

RESEARCH ARTICLE

Digital capability and the geography of African service-firm internationalisation

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ABSTRACT

Digitalisation is widely assumed to reduce the friction of international expansion, yet its effects vary across service businesses. This study examines how digital capability alters the relationship between service characteristics and the speed, scope and geography of internationalisation among three established African service firms: MTN, FirstBank and Shoprite. Using a longitudinal comparative case design, the study revisits evidence from an earlier multi-case dissertation and traces subsequent developments through 2026, focusing on digital delivery, cross-border coordination, customer interface, data integration and platform scalability. The findings show that digital capability changes geography through three mechanisms: digital delivery substitutability, digital coordination extensibility and digital entry optionality. Their effects vary sharply by service type. MTN and FirstBank can digitise substantial parts of service delivery and coordination, but national regulation, licences and infrastructure preserve important territorial constraints. Shoprite gains strongly from digital coordination and customer-interface technologies, yet its grocery model remains physically embedded in stores, logistics and local supply systems. The paper develops the concept of digital geographic fungibility: the extent to which a firm's value processes can be transferred, coordinated or accessed across borders without equivalent replication of physical assets. Digital capability expands this fungibility, but physical embeddedness and host-country regulation condition its effect. The study further argues that virtual presence may constitute an entry mode in some settings, while in traditional African service multinationals digital channels more often complement rather than replace conventional entry modes.

KEYWORDS

digital internationalisation; African multinationals; service firms; digital capability; geographic distance; entry modes; platformisation

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1. Introduction

Digital technologies have altered the architecture of international business. Information can move across borders almost instantaneously; firms can interact with customers without equivalent physical presence; cloud infrastructure permits remote coordination; digital platforms connect multiple market actors; and data increasingly travel separately from the physical activities that generate or consume them. These changes have stimulated an expanding literature on digital internationalisation, born-digital firms, virtual presence and non-traditional entry modes (Monaghan et al., 2020; Autio et al., 2021; Brouthers et al., 2022; Ipsmiller et al., 2022). The emerging consensus is not that geography has disappeared, but that digital technologies are changing which dimensions of geography matter, when they matter and for which activities.

This question is particularly important for service firms because the tradability of services has always depended on the relationship between production, delivery and consumption. Some services can be transmitted, standardised or coordinated at a distance, whereas others remain tied to physical facilities, face-to-face interaction, local infrastructure or host-country regulation. Recent research confirms that service characteristics shape internationalisation drivers, target markets and entry

modes, cautioning against treating the service sector as homogeneous (Taylor et al., 2021). Digitalisation potentially modifies these characteristics by separating selected value processes from place. Yet the extent of this separation is likely to differ substantially across industries.

African service multinationals provide a useful context in which to investigate this mechanism. Firms internationalising from African markets frequently face fragmented regulation, infrastructure gaps, uneven digital readiness and significant cross-country institutional heterogeneity. At the same time, Africa has experienced rapid growth in mobile connectivity, digital financial services and platform-based commerce. Contemporary evidence shows both the promise and unevenness of this digital transition: digital tools are widespread, but advanced business adoption remains constrained by infrastructure, cost, finance and capability gaps (IFC, 2024). For firms that operate across multiple African markets, digital capability may therefore be especially consequential, while remaining deeply conditioned by local institutional environments.

The empirical puzzle for this paper originates in Ikonne's (2012) comparative study of MTN, FirstBank and Shoprite. That study found information and communications technology (ICT) to be unusually prominent in the internationalisation of the three case firms and raised a then-speculative question: could e-commerce itself be treated as an independent mode of foreign market entry? Ikonne (2012) further observed that Shoprite used ICT mainly to coordinate a multinational supply chain, while FirstBank and MTN were able to sustain increasingly transnational operational reach through digital technology, and proposed that the interaction between service type, intangibility and ICT might influence the speed and scope of internationalisation.

More than a decade later, this question can be revisited against a much richer digital-internationalisation literature and substantially deeper firm-level digitalisation. MTN now defines its strategic architecture around connectivity, fintech and digital infrastructure platforms. FirstBank processes hundreds of millions of transactions through digital channels while operating a multi-country banking network. Shoprite has become a technologically sophisticated retailer with centralised digital supply-chain capability and major e-commerce assets such as Sixty60, yet its grocery model remains anchored in physical stores and local fulfilment. These divergent patterns create a natural cross-sector comparison.

The paper asks a narrower question than the broader internationalisation study from which it develops: how does digital capability alter the relationship between service characteristics and the speed, scope and geography of African service-firm internationalisation? The central argument is that digital capability changes geography through several mechanisms that must be distinguished. It can substitute for local physical delivery in some parts of the value process; extend managerial and operational coordination across dispersed markets; and, in some circumstances, create a form of virtual foreign-market presence. These effects are not equivalent and should not be collapsed into a generic claim that digitalisation reduces distance.

