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Framework to assess the impact of the AfCFTA Protocol on Digital Trade

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Report

Framework to assess the impact of the AfCFTA Protocol on Digital Trade

Alberto Lemma

June 2024

Supporting Investment and Trade in Africa (SITA)



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Alberto Lemma is a Research Fellow at ODI.

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Acronyms

| | |
|--------|---|
| AfCFTA | African Continental Free Trade Area |
| AfDB | African Development Bank |
| AI | artificial intelligence |
| ASEAN | Association of South East Asian Nations |
| ATAF | African Tax Administration Forum |
| AU | African Union |
| CPTPP | Comprehensive and Progressive Agreement for Trans-Pacific Partnership |
| DEPA | Digital Economic Partnership Agreement |
| DSTRI | Digital Services Trade Restrictiveness Index |
| EU | European Union |
| FDI | foreign direct investment |
| GDP | gross domestic product |
| ICT | information, communication and technology |
| IMF | International Monetary Fund |
| IT | information technology |
| MSMEs | micro, small and medium-sized enterprises |
| OECD | Organisation for Economic Co-operation and Development |
| PAPSS | Pan-African Payment and Settlement System |
| RTA | regional trade agreement |
| SMEs | small and medium-sized enterprises |
| TPP | Trans-Pacific Partnership |
| UN | United Nations |
| UNCTAD | United Nations Conference on Trade and Development |
| UNECA | United Nations Economic Commission for Africa |
| US | United States |
| USMCA | US–Mexico–Canada Agreement |
| VAT | value-added tax |
| WTO | World Trade Organization |

Executive summary

The African Continental Free Trade Area (AfCFTA) Protocol on Digital Trade represents a significant advancement in Africa's journey towards economic integration and digital transformation. This report, produced under the Supporting Trade and Investment in Africa programme funded by the UK Government, provides a comprehensive framework to assess the impact of this Protocol. The Protocol aims to regulate and facilitate digital transactions, encompassing goods, services and data, across African nations. It addresses critical elements such as data localisation, transnational data flow, cybersecurity, data privacy, electronic financial operations and digital payment systems, forming a structured approach for member states to use to align their national policies with regional and continental standards.

The Protocol is set to reshape the economic landscape of Africa by fostering a unified digital market. It seeks to overcome fragmentation and barriers that have long hindered cross-border trade and economic collaboration. The emphasis on harmonising regulations, ensuring data protection and facilitating digital transactions opens unprecedented opportunities for businesses, especially small and medium-sized enterprises and entrepreneurs. Enhanced connectivity and reduced trade barriers are expected to spur innovation, attract investment and create jobs, driving economic growth and development across the continent.

Digital trade in Africa is at a critical juncture. Despite its significant potential, the continent lags in digital trade compared with other regions. The Protocol aims to bridge this gap by promoting digital inclusion and reducing the digital divide among African countries. It seeks to enhance the continent's digital infrastructure, improve cybersecurity measures and ensure compliance with data protection laws. It also emphasises the need for robust intellectual property rights protection and the ethical use of emerging technologies.

The economic implications of the Protocol are profound. It is anticipated to give a significant boost to intra-African trade, which is currently estimated at just 18% of total African trade. By facilitating digital trade, it will be able to contribute billions to the continent's gross domestic product (GDP) and create millions of jobs. The digital economy, bolstered by the Protocol, is expected to drive growth, innovation and competitiveness, positioning Africa as a significant player in the global digital marketplace.

Measuring the economic impacts of the AfCFTA Protocol on Digital Trade involves evaluating several key areas: economic growth, trade cost reduction, e-commerce growth, digital infrastructure development, cybersecurity and data protection compliance, and the adoption of emerging technologies. Participation in digital trade agreements like the AfCFTA can lead to significant economic benefits, including increased GDP, enhanced trade flows and job creation. Studies indicate that a 1% increase in digital trade could lead to an approximately 1.044% increase in GDP per capita. Additionally, digital trade agreements have been shown to reduce trade costs significantly, enhance e-commerce growth and necessitate the development of digital infrastructure.

The Protocol's potential impact on cybersecurity and data protection is also crucial. By establishing stringent cybersecurity measures and promoting the ethical use of emerging technologies, it aims to create a secure environment for digital trade. This is essential for building consumer trust and ensuring the long-term sustainability of the digital economy.

Furthermore, the Protocol addresses the social and environmental impacts of digital trade. It highlights the potential for digital trade to alleviate poverty, empower women and promote environmental sustainability. By facilitating digital inclusion, the Protocol aims to provide equal opportunities for all segments of the population, particularly women, youth and marginalised communities.

The Protocol also emphasises the importance of international cooperation and support from governments across the continent. Enhancing digital infrastructure, improving internet penetration and fostering an environment conducive to digital innovation are critical for its successful implementation. Initiatives like the Pan-African Payment and Settlement System and the Programme for Infrastructure Development in Africa are essential to supporting continental infrastructure development and ensuring the smooth operation of digital transactions.

In conclusion, the AfCFTA Protocol on Digital Trade represents a landmark step towards a unified and prosperous digital economy in Africa. It offers a vision of an interconnected, innovative and inclusive continent, harnessing the power of digital technology for sustainable development. However, realising this vision requires addressing existing challenges, building capacities and ensuring equitable access to digital opportunities. The Protocol is more than a trade agreement; it is a blueprint for the future, paving the way for a digitally integrated and economically vibrant Africa. Successful implementation will unlock the continent's digital potential, fostering economic integration, innovation and inclusive growth, ultimately contributing to broader economic and social advancement for all Africans.

1 Introduction

The ongoing discussions surrounding the Protocol on Digital Trade ('the Protocol') under the African Continental Free Trade Area (AfCFTA) are centred on developing a comprehensive framework to regulate and facilitate digital transactions – encompassing goods, services and data – across African nations. The Protocol aims to address a broad spectrum of elements crucial for digital trade. These include, but are not limited to, the management and exchange of digital goods and services (commonly known as e-commerce), as well as foundational components that are essential for the smooth operation of digital transactions. Among these foundational components are rules and regulations concerning data localisation, the transnational flow of data, measures for cybersecurity and the protection of data privacy. Additionally, the Protocol is set to encompass ancillary yet vital aspects such as electronic financial operations and digital payment systems.

As the Protocol eventually comes into effect, numerous AfCFTA member states will embark on a journey of integrating this new digital trade framework into their national policies. This integration process, often referred to as 'domestication,' involves aligning local laws and regulations with the regional and continental standards set by the AfCFTA. In undertaking this process, member states will have access to a well-established methodology and a comprehensive framework. This resource will serve as a guiding blueprint, offering a structured approach for countries to effectively adapt and apply the provisions of the Protocol within their unique national contexts. The eventual aim is to create a harmonised digital trade environment across the continent, facilitating smoother and more efficient digital transactions across borders.

This report seeks to answer two primary questions: What are the main commitments and areas of regulatory change in a country when it takes commitments as part of the AfCFTA Protocol on Digital Trade? And how do these areas affect a country in economic terms? To answer these questions, the report first describes the components of digital trade, including its definition, scope and its current state in Africa. This overview sets the stage for a deeper understanding of the potential and challenges of digital trade within the continent.

Following this, the report looks at the draft agreement areas of the Protocol, outlining what commitments and expected changes in regulatory landscapes across member states it is predicted to enable. A critical aspect of this analysis lies in enabling an understanding of

how these commitments could transform the digital trade environment in Africa. This includes examining the potential impacts on cross-border data flow, cybersecurity, data protection, electronic financial operations and digital payment systems. The report also explores how these changes are likely to influence economic growth, innovation, job creation and the overall competitiveness of African economies in the global digital marketplace.

Finally, the report presents a comprehensive framework for assessing the potential economic impacts of the Protocol. This framework not only quantifies the estimated direct economic benefits but also considers the broader socioeconomic implications, such as the potential for reducing the digital divide and fostering inclusive growth. By doing so, the report aims to provide policy-makers, businesses and other stakeholders with valuable insights into how to maximise the benefits of the potential Protocol, ensuring its implementation leads to sustainable and equitable economic development across the continent.

The AfCFTA Protocol on Digital Trade represents a landmark step in the journey towards a unified and prosperous digital economy in Africa. This report aims to provide a thorough understanding of the Protocol's implications, guiding member states in harnessing its full potential for economic transformation and regional integration.

2 Digital trade in Africa

The Secretary-General of the (AfCFTA) Secretariat has stated that digital trade (see Box 1 for a definition) is the next big thing in Africa (Ighobor, 2020). It now permeates every aspect of trade, from agriculture to clothing, from manufactured goods to business services. However, there is now a risk of exacerbating the digital divide among and within African countries, while the continent itself already lags behind in terms of digital trade from other regions across the world.

Box 1 What is digital trade?

Digital trade encompasses a broad spectrum of activities and concepts. Primarily, it involves digitally enabled transactions in the trade of goods and services, which include interactions among consumers, firms and governments, as well as the movement of data (López-González and Jouanjean, 2017). It is characterised by its reliance on digital technologies and data, and often involves government guidance (Ma et al., 2019).

Digital trade also represents an area of trade law where international rule-making is actively occurring, as seen in agreements like the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the US–Mexico–Canada Agreement (USMCA) (Burri, 2020). Furthermore, it involves technology-enabled commerce in various sectors like speech, finance, energy and transportation, necessitating cross-border regulatory cooperation to address emerging challenges (Ahmed, 2019).

