Trade Finance in Intra-African Trade under the African Continental Free Trade Area (AfCFTA)

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Abstract

Despite the transformative potential of the AfCFTA and emerging digital trade finance solutions, a comprehensive empirical understanding of their combined impact on intra-African trade remains nascent. While initial projections of the AfCFTA's positive effects exist (Fofack et al., 2021), the actual observed impacts, particularly in conjunction with new digital payment infrastructures like PAPSS, require detailed empirical scrutiny. This study investigates the evolving landscape of intra-African trade, focusing on the transformative roles of trade finance and digital solutions under the AfCFTA, addressing the core question: How do these factors influence intra-African trade and what are the associated challenges? To address this, the research aimed to

i. To assess the current state and trends of trade finance provision for intra-African trade since the operationalization of AfCFTA

ii. To analyse the impact of trade finance availability and cost on intra-African trade flows and the participation of Small and Medium-sized Enterprises (SMEs) under the AfCFTA.

iii. To identify the key challenges and opportunities in the provision and uptake of digital trade finance solutions for enhancing intra-African trade under the AfCFTA.

Using panel data from 2018-2023, fixed-effects models analysed drivers of trade volume and payment efficiency. We employ panel data regression models to investigate the relationships between trade finance, digital solutions, and intra-African trade flows and SME participation.

Panel data models are preferred given their ability to control for unobserved country-specific characteristics and time- invariant factors, thereby providing more efficient and consistent estimates compared to pure cross-sectional or time-series approaches. To analyse impact of trade finance availability and cost on intra-African trade flows under AfCFTA, we model. Key findings reveal the AfCFTA's significant positive impact on trade. Increased PAPSS transaction volume (a 1% rise linked to a 0.15% trade increase) and more participating financial institutions significantly drove trade, further supported by improved cross-border payment efficiency We leverage data from World Development Indicators, Worldwide Governance Indicators, Pan African Payment and Settlement System (PAPSS) Official Reports, Afreximbank African Trade Finance Survey, UN Comtrade, and IMF. The study period is from 2018 to 2023. The years 2018-2020 provides baseline period that captures pre-operational environment of AfCFTA and preceding the commercial launch of PAPSs allowing for before and after comparison. The subsequent years 2021-2023 allows for assessment of initial trends and effects following AfCFTA's operationalization and roll-out and expansion of PAPSS. Regarding efficiency itself, PAPSS transaction volume was a potent driver (1% increase linked to 0.18% efficiency gain), alongside financial development and internet penetration. This research provides early empirical quantification of AfCFTA and PAPSS impacts, suggesting the urgent policy need for accelerated digital infrastructure investment and robust PAPSS adoption to fully realize intra-African trade potential. The findings revealed positive trend in intra-African trade since the AfCFTA's operationalization, with an accelerated average annual growth rate. This period also saw a commendable growth in the volume of intra-African trade finance, alongside a gradual but measurable improvement in its accessibility and a marginal decrease in overall costs. Digital payment efficiency captured by reduced cross-border payment times, improved considerably,

1.0 Introduction

The aspiration for a more integrated and prosperous African continent hinges significantly on fostering robust intra-African trade, which historically has lagged behind other regional blocs (Emeka, 2020). Recognizing this, the operationalization of the African Continental Free Trade

Area (AfCFTA) in 2021 marked a pivotal moment, aiming to dismantle trade barriers and foster a unified continental market (Songwe, 2019; Aliyu, 2024). Concurrently, the rapid rise of digital financial technologies, exemplified by the Pan-African Payment and Settlement System (PAPSS), presents unprecedented opportunities to overcome traditional trade finance bottlenecks and payment inefficiencies that have historically stifled cross-border commerce across Africa (Ocran et al., 2024; Monye & Monye, 2022).

Despite the transformative potential of the AfCFTA and emerging digital trade finance solutions, a comprehensive empirical understanding of their combined impact on intra-African trade remains nascent. While initial projections of the AfCFTA's positive effects exist (Fofack et al., 2021), the actual observed impacts, particularly in conjunction with new digital payment infrastructures like PAPSS, require detailed empirical scrutiny. Specifically, there is a need to assess how these initiatives are influencing trade volumes and efficiency, leading to the overarching research question: "how do trade finance provisions and digital solutions, particularly under the AfCFTA, influence intra-African trade, and what are the associated challenges and opportunities?" To address this, the research aimed to

i. To assess the current state and trends of trade finance provision for intra-African trade since the operationalization of AfCFTA
ii. To analyse the impact of trade finance availability and cost on intra-African trade flows and the participation of Small and Medium-sized Enterprises (SMEs) under the AfCFTA.
iii. To identify the key challenges and opportunities in the provision and uptake of digital trade finance solutions for enhancing intra-African trade under the AfCFTA.

Utilizing panel data (2018-2023) covering 15 African economies, the study employed fixed-effects panel regression models to analyse these relationships. The years 2018-2020 provided a crucial baseline, representing the pre-operational environment of the AfCFTA and preceding the commercial launch of PAPSS, enabling a robust "before and after" comparison in the findings. We found significant positive shifts post-AfCFTA operationalization and PAPSS launch. Intra-African trade value's average annual growth rate notably accelerated from an estimated ~4.5% (2018-2020) to ~8.5% (2021-2023). Similarly, trade finance volumes supporting intra-African trade saw an invigorated expansion, with average annual growth increasing from ~6.0% (2018-2020) to ~12.0% (2021-2023). Concurrently, average cross-border payment times significantly decreased by approximately 0.5 days annually post-PAPSS commercial launch, indicating tangible improvements in payment efficiency.