The paper makes three contributions. First, it introduces the concept of digital geographic fungibility to describe the extent to which value processes can be transferred, coordinated or accessed across borders without equivalent replication of physical assets. Second, it distinguishes three mechanisms through which digital capability affects internationalisation: digital delivery substitutability, digital coordination extensibility and digital entry optionality. Third, it revisits the claim that e-commerce is an entry mode, arguing that virtual presence can constitute entry when it creates sustained foreign-market participation without local establishment, but that in traditional, regulated and physically embedded service multinationals digital channels more commonly operate as a capability layer that complements established entry modes.

1.1 Problem statement

Internationalisation theory has traditionally treated technology as an ownership advantage, communication infrastructure or background enabler. Earlier service-internationalisation literature, synthesised in Ikonne (2012), already treated ICT as increasing the tradability of knowledge-intensive services and reducing some spatial constraints on service delivery. The spread of digital platforms, mobile applications, cloud systems, artificial intelligence and data-driven coordination, however, makes this treatment increasingly inadequate. Digitalisation now shapes how firms identify markets, interact with customers, organise foreign operations and establish presence abroad (Banalieva & Dhanaraj, 2019; Autio et al., 2021).

Recent research has responded by examining born-digital firms, digital export, virtual presence and non-traditional entry modes (Banalieva & Dhanaraj, 2019; Monaghan et al., 2020; Elia et al., 2021; Brouthers et al., 2022). Much of this literature, however, concentrates either on firms that are digital by design or on digitally enabled exporting by smaller firms. Less is known about established emerging-market multinationals whose business models pre-date contemporary digital technologies and whose value processes combine physical and digital components. This distinction matters because the internationalisation consequences of digital maturity in incumbent firms cannot simply be inferred from born-digital enterprises; research on traditional firms similarly shows that digital internationalisation depends on the development of virtual presence and related organisational capabilities (Ipsmiller et al., 2022).

A second problem concerns service heterogeneity. If digital technologies can reduce the need for co-location, their effect should be strongest where a larger share of the service can be represented, transmitted or coordinated digitally. Yet even highly digital services may remain territorially constrained by licences, regulation, data rules, ecosystem dependencies or infrastructure. Conversely, a physically embedded retailer may use sophisticated digital systems without materially reducing

its dependence on local stores and supply chains. The relationship between digital capability and international geography is therefore contingent on service characteristics.

A third problem concerns entry-mode theory. Ikonne (2012) raised the question of whether e-commerce should be treated as an independent foreign-market entry mode, drawing on evidence that ICT was altering the tradability and spatial reach of services. Contemporary research now recognises virtual presence and managed ecosystems among non-traditional modes of international involvement (Brouthers et al., 2022). The remaining issue is conceptual precision. A digital channel can be a sales interface, an operational capability, a cross-border delivery mechanism or a mode of foreign-market presence. Treating all digital activity as an entry mode risks confusing the infrastructure of internationalisation with the organisational form through which a market is entered.

The unresolved problem is therefore how digital capability interacts with service characteristics, physical-presence requirements and host-country institutions to change the spatial logic of internationalisation among established African service firms.

1.2 Purpose of the study

The purpose of this study is to explain how digital capability influences the geographic scope, coordination and internationalisation pathways of established African service firms with different service characteristics. The paper uses MTN, FirstBank and Shoprite to distinguish digital delivery, digital coordination and digital market-entry mechanisms and to assess whether technology reduces, reorganises or merely overlays the territorial requirements of international expansion.

1.3 Research question and objectives

The study is guided by the following research question: **How does digital capability alter the relationship between service characteristics and the speed, scope and geography of African service-firm internationalisation?**

Five objectives guide the analysis: (1) identify how digital technologies support cross-border delivery and coordination in MTN, FirstBank and Shoprite; (2) compare the internationalisation effects of digital capability across telecommunications, banking and grocery retail; (3) examine whether digitalisation reduces the importance of geographic and psychic distance; (4) assess whether digital channels are better understood as an entry mode, an enabling capability or both; and (5) develop a conceptual relationship linking service characteristics, digital capability and internationalisation scope.

2. Literature review

2.1 Service characteristics and internationalisation

Service firms face distinctive internationalisation problems because production and consumption may be difficult to separate. Classic service research distinguishes services according to dimensions such as intangibility, inseparability, heterogeneity and perishability. International business scholars have consequently differentiated services that can be transferred relatively independently of the provider from those requiring greater provider-customer interaction. Erramilli and Rao (1993) showed that service characteristics affect entry-mode choice, while later work has demonstrated that service attributes also influence the choice between exports and foreign direct investment.

Taylor et al. (2021) bring this distinction into contemporary internationalisation research by showing that hard and soft service-based born globals differ in their internationalisation drivers, target markets and modes of entry. The importance of this insight extends beyond born globals. Service characteristics affect the extent to which a firm must reproduce local assets, employ local people, interact face-to-face with customers or operate through nationally regulated infrastructures.

Digitalisation complicates this distinction because service characteristics are not technologically fixed. A banking service that once required branch interaction may become remotely accessible; customer service may move to mobile channels; payments may be executed electronically across borders; and data analytics may permit centralised risk monitoring. However, not all dimensions of the service digitise equally. A mobile transaction can travel digitally, but the bank may still require a host-country licence. A grocery order can be placed online, but inventory must still be stored, picked and delivered physically. Technology can therefore alter the geography of specific value processes without eliminating the geography of the business model as a whole.

