

# An analysis on the role of Emerging Digital Technologies on Intra-African Trade: Opportunities, Challenges, Strategic priorities and Recommendations.

By: Lola Aworanti-Ekugo

## Executive summary

This report offers a comprehensive analysis of the current state of intra-African trade and how emerging digital technologies are reshaping its landscape. By examining key trends, challenges, and opportunities, the report aims to chart a course for the future of African trade in the digital age. It provides recommendations on setting priorities, necessary reforms, and fostering partnerships that will drive sustainable economic growth across the continent.

## Introduction

Advances in digital technologies are reshaping industries worldwide, bringing transformative innovations with profound impact on the way we live, work, and trade. According to Wang “Emerging digital technologies are defined as anything from cloud computing, advanced robotics, internet of things (IoT), artificial intelligence (AI), augmented reality (AR), machine learning, drones, blockchain, sensors, etc.” (Wang, 2023). They embody a wide range of innovations, each with its own disruptive potential, transforming industries worldwide.

Global trade continues to be a cornerstone of economic prosperity. However, intra-African trade—the exchange of goods and services between African countries, institutions, and individuals—remains a critical, yet underutilized, driver of sustainable development and inclusive economic growth on the continent. In 2019, Africa accounted for only 2.8% of global trade and just 1.5% of global growth, while intra-African trade represented a mere 14.4% of total trade, compared to 73% in Europe and 52% in Asia (Afreximbank, 2020). These figures highlight the immense potential opportunities for enhancing regional integration and unlocking new economic opportunities within Africa.

The implementation of the African Continental Free Trade Area (AfCFTA), alongside the rise of digital technologies, presents a transformative opportunity to significantly advance intra-African trade. By overcoming longstanding barriers—such as inadequate infrastructure, complex regulatory environments, and fragmented markets—these technologies are expected to streamline operations across sectors and pave the way for increased and seamless trade.

A recent report from the World Trade Organization highlights the growing importance of cross-border digitally delivered services, identifying Ghana, South Africa, Morocco, Egypt, Algeria, and Kenya as key players driving this trend. These countries have seen significant expansion in digitally delivered services, contributing to the rapid rise of cross-border digital trade across the continent (Investment Times, 2024).

As the world advances, the promise of digital technologies in reducing trade costs, boosting trade opportunities, and fostering innovation are becoming even more evident. According to a study, global trade growth could increase by 2 percentage points annually by 2030 as a direct result of digital technologies, with developing

countries expected to see even higher growth rates of 2.5 percentage points annually (Bekkers, Koopman and Sabbadini, 2021).

This report delves into emerging digital technologies in trade, highlighting current trends and specific methods through which they can enhance and support intra-African trade. It examines the opportunities these technologies present, the challenges they introduce, and the strategic priorities for effectively leveraging them to propel growth across the continent.

# Key Trends in Digital Technologies Shaping Intra-African Trade

Over the past 30 years, advancements in technology and its application have played a pivotal role in shaping digital markets and platforms, fundamentally transforming how goods, services, and information are bought, sold, and exchanged.

We have seen the real life application of digital technology applications in trade make tremendous impact in areas such as Cargo tracking where after the implementation of the Regional Electronic Cargo Tracking System (RECTs), an information technology system developed in partnership with TradeMark Africa to assist in the electronic tracking of transit goods for revenue authorities of Kenya, Uganda, Rwanda, Democratic Republic of the Congo, cargo transit time reduced from 11 days to 4 days (Jato, 2018).

The application of emerging digital technologies such as AI are also on the rise with new use cases being explored. For example, machine translation powered by AI has been shown to reduce language barriers in trade, facilitating exports, especially for e-retailers.

Some of the key indicators and trends in the advancement of Digital technologies in Africa lie in the development and progress of several pillars as highlighted as follows:

## Digital Infrastructure

Digital infrastructure refers to the digital technologies that provide the foundation for information technology and operations. Some examples of digital infrastructure include: Internet, mobile phones, Data centers, Cloud services and software Operational security, user identity and data encryption APIs and integrations. (Pathak, 2024)

The penetration of mobile technology in Africa is notably high and continues to increase. Sub-Saharan Africa's mobile penetration rate was recorded at 46 percent in 2021, marking a significant rise since 2012. It is projected to experience further growth by 2025, with an estimated half of the Sub-Saharan African population expected to be subscribed to a mobile service (Taylor, 2024). Despite the high mobile penetration, there is potential for further utilization, underscoring the untapped trade opportunities in the region.