Further, results revealed that the AfCFTA's operationalization significantly boosted intra-African trade, with PAPSS's increasing transaction volume (1% increase linked to 0.15% trade rise) and growing participant numbers (0.8% trade rise per participant) being crucial drivers. Improved cross-border payment efficiency (e.g., a 1% increase in payment days linked to a 0.07% trade decrease) also fostered trade, while traditional factors like GDP growth positively impacted it, and exchange rate volatility and high trade finance costs acted as deterrents. Furthermore, the volume of PAPSS transactions was a direct and potent driver of payment efficiency (1% increase in volume tied to 0.18% efficiency gain), with broader financial development (1% increase linked to 0.25% efficiency gain) and internet penetration (1% increase linked to 0.30% efficiency gain) identified as fundamental prerequisites, and the AfCFTA independently contributing to this efficiency (0.15% increase).

We contribute to the existing literature by providing empirical quantification of the impacts of both the AfCFTA and, critically, the early effects of PAPSS on intra-African trade volumes and payment efficiency. It moves beyond theoretical projections, Fofack et al (2021) and policy advocacy, Ocran et al (2024); Monye & Monye (2022) to present measurable relationships. By demonstrating the direct linkages between digital payment system adoption, financial sector development, Gakpa et al (2025), and digital infrastructure, Akinkunmi (2025); Lemma et al (2025) with trade outcomes, the study fills a critical gap in the empirical literature concerning Africa's ongoing digital transformation in trade finance. It supports the arguments on financial inclusion and digital transformation, Warikandwa (2023); Adewale et al (2023) by showing their tangible impact on trade efficiency. The significance of this work lies in its direct relevance to ongoing policy formulation and strategic investment decisions.

The findings provide robust evidence to policymakers, financial institutions, and development partners on where to concentrate efforts: vigorously promoting PAPSS adoption, investing in foundational digital infrastructure to bridge connectivity gaps, deepening financial markets, and sustaining the rigorous implementation of the AfCFTA, particularly its Digital Trade Protocol. This research underscores that a holistic approach integrating digital innovation with sound financial and trade policies is essential for unlocking the full potential of intra-African trade and fostering continental economic integration.

2. Related Literature

Prior to the AfCFTA, intra-African trade remained relatively low compared to other regions, a challenge explored by scholars like Emeka (2020), who examined its interplay with

macroeconomic conditions and competitiveness. The AfCFTA, operationalized in 2021, is widely regarded as a transformative initiative poised to boost intra-African trade by dismantling tariff and non-tariff barriers, fostering economic integration, and promoting industrialization. Songwe (2019) articulates its vision as a pathway to economic diversification and inclusion, while Aliyu (2024) investigates its implications for macroeconomic performance. Early estimations, such as those by Fofack et al (2021), project significant positive effects on intra-African trade volumes. The agreement's influence extends beyond goods, with Socrates et al (2023) exploring its impact on intra-African trade in services. The broader discourse also includes analyses of trade co-movements and shock transmission as a baseline for the AfCFTA, as discussed by Mensah (2023), setting the stage for understanding the agreement's evolving impact.

Trade finance is an indispensable lubricant for cross-border commerce, yet its provision in Africa is often characterized by significant challenges, including high costs, limited accessibility, and a substantial financing gap, particularly for Small and Medium-sized Enterprises (SMEs). Mazorodze (2024) directly addresses the issue of "Access to finance and intra-Africa trade efficiency," underscoring how financial accessibility remains a critical bottleneck. The role of the broader financial sector development in facilitating trade is a recurring theme. Gakpa et al (2025) delve into the intricate relationship between financial sector development and intra-African trade, emphasizing the necessity of robust financial systems. Amoah & Murinde (2024) further generalize this by examining the broader nexus between financial development and international trade. The stability of regional financial markets is also deemed central for sustainable intra-African trade operations, a point articulated by Chikowore, Sibanda, & Chikowore (2021). These studies collectively highlight that addressing the trade finance gap requires comprehensive financial sector reforms and innovative solutions.

The digital revolution is increasingly recognized as a potent enabler for overcoming Africa's trade finance challenges and streamlining cross-border payments. The advent of continent-wide payment systems and digital trade protocols marks a significant shift. Monye & Monye (2022) provided foundational proposals for an "Africa-wide payment system," anticipating the benefits of such an integrated platform. This vision has materialized with the Pan-African Payment and Settlement System (PAPSS), which is now being critically examined. Ocran, Abor, Ofori-Sasu, & Nambafu (2024) specifically analyze the transformative role of "Payment and Settlement Systems and the African Continental Free Trade Area," arguing for their

centrality in enhancing trade efficiency. The broader concept of a "Synergistic Digital Ecosystem for Pan-African Trade and Development" is championed by Akinkunmi (2025), emphasizing how interconnected digital solutions can foster trade. Furthermore, Lemma et al (2025) provide insights into the crucial task of "Implementing the Digital Trade Protocol of the African Continental Free Trade Area," which aims to formalize and streamline digital trade across the continent. The potential of various digital financial innovations, including Central Bank Digital Currencies (CBDCs), for improving financial inclusion and intra-African trade is explored by Adewale, Yadudu, & Oyewole (2023). These digital advancements are expected to address inefficiencies in foreign exchange markets, a challenge discussed by Wellisz (2022) in the context of "Freeing Foreign Exchange in Africa."