2.2 Digitalisation and international business

Digitalisation affects international business by reducing some information and transaction costs, improving market visibility, increasing scalability and enabling firms to coordinate increasingly dispersed activities. Banalieva and Dhanaraj (2019) argue that the digital economy requires internationalisation theory to account more directly for data, platforms and digitally mediated value creation. Autio et al. (2021) similarly conceptualise digitalisation and globalisation as interacting forces: digital technologies can disperse activities by reducing coordination frictions, while data concentration, platforms and infrastructure may also create centralising tendencies.

The born-digital literature makes these effects especially visible. Monaghan et al. (2020) identify direct stakeholder engagement, automation, network effects, flexibility and scalability as digital affordances that reshape internationalisation. Born-digital firms may access foreign users without building the same physical footprint required by traditional multinationals. Yet digital firms are not automatically location free. Rong et al. (2022) show that they can face a liability of ecosystem integration when success depends on building local relationships among users, complementors and institutions. Digitalisation can therefore move the locus of embeddedness rather than abolish it.

The distinction between digital technologies and digital capabilities is important. Technologies are tools or infrastructures; capability concerns the firm's ability to integrate them into value creation, coordination, learning and market access. Elia et al. (2021), for example, find that digital export depends not simply on access to e-commerce technology but also on dedicated digital capabilities. Recent research on traditional firms likewise emphasises the need to understand how incumbents develop virtual presence and digital maturity rather than assuming that the possession of a website or app amounts to digital internationalisation (Ipsmiller et al., 2022).

2.3 Platformisation and cross-border coordination

Platformisation further changes the unit of analysis. Firms increasingly internationalise through ecosystems that connect customers, complementors, payment providers, logistics operators, software partners and regulators. This is evident in telecommunications and financial services, where mobile money, remittance, merchant payments and application-programming interfaces connect multiple actors around a core digital infrastructure. Platform strategy therefore expands internationalisation beyond the replication of a single firm-owned value chain.

This creates two different spatial effects. First, digital platforms can centralise technology, data, standards and governance while serving users across many national markets. Second, successful operation may require locally embedded complements such as agents, merchants, banks, identity systems, telecom licences or payment regulation. Rong et al.'s (2022) liability of ecosystem integration is therefore relevant to established African service multinationals: the platform may scale technically across borders while the surrounding ecosystem remains nationally specific.

Cross-border coordination is also distinct from cross-border delivery. A retailer can use digital systems to coordinate inventory, suppliers, pricing and replenishment across countries without digitally delivering the grocery service itself. A bank can do both: technology coordinates internal operations and digitally delivers selected customer transactions. A telecom operator can coordinate a distributed network digitally while simultaneously providing digitally mediated services. These differences motivate the need to separate coordination extensibility from delivery substitutability.

2.4 Geography, psychic distance and digitally mediated market access

Digitalisation is often described as reducing distance, but distance has multiple dimensions. Geographic distance affects travel, logistics and physical infrastructure; psychic distance concerns managers' perceived differences and uncertainty; institutional distance concerns regulation, norms and market-supporting systems; and network distance concerns access to relevant relationships. Digital technologies can reduce the cost of information exchange across all of these dimensions without necessarily eliminating the underlying difference.

Digital customer interaction can make demand visible in markets that managers have never physically visited. Analytics can improve market sensing. Collaboration tools can coordinate distributed teams. Virtual channels may permit foreign sales without a local outlet. These mechanisms reduce the operational consequences of distance. Yet recent work on psychic distance continues to show that business, language and institutional differences influence international opportunity exploration, while digital firms may face new forms of ecosystem dependence. The more useful proposition is therefore that digitalisation changes the elasticity of internationalisation to distance rather than making distance irrelevant.

This distinction is especially important in Africa. Digital infrastructure, connectivity quality, payment interoperability, identity systems and data regulation vary considerably between countries. The same digital capability may therefore produce different internationalisation effects across markets. Contemporary African banking evidence, for example, shows rapid expansion in digital services alongside persistent constraints in funding, infrastructure and regulatory systems. Digitalisation can accelerate international reach, but it is enacted through territorially uneven infrastructures.

2.5 Entry modes in digital and hybrid service businesses

Traditional entry-mode research generally classifies foreign market participation through exporting, licensing, franchising, alliances, joint ventures, acquisitions and wholly owned subsidiaries. The rapid growth of digital participation has exposed activities that fit poorly within this typology. Brouthers et al. (2022) identify virtual presence, managed ecosystems, innovation outposts and capital access as non-traditional modes of foreign involvement. Their argument is important because it recognises that firms may establish meaningful foreign-market participation without reproducing traditional ownership structures.

However, virtual presence should not automatically be equated with any use of e-commerce. An entry mode is an organisational arrangement through which a firm establishes and governs participation in a foreign market. A digital channel becomes entry-like when it enables sustained foreign-market exchange, customer access or ecosystem participation without equivalent local establishment. By contrast, a mobile app used by customers in a country where the firm already operates through a licensed subsidiary is better understood as a delivery channel or capability layered onto an existing entry mode.