Increasingly several initiatives aimed at improving high-speed internet connectivity across African countries to drive digital transformation and economic growth have been introduced. Some examples include: Google's Project Taara in Kenya, Elon Musk's Starlink launched in Nigeria, Rwanda, Mozambique, South Africa, and expanding across more African countries. The Digital Economy Initiative for Africa (DE4A) aims to ensure that every individual, business, and government in Africa will be digitally enabled by 2030 in support of the African Union "Digital Transformation Strategy for Africa." (Worldbank, 2023).

However, the provision of affordable and accessible broadband internet access remains a significant challenge in many developing countries, particularly in Sub-Saharan Africa. Even where international broadband networks are available, large segments of the population are unable to utilize these services due to the high costs involved. (Gillwald, 2017). As of 2023, the challenge persists as a considerable portion of the population in countries like Nigeria continues to earn below \$126 per month, rendering the current costs of broadband services, such as Starlink's \$94 monthly subscription and the \$744 hardware kits, largely unattainable. The unavailability of affordable broadband access has extensive implications for the social and economic development of these regions.

## **Cross Border Payments**

The interest in cross-border payment solutions for Africa has grown substantially over the years, driven by several factors such as increased focus on intra-African trade, fintech innovation, remittances, and the AfCFTA. Efficient cross-border payment systems are critical for intra-African trade growth, leading to greater demand for payment solutions.

Companies like Flutterwave and Verto FX have expanded rapidly to cater to cross-border payments. Flutterwave, has expanded into over 30 countries while VertoFX processes over \$4 billion in payments annually and claims to reduce cross-border payment costs by 40% and transaction processing times by 30%. (VertoFX, 2024)

The commercial launch of the Pan-African Payment and Settlement System (PAPSS) in 2022 brought renewed vigour. PAPSS is a cross-border, financial market infrastructure run by the African Export Import Bank. The PAPSS allows companies in Africa to pay for intra-African trade transactions in their local currency. PAPSS is projected to reduce the costs, and accelerate the settlement and payment of, trade transactions. Afrexim has now incorporated 10 African central banks into the PAPSS and forecasts that the rest of Africa's central banks will join by 2024. The current participants include the central banks of Nigeria, Ghana, Liberia, Gambia, Guinea, Sierra Leone, Kenya, Zimbabwe, Zambia, and Djibouti. (International Trade Administration, 2023)

## **AI Readiness and Regulation Landscape**

AI is evolving and countries are deliberating on its impact and value driven use cases. In March 2024, the world's first major set of regulatory guidelines to govern AI was approved by the European Union. Interestingly, Africa currently accounts for just 2.5% of the global AI market, the potential of emerging technologies like AI is enormous. By 2030, AI alone could boost Africa's economic growth by as much as US\$2.9 trillion (AI4D Africa, 2024).

Recent reports suggest that, "The regional landscape despite Sub-Saharan Africa having the lowest average score of any world region in the index, signifying serious challenges to government AI adoption in the region, there has been real growth over the past 12 months". (Oxford Insights, 2023)

The below shows the efforts by African countries to create National AI strategies and corresponding initiatives.

<b>Country</b>	<b>Initiative</b>
<b>Kenya</b>	Established the Distributed Ledgers Technology and AI Task Force in 2018. National AI Strategy and Code of Practice in development.
<b>Mauritius</b>	Mauritius Working Group on AI established to address financial and social issues using AI.
<b>Egypt</b>	National AI Strategy focuses on technology transfers and attracting foreign investments.
<b>Nigeria</b>	Draft national AI strategy (2024-2028) with 10 principles. Nigeria AI Collective launched.
<b>South Africa</b>	No national AI regulation yet. Universities and private associations host AI conferences and events.
<b>Other African Countries</b>	Other countries that have drafted national AI strategies: Benin, Ghana, Rwanda, Senegal, Tunisia.

