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Beyond Digital Adoption: AI-Enabled Export Readiness and Responsible Digital Internationalisation of African SMEs under the AfCFTA Digital Trade Protocol

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ABSTRACT

African small and medium-sized enterprises (SMEs) increasingly use social media, mobile money, e-commerce platforms and artificial intelligence (AI) tools to reach customers across borders. Digital adoption, however, does not necessarily establish export readiness. Firms may gain online visibility without developing the compliance, logistics, payment, data governance, standards and trust capabilities needed for sustained internationalisation. This paper develops an evidence-informed conceptual framework explaining how AI-enabled digital capabilities can support SME export readiness under the African Continental Free Trade Area (AfCFTA) Digital Trade Protocol. The study integrates peer-reviewed research, AfCFTA legal texts, international development reports and national AI policy documents, supplemented by an illustrative comparison of policy environments in Rwanda, Kenya, Ghana, Nigeria, South Africa and Egypt. The synthesis identifies potential roles for AI in market intelligence, buyer discovery, localisation, pricing, compliance preparation, demand forecasting and risk assessment. However, these benefits remain conditional on institutional readiness, interoperable payments, data protection, cybersecurity, standards infrastructure, fulfilment capacity and SME-sensitive policy implementation. The proposed framework distinguishes digital adoption from export readiness, identifies AI-enabled sensing, seizing and reconfiguring mechanisms and situates firm capabilities within the institutional conditions of continental digital trade. The study offers a practical export-readiness matrix for policymakers, export promotion agencies and SME managers seeking inclusive and responsible digital internationalisation in Africa.

1. Introduction

International business faces slower growth, geopolitical fragmentation, shifting value chains, more demanding regulatory conditions and rapid digitalisation. UN Trade and Development (2026) projects subdued global growth of about 2.6 percent in 2026 and argues that developing economies face both risks and opportunities as digital, green and regulatory transitions reshape trade flows. These pressures heighten the importance of regional trade, SME competitiveness and participation in digital markets across Africa. The AfCFTA is widely presented as a structural opportunity because full implementation could raise African income by 7 percent or nearly US$450 billion in 2014 prices, while expanding intraregional trade and reducing poverty (World Bank, 2020). These gains, however, depend on effective implementation. They require trade facilitation, services liberalisation, implementation capacity and firm-level readiness, especially among SMEs.

SMEs account for a substantial share of business activity and employment. The World Bank (n.d.) estimates that SMEs represent about 90 percent of businesses and account for more than half of global employment. In Africa, population growth, informality, constrained formal employment and limited participation in regional value chains make SME development particularly significant. Nevertheless, SMEs are commonly disadvantaged by finance constraints, limited managerial capacity, weak market intelligence, standards compliance burdens, uncertain cross-border payments, logistics bottlenecks and uneven policy support. Digital channels appear to reduce some of these barriers, but they do not remove the deeper institutional and operational requirements of exporting.

The AfCFTA Digital Trade Protocol provides a policy context for examining this problem. Its stated objective is to establish harmonised rules, common principles and standards that support digital trade for sustainable and inclusive socio-economic development and continental digital transformation (African Union, 2024). It further seeks to promote intra-African digital trade, common and open standards, interoperability, trustworthy digital ecosystems, digital skills, digital entrepreneurship and responsible adoption of emerging technologies (African Union, 2024). These provisions directly connect firm internationalisation to continental digital governance. They also create a conceptual question for international business scholarship: how can African SMEs convert AI-enabled digital adoption into genuine export readiness rather than mere online visibility?

AI offers potential benefits while also raising concerns about exclusion. The World Bank's (2026) concept note argues that AI may help developing countries address market failures, improve decision-making and make smartphone-based business advice more accessible to small enterprises. The same source cautions that AI could deepen inequality because of its dependence on computing power, data, skills, safeguards and the market power of large technology companies. The Organisation for Economic Co-operation and Development (OECD, 2025) similarly notes that AI adoption among SMEs is less widespread than other forms of digital technology adoption and lags adoption among larger firms, with connectivity, data, algorithms, compute, skills and finance acting as critical enablers. These considerations caution against treating AI as a technological shortcut. It must be embedded in organisational capability, institutional trust and responsible governance.

The central research problem is the gap between digital adoption and export readiness. African SMEs may use WhatsApp, Facebook, TikTok, online marketplaces, mobile money and generative AI tools, yet remain unable to export sustainably because they cannot verify buyers, comply with standards, secure payments, manage returns, document origin, protect customer data, meet product certification requirements or fulfil cross-border orders reliably. Digital adoption may therefore increase visibility without producing operational readiness. The framework proposes that responsible digital internationalisation depends on a

threefold alignment of firm-level AI-enabled capabilities, cross-border institutional readiness and AfCFTA-sensitive implementation.

The study addresses five research questions. RQ1: How do AI-enabled digital capabilities influence the export readiness of African SMEs? RQ2: What institutional conditions are necessary for African SMEs to convert digital adoption into responsible digital internationalisation? RQ3: How does the AfCFTA Digital Trade Protocol reshape the opportunities and constraints of SME cross-border digital trade? RQ4: What capability gaps prevent African SMEs from moving from digital visibility to sustained export competitiveness? RQ5: What policy and managerial interventions can strengthen inclusive AI-enabled SME internationalisation in Africa?