Beyond trade-specific policies and financial mechanisms, broader macroeconomic and infrastructural factors significantly impact intra-African trade. Exchange rate volatility is a persistent concern, often acting as a deterrent to cross-border commerce. Umeaduma & Dugbartey (2023), Hosni (2025), and Shuaibu & Isah (2020) have all empirically examined the nexus between exchange rate dynamics and trade flows in various African economies, consistently finding that volatility negatively affects trade competitiveness and balances. Furthermore, robust infrastructure, encompassing transport, energy, and ICT, is fundamental for reducing trade costs and enabling efficient movement of goods. Tandrayen-Ragoobu et al (2023) investigate the critical relationship between "Infrastructure and intra-regional trade in Africa," highlighting its pivotal role. The broader institutional quality and governance environment, though less frequently isolated as a direct variable in some trade models, underpins the effectiveness of financial systems and the enforcement of trade agreements. Oloyede, Tella, & Lawal (2025), in their analysis of "Capital Flows on Intra-African Trade," also touch upon the broader economic integration factors that encompass these structural elements.

While the existing literature provides a robust theoretical and conceptual framework for understanding intra-African trade and the potential of digital solutions, several empirical gaps remain, particularly concerning the nascent period post-AfCFTA operationalization and PAPSS launch. Specific quantitative assessments of PAPSS's early impact on both trade volumes and payment efficiency are limited. Furthermore, a detailed empirical analysis that simultaneously disentangles the direct effects of digital solutions, traditional trade finance, and the moderating roles of underlying infrastructure and institutional quality in driving intra-African trade remains an area ripe for further investigation. This study aims to contribute to

filling these empirical voids, offering timely quantitative evidence to inform ongoing policy dialogues.

3.0 Methodology

3.1 Theoretical foundation

We build from gravity trade model, information asymmetry, agency theory, financial development and, trade theory to examine effect of costs, availability, and impact of trade finance on intra-African trade flows especially for small and medium-sized enterprises. The gravity trade model posits that trade volumes between two countries was directly proportional to their economic sizes and inversely proportional to the distance or trade costs between them, Tinbergen (1962) & Anderson (2011). We contextualize trade costs as inclusive of geographical distance, infrastructural deficit, regulatory hurdles, and cost of availability of trade finance. First, the gravity trade model posit that regional arrangements encompassing moderating high costs and limited availability of trade finance contribute to non-tariff barriers. Thus, trade finance provides liquidity and risk mitigation which decreases effect of trade costs thus shrinking economic distance between African trading partners, Emeka (2020); Chiranga et al (2025). Such reduction in trade distance increases intra-African trade volumes enabling the AfCFTA's potential We extend on Aliyu (2024) & Pato (2018) by empirically dissecting financial distance component, and analyzing how specific trade finance instruments and their volumes moderate trade flows beyond general financial development. i.e

$$In(Tij) = \beta 0 + \beta_{1\ln\ (GDP_i)} + \beta_{2\ln\ (GDP_j)} - \beta_{3\ln\ (GeoDistance_{ij})} + \beta_{4\ln\ (TradeFinanceAvailability_{ij})} - \beta_{5\ln\ (TradeFinanceCost_{ij})}$$

Where T is the trade flow capturing volume of exports from country *i* and country *j*; Geo-distance is the distance between country *i* and country *j*; trade finance availability

Information asymmetry and agency theory argue that trade fiancé gaps exists due to information imbalances on counterparty risks and creditworthiness, Akerlof (1970); Jensen & Meckling (1976). Information imbalances create inefficiencies and suboptimal outcomes through adverse selection such that SMEs know their true credit risk better than the lender, or moral hazard where borrower takes on more risk after getting a loan, Bhattacharya et al (2013) & Armstrong et al (2011). The agency theory posit that conflict of interest could arise between principal and agent if agents choose their own interest over one's for the principal due to asymmetric information. Asongu & Odhiambo (2021) found that these asymmetries

exacerbated by less transparent financial ecosystems and fragmented regulatory environments, leading to higher perceived risks by financial institutions. This translates into stringent financing conditions, high costs, or outright rejection of trade finance applications, particularly impacting SMEs that lack extensive credit histories or collateral. We again contextualize trade finance instruments as risk mitigation tools that respond to these asymmetries. We theorize digital trade finance solution such as AI for enhanced credit scoring and blockchain for transparency as tools that could systematically reduce these information asymmetries, Banga et al (2021).

The financial development and trade theory, Rajan & Zingales (1998); Beck (2002) relate country's financial health and complexities of its financial sector determine trade robustness. Trade finance is not merely an isolated product but reflection of deeper financial market development which include diverse financial products, sound regulatory frameworks, and efficient payment systems, Diop et al (2025); Ayadi & Williams (2023). We then theorize that uneven financial development across African economies could create bottlenecks in trade finance provision, thereby limiting the realization of AfCFTA's benefits. Thus, we argue that trade finance act as lubricant for intra-African trade which reduces economic distance between trading partners by mitigating information asymmetries, and its effectiveness directly proportional to the level of financial development including digitalization across the continent.

3.2 Empirical methodology

We employ panel data regression models to investigate the relationships between trade finance, digital solutions, and intra-African trade flows and SME participation. Panel data models are preferred given their ability to control for unobserved country-specific characteristics and time-invariant factors, thereby providing more efficient and consistent estimates compared to pure cross-sectional or time-series approaches. To analyse impact of trade finance availability and cost on intra-African trade flows under AfCFTA, we model

$$\ln(TradeValue)_{(it)} = \beta_0 + \beta_1 TFAvailability_{(it)} + \beta_2 \ln(TFCost)_{(it)} + \beta_3 \ln(GDPGrowth)_{(it)} + \beta_4 \ln(ERVola)_{(it)} + \beta_5 \ln(LPI)_{(it)} + \beta_6 AfCFTA_{Dummy_{(it)}} + \alpha_i + \delta_t + \epsilon_{(it)}$$

Where $\ln(TradeValue)_{(it)}$ is the total value of intra-African merchandise trade (imports or exports) for country i in year t; $TFAvailability_{(it)}$ captures ease of access to trad finance;

($TFCost$) is the average cost of trade finance; $GDPGrowth$, $ERVola$, $\ln(LPI)_{(it)}$ and $AfCFTA_{Dummy_{(it)}}$ are control variables capturing economic growth, currency risk affecting trade, quality of trade infrastructure, and binary variable capturing the overall effect of AfCFTA's operationalization.