*(Multiple Sources)*

Recently, the African Union Executive Council also endorsed the Continental AI Strategy during its 45th Ordinary Session in Accra, Ghana, on July 18-19, 2024.

In the startup landscape, a report by Afrilabs reveals that more than 2,400 African companies are focused on AI, with 41% of them being startups. Additionally, seven countries host over 54% of the 660 AI startups surveyed, although 63% are still in early growth stages. It is projected that AI could contribute \$1.2 billion to Africa's GDP by 2030 (Afrilabs, 2023).

AI's transformative potential is increasingly being recognized across Africa, while much progress has been made, there is still significant untapped potential for AI to drive innovation and economic growth across Africa.

### **Digital Skills and Entrepreneurship**

Africa's youthful population holds immense potential for driving the continent's digital transformation if strategically nurtured. With over 400 million individuals aged 15 to 35, Africa boasts the world's youngest population, and this figure is projected to rise by 73%, compared to a modest 6% growth in the rest of the world (Natabaalo & Horváth, 2024).

This demographic advantage, if tapped into through targeted digital upskilling, can fuel Africa's rise as a global digital player. Several initiatives are working toward this goal. Nigeria's 3 Million Technical Talent (3MTT) program is focused on developing essential tech skills among its youth. Similarly, the Kenyan government's Ajira Digital Program is enabling young people to access online freelance work. Moreover, platforms like IBM's Digital-Nation Africa are offering free training in high-demand fields such as cloud computing, AI, blockchain, and data science. Grow with Google

has also played a significant role, empowering millions of individuals across the continent with digital tools and training to improve their careers and businesses. In addition, Itana and AFC have recently partnered to develop Itana, Africa's First Digital Economic Zone in Lagos, Nigeria to support global businesses and driving the continent's digital economy (Ranjan, 2024).

Africa's sustainable future in the global digital economy depends on its ability to harness the potential of its youth through continued investment in digital education and skills development.

## **Policies**

Policies targeting digital technologies at the country level have been introduced to facilitate the growth of intra-African trade, though many are still in the conceptualisation or implementation phase. The Digital Trade Protocol, part of the agreements under the African Continental Free Trade Area (AfCFTA), the Protocol aims to foster intra-African digital trade while creating a harmonized, transparent, secure, and reliable ecosystem among nations. Additionally, the Policy and Regulatory Initiative for Digital Africa (PRIDA) and the Smart Africa Initiative emphasize the creation of a Digital Single Market as a strategic goal. The African Union's Digital Transformation Strategy seeks to enhance digital infrastructure and services, thereby improving connectivity and driving innovation to support trade. The Smart Africa Initiative is focused on expanding broadband access and developing digital trade ecosystems, including digital customs systems. Furthermore, the Single African Digital Market (SADM) envisions a cohesive digital services market to facilitate the movement of digital goods and data. Many countries have also embraced National e-Government policies to bolster trade initiatives at the national level.

# Unleashing the potential of digital technologies – A Future Outlook

Africa has the potential to become a competitive global trading hub by leveraging digital technologies. By developing robust digital infrastructure, fostering innovation, and investing in skills development, African nations can enhance intra-African trade, create jobs, and fuel sustainable economic growth across the continent.

Emerging digital technologies, such as smart e-commerce platforms, AI-powered logistics solutions, and fintech innovations, will serve as catalysts to transform Africa's trade landscape. These technologies will drive efficiency, reduce costs, and streamline supply chains, making it easier for African businesses to access regional and global markets. Intra-African trade is set to benefit significantly, as digital platforms overcome traditional barriers like infrastructure gaps and regulatory complexities.

## Digital Payments and Fintech Innovation

Africa is bustling with fintech innovations, the number of African fintech startups grew 17.7% over the past two years and they raised more than \$2.7 billion in funding (Disrupt Africa, 2023). This rapid growth underscores the escalating demand for innovative financial services, particularly cross-border payments, which are crucial for facilitating intra-African trade.