The paper makes four contributions. First, it distinguishes digital market access from export execution by positioning export readiness as the mechanism connecting AI-enabled capabilities to responsible cross-border participation. Second, it specifies AI-enabled sensing, seizing and reconfiguring as complementary organisational processes. Third, it treats institutional readiness as heterogeneous contextual conditions, rather than an assumed higher-order latent construct, that moderate capability conversion. Fourth, it identifies responsible digital governance as a distinct moderator of the export-readiness-to-internationalisation relationship and offers an export-readiness matrix for SME managers and policymakers.

2. Literature Review

2.1 SME internationalisation in emerging economies

SME internationalisation scholarship has long recognised that smaller firms face distinctive resource constraints when entering foreign markets. The Uppsala tradition emphasised experiential learning, gradual commitment and uncertainty reduction, while later revisions shifted attention from liability of foreignness to liability of outsider ship in relevant business networks (Johanson & Vahlne, 2009). International entrepreneurship scholarship, in contrast, explains how some firms internationalise early by combining opportunity recognition, entrepreneurial orientation and distinctive capabilities (Knight & Cavusgil, 2004; Oviatt & McDougall, 1994). These traditions remain valuable, but African digital trade raises a more specific question: when digital channels reduce search and communication costs, which non-digital barriers remain binding?

Export readiness helps answer that question. It refers here to the condition in which a firm possesses sufficient strategic, operational, financial, regulatory and relational capacity to identify foreign market opportunities, meet buyer and regulatory requirements, deliver reliably, receive payment securely and manage cross-border risk. This definition extends beyond online presence. A firm that advertises on social media but lacks standards certification, trade documentation, packaging, logistics coordination and customer dispute mechanisms is digitally active but not export-ready. The distinction is essential because internationalisation is not simply a communications problem. It depends on coordinated capabilities, trustworthy institutions and functioning infrastructure.

2.2 Digital adoption and platform-mediated trade

Digitalisation alters the opportunity structure of international business by expanding access to customers, information and networks (Autio et al., 2018; Nambisan, 2017; Nambisan et al., 2019). Digital internationalisation theory explains these changes in market reach, relationship formation and modes of foreign-market engagement, but does not establish that platform access alone enables reliable cross-border transactions. Empirical research finds that platforms can facilitate SME internationalisation while shaping visibility, access and dependency (Zhang et al., 2025). In JIBE, Putit et al. (2025) find that perceived

usefulness, ease of use, cost and facilitating conditions are associated with social media marketing continuance among Malaysian micro, small and medium-sized enterprises. Their adoption-level explanation is relevant to sustained channel use, but channel continuance remains analytically distinct from export execution.

Platform-mediated trade is especially accessible to African SMEs with limited formal export support, yet it can increase exposure without establishing trustworthy transactions. Mohamed Hussin and Subramaniam (2026), in JIBE, theorise social media integration as a mediator between organisational antecedents and SME performance, emphasising compatibility and security concerns. This complements the present argument that digital tools must be embedded in organisational capabilities and safeguards. Similarly, Abd. Raub et al. (2025) report gains in SME digital marketing confidence and product adaptation through a Malaysia–Indonesia service-learning initiative, alongside remaining cultural-communication and digital-readiness gaps. These studies establish the importance of adoption, integration and capability development; the present framework extends their implications to export compliance, payments, fulfilment and cross-border trust without assuming that their Malaysian or Indonesian findings are directly generalisable to African exporters.

2.3 AI-enabled capabilities and SME competitiveness

AI may support SME internationalisation through information processing and decision support. At the sensing stage, AI tools can assist with foreign market scanning, demand signals, competitor analysis, buyer discovery, translation and customer segmentation. At the seizing stage, AI can improve customer engagement, quotation preparation, digital marketing, fraud detection, pricing and product-market matching. At the reconfiguring stage, AI can support demand forecasting, inventory planning, compliance checklists, documentation preparation and learning from customer feedback. These functions align with the dynamic capabilities view that competitive advantage depends on the capacity to sense opportunities, seize them and reconfigure organisational resources under changing conditions (Teece, 2007; Teece et al., 1997).

AI use remains constrained by digital maturity, reliable data, skills, finance organisational routines and governance. OECD (2025) identifies connectivity, data, algorithms, compute, skills and finance as adoption enablers, while World Bank (2026) cautions that uneven access can widen divides. Dynamic capabilities theory distinguishes possession of AI tools from their purposeful deployment: sensing informs foreign-market decisions, seizing converts opportunities into buyer relationships and reconfiguring aligns fulfilment and compliance routines with export requirements. Consistent with the JIBE analysis of technology integration and security concerns (Mohamed Hussin & Subramaniam, 2026), the proposed capability construct is behavioural and organisational, not a count of software applications.

2.4 AfCFTA, digital trade governance and institutional readiness

The AfCFTA Digital Trade Protocol establishes a continental framework for digital trade governance. Its objectives include eliminating barriers to digital trade, establishing predictable and harmonised rules, creating a secure and trustworthy digital trade ecosystem, promoting interoperability and encouraging safe, ethical and responsible use of emerging technologies (African Union, 2024). This policy architecture is important because digital trade requires legal and institutional trust. Electronic transactions, cross-border data flows, consumer protection, e-signatures, cybersecurity, digital identity, dispute settlement and payment interoperability all shape whether SMEs can trade beyond borders.

