

An aerial view of a multi-lane highway with several trucks and cars. A blue digital network overlay, consisting of interconnected nodes and lines, is superimposed on the scene, suggesting a data-driven or AI-enhanced logistics system.

# APPLICATION OF AI AND DIGITIZATION IN AFRICAN SUPPLY CHAIN AND LOGISTICS

***Name: Yakubu Muhammed-jamiu***

***IEDE ID: 2024001***

***School: Jiangsu University of science and  
technology***

***Department: Mechanical engineering***

***Current degree: BSc Computer engineering***

***Country: GHANA***

# Contents

- Keywords
- Introduction
  - ✓ Companies in Africa
  - ✓ Supply chain and logistics in Africa
- Digitization in Africa
  - ✓ Software
  - ✓ Automation
  - ✓ Artificial Intelligence
- Methodology
- Objectives
- Problems
- Solution
- Challenges and Resolution
- Limitation
- Future improvement
- Conclusions

# Keywords

*AI: Artificial Intelligence,  
App: A Mobile and Web Applications,  
IOT: Internet of Things,  
Tech: Technology,  
Afro-: Africa-,  
Digitization,  
Supply Chain,  
Logistics,  
Africa,  
Software,  
Automation*

# Keywords

## ***Companies in Africa***

Africa hosts a diverse range of companies spanning various industries, each facing unique challenges and opportunities.

## ***Supply Chain and Logistics in Africa***

The supply chain and logistics landscape in Africa is characterized by complexities arising from infrastructure limitations, regulatory issues, and geographical factors.

Africa is home to the next major world economy, and African supply chains will make that possible. Despite the impact of the recent pandemic, Africa's economy is doing better than expected. According to the African Development Bank (AFDB), Africa is set to outperform the rest of the world in economic growth over the next two years (2023 and 2024).

African supply chains have seen much improvement in recent years. There is still a lot to do for the continent's supply chain operations to catch up with those of the present major economies, but every indication points to a giant on the rise. Traditional supply chains are reactive and linear in nature, operating like single minded entities. This makes them slow to adapt to changes. Traditional supply chains are also mostly focused on production and provision of the goods and service, rather than the needs of the customer.

Supply chains within the continent face a myriad of hurdles, and many businesses navigate them with precision and ingenuity. Although impressive, this does not negate the legitimate challenges and concerns that come along with doing so. These challenges impact businesses to varying degrees across different regions on the continent. And because traditional supply chains react slowly, it results in loss of productivity and profitability

# Digitization in Africa

Sub-Saharan Africa (SSA) faces critical challenges for digital development, including underdeveloped digital infrastructure, lack of accessible and affordable connectivity, a stubborn digital gender gap, limited skills for digitally enabled industries, and inadequate regulatory and policy environments. However, in the last decade, the region has made substantial strides toward digital transformation, with hundreds of millions of people gaining access to the internet and productively utilizing a wide variety of digital services, such as mobile payments and online learning platforms. The World Bank supports countries across the SSA region in building the foundations for vibrant, safe, and inclusive digital economies and societies.

Over 160 million Africans gained broadband internet access between 2019 and 2022.

115 percent increase in internet users between 2016 and 2021 in Sub-Saharan Africa.

191 million additional individuals made or received a digital payment between 2014 and 2021.

## ➤ **Software**

Software adoption is increasingly prevalent among African companies, offering solutions for inventory management, procurement, and customer relationship management.

## ➤ **Automation**

Automation technologies are reshaping operations in industries such as manufacturing, transportation, and warehousing, leading to efficiency gains and cost savings.

## ➤ **Artificial Intelligence**

Artificial Intelligence (AI) applications are emerging in African businesses, facilitating predictive analytics, demand forecasting, and personalized customer experiences.

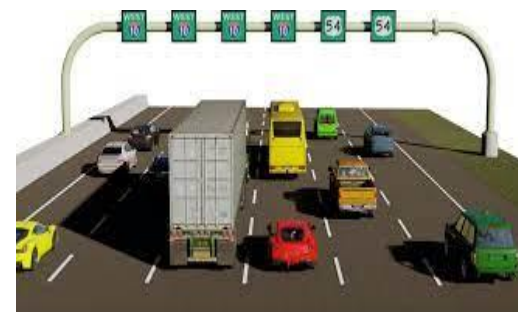


## Methodology

This study employs a combination of qualitative and quantitative research methods, including surveys, interviews, and data analysis, to examine digitization trends in African supply chain and logistics sectors

# Objective

- To analyze the current state of digitization in supply chain and logistics among companies in Africa.
- To identify challenges hindering the adoption of digitization technologies.
- To propose strategies for overcoming these challenges and enhancing digitization efforts.
- Application of AI in solving the challenges in the supply chain and logistics in Africa.



# Problems

- ❖ Limited access to technology infrastructure and internet connectivity.
- ❖ Resistance to change and cultural barriers.
- ❖ High implementation costs and resource constraints.

