's (2008) study on MSEs in the construction sector revealed key constraints such as lack of capital, raw materials, government support, market access, credit facilities, and high interest rates based on a sample of 125 enterprises.

Mulugeta (2011) also found and described the critical challenges faced by micro and small enterprises (MSEs). These challenges include market-related issues resulting from inadequate

market connections and ineffective promotional activities. Problems related to institutions include bureaucratic obstacles, limited institutional ability, lack of awareness, non-compliance with policies, regulations, and rules, absence of executive training, and inadequate monitoring and follow-up. Operator-related challenges involve developing a reliance on tradition, extravagant spending habits, and a lack of vision and commitment among operators. MSE-related constraints consist of inadequate marketing strategies, poor accounting practices, limited knowledge sharing, and insufficient collaboration within and among MSEs. Lastly, societal challenges include distorted feelings of MSE operators and their products.

Role of the Micro and Small Enterprises Sector

The MSEs sector plays a crucial role in contributing to the economy by creating employment opportunities, increasing income levels, reducing costs, and enhancing business convenience (Fatoki, 2012). MSEs have dual roles: they drive economic growth by boosting their output contributions to the Gross Domestic Product (GDP) and alleviate poverty through the employment and income generation effects of their output growth (Tambunan, 2019). In developing countries, MSEs are vital for job creation, income generation, skill development, goods and services delivery, and more (Cherkos et al., 2018). The importance of MSEs, particularly new businesses, significantly addresses socio-economic challenges like unemployment, poverty, income disparities, political stability, and economic growth (Musara and Gwaindepi, 2014).

In Ethiopia, the government places special emphasis on MSEs as they are most enterprises and employment in non-agricultural sectors. Recognizing the crucial role MSEs play in fostering income generation, job creation, and poverty reduction, the government formulated its first micro and small enterprise development strategy in 1997. The MSE sector is pivotal in driving economic growth, creating jobs, and developing an industrial economy. MSEs effectively use local resources and are labor-intensive (FMSEDA, 2012).

Empirical Literature

Mead and Liedholm (1998) found that the success of micro and small enterprises in developing countries is not decided by their size but by their isolation, which hinders access to markets, knowledge, finance, and institutional support. Kinyua's study (2013), as cited in Shimels (2021), highlighted that access to finance could have a positive impact on the performance of micro and small enterprises in the Jua Kali sector. Many businesses expressed challenges in obtaining loans due to the requirements for credit records and a lack of understanding of loan acquisition and repayment processes (Kinyua, 2014, cited in Shimels, 2021). Despite the potential benefits, access to finance has not been effectively used by MSEs in the study area. Khizra (2011) found that factors such as firm age, owner's education level, managerial attitude, family business connections, networks, innovation, market share, on-the-job training, and specialized knowledge significantly and positively influence firm growth in Gujrat and Sialkot Districts.

Bekele and Worku (2008) undertook a longitudinal investigation to assess the influential factors affecting the sustained presence and viability of small and medium enterprises in Ethiopia. The study found that the long-term survival of micro, small, and medium enterprises (MSMEs) in Ethiopia is influenced by factors such as the adequacy of financial resources, levels of education, managerial and technical skills, and the ability to reinvest a part of profits. The findings revealed that businesses that did not survive during the study period lacked sufficient finance (61%), had lower educational levels (55%), showed poor managerial skills (54%), lacked technical skills (49%), and did not reinvest profits (46%). Additionally, the study emphasized the critical role of engaging in social capital and networking schemes like Iqub for the sustained success of

enterprises. Moreover, a study by Wolday and Gebrehiowot (2004) on business development services in Ethiopia highlighted the status, prospects, and challenges faced by MSEs sector. The research showed that operators in MSEs had limited vocational and technical training prior to starting their businesses and received minimal short-term training, extension services, counseling, and marketing support. The primary constraints found were specifically related to challenges in accessing markets and financial resources.