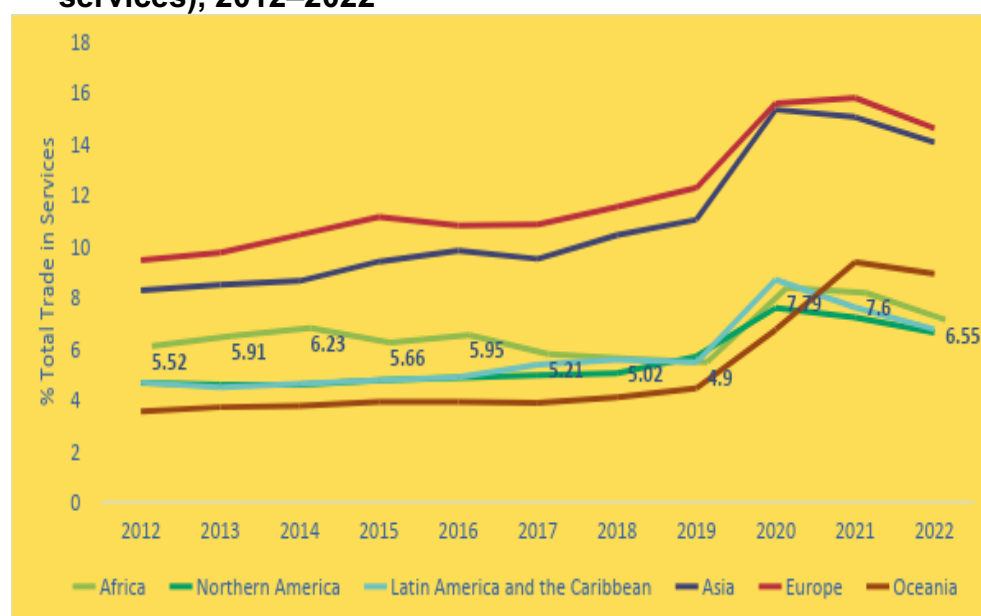
Digital trade represents a rapidly developing sector influenced by advancements in digital technology and economic globalisation, involving a wide array of digitally enabled transactions and governed by evolving international rules.

Such a trend is evident from data illustrating trade values in information, communication and technology (ICT) services (as a percentage of total trade in services). From 2012, Africa started with lower trade values in ICT services compared with regions like Asia and Northern America (see Figure 1). There was a slight fluctuation in trade values during these years, with a peak in 2014 followed by a slight decrease in 2015. From 2016 to 2019, Africa's trade values showed relatively small changes, hovering around a consistent

range. This period indicates a phase of stability in ICT trade for Africa. A significant spike in trade value is observed in 2020. This may be attributed to a variety of factors, potentially including increased digital adoption or external global factors (like the COVID-19 pandemic accelerating digital transformation). After the peak in 2020, there is a slight reduction in 2021 and 2022, possibly indicating a normalisation after the exceptional circumstances of the previous year.

In terms of comparing with other regions, Northern America and Asia consistently outperformed Africa in terms of trade values throughout the period. Asia showed a strong and steady growth trend, maintaining its lead. Latin America and the Caribbean, similarly to Africa, had lower trade values but, unlike Africa, it showed a more consistent upward trend throughout the period.

Figure 1 Trade in ICT services (as a % of total trade in services), 2012–2022



Source: UNCTAD (2023)

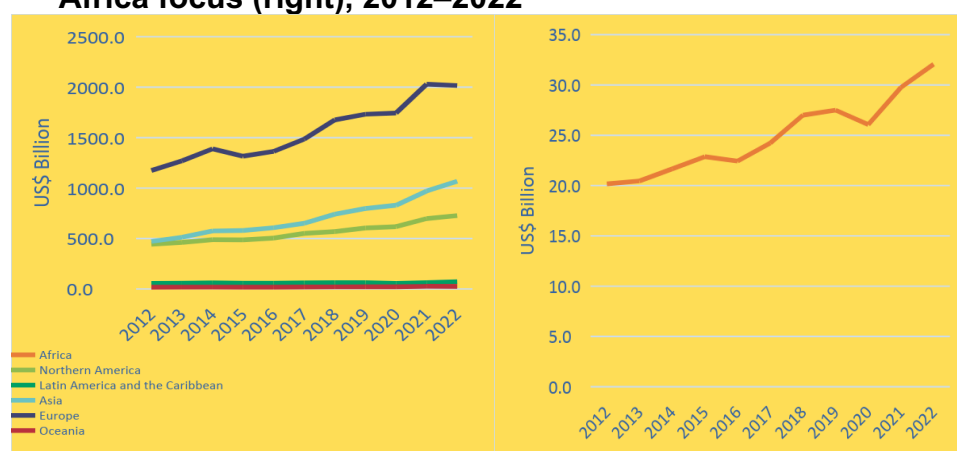
Africa's digitally deliverable services market (see Figure 2) saw a general upward trend over the given period.¹ Starting at \$16.76 billion in 2010, it had grown to \$32.07 billion by 2022. The growth was steady but shows some fluctuation, with a slight dip in 2016 before recovering and continuing to rise. Africa's digitally deliverable services market is relatively small compared with that of regions like Europe, Asia and Northern America. However, its growth trend indicates an increasing adoption of digital services. Over the period, its average annual growth rate was 4.9%, faster than that of Latin America (3%) and Oceania (3.6%).

¹ Services that are digitally deliverable are those that can be provided remotely through computer networks. It should be recognised that, just because a service can be delivered digitally, this does not ensure that it will be when it comes to international trade. Consequently, the potential for trade in digitally deliverable services exceeds the actual volume of services that are traded digitally.

The fluctuations in Africa's growth could owe to various factors, such as economic volatility, digital infrastructure development and changes in consumer behaviour. Africa's growth indicates potential for further development, especially as the continent continues to improve its digital infrastructure, policy environment and educational landscape to support the digital economy.

Given the overall global trend towards digitalisation, Africa's digitally deliverable services market has significant room for growth. The relatively lower base means that Africa may experience higher growth rates in the future as it leverages technology to overcome traditional barriers to service delivery.

Figure 2 Digitally deliverable services by region (left) and Africa focus (right), 2012–2022



Source: UNCTAD (2023)

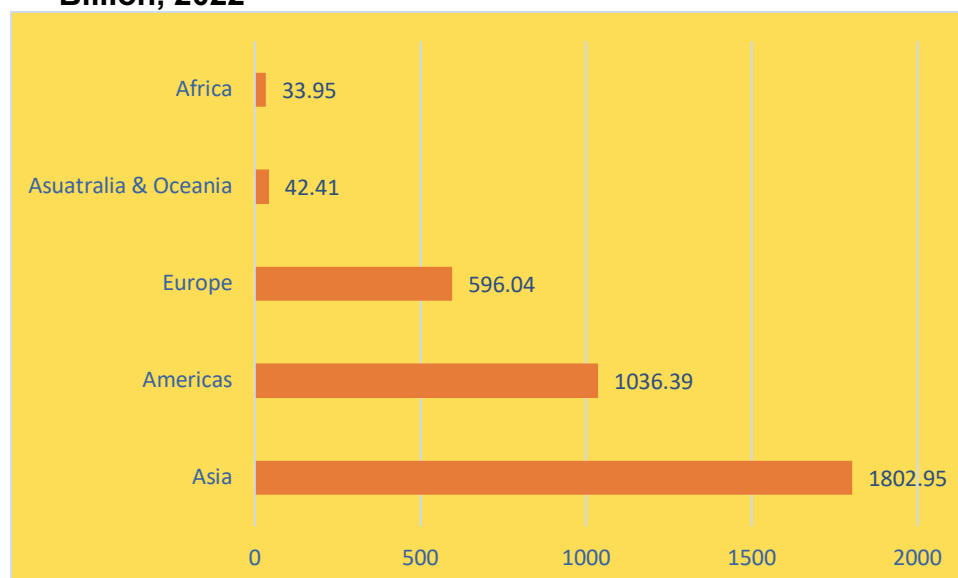
Figure 3 presents retail e-commerce revenues in billions of US dollars for various regions in 2022. Africa shows revenues of \$33.95 billion. This figure is the lowest among the regions. Many African countries are just beginning to experience e-commerce growth because of increasing internet access and mobile phone usage. When comparing Africa with other regions, there is a significant disparity in e-commerce sales.

The expansion of digital trade in Africa faces several constraints. Key challenges include inefficiencies and high costs in postal services and transport, complicating e-commerce. Taxation issues, such as foreign taxation, double taxation and complex VAT regulations, create further barriers. The lack of reliable digital payment systems impedes online transactions. Limited awareness of e-commerce regulations at national and regional levels hinders compliance and growth. Additionally, complex customs duties and procedures make cross-border e-commerce challenging. Finally, the absence of robust consumer protection online and issues related to digital trust restrict the uptake of e-commerce (Banga et al., 2021).

However, this may also indicate a greater opportunity for growth. The lower baseline suggests that, as infrastructure improves and internet access becomes more widespread, there is potential for a significant

increase in e-commerce activity in the future. Furthermore, this region could benefit from observing the maturation of e-commerce markets in other regions and adopting best practices faster than those regions were able to during their growth phases.

Figure 3 Global retail e-commerce sales by region, US\$ Billion, 2022²



Source: Statista (2022)

Recent trends show an increase in taxes and tariffs on digital transactions, particularly impacting mobile money services. Kenya, for instance, has seen small businesses reverting to cash as a result of heightened turnover tax rates and strict compliance measures by the Kenyan Revenue Authority (WeeTracker.com, 2023). Tanzania faces similar challenges, with increased mobile money taxes leading to a decline in usage, particularly among vulnerable and low-income groups (GSMA, 2023). This pattern is also observed in Nigeria and Uganda, where heavy taxes on mobile transactions have been criticised. These developments threaten progress in financial inclusion and digital financial services, as they discourage digital transactions and may encourage unregistered cash transactions.