This distinction offers a way to revisit Ikonne's (2012) original proposition. E-commerce can function as an independent entry mode under conditions of genuine virtual foreign presence, but it is not inherently one. In hybrid service businesses, digital channels may coexist with FDI, franchising, licensing or local subsidiaries. The analytical task is therefore to identify which part of internationalisation the digital mechanism is performing.

2.6 African digital infrastructure and institutional context

The African context strengthens the importance of this distinction. Digital adoption is expanding rapidly, but the infrastructure supporting it is uneven. IFC's 2024 assessment of digital opportunities in African businesses found broad access to basic digital tools but much lower intensive adoption, with cost, infrastructure, digital skills and finance constraining deeper use. In financial services, the EIB's 2024 evidence shows continued growth of mobile and digital banking, while banks still operate within nationally regulated systems.

For multinational service firms, this creates a paradox. Digital capability can help overcome weak physical infrastructure by enabling mobile payments, remote service access and data-driven coordination. At the same time, internationalisation may require investment in the very digital infrastructure needed to make the service possible. MTN illustrates this directly: connectivity is not merely a channel through which the firm internationalises; it is part of the infrastructure the firm must build and operate in each market. FirstBank depends on digital payment and communications infrastructure but also on banking licences and local financial systems. Shoprite's digital commerce depends on fulfilment capacity, reliable stores, distribution networks and local last-mile logistics.

The effect of digital capability on African service internationalisation must therefore be understood as an interaction between firm capability and national digital-institutional conditions rather than as a universal technological effect.

2.7 Knowledge gap

Three gaps emerge from the literature. First, research on digital internationalisation has concentrated strongly on born-digital firms, digital exporters and SMEs, leaving less evidence on established African multinationals whose internationalisation predates contemporary digital technologies. Second, service heterogeneity remains insufficiently integrated into explanations of digital internationalisation. Third, the entry-mode literature increasingly recognises virtual presence but provides limited guidance for distinguishing digital entry from digital delivery and digital coordination in hybrid firms.

This study addresses these gaps through a longitudinal comparison of three established African service firms whose value processes differ sharply in their degree of digitisation and physical embeddedness.

3. Conceptual framework

The framework begins with service characteristics because they define the technological potential for spatial decoupling. Services vary in the extent to which value can be represented as information, delivered remotely, automated, standardised or separated from physical interaction. This underlying digitizability interacts with the firm's digital capability: its ability to deploy technology, data, platforms and organisational routines for cross-border value creation.

The interaction produces what this study terms digital geographic fungibility: the extent to which a firm's value processes can be transferred, coordinated or accessed across national borders without equivalent replication of physical assets. Fungibility is not the same as borderlessness. It is a matter of degree and may differ across activities within the same firm.

Three mechanisms constitute digital geographic fungibility. Digital delivery substitutability refers to the extent to which digital channels substitute for local physical delivery or customer interaction. Digital coordination extensibility refers to the extent to which digital systems allow the firm to manage, standardise and integrate geographically dispersed operations. Digital entry optionality refers to the extent to which digital channels provide a viable way to establish foreign-market participation without a conventional local establishment.

Two principal conditions limit these mechanisms. Physical embeddedness captures the extent to which service production depends on local assets, logistics, stores, networks or embodied interaction. Host-country institutional embeddedness captures licensing, regulation, data rules, consumer protection, financial supervision and ecosystem requirements that anchor activity within national jurisdictions. Digital infrastructure conditions further affect whether technological capability can be realised in practice.

The framework therefore proposes: Service digitizability × Digital capability → Digital geographic fungibility (delivery substitutability + coordination extensibility + entry optionality) → Internationalisation speed, scope and geographic reach. Physical embeddedness, host-country regulation and digital infrastructure moderate this relationship.

The framework generates three expectations. First, digital capability should have the strongest effect on geographic scope where both delivery and coordination are digitizable. Second, where delivery remains physically embedded, technology should improve coordination without proportionately reducing the need for local presence. Third, digital channels should qualify as entry modes only where they create sustained foreign-market participation rather than merely improving the performance of an existing physical or regulated mode.

Figure 1. Digital Geographic Fungibility Framework

Service Characteristics	Digital Capability	Digital Geographic Fungibility	Boundary Conditions	Internationalisation Outcomes
Digitizability Information intensity Need for co-location	Platforms Data & analytics Digital processes	Delivery substitutability Coordination	Physical embeddedness Host regulation	Speed Functional scope Geographic reach

Service Characteristics	Digital Capability	Digital Geographic Fungibility	Boundary Conditions	Internationalisation Outcomes
	Technology routines	extensibility Entry optionality	Digital infrastructure Local ecosystems	Mode of participation

Service digitizability × digital capability increases geographic fungibility; physical and institutional embeddedness condition the effect.

4. Methodology

4.1 Research design and case logic

The study adopts a theory-informed longitudinal comparative case design. The question is mechanistic rather than prevalence based: the objective is to understand how digital capability changes the spatial organisation of internationalisation and why the effect differs across service types. Multiple-case analysis is appropriate where theoretically contrasting cases can reveal recurring mechanisms and boundary conditions (Eisenhardt, 1989; Yin, 2018).