Institutional theory explains why otherwise similar SMEs face different cross-border opportunities. North (1990) emphasises rules and incentives, while Scott (2014) distinguishes regulative, normative and cultural-cognitive pillars. In this framework, institutional readiness is expressly defined as a set of heterogeneous, potentially non-substitutable contextual conditions, not a single higher-order latent variable

or an additive national readiness score. Regulative conditions include recognition of electronic transactions, standards, data protection and enforceable consumer remedies; normative conditions include buyer trust, platform accountability and accepted business practices; cultural-cognitive conditions concern shared expectations, digital literacy and familiarity with cross-border procedures. Payment interoperability, logistics services and certification infrastructure are complementary operational conditions. A strength in one domain cannot necessarily compensate for a binding weakness in another. These external conditions may therefore alter the extent to which AI-enabled organisational capabilities translate into export readiness (P4). They are analytically distinct from responsible digital governance practices exercised by firms and platform intermediaries, which condition how export-ready firms participate responsibly across borders (P5).

2.5 Research gap and conceptual positioning

Table 1 distinguishes the established insights and unresolved mechanisms across five streams. Recent JIBE studies illuminate digital marketing continuance, social media integration and SME capability development (Putit et al., 2025; Mohamed Hussin & Subramaniam, 2026; Abd. Raub et al., 2025), but their findings do not establish whether digitally active enterprises satisfy cross-border compliance, settlement and fulfilment requirements. The present study addresses that narrower explanatory gap by linking AI-enabled organisational capabilities to export readiness, institutional constraints and responsible digital internationalisation under the AfCFTA framework.

Table 1. Key literature streams and research gaps

Literature stream	Established insight	Remaining gap addressed in this study
SME internationalisation	SMEs internationalise through learning, networks, entrepreneurial capability and opportunity recognition (Johanson & Vahlne, 2009; Oviatt & McDougall, 1994).	Limited explanation of how African SMEs move from digital visibility to export readiness under AfCFTA digital trade rules.
Dynamic capabilities	Firms compete by sensing opportunities, seizing them and reconfiguring resources in changing environments (Teece, 2007; Teece et al., 1997).	AI-enabled sensing, seizing and reconfiguring mechanisms remain under-specified for African SME export readiness.
Digital platforms and internationalisation	Platforms and digital marketing support access and use, but continuance, security and integration are distinct from export execution (Nambisan, 2017; Zhang et al., 2025; Putit et al., 2025; Mohamed Hussin & Subramaniam, 2026).	The step from digital reach or integration to compliant, trustworthy and repeatable cross-border exchange remains insufficiently explained.
AI adoption in SMEs	SME AI adoption is shaped by connectivity, data, compute, skills, finance and organisational maturity (OECD, 2025; World Bank, 2026).	AI adoption literature rarely integrates export compliance, cross-border payments, logistics and continental digital trade governance.

Literature stream	Established insight	Remaining gap addressed in this study
AfCFTA digital trade governance	The Digital Trade Protocol seeks harmonised rules, interoperability, trust and responsible emerging technology adoption (African Union, 2024).	Policy analysis has not yet sufficiently specified firm-level SME capability requirements for inclusive implementation.

2.6 Theoretical Framework and Conceptual Model

The three theoretical perspectives explain distinct parts of a sequential, conditional process. Digital internationalisation theory explains the opportunity architecture: platforms and digital networks expand foreign-market discovery, contact and interaction, but their affordances do not guarantee completed trade (Autio et al., 2018; Nambisan et al., 2019; Zhang et al., 2025). Dynamic capabilities theory explains the firm-level conversion mechanism: AI-enabled sensing identifies opportunities, seizing mobilises buyer engagement and market commitments and reconfiguring adapts products, documentation and fulfilment routines (Teece, 2007). Institutional theory explains cross-context variation in this conversion by specifying the external rules, norms, shared understandings and supporting systems that reduce or preserve transaction uncertainty (North, 1990; Scott, 2014). Thus, the perspectives are complementary rather than interchangeable: digital internationalisation identifies where opportunities arise, dynamic capabilities explain how firms prepare to execute them and institutional theory identifies when that preparation is more or less feasible.

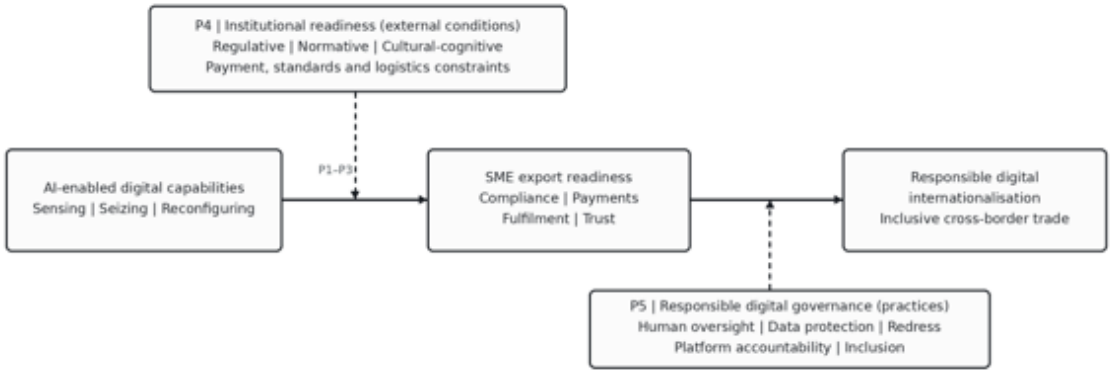


Figure 1. Proposed capability-to-export-readiness framework with distinct institutional (P4) and governance (P5) moderators. Source: Authors' conceptual synthesis informed by African Union (2024), Autio et al. (2018), North (1990), Scott (2014) and Teece (2007).