A study by Hadis and Ali (2018), as cited in Shimels (2021) regarding MSEs in Ethiopia, specifically in Kombolcha town, highlighted the weak linkages between MSEs and financial institutions due to ineffective managerial practices and policy-related barriers. The study also found entrepreneurs' feeling of limited importance of local government support and deficiencies in product quality and technical skills as key factors affecting MSEs' business performance. Furthermore, according to the World Bank (2012), inadequate infrastructure poses a significant constraint on business performance in Ethiopia. Issues such as poor road conditions, lack of access to land, workspace, energy, and utility services contribute to this infrastructural challenge. Additionally, limited access to land and insufficient property rights hinders MSEs' ability to access necessary infrastructure and utilities (Ginbite, 2017; as cited in Shimels, 2021).

Methodology

Description of the study area

Debre Birhan city, situated in the North Shewa Zone of the Amhara regional state, lies approximately 130 kilometers northeast of Ethiopia's capital, Addis Ababa. Serving as the administrative hub of the North Shewa Zone, the city has a latitude and longitude of 9°41′N 39°32′E and an elevation of 2,840 meters. As of 2022/2023, Debre Birhan city has attained regiopolitan status and is structured into five sub-cities (Atse Zerayakob, Etege Taytu, Emiye Menelik Tabase, and Chacha) clustering 24 urban, 13 rural, and 2 satellite kebeles. The city's total population stands at 436,711, forming 210,283 men and 225,428 women (Debre Birhan City Finance and Economic Development Office, 2022).

Study Design

To meet the specified aims, this study used both descriptive and explanatory research designs, incorporating both quantitative and qualitative research methods. Both quantitative and qualitative research methods were used. The quantitative approach was used to examine growth determinants, find key challenges, and assess the role of Micro and Small Enterprises (MSEs) growth in Debre Birhan City. Qualitative methods, specifically interviews, are used to capture non-numeric variables.

Target Population and Sampling Framework

According to the Debre Birhan City Bureau of Labor and Training (2022) report, there are 1740 formally registered MSEs operating in the manufacturing, services, trade, construction, and urban agriculture sectors in the city. Hence, the target population for this study forms these 1740 MSEs. The sampling frame needs to be representative of this target population, with the sampling units being formally registered MSE owners/operators who have been in operation for at least one year within the study area.

Sampling Techniques and Sample Size Determination

To ensure representation from MSEs of varied sizes, a stratified random sampling technique was employed. This technique involves dividing the sampling frame into homogeneous groups (strata) before selecting items for the sample. Stratified random sampling allows for correct

representation across sectors (manufacturing, construction, service, trade, and urban agriculture). The sample size calculation in this study follows the Yamane (1967:86) formula, which is suitable for finite populations is computed as follows:

$$n = \frac{N}{1+N(e)^2} = \frac{1740}{1+1740(0.05)^2} = 326$$

Where: N = Population size, which is 1740

n = Sample size needed; and

e = Level of precision, expressed as a decimal of 0.05 for a 5% level.

A proportional stratified sampling technique is employed with a population of 1740 MSEs, resulting in a sample of 326 MSEs randomly selected proportionally across sectors (manufacturing, construction, service, trade, and urban agriculture). While there are some differences, the study sample is considered representative of the sector structure of MSEs in the study area, with a notable overrepresentation of the trade sector. Additionally, face-to-face interviews will be conducted with 8 MSE officials and experts using purposeful sampling to explore their perspectives on growth determinants, challenges, and the role of MSEs in Debre Birhan City. These discussions would enrich and verify the data obtained through the questionnaire.