Cross-border digital transaction taxes in Africa are also experiencing significant transformations, with various countries implementing unique regulatory approaches. These changes reflect the continent's efforts to adapt to the evolving digital economy, especially in taxation and financial transactions.

In Ghana, for example, the government implemented a tax on electronic transactions in May 2022, initially set at 1.75% but later reduced to 1.5%, and then to 1%. This tax aimed to widen Ghana's tax net and increase its tax-to-gross domestic product (GDP) ratio.

² Covers goods or services purchased online through any device, without considering the payment or delivery methods used; does not cover expenses for travel and event tickets, bills, taxes or money transfers, nor does it include sales from food services and drinking establishments, or revenue from gambling and the sale of restricted substances (Statista, 2022).

However, critics argued that it might hinder the development of e-commerce and disproportionately affect rural populations dependent on remittances (Oxford Business Group, 2023). Similarly, Cameroon introduced a 0.2% tax on mobile money transactions in January 2022, and Tanzania implemented a 0.1% minimum tax in July 2021, later reducing it by 43% after protests. Uganda also introduced a 0.5% levy on mobile money transactions in July 2018, which led to wealthier and urban Ugandans switching to agent banking, indicating a regressive impact on the economy (ibid.).

The African Development Bank (AfDB) highlights that cross-border banking is a crucial aspect of Africa's financial landscape, essential for facilitating transactions and supporting business growth. However, businesses in Africa face challenges in cross-border payment landscapes, such as high transaction costs, currency exchange issues and regulatory complexities. These factors make cross-border payments expensive and inefficient, impacting businesses reliant on international transactions (Olaonipekun, 2023).

The African Tax Administration Forum (ATAF) has been working on a technical paper to help African jurisdictions implement the International VAT Guidelines of the Organisation for Economic Co-operation and Development (OECD). This aims to facilitate consistency in VAT rules across jurisdictions, thus enhancing voluntary compliance and addressing multijurisdictional compliance challenges for businesses. ATAF has provided technical assistance to various African countries, including Ghana, Nigeria, Rwanda and Zimbabwe, with regard to implementing effective VAT compliance regimes for cross-border supplies in the digital economy (ATAF, 2023).

Digital payments in Africa, encompassing both domestic and cross-border transactions, have been growing, generating around \$24 billion in revenue in 2020. Experts predict that Africa's domestic e-payments sector will grow by approximately 20% annually, reaching over \$40 billion by 2025. This growth is attributed to economic growth, favourable demographics, technological innovation and developments in payment infrastructure (Ndwaru, 2023).

Finally, fintechs are playing a significant role in transforming cross-border payments in Africa, addressing the high costs and inefficiencies of current systems. With estimates suggesting that around 30 million Africans live outside their birth country, remittances into sub-Saharan Africa alone amount to around \$47 billion. The success of mobile phone-based money transfer services indicates a market demand for safe and cost-effective ways of transferring money across Africa (Zawya, 2023).

Digital development requires intersecting policy interventions, international cooperation and support from governments across the continent (Tralac, 2023). In addition, there is a need to digitise customs capabilities to make them seamless across the continent (Ighobor, 2020). A recent report by Lemma et al. (2022) outlines

significant challenges in digital trade across Africa, such as limited internet access, underdeveloped financial systems and poor data governance. It highlights the AfCFTA Protocol on Digital Trade as a key opportunity for enhancing continental integration and boosting the digital economy through aligning domestic and regional policies with global best practices. Diverse digital trade landscapes are observed in several African countries, with South Africa leading in legal frameworks and connectivity, Nigeria's tech sector thriving despite high internet costs, Kenya advancing in connectivity and mobile money and Ghana progressing in e-commerce legislation. E-commerce and digital trade are recognised as vital for economic growth, impacting GDP and job creation. The report recommends harmonising digital trade policies and regulations and enhancing consumer protection, cybersecurity and data protection.

Digital trade can be a significant driver of economic growth for developing countries. A recent review of the impact of COVID-19 on trade throughout Commonwealth member countries (including a significant number of African states) found that the pandemic had caused a sharp decline in global trade in 2020 but that Commonwealth countries were more resilient than the rest of the world thanks to their diversified export markets and preferential access to each other's markets. However, digital trade has emerged as a key driver of economic recovery and transformation, especially for small and vulnerable economies. The Commonwealth countries have a comparative advantage in digital trade – but they need to address the digital divide and enhance their regulatory frameworks to harness its full potential (Commonwealth Secretariat, 2021).

3 Key digital trade facilitation and regulatory change commitments of the AfCFTA draft Protocol

In February 2020, the African Union (AU) Heads of State and Government Assembly incorporated e-commerce into the AfCFTA, expanding its scope to encompass a broader range of digital trade. This expansion highlights the escalating significance of e-commerce and digital trade in broadening market access and reach, contributing to increased trade and reduced overall trade transaction costs. These costs are lowered by diminishing asymmetries in information and expenses related to communication, information, transactions, and search and matching activities. This evolution aids in integrating firms into value chains and encourages the adoption of innovative technologies (UNCTAD, 2017; UNECA et al., 2019). As of February 2024, the AfCFTA has provided a draft of the Protocol on Digital Trade (AFCFTA Secretariat, 2024).

The draft Protocol sets forth a comprehensive framework aimed at fostering an integrated and robust digital economy across the African continent. This outlines a series of key commitments aimed at implementing comprehensive digital trade facilitation measures and regulatory changes that member states are expected to adopt.

The following lists the commitments that focus on **digital trade facilitation** by streamlining and harmonising digital trade processes, developing common standards and regulations; enhancing digital infrastructure; promoting inclusive digital participation; supporting micro, small and medium-sized enterprises (MSMEs); and ensuring the ethical and secure use of emerging technologies.

- 1 Digital trade facilitation:** Member states commit to simplifying and harmonising digital trade processes, including through the establishment of digital customs procedures and trade documentation. This leads to more efficient cross-border transactions and sets the foundation for harmonisation and efficiency in digital trade. Specific measures include recognising electronic documents and trust services, such as electronic signatures and electronic invoicing, and implementing laws that

support paperless trading and electronic contracts. By streamlining licensing procedures related to logistics services and ensuring regulatory authorities apply these procedures transparently and non-discriminatorily, member states can significantly enhance the efficiency of cross-border digital transactions.

- 2 Harmonisation of digital trade regulations:** Building on the facilitation of digital trade, member states will align regulations concerning various aspects of digital trade to maximise efficiency and standardisation. This includes creating predictable and transparent harmonised rules and common principles for digital trade, which are essential for building a cohesive digital market. Developing common standards for digital products ensures non-discrimination against digital products created or produced within member states, fostering a fair and competitive digital marketplace. Enhanced cooperation among member states on digital trade matters, including promoting the use of open standards, enables interoperability of frameworks and systems necessary for seamless cross-border digital transactions. This harmonisation is critical for maximising the benefits of digital trade and making it more efficient and standardised.
- 3 Digital infrastructure development:** Member states commit to promoting investment in digital infrastructure, ensuring interoperability and interconnectivity between different digital infrastructures among member states. Encouraging the development of regional data centres, cloud systems and network infrastructure is essential for addressing infrastructure constraints and achieving optimal utilisation of available capacity. By providing an enabling regulatory environment to enhance universal access and support participation in digital trade, member states can promote continuous development and affordability of broadband and technology devices and services.
- 4 Digital inclusion:** To promote digital inclusion, member states will facilitate the participation of women, youth, indigenous peoples, rural and local communities, persons with disabilities and other underrepresented groups in digital trade. This includes improving digital skills, literacy and access to online business tools. By sharing experiences and best practices, member states can identify and address barriers to accessing digital trade opportunities and enhance the overall digital literacy of these groups. Participation in regional and multilateral fora will further promote digital inclusion and help improve cross-border connectivity and interoperability.
- 5 Support for MSMEs:** Member states will facilitate the meaningful participation of MSMEs in digital trade by sharing information and best practices to improve their participation and capabilities. Promoting the participation of MSMEs in online platforms and other mechanisms that support them in connecting with regional

and international suppliers, buyers and business partners is crucial. Providing incentives for MSMEs in digital trade, supporting the development of start-ups and facilitating access to logistics and supply chain facilities will help strengthen local capabilities and promote the growth of MSMEs in the digital economy.

- 6 Regulation of emerging technologies:** Member states commit to facilitating the adoption and regulation of emerging and advanced technologies subject to their legitimate public policy objectives and essential security interests. Developing governance frameworks for the ethical, trusted, safe and responsible use of these technologies is crucial. By promoting collaboration and cooperation on emerging technologies, member states can ensure these technologies are used in a way that supports digital trade and economic growth while safeguarding public interests.

The draft Protocol also includes a number of commitments aimed at **regulatory changes**. By establishing clear and consistent rules for digital trade, it aims to facilitate efficient cross-border transactions, protect personal data, ensure cybersecurity and foster consumer trust. Additionally, the Protocol emphasises the importance of transparency, cooperation and capacity-building among member states to create a cohesive and thriving digital market in Africa. The following are the proposed regulatory changes:

- 1 Market access and treatment of digital products:** Member states will adopt rules of origin for digital products and eliminate customs duties on electronically transmitted digital products originating from other member states. This ensures that digital products can move freely across borders without being subject to additional tariffs, fostering a more integrated digital market within the AfCFTA.
- 2 Facilitation of digital trade:** To support digital trade, member states will recognise electronic documents and trust services such as electronic signatures and electronic invoicing. Implementing laws that support paperless trading and electronic contracts will further enhance the efficiency of cross-border digital transactions, making digital trade processes smoother and more reliable.
- 3 Data governance:** Member states will allow cross-border data transfers with proper regulations to protect personal data. Developing a legal framework for personal data protection is essential to ensure that personal data is handled securely and in compliance with international standards. Avoiding mandatory data localisation requirements, unless necessary for public policy or security reasons, will support the free flow of data, which is crucial for digital trade.
- 4 Cybersecurity:** To ensure the security of digital trade, member states will establish measures to combat cybercrime and promote cybersecurity. By building capacities and promoting collaboration

among member states in cybersecurity, countries can better protect their digital infrastructure and ensure a secure environment for digital trade.