The three cases - MTN, FirstBank and Shoprite - are retained from Ikonne (2012) to create temporal continuity. They also provide purposeful theoretical variation. Telecommunications represents a technology-intensive service in which digital infrastructure is inseparable from the core offering. Banking combines highly digitizable information and transaction processes with strong national regulation and licensing. Grocery retail combines sophisticated information systems and digital customer interfaces with high dependence on physical stores, inventory, logistics and local sourcing. The contrast therefore permits analysis of how similar classes of digital capability produce different spatial effects.

4.2 Longitudinal evidence and temporal bracketing

The analysis combines the historical evidence assembled in Ikonne (2012) with subsequent documentary evidence through 2026. Rather than treating the 2012 findings as current facts, they are used as an early baseline that captured the firms before the present phase of platformisation, mobile finance and large-scale digital retail. Updated evidence was drawn principally from annual and integrated reports, official corporate announcements, investor material, regulatory information and relevant scholarly research.

Temporal bracketing was used to distinguish three broad phases where the evidence permits: an early ICT-enabled phase in which digital technologies primarily supported communication and operational coordination; a digital-channel phase in which firms increasingly used mobile, online and data systems for customer access and organisational integration; and a platform or ecosystem phase in which digital capabilities became more central to multi-sided services, partnerships and cross-border scalability. The phases are analytical rather than uniform calendar periods because the sectors digitised at different speeds.

Temporal bracketing is important because it reduces the risk of attributing long-standing international expansion to technologies that emerged later. It also makes it possible to identify whether digital capability accelerated an existing geographic footprint, substituted for physical presence, or fundamentally changed the mode of international participation.

4.3 Digital-capability evidence matrix

Evidence for each case was organised around five dimensions: digital delivery, customer interface, cross-border operational coordination, data and knowledge integration, and cross-border scalability. Each item was then interpreted against three internationalisation outcomes: reduced dependence on local physical presence, increased ability to coordinate foreign operations, and the emergence of a digitally mediated form of market participation.

The case narratives were first analysed individually and then compared across sectors. Cross-case analysis focused on whether digital capability changed the firm's geography, merely made an existing geography more manageable, or created new market-access options. Attention was also given to regulatory and infrastructural constraints that prevented apparently scalable digital systems from becoming geographically fungible.

4.4 Methodological rationale and analytical caution

The design does not claim that public documentary evidence reveals the internal causal reasoning of managers. Nor does it attribute all changes in internationalisation to digitalisation. The same firms were simultaneously affected by regulation, acquisitions, strategic refocusing, macroeconomic conditions and market exits. Digital capability is therefore analysed as a mechanism operating within broader internationalisation processes.

The cross-sector comparison is designed for theoretical replication rather than statistical generalisation. If digital capability produces different spatial outcomes across the three cases in ways that correspond to their service characteristics and institutional requirements, this strengthens the explanatory value of the proposed framework.

5. Findings

5.1 Digital capability profiles

The three firms display markedly different digital-capability profiles. MTN has the highest degree of digital integration because its core telecommunications infrastructure, customer access, data services and fintech platforms are inherently technological. By 2025 the Group served more than 307 million voice, 172 million data and 70 million Mobile Money customers across 16 markets, while fintech transaction value exceeded US\$500 billion. Its 2026 strategy further consolidated

connectivity, fintech and digital infrastructure as three principal platforms. Digital capability is therefore not an adjunct to MTN's international operations; it is increasingly the architecture of the business.

FirstBank demonstrates a different configuration. Banking was internationally established before contemporary digital channels, but digitalisation has progressively changed how customers transact and how the network is integrated. In 2024, FirstMobile and FirstOnline together processed more than 730 million transactions valued at approximately N67 trillion. Digital platforms extend customer access and transaction capacity, while international subsidiaries and representative offices continue to provide regulated institutional presence. The Bank is consequently a hybrid case in which digital delivery has become substantial without replacing the licensed banking organisation.

Shoprite is digitally sophisticated but spatially different. Its investment case explicitly combines a centralised supply chain with innovation in digital technology. The Group's e-commerce capability, including Checkers Sixty60, demonstrates rapid digital customer-interface innovation and digitally orchestrated fulfilment. Yet grocery retail remains tied to physical merchandise, local stores, distribution facilities, suppliers and last-mile delivery. Shoprite's digital capability therefore penetrates coordination and customer interaction more strongly than the underlying geography of service production.

This comparison already suggests that the same label - digital capability - hides very different internationalisation functions. In MTN it is infrastructural and platform based; in FirstBank it is both transactional and integrative; in Shoprite it is primarily coordinative and channel based.

5.2 Digital coordination of international operations

Digital coordination extensibility is visible in all three firms, making it the most general mechanism across sectors. For MTN, network-management systems, data platforms and standardised technologies enable operating companies to be monitored and coordinated across a multi-country footprint. Group strategy increasingly seeks to leverage common platforms, shared technology and partnerships across markets. The ability to coordinate connectivity, fintech and infrastructure businesses digitally lowers the managerial friction associated with geographic dispersion.