Blockchain-based solutions for cross-border payments in Africa have seen significant growth, with cryptocurrencies becoming a popular alternative in areas with underdeveloped banking infrastructure. By 2021, Africa was reported to be one of the fastest-growing cryptocurrency markets in the world, with a 1,200% increase in the value of cryptocurrency transactions from 2020 to 2021. Much of this growth is driven by cross-border transfers. (Chainalysis,2021)

As the African Continental Free Trade Area (AfCFTA) continues to harmonize the continent's markets and with the growing adoption of the Pan-African Payment and Settlement System (PAPSS), we are poised to see a surge in fintech solutions that enable seamless, cost-effective cross-border transactions. These innovations will play a pivotal role in accelerating trade, delivering seamless, cost-effective cross-border transactions, reducing remittance costs, and driving economic growth. In the near future, we can expect fintech innovations to revolutionize trade by providing faster, more transparent, and scalable payment infrastructures, key to unlocking Africa's vast trade potential.

## E-commerce and Marketplaces

Digital platforms like Jumia and iSOKO are poised for significant growth, playing a pivotal role in enhancing intra-African trade and connecting the continent to global markets. Launched in 2023, TradeMark Africa's iSOKO platform (accessible via mobile, web, and USSD) is already operational in Uganda, Rwanda, Tanzania, and Burundi, with over 45,000 registered users (TradeMark Africa, 2024). By facilitating



access to market information and reducing the time constraints faced by women traders, iSOKO is helping to level the playing field for small businesses across the region. As platforms like iSOKO expand, they will reduce trade barriers, improve market transparency, and streamline logistics, enabling African businesses—especially SMEs—to scale beyond local markets. Looking ahead, digital platforms will continue to drive regional integration, creating a more connected, efficient trading ecosystem that supports the objectives of a one Africa market and unlocks the continent's vast economic potential through enhanced trade and digital inclusion.

### **Drone and Autonomous Delivery**

In regions with limited infrastructure, AI-powered drones and autonomous vehicles can significantly improve the transportation of goods, especially in remote areas. For instance, DroneDash Technologies and Aerodyne Group plan to launch small-scale commercial drone deliveries between Singapore and Malaysia, potentially marking the world's first cross-border drone delivery by late 2024. This Drone delivery method is anticipated to be four times faster than current land or sea transport and reduce carbon emissions by up to 92%, focusing on high-value shipments like electronics and medical supplies (Wong, 2024). Companies like Zipline, which already operate in several countries across Africa and other continents, could explore cross-border drone trials in Africa.

### **Autonomous Vehicles**

Africa is still in the early stages of developing policies and plans for driverless cars, or autonomous vehicles (AVs). Expectations within the industry regarding autonomous vehicles vary widely, with some expressing positivity, while others are more skeptical about the likelihood of self-driving cars achieving widespread deployment.

However, countries like South Africa are taking the lead and working on regulations for autonomous vehicles. South Africa's transport minister Barbara Creecy says "In this next decade, transport will also be revolutionised by an acceleration of digital technology. The Department of Transport will also implement new technologies in South Africa's ports and railway systems, in addition to the use of AI, self-driving cars, and delivery drones". (Malinga, 2023)

With logistics costs being a major barrier to trade within Africa, data from Argentina (ECLAC, 2021) also suggests that the adoption of autonomous trucks could reduce logistics expenses by 45%, drastically improving supply chain efficiency, lowering the cost of goods, and enhancing the competitiveness of African products on the continent. In future, this could drive greater regional integration by streamlining cross-border trade and fostering economic growth across the continent.

### **Customs Automation and Trade Facilitation**

AI could further streamline customs processes by automating tasks such as document verification and the generation of essential trade documents (e.g., certificates of origin). This would reduce time spent at borders and improve efficiency. Additionally, AI could be used to eliminate language barriers, detect

patterns of fraud, corruption, and smuggling, thereby enhancing transparency and building trust in cross-border trade.