Five theoretically specified propositions follow. P1: AI-enabled sensing capabilities are positively associated with SME export readiness through improved acquisition and appraisal of foreign-market information. P2: AI-enabled seizing capabilities are positively associated with SME export readiness through verified buyer engagement, market commitments and transaction preparation. P3: AI-enabled reconfiguring capabilities are positively associated with SME export readiness through product adaptation, standards preparation and fulfilment coordination. Together, P1–P3 explain the capability-to-readiness pathway rather than three separate internationalisation outcomes. P4: More supportive institutional conditions positively moderate the relationship between AI-enabled digital capabilities and SME export readiness; the relationship is expected to be stronger where relevant legal, trust, payment and operational constraints are less binding. P5: Stronger responsible digital governance practices positively moderate the relationship between SME export readiness and responsible digital internationalisation by limiting the

extent to which exclusion, platform dependency, data vulnerability and regulatory exposure obstruct sustained, trustworthy cross-border participation. P4 concerns external transaction conditions; P5 concerns governance of actual cross-border practices. Neither proposition presumes an observed causal effect.

Figure 1 represents export readiness as the intermediate organisational condition between AI-enabled capabilities and responsible digital internationalisation, not as a synonym for digital adoption or export performance. The three capability dimensions generate market intelligence, verified buyer engagement, product adaptation, compliance preparation and operational coordination (P1–P3). Institutional readiness is a heterogeneous set of external boundary conditions that positively moderates only the capability-to-export-readiness relationship (P4). Responsible digital governance refers instead to firms' and platform intermediaries' accountable practices, including human oversight, proportionate data protection, transparent customer recourse and safeguards against exclusion and dependency. These practices positively moderate the export-readiness-to-responsible-internationalisation relationship (P5). Both moderation arrows therefore terminate on relationship lines, not construct boxes. No proposition or arrow is an empirically established effect; all remain theoretically specified relationships for future testing.

3. Research Method

3.1 Research design

The study uses an integrative conceptual analysis combined with comparative secondary-data mapping. This approach is suited to a policy-relevant question for which directly comparable firm-level evidence on AI-enabled export readiness in Africa remains limited. Integrative review logic is suitable where the aim is to synthesise diverse theoretical and empirical streams, identify gaps and develop a new framework (Snyder, 2019). The analysis is not presented as a causal empirical test. It is a theory-building and policy-analytic synthesis grounded in traceable secondary evidence.

3.2 Data sources and search strategy

Sources included peer-reviewed international business and entrepreneurship literature, official AfCFTA and African Union documents, World Bank and UN Trade and Development reports, ITU connectivity evidence, GSMA mobile money evidence, OECD AI analysis, selected national AI policy documents and directly relevant JIBE studies (Abd. Raub et al., 2025; Mohamed Hussin & Subramaniam, 2026; Putit et al., 2025). Thematic searches combined 'SME internationalisation', 'digital internationalisation', 'AI adoption SMEs', 'export readiness', 'digital trade', 'AfCFTA Digital Trade Protocol', 'Africa e-commerce', 'cross-border digital payments', 'AI policy Africa' and 'institutional readiness digital trade'. Citation chaining supported identification of foundational and journal-specific literature. The added journal studies strengthen theoretical interpretation; no claim is made that the original screening counts were retrospectively recalculated.

Table 2. Source categories and analytical purpose

Source category	Examples	Analytical purpose
Foundational theory	Teece et al. (1997), Teece (2007), North (1990), Scott (2014), Johanson and Vahlne (2009), Oviatt and McDougall (1994)	To ground the framework in dynamic capabilities, institutional theory and SME internationalisation.

Source category	Examples	Analytical purpose
Digital entrepreneurship and platform literature	Autio et al. (2018), Nambisan (2017), Nambisan et al. (2019), Zhang et al. (2025), Putit et al. (2025), Mohamed Hussin and Subramaniam (2026), Abd. Raub et al. (2025)	To explain digital opportunity creation, continued channel use organisational integration and the residual export-execution gap.
AI and SME policy evidence	OECD (2025), World Bank (2026), Denicolai et al. (2021)	To identify AI adoption enablers, constraints and links to international performance.
African and digital trade policy documents	African Union (2024), International Monetary Fund et al. (2023), UN Trade and Development (2024, 2026), World Bank (2020)	To connect SME readiness to AfCFTA, digital trade governance and broader trade conditions.
Country policy documents	Rwanda, Kenya, Ghana, Nigeria, South Africa and Egypt AI strategy or policy documents	To map national AI and digital governance readiness in selected African contexts.

3.3 Comparative secondary-data mapping

The illustrative comparative mapping covers six countries: Rwanda, Kenya, Ghana, Nigeria, South Africa and Egypt. The selection logic combined regional spread, availability of public policy documents, relevance to African digital entrepreneurship, evidence of AI policy development and potential relevance to AfCFTA digital trade implementation. The mapping is not a ranking exercise. It is a structured comparison of policy and capability signals across digital infrastructure, AI strategy, payment ecosystem, logistics and standards readiness, data governance and SME implementation support.

3.4 Reliability, transparency and limitations of method

The analysis compares information from scholarly literature, official policy documents and international development reports. The manuscript describes deductive coding informed by the theoretical framework and inductive coding of recurring themes concerning payments, logistics, standards, data governance and SME capacity. Because the study relies on secondary data, it does not claim to measure firm-level causal effects or actual AI adoption among African SMEs. Its contribution is conceptual, diagnostic and policy-analytic. Future work should empirically validate the framework using surveys, firm-level datasets, interviews, sectoral case studies and longitudinal export performance data.