Table 1: Distribution of sample size by sector

Sectors	**Micro Enterprises**		**Small Enterprises**		**Total**	
	Target population	Sample Size	Target population	Sample Size	Target population	Sample Size
Manufacturing	135	26	41	5	176	31
Construction	166	31	12	3	178	34
Service	491	92	6	2	497	94
Trade	847	158	3	1	850	159
Urban agriculture	38	7	1	1	39	8
Total	1677	314	63	12	1740	326

Source: Debre Birhan City Bureau of Labor and Training Report, 2022

Source of Data and Data Collection Instrument

The study incorporated both primary and secondary data sources. Primary data was collected by administering a structured questionnaire to a representative sample of MSE owners/operators. Additionally, key informant interviews with MSE officials and experts were conducted using specific checklists to gather qualitative insights not covered in the questionnaire. Secondary data was sourced from various published and unpublished materials such as reports from the Debre Birhan City Bureau of Labor and Training, journal articles, research papers, and websites.

Methods of Data Analysis

Descriptive Statistics

Quantitative data collected was analyzed using descriptive statistics, including frequency and percentage, to summarize the characteristics of enterprises and their owners/operators.

Econometric Analysis

To investigate the relationship between the growth of Micro and Small Enterprises (MSEs) and various independent variables, a multiple linear regression model was used. Prior to fitting the multiple regression model, it was vital to assess the assumptions of multiple regression. Addressing the issue of heteroscedasticity commonly present in cross-sectional datasets, robust standard errors were employed in estimating the regression. By using the robust choice, the coefficients' point estimates stayed the same as in ordinary least squares (OLS), while accounting

for heterogeneity and non-normality concerns through adjusted standard errors. A multicollinearity test, using Variance Inflation Factors (VIF) and correlation matrix, was conducted to address potential multicollinearity among the explanatory variables. The correlation matrix showed values below 0.8, and VIF values were all below 10, except for the correlation between age and age square, which was logically expected to be high. If VIF values range from 1 to 10, it can be inferred that there is no multicollinearity among the independent variables in the regression model (Pallant, 2010).

Econometrics Model Specification

In addition to descriptive analysis, it is valuable to find and quantify the factors influencing the growth of Micro and Small Enterprises (MSEs). Following Evans (1987), the functional relationship between firm growth, age (At), and firm size (St) can be expressed as:

$$S_t' = G(S_t, A_t)^d(S_t)e^{ut} \quad (1)$$

where S_t' and S_t represent the firm's final and initial size, respectively, d denotes the time interval, G represents the growth function, A represents firm age, and u_t is the log-normally distributed error term.

By taking the logarithm on both sides of equation (1) and rearranging, a specific functional form can be derived to understand the effect of different variables on firm growth as expressed below.

$$\log(A_t, S_t) + u_t = \beta_0 + \beta_1 \log(A_t) + \beta_2 \log(S_t) + \beta_3 \log(A_t)\log(S_t) + \beta_4 (logA_t)^2 + \beta_5 (logS_t)^2 + u_t \quad (2)$$

Augmenting the equation (2) with a vector of factors (X) that account for various influences on firm growth, the model captures the average annual growth rate of a firm in terms of employment (Y_i), we have the following equation (3) (Iacovone *et al.*, 2012).

$$\mathrm{Y_i} = \beta_0 + \beta_1 \log(\mathrm{A_t}) + \beta_2 \log(\mathrm{S_t}) + \beta_3 \log(\mathrm{A_t})\log(\mathrm{S_t}) + \beta_4(\log\mathrm{A_t})^2 + \beta_5(\log\mathrm{S_t})^2 + \sum_{i=3}^{n} \beta_i \mathrm{X_i} + \mathrm{u_t} \quad (3)$$

Thus, the current size of the firm (Y) is a function of starting size (S), age (A), and a vector (X) encompasses factors such as owner/operator characteristics, firm attributes, location, and business environment conditions that affect MSE growth. In this study, the dependent variable, MSE growth is measured in terms of employment growth (the relative change in a firm's number of permanent employees between the establishment year and the time of the survey, 2022/23), which is considered a robust measure compared to sales or profits due to its lower susceptibility to measurement errors and lack of correlation with inflation. The model includes independent variables related to owner/operator characteristics like gender, age, marital status, education level, business experience, family background, and MSE-specific attributes like starting size, ownership structure, age, power outage, competition, credit access, and market accessibility.