- 5 Consumer protection:** Member states will implement laws to protect consumers from misleading, fraudulent and deceptive commercial activities in digital trade. Ensuring that consumers have the right to return and refund defective goods and services is critical for building consumer trust in digital trade. Cooperation on consumer protection matters will further enhance the protection of consumers engaged in digital transactions.
- 6 Digital payments and financial technology:** Member states will promote the interoperability of digital payment systems and develop safe, secure and accessible cross-border digital payment solutions. This will facilitate smoother and more efficient digital transactions, supporting the growth of digital trade across the continent.
- 7 Transparency and cooperation:** To ensure transparency and cooperation, member states will publish and make available relevant laws, regulations and trade documents. Notifying other member states of any changes to laws or regulations affecting digital trade and cooperating in areas such as personal data protection, cross-border data transfers and consumer protection will help maintain a transparent and collaborative environment for digital trade.
- 8 Technical assistance and capacity-building:** Member states will provide support to enhance the capacity of other member states in digital trade. Facilitating the implementation of the Protocol through technical assistance and capacity-building efforts is essential for ensuring that all member states can effectively participate in and benefit from digital trade within the AfCFTA framework.

4 Potential implications of the Protocol for African economic integration

The potential increase in digital trade volume within a trading bloc like the AfCFTA that could be facilitated by the Protocol on Digital Trade, particularly when paired with the growth of secure servers and internet population, could have significant positive economic impacts. Research by Kovtoniuk et al. (2021) explores how these factors influence digital trade. Key aspects include the importance of secure servers for safe transactions and a large internet population for a vibrant digital economy. Joining a trading bloc typically leads to harmonised trade policies and improved market access, facilitating digital trade. This increase in digital trade volume fosters economic growth, job creation, innovation in the digital sector, more efficient global supply chains and enhanced global market competitiveness for businesses. Based on historical data on the impact of similar trade deals, the key provisions set out in the Protocol could potentially double intra-regional trade and increase real income in member countries by 7% (Maliszewska et al., 2020), contributing significantly to poverty reduction and closing gender wage gaps.

Work by Banga et al. (2021) attempts to understand what the Protocol would need to include from other, similar, best practice South–South trade agreements. The report analyses digital trade provisions in existing South–South trade agreements to find that only 32% of such agreements have provisions on e-commerce, and most of them are soft or mixed commitments rather than hard or binding obligations. The most common digital trade provisions are related to data protection and privacy, electronic trade facilitation and consumer protection. The report thus identifies four priority key commitment areas for the AfCFTA Protocol: data protection and privacy, disciplines on cross-border data flows and data storage, electronic trade facilitation and digital business taxation.

The draft Protocol addresses these four key areas comprehensively. It includes robust measures for data protection and privacy, ensuring that personal data is handled securely and in compliance with international standards. The Protocol supports cross-border data transfers with proper regulations, avoiding unnecessary data localisation requirements, which addresses disciplines on cross-

border data flows and data storage. Furthermore, it emphasises electronic trade facilitation by simplifying and harmonising digital trade processes, recognising electronic documents and trust services, and supporting paperless trading and electronic contracts. While digital business taxation is not explicitly detailed, the Protocol's focus on creating a predictable and transparent digital trade environment encompasses considerations for fair and standardised taxation. The Protocol's comprehensive commitments to consumer protection, cybersecurity, intellectual property rights, supporting small and medium-sized enterprises (SMEs), digital inclusion and the regulation of emerging technologies ensure a holistic approach to fostering a secure and efficient digital trade environment across Africa.

The Protocol establishes a framework for aligning domestic and regional policies, drawing inspiration from global best practices in digital trade agreements. The provisions identified in the Protocol should, in theory, catalyse growth and facilitate continental integration through the expansion of a digital economy in Africa (Lemma et al., 2022). The draft Protocol commitment now also ensures there is a strong potential for governments to regulate both formal and informal cross-border trade more effectively and introduce harmonised cross-border digital trade tax policies. These are key policy areas that are likely to facilitate trade, expand the tax base and increase tax revenues.

The need to improve internet penetration and digital infrastructure across the continent is acute, as these are major constraints to the expansion of intra-African digital trade and e-commerce. These challenges are further compounded by logistical issues, access to financial systems and concerns related to data management and governance. Significant investment in ICT infrastructure and the facilitation of cross-border electronic transactions is essential for nurturing the digital economy (UNECA, 2020a). If left unaddressed, these issues could potentially undermine the positive impacts of the Protocol.

While the Protocol is instrumental in promoting a unified digital market across Africa, it may not directly address challenges related to internet penetration and digital infrastructure development. The Protocol focuses primarily on creating a conducive environment for digital trade through regulatory harmonisation, digital security enhancement and e-commerce facilitation. The critical tasks of improving internet connectivity and building robust digital infrastructure fall mainly to national governments and lie outside the direct scope of the Protocol. However, increased cooperation between governments, particularly aimed at promoting investments in cross-border digital infrastructure, would bolster the potential positive economic impacts of the Protocol.

Ensuring increased digital infrastructure development across the continent, in tandem with the Protocol itself, will be crucial for fostering digital trade. The COVID-19 pandemic has underscored the urgent need for investment in quality and sustainable infrastructure to support various societal and economic functions, including remote working and learning. Attracting private investment in infrastructure projects requires an emphasis on good governance and capacity-building. Initiatives like the Programme for Infrastructure Development in Africa support continental infrastructure development with a focus on inclusivity, sustainability and digitalisation (UNECA, 2020b).

The impact of the Protocol could be bolstered by ensuring the adoption of the Pan-African Payment and Settlement System (PAPSS) by African nations. The Protocol and PAPSS are integrally connected in their mutual aim to enhance economic integration and trade efficiency across Africa. PAPSS serves as a critical enabler for the Protocol by providing a payment infrastructure that simplifies cross-border transactions within the continent (AU, 2021). This system is particularly important for facilitating digital trade as it allows for transactions in local currencies, reducing reliance on foreign currencies and easing the process of trade (UNECA, 2020c). Moreover, one of the significant challenges in African trade relates to the high cost and delays associated with cross-border payments, often because of the need for currency conversion (IMF, 2019). PAPSS addresses this issue by enabling direct transactions in local currencies, which can substantially reduce costs and processing times, thereby making trade under the AfCFTA more efficient and appealing (African Export-Import Bank, 2021).

In terms of digital integration, the final version of the AfCFTA digital trade protocol could emphasise leveraging technology to streamline trade processes. PAPSS is one such key element of this strategy, functioning as an electronic payment platform that integrates different national payment systems across Africa (Maliszewska et al., 2020). This digital integration is crucial for achieving the broader goals of the AfCFTA in terms of trade facilitation and economic integration.

Both PAPSS and the AfCFTA Protocol, together, would be instrumental in boosting intra-African trade. By simplifying and securing payment processes, PAPSS can encourage more businesses, including SMEs, to engage in cross-border trade, thus supporting the AfCFTA's objective of increasing intra-African trade (UNCTAD, 2021). Furthermore, PAPSS plays a role in financial inclusion, a vital aspect of economic development in Africa, by making cross-border payments more accessible and straightforward (AfDB, 2020).

Overall, the commitments and regulatory changes outlined under the draft AfCFTA Protocol are designed to create a more integrated, efficient and secure digital trade environment, which can stimulate

economic growth, innovation and development in member states. However, while the Protocol represents a significant step towards digital integration in Africa, it may not directly address the foundational issues of internet penetration and digital infrastructure development. Addressing these challenges will also be crucial for the successful implementation of the AfCFTA and requires dedicated efforts from national governments and international collaborations.

5 Measuring the economic impacts of potential Protocol commitments

5.1 Economic growth

Participation in digital trade agreements has significant impacts on economic growth, with various studies highlighting quantitative aspects of this impact. For instance, Liang et al. (2022) identify that engagement in such agreements enhances a country's position in the global value chain of producer services, a critical factor in economic growth. Similarly, Elms (2022) observes that digital trade boosts productivity and lowers trade costs, thereby contributing to economic development. These contributions, while significant, do not provide specific numerical data but rather outline a general positive trend.

In Africa, the interaction between digital trade agreements and the digital economy has been specifically noted for its growth-enhancing effects. Abendin and Duan (2021) discuss how this synergy contributes to economic growth, although without providing explicit numerical growth rates. Meanwhile, the Digital Economic Partnership Agreement (DEPA) offers broader benefits, including mitigating limitations on domestic policy space in critical areas like privacy and innovation (Fay and Ciuriak, 2021). This is more of a qualitative assessment than a quantifiable measure of economic growth.

Moreover, increases in secure servers and internet population positively influence the growth of digital trade, with the US experiencing notable economic effects. Kovtoniuk et al. (2021) highlight this trend, though without quantifying the precise economic impact. Burri (2015) notes the significant role of digital goods and services as economic engines but, again, does not provide specific economic growth figures. In the context of 'Belt and Road' countries, Zhang et al. (2022) find that the digital economy significantly boosts economic growth by promoting industrial structure upgrading, total employment and employment restructuring. The study does not detail exact quantitative impact on economic growth rates, however.