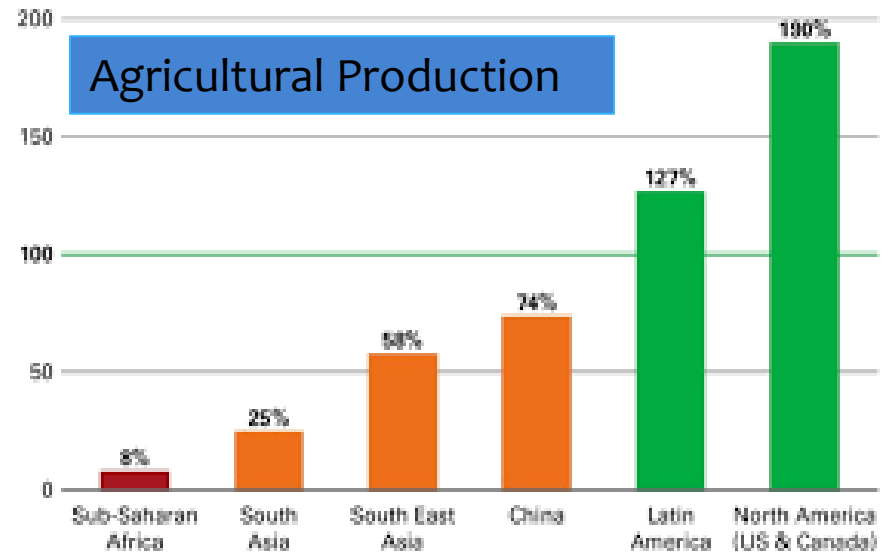
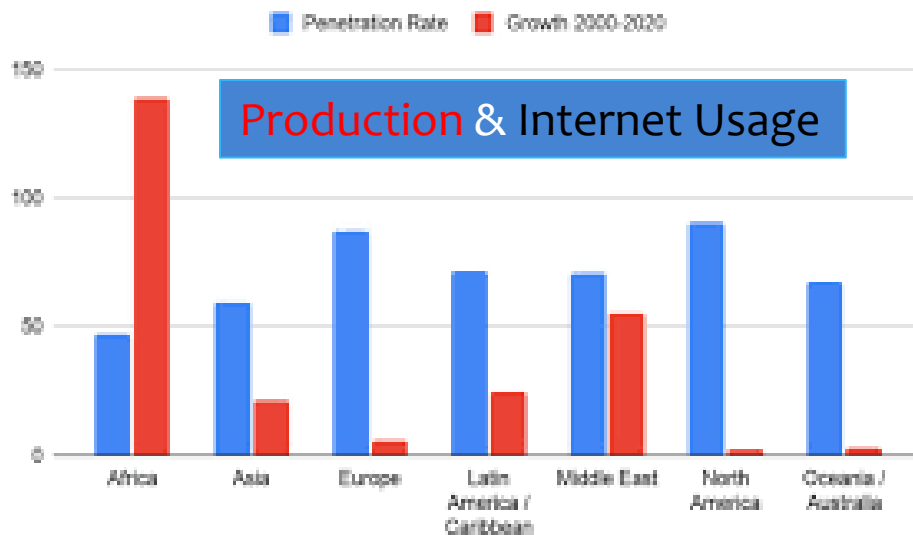




## Individuals in Sub-Saharan Africa using the Internet (Millions)



## World Internet Usage and Population Statistics 2020 Year-Q3 Estimates



# Solutions

- ✓ Investment in technology infrastructure and digital literacy programs.
- ✓ Collaboration between government, private sector, and international partners.
- ✓ Adoption of scalable and cost-effective digitization solutions.
- ✓ Building of IOT systems in the trucks and software and mobile apps to be installed on the drivers devices as well as the truck owners and the client.
- ✓ Truck owners register their tracks on the system
- ✓ Truck drivers can also register and be assigned trucks to work with.
- ✓ A logistic and supply trip is planed with the help of AI
- ✓ Any user can see the closest trip and if any space and the destination as well as the route the truck would take.
- ✓ Tracks can be assigned some products on the route path to branch and pick it up in other to fill the space in the track.
- ✓ Payment is done to the system and all the parties are sorted automatically.
- ✓ Truck is being tracked and all the parties can follow the progress of the truck.
- ✓ A mapping system with AI to help with the IOT devices in traffic detection for the truck drivers to avoid being luck down in a traffic, avoid a road with issues such as fire outbreak, flood, road accident and road collations.
- ✓ Tax is auto paid and no double taxation
- ✓ In case of vehicle breakdown, the system auto detects and seeks for help to be sent to the location of the truck.
- ✓ In case of an accident, the system also auto detect it and immediately seek for aid for the truck at the current location by auto contacting the fire commission, the closest health care and also an ambulance service provider with the GPS of the truck and the best free less traffic route to the location. And also auto fire extinguisher on.
- ✓ The AI can help in avoiding road accident by giving the speed of the closest vehicles on the map and the distance it is from the truck and also tells when overtaken is not safe.
- ✓ The system also can planned the truck maintenance and manage it strictly.
- ✓ Also make sure the driver adhere to the road traffic rules and regulations and the truck operation manual.
- ✓ Also help to prevent overloads.

# Solutions



# Solutions

## ➤ *Limitation*

Limited availability of comprehensive data on digitization initiatives in Africa. Scope focused primarily on companies in urban centers and may not fully represent rural areas.

## ➤ *Future Improvement*

- ❖ Further research on the impact of digitization on job creation and economic growth.
- ❖ Expansion of digitization initiatives to underserved regions and industries.

## ➤ *Conclusions*

Despite challenges, digitization presents significant opportunities for companies in Africa to improve efficiency, reduce costs, and enhance competitiveness in the global market.



# Thanks

*Eng. Yakubu Muhammed-jamii(EMJAY)  
yakubumammedjaamii@gmail.com*