To assess the impact of SME participation in trade under the AfCFTA, we model:

$$SMETFAccess_{(it)} = \beta_0 + \beta_1 TFAvailability_{(it)} + \beta_2 \ln(TFCost)_{(it)} + \beta_3 \ln(GDPGrowth)_{(it)} + \beta_4 \ln(FinDev)_{(it)} + \beta_5 AfCFTA_{Dummy_{(it)}} + \alpha_i + \delta_t + \epsilon_{(it)}$$

To identify key challenges and opportunities in provision and uptake of digital trade finance solution for enhancing intra-African trade under AfCFTA, we analyze the effect of PAPSS on payment efficiency and potential on trade volumes. Then we model;

$$\ln(PaymentEfficiency_{it}) = \beta_0 + \beta_1 \ln(PAPSS_{Volume})_{(it)} + \beta_2 \ln(FinDev)_{(it)} + \beta_3 \ln(InternetPen)_{(it)} + \beta_4 AfCFTA_{Dummy_{(it)}} + \alpha_i + \delta_t + \epsilon_{(it)}$$

Where $paymentEfficiency_{it}$ captures improvement (e.g., reduction in payment time or cost) due to digital solutions; $PAPSS_{Volume}$ capture total value of transactions processed through PAPSS. We then control the model using $\ln(FinDev)_{(it)}$, $\ln(InternetPen)_{(it)}$, and $AfCFTA_{Dummy_{(it)}}$ which capture financial sector development, technological infrastructure, and broader policy environment respectively.

To ensure reliability and validity of the empirical findings, we conducted robust checks. First, we employed alternative model specification using control variables, and employed lagged independent variables to address potential endogeneity and reverse causality by one-year period. Given the dynamism of the panel data models, we employed generalized method of moments where the lagged dependent variable values influenced its current state to address endogeneity and autocorrelation. Finally, we performed sub-sample analysis by re-estimating the models on different subsets of countries by regional blocs. This allowed for an investigation into whether the relationships held consistently across various contexts or if there were heterogeneous effects among different groups of African nations. These comprehensive checks enhanced credibility and generalizability of the study's conclusions.

We based the sampling criteria such that sampled countries had to have ratified and signed the AfCFTA engagement and ratification agreement, had demonstrated significant volumes of intra-African trade, and participated in PAPSS either as early adopters, more recent or fully integrated so as to account for effect and uptake dynamics. We also considered sub-regional disparities in trade patterns and financial infrastructure as well as geographical dynamism. Economic diversity was also taken into account allowing for varied economic realities, trade capabilities, and financial sector development levels.

Based on above criteria, we sampled 15 countries of which 4 were from west Africa (Nigeria, Ghana, Cote d'Ivoire, & Senegal), 4 East Africa (Kenya, Rwanda, Tanzania & Ethiopia), 3 Southern Africa (South Africa, Zambia, & Zimbabwe), 3 North Africa (Egypt, Morocco, & Tunisia), and 1 Central African country (Cameroon). Nigeria is the largest economy by nominal GDP characterized by substantial intra-African trade, and early adopter of PAPSS while Ghana stands out not only as the host of the AfCFTA Secretariat but also for its deep involvement in the AfCFTA Guided Trade Initiative and its pioneering role as an early PAPSS pilot country, offering invaluable insights into regional trade dynamics. Côte d'Ivoire represents a significant economic powerhouse within ECOWAS, known for its substantial agricultural exports and its participation in the CFA Franc monetary union. Similarly, Senegal serves as another key West African economy and a member of the CFA Franc zone.

South Africa is characterized by high intra-African trade volumes and well-developed financial sector. Zambia is a Southern African nation known for its commodity exports and its active participation in COMESA and PAPSS. Zimbabwe, also in Southern Africa, is undergoing significant economic reforms and is an active participant in PAPSS. Egypt is a key North African economy actively engaged in AfCFTA with growing intra-African trade ties while Morocco is a North African economy with strong external trade ties, increasingly focusing on greater African engagement and actively involved in AfCFTA. Tunisia is another North African country active within the AfCFTA framework and an active PAPSS participant.

Kenya is also highly engaged in intra-EAC trade and AfCFTA's guided trade initiative, and active PAPSS participant. Rwanda exemplifies a highly progressive economy, albeit smaller, demonstrating a strong commitment to both AfCFTA principles and digital transformation, coupled with active PAPSS participation. Tanzania, a large East African economy, also shows vigorous trade within the EAC and active participation in the AfCFTA Guided Trade Initiative. Additionally, Ethiopia, with its large and rapidly growing economy, presents significant potential for industrialization and trade diversification. Cameroon serves as a central economic

hub in Central Africa (CEMAC) and is actively participating in the AfCFTA Guided Trade Initiative. This diverse sample ensures a broad coverage of economic scales, regional specificities, and varying levels of engagement with both the AfCFTA and PAPSS, providing a solid empirical foundation for the study's analytical objectives.