3.5 Inclusion, exclusion and PRISMA-informed documentation

Sources were included if they met at least one of five criteria: direct relevance to SME internationalisation or export readiness; direct relevance to AI adoption, digital capabilities or platform-mediated trade; relevance to AfCFTA or digital trade governance; authority as an official policy or development institution source; or foundational theoretical value. Sources were excluded if they were purely promotional, methodologically weak, unrelated to SMEs or internationalisation, not traceable to a credible publisher or duplicative. Figure 2 documents the source identification and screening process in a PRISMA-informed flow format. The approach is described as PRISMA-informed rather than as a

systematic review. Without a reconciled source-level screening log, the reported counts cannot establish a reproducible search history or exhaustive coverage (Page et al., 2021).

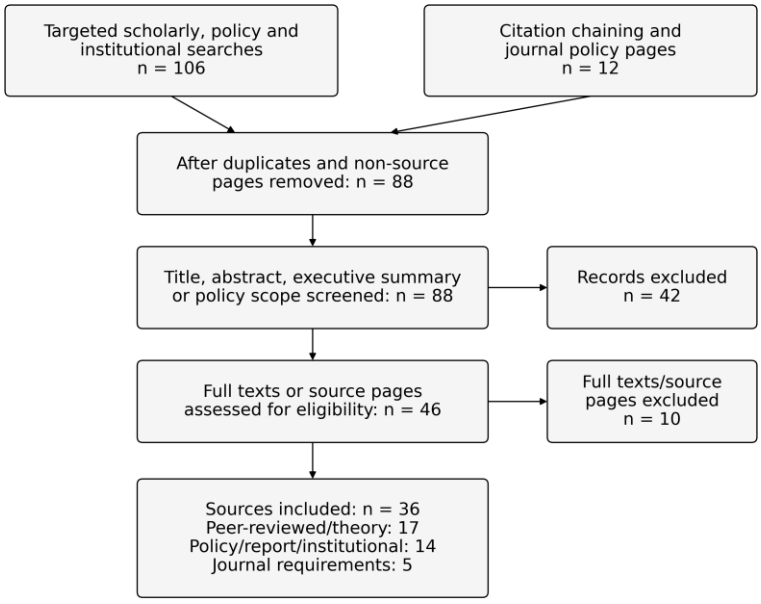


Figure 2. Reported source identification and screening process. Note. Counts are reproduced from the authors' reported screening summary; the review is not presented as a fully reproducible systematic review. Diagram format adapted from Page et al. (2021).

4. Findings and Analytical Synthesis

4.1 The digital adoption-export readiness gap

The synthesis suggests that digital adoption is insufficient on its own to establish SME export readiness. Digital tools can lower search, communication and promotion costs, but export readiness requires additional capabilities. These include standards compliance, certification, trade documentation, buyer verification, fulfilment reliability, secure payment settlement, return handling, consumer protection, data protection and after-sales service. This gap may be especially pronounced among SMEs that rely on informal digital marketing without established export processes. In such cases, digital adoption may increase inquiries without producing reliable export transactions.

The gap also reflects the difference between visibility and trust. Social media posts, online catalogues and platform listings make firms visible, but foreign buyers still require evidence of quality, delivery reliability, payment security and dispute recourse. This distinction aligns with institutional theory because cross-border trade depends on credible rules and enforcement mechanisms, not only on information exchange. It also aligns with dynamic capabilities theory because firms must not only sense opportunities but also seize and reconfigure resources to meet them.

4.2 AI as an enabler of market intelligence and opportunity recognition

AI-assisted tools may lower the cost of foreign-market intelligence for SMEs. For resource-constrained firms, AI-assisted tools can support keyword translation, competitor scanning, product description

adaptation, customer segmentation, demand trend analysis and preliminary regulatory scanning. These functions are especially valuable where SMEs cannot afford specialised export consultants. AI can also support buyer discovery by helping firms identify relevant distributors, compare market requirements and prepare initial communication. These uses are consistent with the World Bank's argument that smartphone-based AI business advice can potentially support small enterprise productivity, although only when connectivity, skills and safeguards are present (World Bank, 2026).

At the same time, market intelligence generated through AI requires verification. AI tools may misinterpret regulatory requirements, generate inaccurate product claims, miss country-specific standards or reproduce biased market assumptions. AI outputs should therefore be reviewed and verified by competent personnel before informing export decisions. Export promotion agencies, chambers of commerce and SME support organisations can play a role by converting AI-assisted market intelligence into verified guidance.

4.3 Digital payments, trust and cross-border transaction readiness

Payment readiness is central to export readiness because an SME cannot internationalise sustainably if it cannot receive secure, affordable and traceable payment. The GSMA (2025) reports that mobile money reached more than 2 billion registered accounts and more than half a billion monthly active users globally in 2024, illustrating the scale of mobile money infrastructure. However, domestic mobile money success does not automatically solve cross-border payment friction. SMEs still face currency conversion costs, know-your-customer requirements, chargeback risks, fraud exposure, platform withholding rules and limited interoperability between payment systems.

The AfCFTA Digital Trade Protocol's emphasis on interoperability and trustworthy digital ecosystems is therefore directly relevant. AI can assist payment readiness through fraud detection, transaction anomaly monitoring, invoice preparation and customer risk screening. Yet these tools require data governance, cyber resilience and coordination with regulated financial institutions. Without such institutional support, AI-assisted payments may remain a private workaround rather than a reliable export system.