**Other emerging technologies** such as blockchain, Internet of Things (IoT) and 3D printing present opportunities to digitalise trade further in future. Blockchain, and other forms of distributed ledger technology, can facilitate trade through 'smart contracts' - providing payment for the delivery of goods automatically on receipt and scanning in of the product at a warehouse (FAO, ICTSD 2020 ). Tools such as Internet of Things (IoT) can help monitor goods in transit, improve inventory management, and reduce delays and losses in cross-border trade. 3D printing also represents a potential revolution in global goods trade. The technology is still relatively new and, in many cases, not yet economically viable. However, it could impact global trade in goods in a big way – reducing the need to import intermediate goods and changing the shape of global trade flows. (Board of Trade, 2021)

Looking forward, we expect to see the continued expansion of digital platforms, AI use cases, enhanced cross-border payment systems, and innovations in supply chain automation, all of which will contribute to deeper economic integration and make Africa a dynamic player in the global economy.

# Challenges

Despite the rapid advancement of digital technologies and their potential to revolutionize intra-African trade, several significant challenges persist. These obstacles hinder the widespread adoption and effectiveness of these innovations across the continent, creating barriers that need to be addressed for sustainable progress. Below highlights a number of key challenges that must be addressed to unlock the full potential of digital transformation in the region.

## Infrastructure Gaps

Poor digital and physical infrastructure still hinders the full potential of digital trade across the continent, especially in remote areas. It is important to note that basic infrastructure like electricity is needed to power Digital infrastructure. The lack of reliable electricity severely constrains intra-African trade by limiting industrial capacity, raising costs, disrupting supply chains, and slowing down technological advancement. This can potentially slowdown the African Continental Free Trade Area (AfCFTA) overall progress as it creates room for an Unbalanced Regional Development and trade relationships within Africa. Addressing these will be key for unlocking the full potential of trade across the continent.

## AI Adoption

While AI offers tremendous potential, lack of data access, widespread and affordable internet access, inadequate cloud infrastructure, affordable digital tools, limited funding, regulatory barriers and AI training is essential for impact. Data Privacy and Security concerns remain a topical issue as AI systems rely on vast amounts of data. AI adoption plays a critical role in enhancing intra-African trade.

## Regulatory Fragmentation

There are several regulations in place at a country level and more now at a continent level. However, more work needs to be done as inconsistent regulatory frameworks between African countries create barriers to seamless digital transactions and trade. Implementation and tracking of existing policies.

## Digital Talent, Literacy and Skills

By 2030, it is projected that approximately 230 million jobs in Sub-Saharan Africa will require varying levels of digital skills. Currently, the region faces a significant challenge in reconciling the increasing demand for digital expertise with a growing brain drain, as skilled professionals seek more lucrative opportunities abroad. This trend is likely to escalate, potentially widening the talent gap and hindering the region's digital transformation efforts (Scott Firsing, 2024).

The full impact of this emigration on the African continent remains uncertain, yet it poses a serious threat to the region's developmental aspirations. Compounding this issue is the prevalence of digital illiteracy, particularly among small and medium

enterprises (SMEs) and informal traders, which further undermines the broader adoption of emerging technologies.

# Recommendations

To unlock the full potential of intra-African trade and build an interconnected, innovative, and inclusive continent, the following strategic recommendations are vital:

## 1. Innovation and Collaboration

**Track Digital Maturity:** Establish frameworks to assess the digital and AI readiness of African countries, partnering with organizations to monitor progress.

**National AI Strategies:** Collaborate with other African nations and international development bodies to design national AI strategies, set clear goals, and develop roadmaps.

**Continental AI Strategy:** Accelerate the African Union's deployment of a continental AI strategy, which can be used as a blueprint for member nations.

**Localized Use Cases:** Develop use cases for emerging technologies tailored to African trade needs, highlighting Africa's own digital transformation story.

**Policy Standardization:** Foster collaboration across African countries to standardize policies such as data sharing and regulatory frameworks.

**Hackathons & Pilots:** Organize continent-wide hackathons to discover innovative solutions for trade challenges and identify regions to pilot successful digital solutions, e.g., the Regional Electronic Cargo Tracking System (RECTs).