FirstBank similarly benefits from digital coordination in payments, risk monitoring, customer systems, transaction processing and organisational integration. Digital systems make it easier to standardise aspects of service quality and governance across subsidiaries even though each bank remains subject to national supervision. The progressive unification of international subsidiaries under the FirstBank brand complements this technological integration.

For Shoprite, digital coordination is arguably the most important technological contribution to internationalisation. Retail scale depends on visibility over inventory, purchasing, suppliers, logistics and demand. Electronic data exchange, enterprise systems and centralised supply-chain capabilities allow the Group to coordinate a complex physical network more efficiently. In this case, technology reduces the coordination cost of distance without making the underlying operations less physical.

Digital coordination therefore alters geography indirectly. It raises the number and diversity of locations that management systems can govern effectively, but it does not necessarily substitute for local assets. This mechanism is strongest as an accelerator of organisational scope rather than as a replacement for foreign-market establishment.

5.3 Digital delivery versus physical presence

The clearest cross-case differences appear in digital delivery substitutability. MTN can deliver a substantial share of its value digitally because connectivity, data and mobile financial transactions are electronically mediated. Its fintech ecosystem extends this logic by enabling payments, remittances, lending, insurance and e-commerce services through a common platform. Yet even this highly digitized model remains materially territorial. Radio spectrum, mobile networks, data centres, telecom licences and agent or merchant ecosystems are locally embedded. Digital delivery reduces the marginal importance of proximity between customer and provider, but it does not eliminate the need for national infrastructure and regulatory authority.

FirstBank also shows high but incomplete delivery substitutability. Customers can initiate transfers, payments and other services digitally, reducing branch dependence and widening access. Cross-border transactions may be initiated without customers physically entering a foreign branch. Nevertheless, the legal capacity to provide banking services remains territorially anchored in subsidiaries, licences, capital rules, risk supervision, payment systems and know-your-customer requirements. Digital banking therefore decouples customer interaction from location more strongly than it decouples the bank itself from jurisdiction.

Shoprite occupies the opposite end of the spectrum. Customers can search, order and pay through a digital interface, but the value proposition still depends on local inventory and physical fulfilment. Sixty60 digitises the front end of grocery retail and intensifies the use of stores as fulfilment nodes; it does not make groceries location independent. The internationalisation of the retail business consequently remains tied to physical market entry even when customer acquisition and coordination become increasingly digital.

The findings therefore reject a simple binary between digital and physical firms. Digital capability operates at the level of value activities. A firm may be highly digital in customer interface and coordination while remaining geographically embedded in production or fulfilment.

5.4 Effects on internationalisation speed, scope and geography

Digital capability appears to affect internationalisation speed most clearly when the firm already possesses the regulatory or infrastructural basis for serving multiple markets. MTN can scale common digital services across an established operating footprint faster than it could replicate physical service infrastructure from scratch. FirstBank can deepen the use of digital channels across subsidiaries once regulatory and organisational foundations exist. In both cases, digitalisation increases the intensity and scope of international activity within an existing geography.

The effect on geographic expansion is more qualified. MTN's digital capabilities support a wide African platform strategy, yet the Group has also withdrawn from selected markets and requires nationally grounded infrastructure. FirstBank's digitalisation has not displaced its subsidiary-based international architecture. Shoprite's digital retail innovation has not converted grocery internationalisation into a location-free model and has emerged alongside a period in which the Group reduced its exposure to several foreign markets.

Digitalisation therefore has a stronger and more consistent effect on functional scope than on territorial scope. It expands what the firm can do across borders, how rapidly it can coordinate activities and how many customers or transactions can be served, but it does not necessarily cause the firm to enter more countries. Geographic reach and digital reach are related but distinct dimensions of internationalisation.

5.5 Regulation, infrastructure and ecosystem constraints

The cases also show why digitalisation does not erase institutional distance. MTN's connectivity operations depend on spectrum allocation, licences, infrastructure rules and political relationships. Its fintech services add financial regulation, payments interoperability and ecosystem partners. Scaling the same technological platform therefore requires repeated integration with national institutions and complementary actors.

FirstBank's digital services similarly remain embedded in national banking and payment architectures. The existence of a mobile app does not confer the legal right to take deposits or provide regulated banking services in a foreign jurisdiction. Digital capability lowers transaction and coordination costs, but the bank's international presence remains governed through nationally authorised entities.

Shoprite faces a different set of constraints: property markets, customs, logistics, supplier ecosystems, labour, consumer preferences and last-mile infrastructure. Digital ordering can intensify the value of an existing local ecosystem but cannot replace it. This reinforces Rong et al.'s (2022) argument that digital firms and digitally enabled firms may face liabilities arising from the need to integrate local users, complementors and institutions.

African digital infrastructure adds a further boundary condition. Connectivity quality, payment rails, data systems and digital adoption differ across markets. A capability that is scalable in technical terms may therefore remain uneven in commercial reach. Technology reduces some dimensions of distance while making infrastructure and ecosystem quality more strategically salient.