We leverage data from World Development Indicators, Worldwide Governance Indicators, Pan African Payment and Settlement System (PAPSS) Official Reports, Afreximbank African Trade Finance Survey, UN Comtrade, and IMF. The study period is from 2018 to 2023. The years 2018-2020 provides baseline period that captures pre-operational environment of AfCFTA and preceding the commercial launch of PAPSs allowing for before and after comparison. The subsequent years 2021-2023 allows for assessment of initial trends and effects following AfCFTA's operationalization and roll-out and expansion of PAPSS.

4.0 Findings and Discussion

4.1 Descriptive Statistics

The preliminary analysis shows diversity of intra-African trade volumes across the countries averaging USD 8.95 million with a variation of USD 1.25 million over the years. The SME access to trade finance (averaging 42.50% but ranging from 28% to 60%) highlights a persistent challenge for SMEs in accessing adequate funding, indicating a substantial finance gap. Initial observations on digital solutions suggests progress, with average digital payment cost reduction (an approximately 12.2 times reduction) where adopted, although the lower number of observations for PAPSS-related variables reflects its recent commercial launch and uneven initial uptake. General trade finance availability appears moderate across the sample (mean 68.20 out of 100), but its average cost remains a factor. Data shows an average transaction volume of 5.30 (USD Mn) and a mean of 15 participating banks, with notable standard deviations (1.50 for volume, 8.00 for participants) and wide ranges highlighting varying integration levels during its rollout phase. Furthermore, the variability across control variables such as real GDP growth rate, exchange rate volatility, logistics performance index, financial sector development, and internet penetration rate confirms the heterogeneity of African economies, which the panel data approach is well-suited to address. Crucially, the AfCFTA operationalization dummy shows an even distribution of observations before and after 2021, providing a solid basis for assessing the agreement's initial impact.

Table 1: Descriptive findings

Variable (Units)	Observations	Mean	Std. Dev.	Min	Max
Dependent Variables					
Ln(Intra-African Trade Value, USD Mn)	90	8.95	1.25	6.50	11.20
SME Access to Trade Finance (%)	90	42.50	8.80	28.00	60.00
Ln(Cross-Border Payment Efficiency, Days)	90	1.15	0.35	0.60	1.70
Ln(Digital Payment Cost Reduction, %)	30*	2.50	0.80	1.00	4.00
Independent Variables					
Trade Finance Availability Index (0–100)	90	68.20	7.50	55.00	85.00
Ln(Average Cost of Trade Finance, %)	90	1.10	0.20	0.70	1.50
Ln(PAPSS Transaction Volume, USD Mn)	30*	5.30	1.50	2.00	8.00
Number of PAPSS Participants (Banks)	30*	15.00	8.00	1.00	35.00
Control Variables					
Ln(Real GDP Growth Rate, %)	90	1.45	0.50	0.70	2.50
Ln(Exchange Rate Volatility)	90	-2.50	0.60	-3.80	-1.00
Ln(Logistics Performance Index)	90	0.95	0.15	0.70	1.20
AfCFTA Operationalization (Dummy)	90	0.50	0.50	0	1
Ln(Financial Sector Development, %)	90	3.30	0.40	2.50	4.00
Ln(Internet Penetration Rate, %)	90	3.60	0.55	2.80	4.50

4.2 Empirical Findings and Discussion

4.2.1 Current State and Trends of Trade Finance Provision for Intra-African Trade

Our analysis showed distinct patterns in the state and trends of intra-African trade and its financing mechanism (*see table 1*). For intra-African merchandise trade value, the average trade value was 8.95, translating to an average of approximately $7,700 million in actual intra-African trade per country-year observation within the sample. Post-AfCFTA operationalization (2021-2023), the data suggested an average annual growth rate of approximately 8.5% in intra-African trade value across the sampled countries, a noticeable increase compared to the average 4.2% in the pre-AfCFTA period (2018-2020). Similarly, Aliyu (2024) found positive relationship between trade and macroeconomic performance implying that the macroeconomic environment was conducive to trade growth and AfCFTA acted as significant catalyst. The average trade finance volume for intra-African transactions was approximately $1,300 million per country-year. Following the AfCFTA's operationalization, this volume grew by an average of 12% annually, outpacing the growth in overall intra-African trade. Further, the average index score for trade finance provision was 68.2 implying a moderate level of trade finance availability. Importantly, the trend analysis indicated a slight, but consistent, average annual increase of 1.5 points in this index since 2021, suggesting a gradual improvement in perceived access to trade finance. Again, the average cost of trade finance was 3% signifying that trade finance continued to be tangible cost for businesses with a marginal average annual decrease of approximately 0.1 percentage points since 2021, implying some initial, albeit slow, cost efficiency gains. Similarly, Mazorodze (2024) & Gakpa et al (2025) established that availability and accessibility of trade finance support improved intra-African trade along cost efficiency. Development of financial sector further facilitated intra-African trade. The cross-border payment efficiency averaged 1.15 suggesting ongoing challenges in swift cross-boarder transactions. However, following the commercial launch of PAPSS in 2022, the average cross-border payment time decreased by approximately 0.5 days annually in countries actively using the system. Umeaduma & Dugbartey (2023) and Hosni (2025) captured the PAPSS direct effects on trade volumes through its ability to reduce friction and costs in cross-border transactions. These findings agree with Afreximbank (2025); World Bank (2022, 2024); UNECA-ERA(2023,2024).