4.4 Logistics, standards and compliance as export-readiness bottlenecks

Logistics and standards remain among the most persistent constraints on SME exports. A digital order is only commercially meaningful if the firm can package, label, certify, ship, track and deliver the product within buyer expectations. The World Bank (2020) emphasises that AfCFTA gains depend on trade facilitation reforms and policy implementation, not tariff reduction alone. Digital orders may be small, dispersed and time-sensitive, making reliable fulfilment particularly important to buyer confidence. Failure in fulfilment can quickly damage digital reputation.

AI can support logistics and compliance readiness by generating checklists, comparing documentation requirements, forecasting inventory needs and identifying likely shipment risks. However, AI cannot replace accredited certification bodies, customs reform, standards infrastructure, logistics service quality or mutual recognition mechanisms. This argument supports the paper's central claim: AI-enabled capabilities become valuable only when paired with institutional and operational readiness.

4.5 AfCFTA digital trade governance as enabling but insufficient

The AfCFTA Digital Trade Protocol creates an enabling architecture, but it does not by itself create export-ready SMEs. Its objectives are broad and strategically important: harmonised rules, removal of digital trade barriers, interoperability, trustworthy ecosystems, responsible emerging technology adoption and digital entrepreneurship (African Union, 2024). Yet implementation will require national laws, regional

coordination, enforcement capacity, technical standards, private-sector participation and targeted SME support. The Protocol is therefore treated in the proposed framework as part of the institutional context of SME internationalisation, not as evidence that implementation automatically improves firm performance. This distinction matters for policy. If implementation focuses mainly on high-level legal harmonisation, larger firms and platform intermediaries may capture most benefits. If implementation is SME-sensitive, the Protocol can support export-readiness diagnostics, digital identity, e-signature recognition, SME data protection guidance, cyber hygiene support, interoperable payment systems and simplified digital trade documentation. The distinction concerns both legal implementation and the distribution of its economic benefits.

4.6 Risks of uneven AI-enabled internationalisation

The synthesis also identifies risks. AI-enabled internationalisation may reinforce exclusion if better-resourced firms adopt AI earlier while smaller, rural, informal or women-led enterprises remain constrained by connectivity, skills and finance. The International Telecommunication Union (ITU, 2025) reports that nearly three-quarters of the world's population are online but 2.2 billion people remain offline, mostly in low- and middle-income countries. Africa's internet use remains substantially below the global average, which means that digital trade policy must confront connectivity and affordability gaps rather than assume universal readiness.

AI also raises risks of platform dependency, data extraction, algorithmic bias, misleading automation, cybersecurity vulnerability and loss of local control. UN Trade and Development (2024) further shows that digitalisation carries environmental and resource costs, including energy, water and device-waste burdens, with developing countries often bearing disproportionate costs while capturing fewer benefits. Responsible digital internationalisation must therefore include safeguards for data protection, competition, consumer rights, environmental sustainability and SME bargaining power.

4.7 Toward an AI-enabled SME export readiness framework

Table 3 translates the synthesis into an AI-enabled SME export readiness matrix. The matrix identifies six readiness dimensions and shows how AI can contribute, what complementary conditions are required and what risks should be controlled. This matrix is intended as a diagnostic tool for policymakers, export promotion agencies and SME managers.

Table 3. AI-enabled SME export readiness matrix

Readiness dimension	AI-enabled contribution	Complementary conditions	Risk to manage
Market intelligence	Demand scanning, competitor analysis, translation, buyer discovery, product-market matching.	Verified market data, export advisory support, sector expertise and human review.	False or biased market signals, hallucinated regulatory claims, overconfidence.
Product and compliance readiness	Standards checklists, labelling guidance, documentation preparation origin-rule prompts.	Accredited certification, standards agencies, customs guidance and product testing.	Unverified compliance advice and legal exposure.

Readiness dimension	AI-enabled contribution	Complementary conditions	Risk to manage
Digital payment readiness	Fraud detection, invoice support, transaction monitoring, customer risk screening.	Interoperable payment systems, KYC rules, regulated providers, consumer protection.	Payment fraud, data leakage, platform withholding and currency risk.
Logistics and fulfilment	Demand forecasting, inventory planning, route comparison, shipment tracking support.	Reliable logistics partners, packaging standards, tracking infrastructure and return mechanisms.	Late delivery, hidden costs and reputational damage.
Digital trust and reputation	Customer service automation, review analysis, complaint tracking, reputation monitoring.	Transparent dispute systems, data protection, platform accountability and buyer verification.	Manipulated reviews, privacy breaches and poor escalation.
Responsible governance	Risk assessment, policy monitoring, cybersecurity prompts, audit trails.	Data governance, cyber hygiene, AI literacy, human oversight and accountability.	Algorithmic bias, dependency, exclusion and weak accountability.

Table 4 provides an illustrative comparative mapping of selected African policy environments. It should be read as a qualitative readiness signal, not a definitive ranking. It shows that national AI and digital policy development is advancing, but export-readiness implementation remains uneven and requires closer connection to SME support, payments, standards and logistics.

Table 4. Illustrative comparative policy-readiness mapping for selected African economies

Country	Policy/readiness signal	Export-readiness opportunity	Implementation concern
Rwanda	National AI Policy approved in 2023, with emphasis on responsible and inclusive AI (Republic of Rwanda, 2023).	Can position AI within SME advisory, trade facilitation and digital public infrastructure.	Small domestic market and need for cross-border scale make regional interoperability essential.
Kenya	Kenya AI Strategy 2025-2030 emphasises AI infrastructure, data ecosystems, innovation and ethics (Republic of Kenya, 2025).	Strong digital entrepreneurship and mobile money ecosystem can support platform-enabled exporting.	Rural inclusion, standards compliance and cross-border payment costs remain material.