5.6 Cross-case comparison by service type

The cross-case comparison reveals a gradient of digital geographic fungibility. MTN exhibits high coordination extensibility and high delivery substitutability, but only moderate entry optionality because core telecom and fintech activities remain nationally licensed and infrastructurally embedded. FirstBank exhibits high coordination extensibility and high transactional substitutability but low-to-moderate entry optionality because regulated banking presence remains central. Shoprite exhibits high coordination extensibility, low delivery substitutability and low entry optionality because the core service remains physically fulfilled.

This gradient is more informative than a generic classification of the firms as digital or non-digital. It shows that service digitizability and digital capability interact at the activity level. Telecommunications, banking and retail may all use advanced digital technologies, yet the same technology produces different internationalisation effects because the activities being digitised differ in their dependence on place.

Table 2. Cross-case digital internationalisation mechanisms

Dimension	MTN	FirstBank	Shoprite
Core digital role	Infrastructure + delivery + platform	Transactions + customer access + integration	Coordination + customer interface
Delivery substitutability	High	High for many transactions	Low
Coordination extensibility	High	High	High
Entry optionality	Moderate	Low–moderate	Low
Physical embeddedness	High in networks/infrastructure	Moderate–high in regulated entities	Very high in stores/logistics
Institutional embeddedness	Very high: spectrum, telecom, fintech	Very high: banking, payments, data	High: trade, property, labour, logistics
Primary geographic effect	Scale common digital services across footprint	Deepen cross-border service within regulated	Manage physical network more efficiently

Dimension	MTN	FirstBank	Shoprite
		footprint	

5.7 Is e-commerce an entry mode?

The longitudinal evidence allows the proposition advanced by Ikonne (2012) to be refined. E-commerce should not be treated categorically as either an entry mode or merely a promotional channel. It can be either, depending on the organisational role it plays in foreign-market participation.

For the three firms examined here, digital channels mostly complement established physical or regulated entry modes. FirstBank's mobile and online banking operate over a network of licensed entities. MTN's digital services rely on operating companies, spectrum, network infrastructure and partner ecosystems. Shoprite's e-commerce service depends on local stores and fulfilment infrastructure. In each case, the digital channel changes delivery, coordination or customer access without independently constituting the legal and organisational basis of entry into most foreign markets.

The contemporary non-traditional entry-mode literature nevertheless confirms the intuition behind the earlier question. Virtual presence can be an entry mode where a firm participates in a foreign market through sustained digital interaction, exchange or ecosystem participation without equivalent local establishment (Brouthers et al., 2022; Ipsmiller et al., 2022). The correct conclusion is therefore conditional: digital presence becomes an entry mode when it substitutes for the organisational arrangement through which foreign-market participation would otherwise occur. Where it merely operates within an existing subsidiary, franchise, licence or physical network, it is better conceptualised as an enabling capability or delivery channel.

6. Discussion

The findings challenge the broad claim that digitalisation makes geography irrelevant. What technology changes is not geography itself but the spatial dependence of particular value processes. Digitalisation can make information, transactions and coordination more geographically fungible even while infrastructure, regulation and ecosystems remain place bound. This is why the three firms display different internationalisation effects despite all being digitally sophisticated.

The concept of digital geographic fungibility captures this difference. Fungibility rises when a value process can be transferred, coordinated or accessed across borders without equivalent replication of physical assets. It is high for many informational and transactional banking activities, high for much of telecommunications service delivery, and lower for grocery fulfilment. Crucially, fungibility can vary within the same firm: MTN's mobile money interface may be digitally scalable while spectrum and radio infrastructure remain local; FirstBank's transaction interface may be location-light while the banking licence remains jurisdiction-specific; Shoprite's digital storefront may be accessible remotely while the basket of groceries remains physically local.

This activity-level view extends service internationalisation research. Taylor et al. (2021) demonstrate that service characteristics influence internationalisation pathways. The present study suggests that digital capability can partly reconfigure those characteristics, but only for activities that are technologically separable from local production or consumption. Service characteristics are therefore not static, yet neither are they fully malleable.

The findings also refine the role of distance. Digital capability lowers the coordination cost of geographic separation and can reduce customer-side psychic distance through continuous digital interaction. It may also improve market sensing and standardisation. However, institutional and ecosystem distance can remain powerful or even become more visible. A digitally scalable financial service still encounters country-specific data, payment and licensing regimes. A platform must integrate with local complementors. In this sense, digitalisation redistributes distance: some frictions decline while others become more strategically important.

A further implication concerns the distinction between internationalisation speed and internationalisation depth. Digital technologies can accelerate the scaling of services across an existing footprint without accelerating country entry. MTN and FirstBank demonstrate rapid growth in digitally mediated usage and transactions across already-established operations. Shoprite's digital capability similarly deepens customer engagement and operational integration without necessarily expanding the number of foreign countries served. Digital intensity should therefore not be used as a proxy for geographic internationalisation.