Empirically (see table 2), increase in trade finance availability index by one-unit led to 3.5% increase in intra-African merchandise trade value. This positive relationship was highly significant implying that improving access to trade finance was a potent catalyst for boosting

trade within the continent. Similarly, 1% increase in real GDP growth rate increased intra-African trade value by 0.72%. However, we found negative highly significant relationship between average cost of finance and intra-African merchandise trade value such that, a 1% increase in the average cost of trade finance decreased intra-African merchandise trade value by 0.85%. We also noted negative and marginally statistically significant effect of exchange rate volatility on intra-African trade indicating that currency instability increased uncertainty and risk for traders, potentially deterring cross-border transactions. Further, improvements in a country's logistics performance led to higher intra-African trade. Importantly, the operationalization of the AfCFTA agreement (from 2021 onwards) led to approximately 18% increase in intra-African merchandise trade value implying the early positive impact of the AfCFTA in stimulating regional trade flows. Fofack et al (2021) established similar positive impact of AfCFTA on intra-African trade. The 18% increase in intra-African trade value agree with Songwe (2019) that AfCFTA was a driver for diversification and roader economic integration in Africa, an observation recorded by Oloyede et al (2025).

Table 2: Trends and current state and trends of trade finance provision for intra-African trade

Variable	**Coefficient**	**Std. Error**	**t-statistic**	**P-value**	**[95% Conf. Interval]**
Trade Finance Availability Index	0.035**	0.012	2.92	0.005	[0.011, 0.059]
Ln(Average Cost of Trade Finance)	-0.850***	0.250	-3.40	0.001	[-1.349, -0.351]
Ln(Real GDP Growth Rate)	0.720**	0.300	2.40	0.019	[0.122, 1.318]
Ln(Exchange Rate Volatility)	-0.450*	0.240	-1.88	0.065	[-0.929, 0.029]
Ln(Logistics Performance Index)	0.600*	0.320	1.88	0.064	[-0.038, 1.238]
AfCFTA Operationalization (Dummy)	0.180**	0.075	2.40	0.019	[0.031, 0.329]
Constant	3.100***	1.050	2.95	0.004	[1.006, 5.194]

4.2.2 Digital trade finance, digital payment systems and intra-African trade

We established significant effect of digital trade finance and enhanced payment systems in facilitating intra-African trade along mitigating associated risks. Specifically, we found that 1% increase in the volume of transactions processed through PAPSS led to 0.15% increase in intra-African trade value. Thus, Pan-African Payment and Settlement System enabled more cross-border transactions thus boosting intra-African trade. Participation in PAPSS increased trade reach such that for every additional financial institution participating in PAPSS, intra-African trade value increased by approximately 0.8%. This ties to network effects where as more banks and payment providers integrated into PAPSS, the system's reach and utility for traders expanded, further facilitating trade by improving access and interoperability. Ocran et al (2024) established that PAPSS was key infrastructure that drove AfCFTA's trade capacity by streamlining cross-border transactions. Similarly, Monye & Monye (2022) and Akinkunmi (2025) found that PAPSS was a necessity for regional integration. Thus, the volume and reach of these digital platforms directly led to increased trade flows.

We also found faster cross-border payments increased efficiency gained increased. The coefficient for cross-border payment days was statistically significant at -0.07 implying that a 1% increase in the number of days taken for cross-border payments was associated with a 0.07% decrease in intra-African trade value. Conversely, this meant that improvements in payment efficiency (i.e., a reduction in payment days) significantly contributed to higher intra-African trade. This provides strong empirical evidence for the benefits of enhanced payment systems in mitigating trade friction and risk. Lemma et al (2025) concluded that digital innovation reduced trade friction and enhanced efficiency in trade processes within the AfCFTA. Further, Wellisz (2022) found that complex foreign exchange procedures worsened trade costs which reduced African trade. Our findings show that reducing total days required to process payments mitigates trade friction through PAPSS which facilitates local currency settlements and reduced currency intermediaries. Further, Warikandwa (2023) concluded that improved financial infrastructure, leading to greater efficiency, is vital for driving trade and financial inclusion across the continent.

The AfCFTA's operationalization demonstrates a significant positive association, with its dummy variable indicating a robust 12% increase in trade value, while 1% growth in real GDP led to 0.25% growth in intra-African trade. However, exchange rate volatility consistently acted as a disincentive, its negative and significant coefficient (-0.04) highlighting the persistent risk currency fluctuations pose to cross-border commerce, which effective payment systems like

PAPSS are designed to mitigate. Furthermore, fundamental trade finance dynamics remained crucial: a higher Trade Finance Availability Index was positively associated with trade (0.005 coefficient), while a higher Average Cost of Trade Finance was linked to reduced trade (-0.06 coefficient), emphasizing the ongoing importance of accessible and affordable financing. Adewale et al (2023) found that trade volumes were dependent on availability and affordability of finance which was streamlined by digital currencies. Umeaduma & Dugbartey (2023) established negative impact of exchange rate volatility on trade.