Country	Policy/readiness signal	Export-readiness opportunity	Implementation concern
Ghana	National AI strategy launched to support digital transformation and responsible AI adoption (Republic of Ghana, 2026).	Can connect AI governance to export promotion, digital identity and SME capacity-building.	Implementation maturity and SME-level operational support require monitoring.
Nigeria	Draft National AI Strategy frames AI as a socioeconomic development tool (Federal Ministry of Communications, Innovation and Digital Economy, 2024).	Large market scale and entrepreneurial density can support AI-enabled market intelligence and regional trade.	Fragmented infrastructure, trust, cybersecurity and formalisation constraints may limit inclusive benefits.
South Africa	The August 2024 AI Policy Framework is identified as the foundation of the draft national AI policy released for public comment in April 2026 (Department of Communications and Digital Technologies, 2026).	Relatively deeper standards, finance and logistics systems can support regional digital trade services.	SME inclusion, inequality and coordination across policy instruments remain central.
Egypt	Second National AI Strategy 2025-2030 sets an inclusive AI framework for Digital Egypt (Ministry of Communications and Information Technology, 2025).	Can link AI strategy to digital services exports, Arabic language technologies and logistics corridors.	Need to connect national AI ambition to AfCFTA SME participation beyond large firms.

5. Discussion

The conceptual synthesis informs the international business debate in three ways. First, it indicates that digital internationalisation should not be equated with digital channel use. Digital channel use may increase market reach, but export readiness requires a broader configuration of capabilities and institutions. This matters because much practitioner language treats platform presence as evidence of internationalisation. The framework instead distinguishes online exposure from transactions that meet compliance, payment, fulfilment and repeat-purchase requirements.

Second, dynamic capabilities theory specifies the organisational processes that can convert digital opportunities into export readiness. AI-enabled sensing supports appraisal of demand, competitors and standards; seizing supports verified buyer engagement, pricing and transactional commitments; reconfiguring aligns product specifications, documentation and fulfilment routines. Digital internationalisation theory explains why platform-mediated networks can make such opportunities accessible before firms possess the capacity to execute them. The findings of Putit et al. (2025) on sustained social media use and Mohamed Hussin and Subramaniam (2026) on digital integration help identify this

distinction between channel engagement and organisational conversion. Thus, P1–P3 concern export preparedness, not a demonstrated AI-induced increase in actual exports.

Third, institutional theory specifies the external conditions under which capability conversion is more likely. Regulative recognition and enforcement, normative trust, cultural-cognitive familiarity, interoperable payments and dependable standards and logistics do not necessarily move together. They are treated as heterogeneous conditions rather than indicators of an unvalidated composite scale. Their conditioning role (P4) pertains to the first path, from AI-enabled capabilities to export readiness. Separately, governance of platform relationships, personal data, automated decisions and customer redress (P5) pertains to the second path, from readiness to responsible cross-border participation. This separation prevents institutional environment and managerial governance from being conflated.

The synthesis further cautions that export-ready firms need not internationalise inclusively or responsibly. Platform concentration, data asymmetries and uneven access can persist after operational barriers are addressed. The model therefore treats accountable digital governance as a theoretically distinct safeguard, rather than a general aspiration or a duplicate label for institutional readiness. In practice, stronger governance may help firms sustain foreign-buyer trust while mitigating vulnerabilities identified in international guidance on AI and SME adoption (OECD, 2025; World Bank, 2026). The proposed moderation remains to be tested.

6. Implications and Limitations

6.1 Theoretical Contributions

The first contribution concerns digital internationalisation theory. By distinguishing digital contact and platform participation from export-ready execution and sustained responsible internationalisation, the model explains why foreign-market visibility is not equivalent to foreign-market capability. Research in JIBE on social media continuance (Putit et al., 2025) and digitally integrated SME resilience (Mohamed Hussin & Subramaniam, 2026) supports the relevance of persistent channel use and organisational integration, but does not itself resolve the additional cross-border requirements identified here.

The second contribution concerns dynamic capabilities theory. AI-enabled sensing, seizing and reconfiguring are specified as complementary organisational practices, each associated with export readiness through different mechanisms (P1–P3). The focus is on interpreting and acting upon market intelligence, preparing transactions and coordinating compliance and fulfilment, rather than treating AI acquisition as a performance-producing resource in isolation.

The third contribution concerns institutional theory. Institutional readiness is explicitly conceptualised as heterogeneous, non-substitutable external conditions, rather than a validated higher-order construct. Their moderating role (P4) concerns conversion of AI-enabled capabilities into readiness; a weak payment or standards regime, for example, may remain binding despite stronger digital literacy or legal provisions. A future empirical study should assess these conditions separately or justify any composite specification before estimation.

The fourth contribution is a distinct governance mechanism (P5): responsible data, algorithmic, platform and customer practices condition whether export readiness leads to sustainable and socially responsible cross-border participation. This proposition is differentiated from P4 by level of analysis, location on the causal pathway and operative mechanisms. The framework thereby relates continental AfCFTA rules organisational transformation and accountable market participation without implying that policy commitments have already yielded measured SME export gains.

6.2 Policy Implications

First, the AfCFTA Secretariat, African Union and regional economic communities should operationalise the Digital Trade Protocol through SME-sensitive implementation instruments. These should include practical guidance on e-signature recognition, cross-border digital consumer protection, platform accountability, interoperable payment systems, digital identity, data protection and cyber hygiene for small firms. Legal harmonisation should be translated into tools that SMEs can understand and use.