Overall, while these studies consistently affirm the positive impact of participation in digital trade agreements on economic growth, they more often provide qualitative insights than specific quantitative data. This suggests a trend whereby the positive influence of digital trade

on economic growth is recognised but the precise magnitude of this impact varies and is often not quantified in detail in the cited studies.

Economic indicators: Track broader economic indicators like GDP growth, job creation in the digital sector and performance of digital industries. The following indicators provide insights into different aspects of economic performance and how digital trade integration influences them:

- 1 **GDP growth rate:** indicates overall economic health and the impact of digital trade on national income
- 2 **foreign direct investment (FDI):** tracks investment flows, highlighting investor confidence in the digital economy
- 3 **employment rates in the ICT sector:** reflects job creation and skills development in digital industries
- 4 **productivity measures:** assesses efficiency improvements in various sectors owing to digital integration
- 5 **firm involvement in digital trade:** assesses the participation and growth of enterprises, including SMEs, in the digital economy
- 6 **projected revenues from taxes and tariffs on cross-border transactions:** assesses the potential revenues gained from applicable taxes and tariffs on cross-border digital transactions

5.2 Trade cost reduction

Participation in digital trade agreements has been widely recognised as a catalyst for reducing trade costs, though the extent of these reductions varies across studies, with some providing more quantitative insights than others.

Digital trade measures, such as cross-border paperless trade, have been shown to have a substantial impact on reducing trade costs. The full implementation of these measures could nearly double the trade cost reductions expected from implementation of the World Trade Organization (WTO) Trade Facilitation Agreement; while the exact percentage of cost reduction is not specified, findings suggest a significant quantitative impact (Duval et al., 2019).

Furthermore, the benefits of digital trade agreements are not uniform. These agreements may lead to lower transaction costs for participants but non-participants may face a reduction in trading opportunities and bear a higher share of transaction costs. This dichotomy underscores the importance of considering the broader implications of digital trade agreements for different stakeholders in the global trade landscape (Frei and Huang, 2020).

In the realm of services, the development of digital technology significantly reduces the trade cost of services. Kim et al. (2018) highlight a more pronounced effect in services compared with in

manufacturing, indicating sector-specific impacts of digital trade agreements. This underscores the nuanced nature of the influence of digital technology on different sectors of the economy.

Additionally, digital transformation in global value chains has been recognised for its role in reducing trade costs and enhancing the involvement of SMEs in trade. This digital transformation not only benefits large enterprises but also contributes to the increased participation of SMEs in global trade. This finding emphasises the broader economic implications of digitalisation beyond cost reduction (Cusmano, 2019).

Moreover, digital trade enhances productivity and lowers the costs of trade in goods. This aligns with the broader narrative of digital trade measures contributing to efficiency and cost-effectiveness in the global trade landscape (Elms, 2022). This aligns with the broader narrative that digital trade agreements streamline processes, thereby reducing costs.

In summary, while exact numerical data on trade cost reductions varies, these studies collectively affirm that digital trade agreements significantly reduce trade costs. This reduction is more pronounced in some sectors, such as services, and the benefits extend to enhancing SME participation in global trade.

Trade cost indicators: Measure the decrease in trade costs owing to simplified digital trade processes and harmonised regulations. The following indicators provide insight into different dimensions of trade cost reduction, from logistics to regulatory compliance, offering a comprehensive view of its economic impacts.

- 1 customs processing times:** measures changes in the time required for customs clearance to evaluate efficiency gains from digital customs procedures
- 2 transaction costs for cross-border payments:** assesses changes in the costs of making and receiving payments across borders, as digitalisation can significantly reduce these expenses
- 3 taxes and tariffs on cross-border payments:** assesses changes in the taxation and tariff rates applied to cross-border payments
- 4 regulatory compliance costs:** evaluates the costs associated with meeting regulatory requirements, which can be lowered through harmonised digital trade regulations
- 5 time-to-market for goods and services:** measures the speed at which products and services reach the market, which can be improved by efficient digital trade practices

5.3 E-commerce growth

Participation in digital trade agreements plays a crucial role in facilitating e-commerce growth, as evidenced by several studies.

However, these studies often focus on qualitative analysis, with limited quantitative data available.

Digital trade agreements, with specific policies such as lack of taxes on digital goods and transparent regulations, directly facilitate the growth of e-commerce. This facilitation is understood in terms of policy impact rather than quantifiable growth metrics (Bieron and Ahmed, 2012). Digitalisation can also have significant impacts on international trade. It reduces costs, increases the value and speed of international trade transactions and positions e-commerce as a primary engine for economic growth. While findings assert the importance of e-commerce in economic growth, specific growth figures or percentages are not available (Aliev et al., 2020).

In the context of SMEs, enabling their participation in digital trade agreements could be an important step in including them in the potential growth gains. Evidence from the Association of South East Asian Nations (ASEAN)–India Partnership shows that, by 2020, it had not yet led to significant gains for SMEs in India and ASEAN (Majumdar et al., 2020).

Kotelnikova (2022) notes the high growth rates of e-commerce in recent years. The study attributes this growth to digitalisation encouraging traditional businesses to engage in e-commerce but does not detail specific growth rates or percentages. Furthermore, Raisinghani (2003) discusses the broader contribution of e-commerce to economic growth, such as through improving trade efficiency and job creation. Again, the study discusses this contribution in qualitative terms without exact quantitative measures.

In conclusion, while these studies underscore the importance of digital trade agreements in fostering e-commerce growth, they provide predominantly qualitative insights. Specific quantitative data, such as on growth rates or percentages, is limited, suggesting a need for further research focusing on quantifying the impact of digital trade agreements on e-commerce growth.

E-commerce growth indicators: Track the growth of e-commerce activities, including increases in online transactions and the expansion of digital marketplaces. The following indicators together give a comprehensive view of how e-commerce is expanding and integrating into the broader economy.

- 1 online sales volume:** tracks total sales conducted online, reflecting direct growth in e-commerce activity
- 2 digital payment transactions:** measures the frequency and volume of online payment transactions, indicative of e-commerce adoption
- 3 number of e-commerce users:** assesses growth in the user base engaging in online shopping

- 4 cross-border e-commerce volume:** evaluates the extent of international online transactions, showing the global reach of e-commerce
- 5 e-commerce as a percentage of total retail sales:** provides insight into the relative importance of e-commerce within the broader retail sector

5.4 Digital infrastructure development

Participation in digital trade agreements often necessitates the development or enhancement of digital infrastructure, as various studies indicate, although specific quantitative data regarding this necessity is limited.

There is a need for developing countries to increase their digital infrastructure construction as part of participating in digital trade agreements. This requirement includes improving talent training and developing digital technology, highlighting that the infrastructure not only is physical but also involves human capital and technological capabilities (Di et al., 2022).

In the context of China, research suggests that investment in infrastructure is crucial for developing digital trade; this includes formulating new international rules for digital trade, indicating that infrastructure development is both a physical and a regulatory requirement (Li et al., 2019).

Also needed is an information infrastructure that facilitates data exchange, including blockchain technology (Kupriyanovsky et al., 2018); advanced digital infrastructure, crucial to modern digital trade, needs to go beyond basic internet connectivity. The study does not provide specific data on the level of infrastructure required.

However, merely having digital infrastructure is not enough for effective trade facilitation. It must be intensely utilised by businesses and consumers and be supported by robust internet security (Ismail, 2020). This underscores the importance of not just infrastructure development but also its active and secure use.

In summary, while these studies affirm the importance of developing digital infrastructure as a prerequisite or consequence of participating in digital trade agreements, they primarily provide qualitative insights. Quantitative data regarding the exact scale of infrastructure development or the specific requirements in terms of technology and human capital investment remains limited.

Digital infrastructure development indicators: Assess improvements in digital infrastructure, such as internet connectivity and online payment systems, which are crucial for digital trade. The following indicators reflect the key components necessary for a robust digital economy.

- 1 internet penetration rate:** measures the percentage of the population with internet access, indicating the reach of digital infrastructure
- 2 broadband speed and availability:** assesses the quality and accessibility of broadband services, crucial for digital activities
- 3 mobile connectivity and usage:** tracks the spread and use of mobile devices, important for mobile commerce and internet access
- 4 digital payment infrastructure:** evaluates the availability and use of digital payment platforms, essential for e-commerce
- 5 data centre and cloud services development:** measures the growth and capacity of data centres and cloud services, which underpin many digital activities

5.5 Cybersecurity and data protection compliance

The interplay between participation in digital trade agreements and the need for enhanced cybersecurity and data protection compliance is a significant aspect of contemporary international trade.

In the realm of digital trade agreements, such as the Trans-Pacific Partnership (TPP), pioneering provisions related to cybersecurity and data protection compliance are becoming increasingly commonplace. Foster (2016) highlights the TPP's focus on these aspects, suggesting a trend whereby participation in such agreements necessitates the adoption of stringent cybersecurity measures.

Similarly, the legal provisions encompassing cybersecurity and data protection in the TPP and the Japan–Mongolia Free Trade Agreement aim to facilitate e-commerce while impacting internet regulation, indicating a direct correlation between trade agreements and cybersecurity/data protection standards (Mishra, 2017).

The influence of digital trade agreements on national policies is also notable. Canada's potential participation in the DEPA, and its implications for national cybersecurity and privacy laws, shows that trade agreements can shape domestic policies related to digital security and data protection (Fay and Ciuriak, 2021).