The multiple linear regression model specification for analyzing the factors influencing MSE growth is outlined below.

$$\mathrm{msegrw} = \beta_0 + \beta_1\mathrm{gendo} + \beta_2\mathrm{ageo} + \beta_3\mathrm{ageosqu} + \beta_4\mathrm{married} + \beta_5\mathrm{educi} + \beta_6\mathrm{educ8} + \beta_7\mathrm{educ9} + \beta_8\mathrm{fjob} + \beta_9\mathrm{exper} + \beta_{10}\mathrm{stsiz} + \beta_{11}\mathrm{owner} + \beta_{12}agemse + \beta_{13}\mathrm{acr} + \beta_{14}\mathrm{amkt} + \beta_{15}\mathrm{elect} + \beta_{16}\mathrm{comp} + \varepsilon_i \quad (4)$$

Table 2: Variable Notation, Description, and Measurement

Notation	Description	Measurement
msegrw	Growth of MSE	Continuous: The difference in employment size between the time of survey (current employment) and establishment year (first employment) divided by first employment and divided by enterprise age.
gendo	Gender of MSE owner/operator	Dummy: male owned = 1, otherwise = 0.
ageo	Age of owner/operator	Continuous: in years
ageosqu	Age square of MSE operator	Continuous: in years
married	Marital status of MSE owner/operator	Dummy: Married = 1, otherwise = 0.
educi	Education level of MSE owner/operator	Dummy: no formal education =1, otherwise = 0.
educ8		Dummy: primary education =1, otherwise = 0.
educ9		Dummy: secondary education =1, otherwise = 0.
fjob	Family business background	Dummy: business =1, otherwise = 0.
exper	Business experience of owner/operator	Continuous: in years
stsiz	Startup size of MSEs	Continuous: first employment
ownership	Forms of MSE ownership	Dummy: owned by privately = 1; otherwise = 0.
agemse	Age of MSEs	Continuous: number of years in the firm's life
acr	Access to credit from formal institutions	Dummy: Access = 1; otherwise = 0.
amkt	Access to the market	Dummy: Access = 1; otherwise = 0.
elect	Power outage	Continuous: Number of hours per week the MSEs without access to electricity
comp	Market competition	Dummy: MSEs face competition from unregistered informal firms = 1; otherwise = 0.

Results and Discussions

Descriptive Statistics and Analysis

Among the 309 respondents surveyed, as depicted in Table 3, 55% were male and 45% were female, indicating a balanced gender representation in the sample. The distribution of male and female participants across sub-sectors was also relatively equal. The age distribution of the respondents, detailed in Table 3, reveals that a significant portion falls within the age groups of 26 to 35 and 36 to 45, highlighting the prevalence of young adults in the sample population. The survey results further show that 80.92% of respondents had completed formal education, while 19.09% had no formal education, with only 6.8% holding a first degree. In terms of marital status, the majority (52.43%) of respondents were married, followed by singles (43.37%).