**Innovation Hubs:** Increase support for innovation hubs and incubators to foster trade-related startups.

**Encourage Public-Private Partnerships:** Strategic partnerships between governments, tech companies, financial institutions, and regional trade bodies are essential to drive innovation and overcome infrastructure and regulatory challenges.

## 2. Digital Infrastructure for Seamless Trade

**Expand High-Speed Internet:** Promote more initiatives like the World Bank's DE4A to expand affordable, high-speed internet access, enabling wider digital participation.

**Mobile Technology:** Leverage Africa's high mobile penetration to facilitate access to e-commerce platforms, digital payments, and trade tools.

**Unified Payment Systems:** Accelerate the integration of unified digital payment systems like Afreximbank's PAPSS to streamline cross-border transactions.

**Digital Identity Systems:** Develop national digital identity systems and explore region-wide solutions to formalize businesses and improve trade efficiency.

**Cybersecurity Investment:** Invest in robust cybersecurity infrastructure, policies, and insurance to safeguard digital trade.

## 3. Policy and Regulatory Support

**Harmonized Policies:** Adopt an ecosystem-wide approach to align data governance, trade, and consumer protection policies at both national and regional levels. E.g. The AfCFTA Digital Trade protocol launch and widespread adoption.

**Data Localization:** Balance cross-border data flows with strong domestic privacy safeguards to facilitate digital trade, especially for digital services.

**Consumer Protection:** Strengthen online consumer protection frameworks to boost trust and increase participation in digital markets.

**AI in Trade Agreements:** Ensure Regional Trade Agreements (RTAs) include AI provisions, supporting future digital trade growth.

**Cross-Border Digital Commerce:** Harmonize regulations for digital commerce, cybersecurity, and data protection to create a unified digital trade space through the AfCFTA.

**e-Government Services:** Digitize government services like customs, tax filings, and business registrations to reduce trade barriers and boost efficiency.

#### 4. Talent Development and Entrepreneurship

**Digital Skills Training:** Develop strategies to upskill youth in areas like coding, AI, and data analytics, building a workforce for the digital economy.

**Upskilling Programs:** Scale up programs like Andela and Tech4Dev that train workers for digital jobs to support intra-African trade.

**Gig Economy Opportunities:** Promote remote work and gig economy platforms that allow African talent to offer digital services across borders.

**Digital Entrepreneurship:** Encourage youths to start digital businesses and develop apps or fintech solutions tailored to intra-African trade needs.

**Digital Economic Zones:** Establish more Digital Economic Zones like Itana in Lagos, which supports technology and service-based businesses to scale and operate across Africa.

**Pan-African Talent Visas:** Create Pan-African talent visas for digital professionals, similar to the UK's Global Talent Visa, to attract and retain top talent across the continent.

**Strategies To Retain Digital Talent:** Implement strategies that both develop and retain digital talent within the region.

By embracing these strategies, Africa can harness the power of digital technologies to enhance intra-African trade, foster economic growth, and promote regional integration across the continent.

## Conclusion

Digital technologies are undeniably central to the future of intra-African trade and regional integration. While challenges exist, the opportunities for growth and innovation are substantial. To fully unlock their potential, a unified effort is required from all stakeholders.

Governments must prioritize investment in both physical and digital infrastructure, ensuring that stable, reliable networks are in place to support the growing digital economy. Additionally, they must work collaboratively to harmonize policies and regulatory frameworks across borders, facilitating smoother digital transactions and trade within the African Continental Free Trade Area (AfCFTA).

The private sector also plays a crucial role, as businesses need to embrace innovation and leverage emerging digital technologies to unlock new opportunities in areas like fintech, logistics, and e-commerce. International partners can contribute by supporting Africa's digital agenda through targeted investments and knowledge-

sharing initiatives that build capacity and drive innovation. Finally, Africa's youth must be at the heart of this transformation. Governments should focus on creating programs that not only develop digital skills but also create opportunities to retain this talent within the continent, reducing brain drain and ensuring that Africa's brightest minds contribute to its digital future. Through these collective efforts, Africa can position itself as a leader in the global digital economy while accelerating intra-African trade and fostering regional integration.

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