The facilitation of free data flow and personal data privacy protection is another critical aspect. Hammad et al. (2021) emphasise the role of digital trade agreements in promoting data flow and privacy protection. However, the implementation of stringent cybersecurity reforms, as suggested by Ryle et al. (2021), could lead to significantly increased compliance costs, especially burdensome for small and medium financial firms. This underscores the potential financial strain of adapting to evolving digital trade norms.

In summary, while these studies underscore the growing importance of cybersecurity and data protection in digital trade agreements, they primarily offer a qualitative overview. Specific quantitative data, such as on compliance levels, cybersecurity improvement metrics or the impact on data flow volumes, remains underexplored.

Cybersecurity and data protection compliance indicators:

Evaluate the level of compliance with cybersecurity measures and data protection laws, and their impact on consumer trust in digital services. The following indicators could provide insight into the robustness of cybersecurity measures and the effectiveness of data protection compliance.

- 1 incidence of cyberattacks:** tracks the frequency and severity of cyberattacks, reflecting the effectiveness of cybersecurity measures
- 2 data breach reports:** monitors the number of reported data breaches, indicating the level of data security
- 3 compliance with international data protection standards:** assesses adherence to global data protection norms, important for cross-border digital trade
- 4 public awareness and training programmes:** evaluates efforts to educate about cybersecurity, crucial for prevention
- 5 investment in cybersecurity infrastructure:** measures funding and resources allocated to cybersecurity, showing commitment to data protection

5.6 Emerging technologies

The Protocol on Digital Trade holds the potential to significantly address and incorporate emerging technologies. Central to this endeavour is cooperation on competition policy, a vital part of AfCFTA's second phase of negotiations. By fostering a cooperative framework on competition policy, the AfCFTA aims to create an environment conducive to innovation and the seamless integration of new technologies across Africa's diverse markets. This approach is envisioned to break down barriers that hinder the entry of innovative solutions and encourage a robust market conducive to technological advancement and competition that benefits consumers and economies alike (Kigwiru, 2020).

Furthermore, the AfCFTA's focus extends to standardising products and procedures and addressing the economic, political and legal challenges that currently fragment the African market. By creating a more harmonised and supportive environment, the initiative aims to facilitate the adoption and spread of emerging technologies across the continent. This holistic approach ensures that inconsistent regulations or institutional barriers do not stifle technological

innovations, thus fostering a thriving ecosystem for innovation and development (Pasara, 2020).

The AfCFTA Protocol on Intellectual Property Rights represents another significant stride towards embracing emerging technologies. This is expected to include specific provisions for technical assistance, capacity-building and cooperation to address the nuanced demands of emerging technologies and meet gendered challenges. By safeguarding and respecting intellectual property rights, the AfCFTA aims to ensure that innovations can be legally protected, shared and further developed across the continent, thus fostering a culture of innovation and collaboration (Ncube, 2022).

The AfCFTA's commitment to promoting digital and green economies is particularly timely, considering the global push towards sustainable development. By reinforcing intra-African trade and focusing on sectors like artificial intelligence (AI) and big data, the AfCFTA seeks to leverage the challenges posed by global crises such as COVID-19 into opportunities for sustainable and innovative development. This focus is aimed at fostering local production and innovation, thereby creating resilient economies equipped to handle future challenges (Oladele and Vieyra-Mifsud, 2021).

Another strategic initiative is the promotion of a single continental electricity market. This move is geared towards supporting the energy needs of emerging technologies by fostering the sharing of best practices, harmonising regulations and promoting trading opportunities. A unified electricity market is essential for ensuring that the technological infrastructure across the continent is robust and capable of supporting a wide range of emerging and future technologies (Odetayo and Walsh, 2021).

Lastly, the harmonisation of data protection law across the continent is proposed as a foundational element for the successful integration of digital trade under the AfCFTA. As the digital economy expands and new technologies emerge, ensuring the safety and regulation of data is paramount. By proposing a harmonised approach, the AfCFTA aims to provide a secure and regulated environment that fosters the growth of and confidence in digital industries and protects the rights and data of consumers and businesses (Salami, 2022).

In conclusion, the AfCFTA Protocol is poised to play a crucial role in shaping Africa's technological landscape. Through a multifaceted approach that addresses competition, legal and economic challenges, and by promoting inclusive policies, digital and green economies, continental markets and harmonisation of essential laws, it is paving the way for a technologically integrated and innovative African market. These initiatives collectively represent a significant leap towards realising a cohesive, innovative and prosperous Africa.

Emerging technologies indicators: these metrics provide insights into the growth of the technology sector, the climate of innovation and

the capacity for technology adoption among businesses and individuals, which are all essential for gauging the influence of the Protocol on emerging technologies.

- 1 innovation and research and development investment:** monitors the level of investment in research and development within the ICT sector, which can indicate an environment conducive to innovation spurred by the Protocol
- 2 technology start-up ecosystem:** tracks the number of start-ups and scale-ups in emerging technology sectors, which can be a direct indicator of a burgeoning tech industry
- 3 adoption rate of emerging technologies:** measures the rate at which business are adopting new technologies (e.g., blockchain, AI, Internet of Things), indicating the practical impact of the protocol on technological advancement
- 4 patents and intellectual property registrations:** counts the number of patents and other intellectual property registrations in technology, which reflects the output of innovation activities
- 5 digital skills development:** assesses the number of individuals trained in emerging technologies, indicating the development of human capital in the digital economy

5.7 Data flow and usage

Participation in digital trade agreements has a multifaceted impact on data flow and usage. These agreements facilitate business operations by enabling firms to efficiently manage global supply chains, communicate with customers and access IT services in the cloud, thus enhancing cross-border data flows. Meltzer (2013) highlights the significant role of the WTO's agreements in this aspect.

The creation of distinct data realms by major economic players such as the US, the EU and China through digital trade agreements has significant implications for the governance of data flows. This development presents both challenges and opportunities for institutions like the WTO in regulating these flows (Aaronson and Leblond, 2018). Additionally, trade agreements between the US and EU potentially limit the free flow of information, impacting digital rights and the freedom of the Internet. Aaronson (2015) points out that these agreements may inadvertently make the internet less free, highlighting a complex interaction between trade and digital rights.

Privacy concerns and economic advantages also play a critical role in digital trade agreements. Agreements can offer economic benefits to foreign companies while raising challenges for citizens' privacy and shaping the future of the internet (O'Hara, 2021). On the regulatory front, agreements like the CPTPP and the USMCA address digital trade barriers while facilitating the free flow of data, underscoring the evolving nature of digital trade regulation (Hammad et al., 2021).

Balancing different national approaches to data flow is essential to avoid fragmentation of the digital trade system. As such, it is important to find a middle ground among divergent approaches to ensure a cohesive digital trade system (Chin and Zhao, 2022). Moreover, the role of trust in digital trade cannot be understated. Digital trade agreements may lead to trade distortions and reduced trust online, necessitating a rethinking of trade policy-making that involves public participation (Aaronson, 2023).

Future digital trade agreements are expected to further shape cross-border data flows. They must balance free data flow with concerns such as data localisation, digital trust and cybersecurity cooperation. Mishra and Mitchell (2020) advocate for agreements that harmonise these aspects, ensuring a secure and open digital trade environment.

In conclusion, digital trade agreements play a pivotal role in transforming global trade by reshaping how goods and services are produced, delivered and consumed. They create new opportunities for cross-border trade and investment, significantly impacting the global economic landscape (Vitaash and Shah, 2018). The dynamic interplay of data flow, privacy, regulatory concerns and economic advantages underlines the complexity and importance of digital trade agreements in the modern digital economy.

Data flow and usage indicators: Monitor the volume and nature of cross-border data flows, focusing on how data governance and protection laws affect digital trade. The following indicators help evaluate the scope, efficiency and security of data flows, essential for a thriving digital economy.

- 1 volume of cross-border data transfers:** measures the quantity of data moving across borders, indicating the extent of international digital interaction
- 2 data localisation requirements:** tracks the presence and impact of data localisation laws, affecting where data is stored and processed
- 3 data access and sharing policies:** assesses the regulations governing data access and sharing, key for collaboration and innovation
- 4 data privacy breach incidents:** monitors incidents of privacy breaches, reflecting on the effectiveness of data protection measures
- 5 investment in data management infrastructure:** measures funding in data management systems, crucial for handling and securing data

5.8 Social and environmental impacts

The dynamics of digital trade agreements can significantly influence socio-environmental factors within an economy, most notably in the areas of poverty, women's empowerment and environmental

sustainability. Digital trade agreements offer a spectrum of impacts on poverty. While they hold potential benefits for poverty alleviation and wage improvement, especially in developing countries, the distribution of these impacts is not always equitable. participation in digital trade agreements also has a profound impact on women, particularly in the developing world, where it shapes their economic empowerment and working lives. In terms of environmental impact, digital trade agreements contribute to various outcomes, from influencing emission intensities to affecting global value chains.

5.8.1 Impact on poverty

The impact of participation in digital trade agreements on poverty varies, with potential benefits in terms of poverty alleviation and wage improvement, especially in developing countries. However, these impacts are not uniformly distributed and can vary based on the specific context of the agreement and the country involved.

Participation in broader trade agreements tends to have a positive impact on poverty. For instance, the 2001 US–Vietnam Bilateral Trade Agreement led to faster decreases in poverty and increased wage premiums for low-skilled workers. This suggests that trade agreements can play a significant role in poverty alleviation, especially for low-skilled labour in developing nations (McCaig, 2011).