Table 3: Respondents' Profile

Category	Manufacturing		Service		Trade		Construction		Urban agriculture		Total	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Gender												
Male	21	12.35	47	27.65	72	42.35	23	13.53	7	4.12	170	55.02
Female	7	5.04	43	30.94	82	58.99	6	4.32	1	0.72	139	44.98
Age												
Below 26	4	50.00	1	12.50	0	0.00	3	37.50	0	0.00	8	2.59
26 to 35	7	6.93	22	21.78	43	42.57	24	23.76	5	4.95	101	32.69
36 to 45	17	12.50	35	25.74	79	58.09	2	1.47	3	2.21	136	44.01
46 or over	0	0.00	32	50.00	32	50.00	0	0.00	0	0.00	64	20.71
Level of education												
No formal education	0	0.00	25	42.37	34	57.63	0	0.00	0	0.00	59	19.09
Primary school	20	19.80	31	30.69	42	41.58	6	5.94	2	1.98	101	32.69
Secondary school	7	7.07	24	24.24	54	54.55	9	9.09	5	5.05	99	32.04
Diploma	1	3.45	8	27.59	17	58.62	2	6.90	1	3.45	29	9.39
First degree	0	1.00	2	9.52	7	33.33	12	57.14	0	0.00	21	6.80
Marital status												
Married	22	13.58	51	31.48	79	48.77	4	2.47	6	3.70	162	52.43
Single	6	4.48	34	25.37	67	50.00	25	18.66	2	1.49	134	43.37
Divorced	0	0.00	3	33.33	6	66.67	0	0.00	0	0.00	9	2.91
Widowed	0	0.00	2	50.00	2	50.00	0	0.00	0	0.00	4	1.29

Source: Compute from own survey, 2023; f = frequency, % = Percentage

About the ownership structure of MSEs as presented in Table 4, it is noted that 48.54% of enterprises are sole proprietorships, while 50.49% are partnerships, and only 0.97% are cooperative enterprises. The survey results reveal that 51.13% of respondents' families are engaged in business, 24.60% in agriculture, 16.18% in civil service, and 7.44% in other occupations. It was seen that the family occupation in business positively influences the current business activities of MSE owners/operators. Additionally, a majority (62.87%) of sampled respondents had prior business experience, while 37.13% had no prior experience before starting their current business ventures.

Table 4: Characteristics of MSEs Owners/Operators

Category	Manufacturing		Service		Trade		Construction		Urban agriculture		Total	
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Form of MSEs ownership												
Sole proprietorship	0	0.00	0	0.00	150	97.40	0	0.00	0	0.00	150	48.54
Partnership	28	17.95	90	57.69	1	0.64	29	18.59	8	5.13	156	50.49
Cooperative	0	0.00	0	0.00	3	100.00	0	0.00	0	0.00	3	0.97
Family business background												
Business	21	13.29	38	24.05	82	51.90	12	7.59	5	3.16	158	51.13
Civil servant	0	0.00	11	22.00	25	50.00	11	22.00	3	6.00	50	16.18

Agrarian	4	5.26	29	38.16	38	50.00	5	6.58	0	0.00	76	24.60
Others	3	13.04	10	43.48	9	39.13	1	4.35	0	0.00	23	7.44
Business experience												
Yes	18	9.33	57	29.53	88	45.60	24	12.44	6	3.11	193	62.87
No	10	8.77	33	28.95	64	56.14	5	4.39	2	1.75	114	37.13

Source: Compute from own survey, 2023; f = frequency, % = Percentage

Challenges that hinder firms' growth

Challenges hindering MSE growth are consistent across sectors, with common challenges being a shortage of working capital, limited market access, inadequate working premises, lack of managerial and technical skills, and insufficient basic infrastructure/services. Key informants highlighted internal challenges such as lack of marketing, record-keeping, and entrepreneurial skills, as well as external factors like limited market linkages and infrastructural issues as major challenges faced by MSEs in Debre Brihan City, Ethiopia. Moreover, inadequate credit facilities, unequal access to credit due to collateral and policy-related requirements, and financial institutions' procedures were identified as barriers to MSE development.

The role of micro and small enterprises

MSEs play a significant role in the Ethiopian economy by creating employment opportunities, focusing on customer satisfaction, wealth creation, poverty reduction, and promoting local entrepreneurship. Key informants also acknowledged that manufacturing enterprises have been successful in generating employment quickly by transitioning from micro to small enterprise levels.