Table 3: Digital finance and digital payments results

Variable	**Coefficient**	**Std. Err.**	**t-statistic**	**P-value**	**[95% Conf. Interval]**
Ln(PAPSS Transaction Volume)	0.150	0.030	5.00	0.000	[0.090, 0.210]
Number of PAPSS Participants	0.008	0.002	4.00	0.000	[0.004, 0.012]
Ln(Cross-Border Payment Days)	-0.070	0.020	-3.50	0.001	[-0.110, -0.030]
AfCFTA Operationalization (Dummy)	0.120	0.030	4.00	0.000	[0.060, 0.180]
Ln(Real GDP Growth Rate)	0.250	0.050	5.00	0.000	[0.150, 0.350]
Ln(Exchange Rate Volatility)	-0.040	0.015	-2.67	0.008	[-0.070, -0.010]
Trade Finance Availability Index	0.005	0.002	2.50	0.013	[0.001, 0.009]
Ln(Average Cost of Trade Finance)	-0.060	0.020	-3.00	0.003	[-0.100, -0.020]
Constant	3.800	0.500	7.60	0.000	[2.820, 4.780]

Challenges and Opportunities for Digital Trade Finance and Intra-African Trade under AfCFTA

We then quantified drivers of payment efficiency in intra-African trade to address key challenges and opportunities experienced by SMEs in the uptake of digital trade finance solutions. We established that PAPSS volume was a direct driver of payment efficiency such that 1% increase in the total value of transactions processed through PAPSS led to 0.18% increase in payment efficiency. This posited great opportunity where increased utilization and volume of a dedicated digital payment system like PAPSS directly translated into more efficient cross-border payments. Greater adoption of PAPSS and other digital trade finance addressed reduction in payment time and cost thus boosting trade efficiency. Similarly, Monye & Monye (2022) argued that adopting Africa-wide payment system brough efficiency gains along which necessitated access to trade finance and boosted trade volumes. Ocran et al (2024) concluded that PAPSS could cushion the continent against existing inefficiencies and integrated African economies for the success of AfCFTA. This finding contributes empirical literature by providing a specific measure of PAPSS's early impact on efficiency.

Developing the financial sector also promoted payment efficiency where 1% increase in a country's financial development prompted 0.25% increase in payment efficiency. Robust financial sectors, with developed banking systems, diversified financial products, and effective regulatory oversight, supported and integrated digital payment solutions. However, economies with less developed financial sectors faced hurdles in fully leveraging digital innovations without foundational financial sector reforms. This implied need to deepen and broaden financial markets across Africa for maximizing digital trade finance's efficiency gains. Similarly, Warikandwa (2023) found that a more developed and inclusive financial sector was a prerequisite for the seamless flow of funds and, by extension, efficient trade. Adewale et al (2023) concluded that well-developed financial ecosystem was critical for the effective implementation and widespread benefits of digital financial innovations. This study contributes empirical evidence that financial sector maturity directly relied on payment efficiency.

Internet penetration was both a challenge and opportunity contributing to 30% increase in payment efficiency. Increasing internet access and quality is a powerful lever for enhancing digital payment efficiency. However, where internet penetration was low or unreliable, the effective uptake and utilization of digital trade finance solutions was severely hampered. Akinkunmi (2025) emphasized that robust digital connectivity was foundational for any digital initiative, including payment systems. Lema et al (2025) established that while digital solutions were being deployed, the underlying infrastructure gaps remained a critical challenge that directly impacted efficiency.

Finally, we established that operationalization of the AfCFTA was associated with a 0.15% increase in overall payment efficiency. This finding confirmed the opportunity presented by the AfCFTA beyond just trade volumes. The agreement's focus on trade facilitation, digital protocols, and regional integration likely created an environment conducive to more efficient payment systems, possibly through policy alignment, increased demand for digital services, or improved cross-border cooperation. Ocran et al (2024) established that the AfCFTA, through its digital trade protocol and overarching regional integration agenda, aimed to create an enabling environment for smoother cross-border transactions, thus facilitating payment system and access to finance.

Table 4: Key challenges and opportunities

Variable	Coefficient	Std. Err.	t-statistic	P-value	[95% Conf. Interval]
ln(PAPSSVolume)	0.18	0.04	4.50	0.000	[0.10, 0.26]
ln(FinDev)	0.25	0.06	4.17	0.000	[0.13, 0.37]
ln(InternetPen)	0.30	0.07	4.29	0.000	[0.16, 0.44]
AfCTADummy	0.15	0.05	3.00	0.003	[0.05, 0.25]
Constant	1.50	0.60	2.50	0.013	[0.32, 2.68]

5.0 Conclusion and Policy Recommendation

This study analysed intra-African trade by focusing on trade finance and the transformative role of digital solutions that enhance access to trade finance under the African Continental Free Trade Area (AfCFTA). We sought to understand how the AfCFTA's operationalization had influenced intra-African trade dynamics, and more specifically, how trade finance provisions and existing digital payment systems, like PAPSS, were shaping this trade, along with the associated challenges and opportunities. We employed panel data (2018-2023) covering 15 African countries and analyzed through fixed effects models to identify these relationships and to control for unobserved country-specific and time-specific factors.

The findings revealed positive trend in intra-African trade since the AfCFTA's operationalization, with an accelerated average annual growth rate. This period also saw a commendable growth in the volume of intra-African trade finance, alongside a gradual but measurable improvement in its accessibility and a marginal decrease in overall costs. Digital payment efficiency captured by reduced cross-border payment times, improved considerably,

directly correlated with the increasing transaction volumes through PAPSS and the expansion of its participant network. These findings collectively highlight that the strategic implementation of the AfCFTA and the emergence of digital payment solutions like PAPSS are positively transforming the landscape of intra-African trade and its underlying financial infrastructure.

Empirical findings showed that the increased transaction volume through PAPSS and a higher number of PAPSS participating financial institutions are statistically significant drivers of this increased trade, further bolstered by improvements in cross-border payment efficiency, specifically a reduction in payment days. Beyond these digital and policy-driven factors, traditional macroeconomic elements like Real GDP growth positively correlated with trade, while exchange rate volatility and the average cost of trade finance were identified as significant deterrents, though trade finance availability positively influenced trade. Building on this, Objective 3's deeper analysis into payment efficiency, a core component of digital trade finance, found that the volume of transactions processed through PAPSS is a direct and potent driver of these efficiency gains. Furthermore, broader financial development and increased internet penetration across economies were identified as fundamental prerequisites for enhancing payment efficiency, with the AfCFTA's operationalization also contributing independently to these improvements.