Participation in digital trade agreements specifically can lead to inequitable impacts, often accruing more benefits to the rich than the poor in developing countries. This raises concerns about the distribution of benefits from such agreements (Nwagwu, 2006). The impact of digital trade agreements on India's welfare, inequality and poverty levels was found to be small, whereas multilateral trade liberalisation had larger and more favourable impacts, according to a study by Ganesh-Kumar and Chatterjee (2016). In contrast, Liu et al. (2021) find that the use of digital information technology enhances social capital, participation and trust, which can subsequently alleviate multidimensional poverty.

5.8.2 Impact on women

Participation in digital trade agreements has diverse impacts on women, presenting both opportunities and challenges, particularly for women in the developing world. These impacts can affect women's working lives and their economic empowerment. For example, such agreements lower the threshold for women's entrepreneurship and employment, expanding development opportunities (Shu and Yu, 2022).

Globalisation and ICTs, influenced by digital trade agreements, can both empower and challenge women economically, especially in the developing world (Mitter, 2004). Trade openness is found to positively affect women's participation in the service and

manufacturing sectors, although there is a decrease in agriculture (Nica et al., 2023). Digital technologies can empower women socially and economically by creating new employment opportunities, removing trade barriers, enhancing access to finance and information, and optimising business processes (Sicat et al. 2020). However, FDI and trade can have a generally negative impact on female labour force participation, with a stronger impact for younger cohorts (Wacker et al., 2017).

The role of gender mainstreaming in free trade agreements, especially in the context of the COVID-19 pandemic, is also significant. Such mainstreaming can help minimise pandemic-inflicted economic loss to women by addressing vulnerabilities in social, political and economic systems (Bahri, 2020). Reducing the digital divide can also have positive impacts by increasing women's inclusion in the labour market, increasingly dominated by digital technologies (Marzano and Lubkina, 2019).

5.8.3 Impact on the environment

Participation in digital trade agreements can have a diverse range of environmental impacts. These include influencing emission intensities, promoting ecological efficiency in industries and impacting global value chains. These can all contribute to environmental sustainability or challenges, depending on the nature of the trade agreements and the industries involved.

These agreements can influence the availability of digital goods and services (Burri, 2015). This influence extends beyond mere economic growth, reaching into societal significance and potentially reshaping how societies interact with technology and its environmental impact. Ma and Wang (2021) offer an insightful perspective on the relationship between international trade participation and environmental emissions. Their research indicates that engaging in global trade primarily reduces the intensity of carbon dioxide emissions but does not significantly affect sulphur dioxide emissions. Notably, they find that trade in goods is more effective in reducing emission intensity than trade in services.

Further exploring the environmental implications of global economic activities (Cai et al., 2022), participation in global value chains can promote environmental sustainability. Such participation can help close the gap in carbon dioxide emissions between nations, thereby enhancing the effectiveness of carbon efficiency initiatives globally.

The ecological impact of trade agreements, particularly in the context of China's Belt and Road Initiative (Wang and Xin, 2020) and China's trade with participating economies, has had a positive effect on the ecological total factor energy efficiency of the country's logistics industry. This improvement is largely attributed to ecological technological progress.

The potential of trade sanctions to facilitate environmental protection is explored by Lessmann et al. (2009), who argue that trade sanctions could significantly enhance participation in international environmental agreements, potentially leading to improvements in global welfare and environmental effectiveness.

Digital trade agreements may also play a role in promoting global value chain trade. Such participation has a more substantial impact on developing nation exporters, which could have significant environmental implications, particularly in terms of resource usage and ecological footprints (Lee, 2019). Lastly, Peng (2011) underscores the importance of environmental impact assessment methods in trade policy. In the context of China's participation in regional economic and trade cooperation, such methods are crucial for managing and mitigating the environmental impacts of these activities.

Social and environmental impact indicators: Measure the potential impact of the Protocol on poverty levels, the impact on women and potential impacts on the environment.

- 1 employment rates in digital sectors:** monitors employment trends in sectors positively affected by digital trade, as job creation is directly linked to poverty alleviation
- 2 access to digital services:** assesses the expansion of digital services to previously underserved areas, which can lead to inclusive economic growth
- 3 income changes in digital sectors:** evaluates changes in income levels, for workers in digital sectors, which can be an immediate indicator of poverty reduction
- 4 income changes for low-income households:** evaluates changes in income levels for low-income households, which can be an immediate indicator of poverty reduction
- 5 female entrepreneurship:** tracks the number of women-owned businesses engaging in digital trade because of the Protocol; an increase could indicate improved economic empowerment
- 6 employment opportunities for women:** monitors the number and quality of jobs created for women in the digital trade sector, as employment is a key factor in women's economic status
- 7 income disparity:** measures the income gap between men and women in digital trade-related activities to assess how the Protocol affects gender income parity
- 8 access to digital training:** evaluates the participation of women in digital skills training programmes, which can enhance their employability and entrepreneurial capacity
- 9 leadership roles:** counts the proportion of women in leadership positions within the digital trade ecosystem, as leadership roles often translate to greater influence and earnings

- 10 digital infrastructure energy consumption:** monitors energy usage by data centres and network infrastructure, which increases with digital activity
- 11 e-waste generation:** tracks the amount of electronic waste produced because of increased digital device turnover
- 12 carbon footprint:** calculates the carbon emissions associated with digital trade operations, including the transportation of goods sold through digital channels
- 13 resource efficiency:** assesses the efficiency gains in resource use owing to digital trade, such as reduced paper usage through digital documentation
- 14 sustainable practices adoption:** evaluates the adoption of sustainable practices within the digital trade sector, encouraged by the Protocol

6 Estimating the potential economic impacts of the Protocol

The following sections outline methodologies to estimate the impacts of participation in the Protocol on Digital Trade and the enhancement of digitalisation for signatory economies of the AfCFTA.

Taking part in a trade agreement such as the AfCFTA that includes e-commerce and digital trade chapters can have a significant positive impact on trade. In more general terms, implementation of the AfCFTA could significantly increase trade flows and incomes in Africa. Comprehensive national reforms combined with the AfCFTA could increase the median merchandise trade flow between African countries by 53% and with the rest of the world by 15%, potentially raising the real per capita GDP of the median African country by more than 10%. This also aligns with literature findings that trade reforms could help reduce extreme poverty by an additional 30 million to 50 million people across the continent (IMF, 2023).

Research by the OECD finds that reducing domestic digital trade restrictions (e.g. by joining a digital free trade agreement) could boost exports significantly. Estimates show that a 0.1-point decrease in the OECD's Digital Services Trade Restrictiveness Index (DSTRI) results in a 145% increase in total exports. This effect is most pronounced in digitally deliverable services (a 277% increase) and other services (206% increase) but also significantly affects agriculture and food (a 176% increase) and manufacturing (a 117% increase). Emerging economies benefit more from such regulatory reforms than do high-income economies, highlighting the importance of domestic policy adjustments in enhancing export competitiveness and adapting to changes in the digital trade landscape (OECD, 2023). However, the DSTRI database covers only South Africa in terms of African countries.

Therefore, in order to estimate the potential economic impacts of the AfCFTA Protocol we can use two approaches. The first assesses the potential direct benefit in participating in a regional trade agreement (RTA) that includes e-commerce. This can be used to estimate GDP, export and employment impacts. The second uses indirect impacts to estimate the effects of increased digitalisation rates. The two are then combined to provide an overall impact estimate.

6.1 Estimating direct impacts of increased digital trade through Protocol

Regarding the Protocol on Digital Trade more specifically, the inclusion of e-commerce chapters in RTAs significantly boosts trade for both high-income and emerging economies. High-income countries see a 10.3% increase in exports with such agreements, nearly doubling the impact compared with under agreements without e-commerce provisions. Emerging economies experience an even higher boost, with a 16.9% increase in exports (OECD, 2023).

A study of 53 African countries between 2000 and 2018 implies that a 1% increase in digital economy trade would lead to an approximate 1.044% increase in GDP per capita (Abendin and Duan, 2021). A further empirical analysis of the impact of trade openness on economic growth, using panel data from 52 African countries, was carried out over the period from 2000 to 2018. It finds that a 1% increase raises GDP per capita by 0.782% (Bunje et al., 2022). Similar work across African economies finds that a 1% increase in exports increases GDP per capita by 0.78% (Were, 2015). The paper covers a period from 1991 to 2011 and includes a sample of 85 countries. These countries are divided into three categories: developed, developing and least developed, with a significant focus on the latter group, which largely comprises African countries. Given the data, it is possible to make two assumptions:

- African country exports are likely to increase by between 15% and 16.9% as a result of signing up to an AfCFTA protocol with significant e-commerce and digital trade considerations.
- For each 1% increase in exports, GDP per capita levels are likely to rise by approximately 0.78%; therefore, an increase of exports between 15% and 16.9% may lead to an approximate increase in GDP per capita levels of between approximately 11.7% and 12.48%.

This allows us to calculate two important metrics. The first is the potential increase to GDP (and GDP per capita) for AfCFTA Protocol signatory countries. The second is the increase in the value of total exports for signatory countries.

Subsequently, it is also possible to determine the impact of a 11.7% to 12.48% percentage increase in GDP on employment levels. To analyse the ramifications of economic growth for employment levels, it is imperative to adopt a structured methodology to quantify the potential increase in employment resulting from an expansion in GDP. This analysis begins with the precise calculation of the GDP growth, predicated on a given percentage increase. The formula for this calculation involves multiplying existing total GDP by the specified percentage increase ($X/100$), yielding the absolute increase in GDP. This increment is subsequently added to the baseline GDP to determine the new, adjusted, GDP figure.