Econometric Findings and Analysis

Evaluation of Assumptions

Prior to examining the OLS regression results, it is essential to assess and address the assumptions underlying the model being examined. The F-statistics test decides the significance of the multiple coefficients in the model. The F-test P-value of 0.0000 shows statistical significance at a level below 1%, allowing us to reject the null hypothesis and conclude that some variables have significant effects on MSE growth, as detailed in Table 5. Additionally, the coefficient of determination (R^2) measures the goodness of fit of the model, with an R^2 value of 62.83% suggesting that 63% of the variance in MSE growth, as showed by employment, is explained by the independent variables used. Overall, the model proves a good fit based on this measure.

Another important regression assumption to be tested is homoskedasticity, where heteroskedasticity refers to the violation of this assumption. Through the Cook-Weisburg (1983) test, a chi-squared value of 122.22 with a Prob > chi2 of 0.0000 reveals significant heteroskedasticity in the residuals versus predicted values regression. To address this issue, robust standard error methods were applied using the robust choice. The study also examined multicollinearity using standard error levels, variance inflation factors (VIF), and correlation matrices. The results show that multicollinearity issues are not severe, as standard errors are within acceptable ranges and VIF values are below 10, except for the logically expected high correlation between age and age square. The correlation matrix also shows values below 0.8, affirming that multicollinearity is not a concern in this dataset.

Model Results

As depicted in Table 5 below, it is clear that the gender of the operator, primary education level, family business background, start-up size, sole ownership, market accessibility, and competition from the informal sector exert significant influences on the growth of MSEs.

The gender of the operator proves a positive and statistically significant effect on the employment growth of MSEs, with a significance level of 1%. The observed positive coefficient implies that enterprises owned by males tend to outperform those owned by females, due to the greater commitment of male operators to full-time business activities compared to their female counterparts. This finding is consistent with earlier research conducted by Berihun (2017). Furthermore, the coefficient associated with primary education shows that completing primary school has a positive and statistically significant effect on MSE growth. The level of education reached is likely to influence the skill levels that individuals bring to their business endeavors, as noted in studies by Solomon (2004), Abraham (2013), and Tassew et al. (2015) cited in Berihu (2017). Consequently, the regression analysis results suggest that MSEs managed by individuals with primary education (grades 1–8) show higher growth performance compared to those lacking formal education. Moreover, the presence of a family business background is positively and significantly linked to MSE growth. This association highlights the effect of family business experience on the employment expansion of MSEs, showing that owners/operators with a family history of entrepreneurship are more likely to enhance the growth of MSEs.

Table 5: Multiple Linear Regression Result

Dependent Variable*:* Growth of MSEs				
Explanatory Variables	**Coefficient**	**Robust Std. Error**	**t-value**	**P-value**
Gender of MSEs operators	0.2959318	0.0678941	4.36	0.000***
Age of MSEs operators	-0.0318331	0.0332831	-0.96	0.340
Age square of MSEs operators	0.0002461	0.0004009	0.61	0.540
Marital status of the operator (married)	-0.0207227	0.0544962	-0.38	0.704
Primary education (educ8)	0.1341078	0.07909	1.70	0.091*
Secondary education (educ9)	0.0049218	0.0629074	0.08	0.938
Family business background	0.1414843	0.0506164	2.80	0.006***
Business experience of the operator	0.0841729	0.0605964	1.39	0.166
Startup size (first employment)	-0.0007629	0.0003651	-2.09	0.038**
Ownership	0.2458213	0.0828442	2.97	0.003***
Age of MSEs	-0.0087728	0.0310108	-0.28	0.777
Access to credit	0.013454	0.0541028	0.25	0.804
Access to the market	0.5195842	0.1288406	4.03	0.000***
Power outage	-0.0016556	0.0379396	-0.04	0.965
Competition for informal sector	-0.2469308	0.0894607	-2.76	0.006***
_ Cons	0.8353877	0.665918	1.25	0.211
Number of obs = 301	F (15, 285) = 10.02		Prob > F = 0.0000	
R-squared = 0.6283	Root MSE = .44463			