Second, national governments and digital trade regulators should build AI adoption support into export promotion policy. Such support should not encourage indiscriminate AI adoption. It means providing verified AI-assisted market research templates, compliance checklists, sector-specific export readiness diagnostics and training on responsible AI use. SMEs need practical pathways that connect digital marketing to standards, payment, logistics and after-sales systems.

Third, export promotion agencies and SME development agencies should adopt an export-readiness matrix similar to Table 3. Instead of asking whether a firm has a website or social media page, agencies should assess market intelligence, standards readiness, payment readiness, logistics readiness, data governance and digital trust. Such diagnostics would help identify whether a firm is ready to trade, nearly ready or digitally visible but operationally unprepared.

Fourth, development partners and higher education institutions should invest in export-specific AI literacy covering buyer verification, product localisation, pricing, compliance, cybersecurity and responsible customer communication. The cross-border service-learning evidence of Abd. Raub et al. (2025) suggests that practical, collaborative training can strengthen marketing confidence and product adaptation, while remaining gaps underline the importance of sustained capability support. Such programmes should help SMEs verify automated outputs and connect digital promotion to actual cross-border transaction requirements.

Fifth, policymakers should address infrastructure and inclusion. ITU (2025) shows that global connectivity remains uneven, while UN Trade and Development (2024) emphasises that digitalisation has environmental and distributive costs. Inclusive digital trade policy must therefore combine connectivity, affordability, skills, environmental responsibility, gender inclusion and support for informal-to-formal transitions.

6.3 Managerial Implications

SME owners and managers should use AI to support, rather than replace, export planning and operational judgment. Practical use should begin with market scanning, translation, buyer discovery and product adaptation, but every output should be verified against credible sources, export advisers or official requirements. Managers should maintain records of AI-assisted decisions, especially when used for compliance, contracts, customer communication or product claims.

Managers should also sequence AI adoption. The first stage is basic digital discipline: accurate product information, updated catalogues, reliable communication channels, secure passwords, data protection practices and documented prices. The second stage is export execution: standards, packaging, payment channels, logistics partners and customer dispute processes. The third stage is responsible AI use: market intelligence, fraud detection, demand forecasting, customer service and continuous learning. This sequence prevents firms from using sophisticated tools before building basic export systems.

Finally, SME managers should avoid platform dependency. Platforms can provide access, but firms should preserve customer records lawfully, diversify channels, build their own reputation assets, understand

platform rules and protect data. Responsible digital internationalisation requires control over core commercial knowledge, not only visibility on third-party systems.

6.4 Limitations and Future Research

The analysis is a conceptual synthesis of secondary sources, not a firm-level causal test and the six-country comparison is illustrative rather than representative. National strategies differ in formal adoption and implementation, so documentary policy readiness cannot establish firm outcomes. The institutional conditions have deliberately not been reduced to a single measured readiness construct and neither institutional moderation (P4) nor governance moderation (P5) has been statistically estimated. The reported source counts have not been independently reconciled with a complete screening log, limiting reproducibility of the literature search.

Future research should test the staged relationships using firm-level observations and context-matched institutional indicators. Surveys or longitudinal data could estimate the associations between sensing, seizing and reconfiguring and export readiness, with trade-performance data examining subsequent internationalisation. Multilevel or configurational designs could evaluate separate regulative, normative, cognitive, payment and logistics conditions rather than assuming interchangeable institutional indicators. Researchers could operationalise governance through verifiable oversight, privacy controls, platform-contract transparency and consumer remedy practices, then test its moderation of the readiness-to-internationalisation link. Sectoral studies across manufacturing, agriculture, creative industries and services could assess variation under evolving AfCFTA implementation.

7. Conclusion

Technology adoption alone will not secure Africa's potential gains from digital trade. SMEs may become digitally visible through social media, mobile money, platforms and AI tools, yet still remain unable to export sustainably if they lack compliance capacity, logistics reliability, secure payments, data governance, buyer trust and institutional support. The framework identifies export readiness as an intermediate set of capabilities connecting digital adoption with responsible internationalisation.

The AfCFTA Digital Trade Protocol offers a continental setting for harmonised rules, interoperable systems, trustworthy digital markets and responsible emerging-technology use, but its effects depend on implementation. The proposed model identifies two different contingencies: external institutional conditions shape whether AI-enabled organisational capabilities become export readiness, while responsible digital governance shapes whether readiness supports durable, compliant and inclusive cross-border participation. This distinction clarifies the proposed propositions and provides a testable foundation for export-readiness diagnostics and future empirical research.

Data Availability

This study uses publicly available secondary sources, including peer-reviewed literature, policy documents and institutional reports. No new primary data were collected.

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Not applicable.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this research paper.

Author Contributions

Sixbert Sangwa: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing – Original Draft, Visualization, Project Administration and Funding Acquisition.

Placide Mutabazi: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing – Review & Editing, Visualization, Project Administration and Funding Acquisition.

Disclosure of AI Use

Generative AI was used during manuscript preparation and editorial revision for language drafting and editing, structural refinement, reference checking, formatting and figure preparation. During the October 2026 revision, OpenAI GPT-6 in ChatGPT was used to assist with theoretical clarifications, language revision, formatting and redrawing Figure 1. Earlier use of OpenAI Codex in ChatGPT Work and GPT-6 for editing and figure preparation was disclosed in the preceding manuscript. The authors independently remain responsible for evaluating every source, proposition, analytical claim and the submitted text; no primary data were generated.

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