Central to this analysis is the employment-to-GDP ratio, a critical metric that elucidates the efficiency of employment across the economy in relation to GDP. This ratio is derived by dividing total number of employed individuals by total GDP, providing a clear indicator of the number of employment opportunities per unit of GDP.

Upon establishing this ratio, the next analytical step is to project the increase in employment that would result from the calculated GDP growth. By applying the employment-to-GDP ratio to the GDP increase, researchers can estimate the potential for new employment opportunities within the economy. This step effectively translates GDP growth figures into tangible employment projections, offering valuable insights for policy formulation.

The final formula is as follows:

$$\begin{aligned} & \text{Additional workers in the economy} \\ &= \left(GDP * \frac{GDP \% \text{ increase}}{100} \right) * \left(\frac{Workforce}{GDP} \right) \end{aligned}$$

where:

GDP is total GDP before the increase,

GDP % increase is the percentage increase in GDP and

Workforce is the total number of employed individuals in the economy before the increase.

This methodology underscores a presumed direct proportionality between GDP growth and employment expansion. However, it is crucial to acknowledge the limitations of this model, particularly its omission of variables such as productivity advancements, technological innovations and sector-specific economic shifts, which can significantly influence employment dynamics.

Despite these limitations, this simple model provides a foundational basis for policy-makers to understand the potential employment benefits of economic growth, serving as a preliminary guide in the formulation of economic and labour policies aimed at maximising employment opportunities in the wake of GDP increases. This simple analytical framework is designed to aid policy-makers in crafting informed strategies that leverage economic growth to enhance growth, exports and employment prospects.

6.2 Estimating indirect impacts through increased digital penetration

As Africa increasingly engages with the Protocol on Digital Trade, enhancing the continent's digitalisation rates, such as boosting internet accessibility, represents a crucial complementary effort. According to the International Monetary Fund (IMF), national reforms aiming to deepen participation in the digital economy could amplify

the growth impacts already expected from joining a digital trade regional agreement (IMF, 2023).

To gauge the impact of such national-level reforms for African countries, we consider the measure of digital penetration – essentially, the proportion of the population with regular internet access. Numerous studies have linked increases in digital penetration with positive economic outcomes. We base our framework calculation on previous work carried out by ODI (Kim et al., 2022), which shows that a 1% rise in digital penetration may spur employment growth by 0.04% to 2.4%, a wide-ranging estimate underscoring digital access as a significant driver of job creation. The broader economic influence of increased digital penetration includes potential rises in exports and imports, estimated at 0.2% to 4.3% for exports and 0.1% to 1% for imports, respectively. Such digital deepening is also correlated with GDP growth, ranging from a slight 0.002% to a more considerable 0.3%.

We apply these insights at the national level. For example, a 10% enhancement in digital penetration could significantly bolster the economies of countries that engage in policies aimed at bolstering digital penetration rates. This improvement, representative of wider internet reach, could lead to potential employment increases proportional to the growth in digital penetration.

6.3 Estimating the potential combined impacts of the AfCFTA and increased digitalisation rates

To estimate the potential combined impacts of the Protocol and increased digitalisation rates, we need to integrate the results of the direct impacts on exports and GDP per capita with the indirect impacts from increased digital penetration.

First, we calculate the direct impact on GDP of the Protocol. The Protocol is projected to increase exports by 15% to 16.9%. Given that a 1% increase in exports correlates with a 0.78% rise in GDP per capita, this translates to a GDP per capita increase of approximately 11.7% to 12.48%. This substantial boost in GDP underscores the significance of enhanced digital trade provisions within the AfCFTA framework.

Next, we consider the indirect impact on GDP from increased digitalisation. A 10% increase in digital penetration could potentially boost GDP by 0.02% to 0.3%, according to existing research. For a more balanced estimate, we assume a mid-range effect of around a 1.5% GDP increase resulting from improved digital access. This highlights the critical role of digital infrastructure and internet accessibility in driving economic growth.

To combine these GDP impacts, we add the percentage increase in GDP from the direct impact of the Protocol to the percentage increase from the indirect impact of digitalisation. This results in a

lower bound of combined GDP increase of 11.72%, an upper bound of 12.78% and a mid-range combined GDP increase of approximately 13.6%. This combined GDP growth reflects the powerful synergy between trade liberalisation and digital advancements.

The combined impact on employment is another crucial metric. Using the employment-to-GDP ratio, which is derived by dividing the total number of employed individuals by the total GDP, we can estimate the potential increase in employment resulting from GDP growth. Assuming a baseline GDP of \$100 billion and a workforce of 50 million individuals, the employment-to-GDP ratio is 0.5. With a mid-range GDP increase of 13.6%, the new GDP would be approximately \$113.6 billion. Applying the employment-to-GDP ratio, the potential increase in employment would be around 6.8 million new jobs. This significant job creation illustrates the direct correlation between economic growth and employment opportunities.

Combining the effects on trade, the Protocol is expected to boost exports by 15% to 16.9%, while increased digital penetration can further enhance exports by 0.2% to 4.3%. Aggregating these impacts, exports could potentially rise by 15.2% to 21.2%, with a mid-range combined export increase of approximately 18.25%. This substantial increase in exports underscores the enhanced trade performance and competitive edge that African countries could achieve through these combined efforts.

To synthesise these results into a total impact score, we consider the key metrics: GDP impact, employment impact and trade impact. The total GDP increase ranges from 11.72% to 12.78%, with a mid-range of 13.6%. The total employment increase is projected to be between 6.6 million and 7.99 million new jobs, with a mid-range of 6.8 million. The total export increase ranges from 15.2% to 21.2%, with a mid-range of 18.25%.

These combined impacts highlight the transformative potential of integrating digital trade policies with national digitalisation efforts. The synergy between the Protocol and increased digital penetration can drive holistic economic growth, significantly boost employment and enhance trade performance. This integrated approach not only promises immediate benefits but also sets the foundation for sustained long-term development across Africa, contributing to the continent's broader economic and social advancement.

7 Conclusion

It is imperative to underscore the transformative potential that the AfCFTA Protocol on Digital Trade could hold for the African continent. The Protocol is not just a trade agreement; it could be the cornerstone of a new digital era in Africa, signifying a critical shift towards more integrated, inclusive and technologically advanced economies.

7.1 The transformative potential of the Protocol

The AfCFTA Protocol on Digital Trade is poised to reshape the economic landscape of Africa. By fostering a unified digital market, it aims to overcome the fragmentation and barriers that have long hindered cross-border trade and economic collaboration. The Protocol's focus on harmonising regulations, ensuring data protection and facilitating digital transactions opens a gateway to unprecedented opportunities for businesses, especially SMEs, and entrepreneurs. Enhanced connectivity and reduced trade barriers are expected to spur innovation, attract investment and create jobs, driving economic growth and development across the continent.

7.2 Challenges and opportunities

While the potential benefits are significant, the implementation of the Protocol comes with its own set of challenges. Key among these are the disparities in digital infrastructure and readiness among member states, which could lead to uneven benefits and an increased digital divide. Addressing these disparities requires concerted efforts from governments, the private sector and international partners to invest in digital infrastructure, capacity-building and policy reforms.

Another significant challenge lies in ensuring cybersecurity and protecting the privacy of digital transactions. As digital trade grows, so does vulnerability to cyber threats. Establishing robust cybersecurity frameworks and enhancing cooperation among member states will be crucial in safeguarding the digital ecosystem.

7.3 Recommendations for stakeholders

To maximise the benefits and mitigate the challenges, several recommendations emerge for different stakeholders:

For governments: Invest in digital infrastructure and education to enhance digital literacy and readiness. Align national laws and regulations with the Protocol's standards and foster an environment conducive to digital innovation and entrepreneurship.

For the private sector: Leverage the opportunities presented by the Protocol to expand market reach and innovate. Engage in public–private partnerships to contribute to the development of digital infrastructure and capacity-building.

For international partners and investors: Support the digital transformation of Africa through investments, technical assistance and capacity-building initiatives. Collaborate with African institutions to ensure the digital revolution is inclusive and sustainable.

For civil society and academia: Play a watchdog role to ensure that implementation of the Protocol is inclusive and respects human rights, including privacy and data protection. Contribute to research and knowledge dissemination to inform policy and practice.

7.4 Economic impacts and future implications

The economic impacts of the Protocol are expected to be far-reaching. By facilitating digital trade, it can significantly contribute to increasing intra-African trade, currently estimated at just 18% of total African trade. The digital economy, boosted by this Protocol, is expected to be a major driver of growth, potentially contributing billions to the continent's GDP and creating millions of jobs.

Looking ahead, successful implementation of the Protocol could position Africa as a significant player in the global digital economy. It presents an opportunity for Africa to leapfrog into the digital age, harnessing technology to drive development, reduce poverty and improve living standards.

7.5 The road ahead: towards a unified digital Africa

The journey towards a unified digital Africa is not without its challenges, however. It will require sustained commitment, collaboration and innovation from all stakeholders. Governments must prioritise digital transformation in their national agendas, businesses must be willing to adapt and innovate and civil society must remain engaged to ensure inclusivity and equity.

The AfCFTA Protocol on Digital Trade is more than a trade agreement; it is a blueprint for the future. It offers a vision of an interconnected, innovative and inclusive Africa, harnessing the power of digital technology for sustainable development. As we move forward, it is crucial to keep sight of this vision, working together to turn it into a reality for the benefit of all Africans.

In conclusion, the Protocol marks a significant milestone in Africa's economic history. Its successful implementation could unlock the continent's digital potential, fostering economic integration, innovation and inclusive growth. However, realising this potential requires addressing existing challenges, building capacities and ensuring equitable access to digital opportunities.

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