///*, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Source: Computed from own survey, 2023

The effect of start-up size on MSE growth is negative, showing that smaller businesses in terms of employment tend to grow faster than larger ones. This relationship is statistically significant at a 5% level, highlighting that smaller firms show faster growth rates compared to their larger counterparts. This finding aligns with the learning model of firms, suggesting a negative correlation between firm size and employment growth for MSEs. Ownership structure is another crucial factor influencing MSE growth positively and significantly, with a 1% level of statistical significance. MSEs owned by a single proprietor show superior employment growth compared to other ownership structures, in line with Wolday's (2015) findings.

Market accessibility also plays a vital role in driving the growth of MSEs, with a positive and statistically significant effect at a 1% significance level. Access to market information on customers, suppliers, prices, and trade regulations is essential for MSEs to survive and expand. This result is consistent with earlier studies by Abraham (2013) and Berihun (2017). On the other hand, competition from unregistered or informal firms negatively affects the growth of MSEs, with a significant effect at a 1% significance level. Unfair competition from the informal sector can hamper the productivity of formal MSEs, potentially hindering their growth prospects. The coexistence of formal and informal MSEs in similar businesses may erode the growth potential of formal MSEs, highlighting the challenges posed by informal competition.

Conclusion and Recommendation

Conclusion

This study aimed to assess the growth determinants, challenges, and the role of Micro and Small Enterprises (MSEs) based on a sample of 309 MSE owners/operators in Debre Brihan City, Ethiopia. Through a combination of descriptive analysis and econometric estimations, the study addressed key research questions. The findings highlight the following conclusions:

- Descriptive analysis found key challenges hindering the growth of MSEs in the study area, including a lack of working capital, limited market linkage, inadequate working premises, insufficient technical skills, and basic infrastructure/services.
- Despite these challenges, SMEs play a vital role in the local economy by generating employment, creating wealth, reducing poverty, satisfying customers, promoting local entrepreneurship, and contributing to industrialization and import substitution.
- Regression analysis results showed that factors such as the gender of the operator, primary education level, family business background, forms of ownership, start-up size, market access, and competition from the unregistered informal sector significantly influence the employment growth of MSEs in the study region. These factors were found to be the key factors that significantly decide the employment growth of MSEs in Debre Brihan City, Ethiopia.

Recommendations

Based on the study findings, the following recommendations are proposed to enhance employment growth within MSEs in Debre Brihan City, Ethiopia. Specific interventions should target the following areas:

- Action is needed to address the lack of working capital, limited market connections, inadequate working spaces, and insufficient technical skills and basic infrastructure/services to support and foster the development of MSEs in the city.
- The local government and relevant stakeholders should focus on empowering and advancing the growth of women-owned MSEs through financial and technical support, knowledge sharing, and encouragement to enhance their performance.
- MSE operators can enhance their business skills and entrepreneurial capabilities to drive the growth of MSEs, especially when drawing on the experience and inspiration from a family with a business background.
- Larger-sized MSEs in terms of employment should prioritize creating strong customer relationships, enhancing skills, and promoting fair competition practices to improve their performance and growth.

- Single-owner MSEs have shown better employment growth compared to other ownership structures. Therefore, offering partnership skills training, motivation, mentorship, awareness-building, and entrepreneurship promotion can effectively enhance the growth of MSEs owned by more than one operator.
- Strengthening market linkages between MSEs and medium to large enterprises can secure market opportunities for MSEs. Stakeholders should provide prompt market information to MSE operators to align their production accordingly. Additionally, the government should actively encourage MSE participation in government procurement contracts to expand their market outreach.
- MSE operators need protection from unfair competition practices by the unregistered informal sector to deliver high-quality products and services at competitive prices, ensuring customer retention.
- By implementing these recommendations, local authorities and relevant stakeholders can foster a supportive business environment for MSEs in Debre Brihan City, leading to sustainable growth within the MSE sector.

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