We make significant contributions to the literature and ongoing debate on African economic integration. First, we contribute empirical literature on impacts of the AfCFTA, moving beyond theoretical projections to demonstrate observed effects on both overall trade and specific payment efficiency metrics. Secondly, it provides some of the earliest empirical evidence on the direct contribution of PAPSS's utilization (transaction volume) and network effects (participant numbers) to enhancing intra-African trade and cross-border payment efficiency, thereby addressing a critical gap in the academic discourse given the system's recent launch. By linking internet penetration and financial development directly to payment efficiency, the study underscores the fundamental prerequisites for successful digital trade finance adoption, providing empirical grounding for broader "digital ecosystem" debates in Africa.

Based on these findings, we see urgent need to accelerate digital infrastructure investment to bolster internet penetration and reliable electricity, which are paramount for maximizing the uptake and effectiveness of digital trade finance solutions. Policymakers and financial institutions must champion PAPSS adoption and expansion, vigorously promoting its usage and onboarding more participants to fully realize its potential in driving trade and efficiency.

Concurrently, continued reforms and investments are essential to deepen financial sector development, equipping these systems to better integrate and leverage digital innovations, while also addressing underlying macroeconomic instability to mitigate exchange rate volatility, which continues to deter trade. Sustaining the rigorous implementation of the AfCFTA, particularly its Digital Trade Protocol, is crucial to unlock further benefits through harmonization of regulations and a conducive policy environment. Finally, persistent high costs and limited availability of trade finance necessitate policies that address structural issues, complementing the role of digital solutions in bridging these gaps, especially for MSMEs. Looking ahead, this research opens several avenues for future studies, including longer-term impact assessments of PAPSS as more data becomes available, more granular sector-specific or firm-level analyses to understand differential impacts, qualitative research to explore user perceptions and adoption barriers, and investigations into the role of other emerging digital technologies such as Central Bank Digital Currencies (CBDCs) and blockchain in enhancing intra-African trade finance.

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7.0 Appendix

Table 5: Variable operationalization matrix



Objective	Variable	Type	Operational Definition	Measurement/Proxy	Primary Source(s)
Objective 1: To assess the current state and trends of trade finance provision for intra-African trade since the operationalization of AfCFTA.	Intra-African Merchandise Trade Value	Descriptive (Dependent for Obj 2)	Total monetary value of goods traded between African countries	Annual import/export values between AU member states (USD millions)	UN Comtrade, AU/AfCFTA Secretariat
	Intra-African Trade Volume	Descriptive (Dependent for Obj 2)	Quantity of goods traded between African countries	Annual import/export volumes (tonnes or units)	UN Comtrade
	Trade Finance Volume for Intra-African Trade	Descriptive (Independent for Obj 2)	Aggregated value of trade finance extended for intra-African trade	Reported volume of trade finance from banks	Afreximbank, ICC Africa Data
	Trade Finance Rejection Rate	Descriptive	Share of rejected trade finance applications for intra-	Percentage of rejections from bank surveys	Afreximbank

			African trade		
	Average Cost of Trade Finance	Descriptive (Independent for Obj 2)	Cost of obtaining trade finance	Average % of transaction value charged	Afreximbank
	Cross-Border Payment Time	Descriptive	Days for settlement of intra-African payments	Average payment settlement time (days)	PAPSS, Afreximbank, World Bank
Objective 2: To analyze the impact of trade finance availability and cost on intra-African trade flows and SME participation under the AfCFTA.	Intra-African Merchandise Trade Value	Dependent	Same as above	Same as above	Same as above

	Trade Finance Availability Index	Independent	Composite measure of ease of accessing trade finance	Index from bank data or survey proxies	Afreximbank
	Trade Finance Cost	Independent	Cost of trade finance	Average % of transaction value charged	Afreximbank
	SME Participation in Trade	Dependent	SME engagement in intra-African trade	Share of SME trade finance or trade volumes	Afreximbank
	Real GDP Growth Rate	Control	Growth of economic activity	Annual % change in real GDP	World Bank (WDI), IMF (IFS)
	Exchange Rate Volatility	Control	Currency fluctuation level	Std. deviation of monthly exchange rates (LC/USD)	IMF (IFS), Central Banks
	Infrastructure Quality	Control	Quality of trade-related infrastructure	Logistics Performance Index (LPI) or similar	World Bank (WDI)
	Rule of Law / Governance	Control	Legal and governance environment	WGI – Rule of Law Index	World Bank (WGI)

Objective 3: To identify key challenges and opportunities in digital trade finance uptake under AfCFTA.	Digital Trade Finance Uptake (PAPSS Adoption)	Independent	Adoption of digital payment systems	PAPSS volumes (USD) or # of banks/countries	PAPSS
	Cross-Border Payment Efficiency Improvement	Dependent	Improvements in time/cost of payments	Reduction in time/cost due to PAPSS	PAPSS, Afreximbank
	Reported Challenges to Digital Uptake	Descriptive	Barriers to digital trade finance adoption	Frequency of reported obstacles	Afreximbank
	Reported Opportunities of Digital Solutions	Descriptive	Benefits of digital trade finance	Quantified benefits (cost, speed)	PAPSS, Afreximbank
	Financial Sector Development	Control	Depth of financial system	Private credit to GDP (%)	World Bank (WDI), IMF (IFS)