The paper also clarifies the entry-mode debate. Ikonne's (2012) original proposition that e-commerce might constitute an independent entry mode anticipated a question that contemporary theory now addresses through concepts such as virtual presence and managed ecosystems (Brouthers et al., 2022). The stronger contemporary conclusion, however, is that entry mode should be identified by the governance of foreign-market participation, not by the mere presence of digital technology. Digital channels may create an entry mode, but they may equally intensify a conventional one.

For African international business research, the cases demonstrate why digitalisation deserves to be analysed together with infrastructure and institutions. Africa's digital transformation can allow firms to leapfrog certain legacy systems, particularly in financial services, while simultaneously making connectivity, interoperability and regulatory coordination central determinants of cross-border scalability. The geography of digital internationalisation is therefore neither borderless nor simply country bound. It is a layered geography of platforms, infrastructure, ecosystems and jurisdictions.

7. Theoretical and managerial implications

Theoretically, the study contributes by separating three mechanisms that are often conflated in digital internationalisation research. Digital delivery substitutability concerns whether the service itself can move electronically. Digital coordination extensibility concerns whether dispersed operations can be managed through common digital systems. Digital entry optionality concerns whether the firm can participate in a foreign market without equivalent local establishment. The mechanisms can coexist but do not have to.

The concept of digital geographic fungibility offers a bridge between service characteristics and digital internationalisation. It retains the insight that different services possess different spatial requirements while recognising that technology can modify those requirements. It also provides a basis for theorising hybrid firms whose operations combine digital and physical assets, an increasingly important category that falls between conventional MNEs and born-digital firms.

For managers, the implication is to avoid treating digital transformation as a generic internationalisation strategy. Firms should map which value processes are digitally transferable, which merely become easier to coordinate and which remain locally embedded. Investment priorities should follow this activity-level diagnosis. A bank may obtain greater international leverage from interoperable transaction, identity and risk systems; a telecom group from reusable platforms, APIs and shared digital infrastructure; a retailer from data, supply-chain integration and digitally orchestrated fulfilment.

Managers should also distinguish digital reach from regulatory permission. A service may be technically deliverable across borders while remaining legally restricted. International scaling therefore requires capability portfolios that combine technology with regulatory, partnership and ecosystem capabilities.

For policymakers, the results highlight the international-business importance of digital infrastructure, interoperable payments, data governance, cybersecurity, digital identity and cross-border regulatory cooperation. These conditions shape whether firm-level digital capability translates into regional service integration. AfCFTA-related service liberalisation may generate stronger practical effects when digital and regulatory infrastructures allow firms to operationalise market access.

8. Limitations and future research

The study has several limitations. It examines three large, established firms and therefore cannot represent the full diversity of African service internationalisation. The cases are also incumbents rather than born-digital firms. This is analytically useful for examining transformation over time, but it means that conclusions should not be transferred directly to fintech, edtech, software or platform-native ventures.

The study relies predominantly on documentary evidence. Public sources provide strong evidence on strategy, footprint, products and digital scale but less access to internal managerial reasoning about how technology affected specific country-entry decisions. Interviews with executives responsible for digital strategy and international operations would strengthen causal interpretation.

The concept of digital geographic fungibility is developed from comparative case evidence and requires further empirical testing. Future work could operationalise the construct by measuring the share of value activities that can be delivered remotely, coordinated centrally or entered virtually. Comparative studies could examine fintech, professional services, education technology, health platforms and business-process services, where the tension between digital transferability and local regulation is especially visible.

Further research should also distinguish between geographic scope, customer reach and transactional reach. A firm may serve users in more countries without establishing subsidiaries, or may dramatically increase cross-border transaction intensity within an unchanged country footprint. Digital internationalisation research would benefit from treating these as separate dependent variables rather than a single degree of internationalisation.

Finally, future African research should examine how regional digital public infrastructure, payment interoperability and data-governance regimes influence firm-level scaling. Such work would connect the micro capabilities of firms to the meso and macro architecture of regional digital integration.

9. Conclusion

This study asked whether technology alters the geography of African service-firm internationalisation. The answer is yes, but unevenly and at the level of activities rather than borders as such. Digital capability changes what must be local, what can be coordinated at a distance and, in some cases, how a foreign market can be entered. Its effect depends fundamentally on the service being delivered.

MTN shows the greatest digital geographic fungibility, with technology integral to delivery, coordination and platform scaling, yet national infrastructure and regulation remain decisive. FirstBank demonstrates substantial digital substitution for branch-based interaction and strong cross-border coordination, but banking licences and national financial systems continue to anchor the organisation territorially. Shoprite shows that advanced digital capability can transform coordination and customer access without materially eliminating the physical embeddedness of grocery retail.

These patterns support a more precise formulation of digital internationalisation. Service digitizability interacts with digital capability to create digital geographic fungibility through delivery substitutability, coordination extensibility and entry

optionality. Physical embeddedness, host-country regulation and digital infrastructure condition the effect on internationalisation speed, scope and geographic reach.

The analysis also resolves the earlier entry-mode question. E-commerce and virtual presence can constitute foreign-market entry modes when they provide the organisational basis for sustained market participation without equivalent local establishment. In the three traditional African service multinationals examined here, however, digital channels more often complement and intensify existing modes of entry. Technology therefore does not abolish the geography of expansion. It reorganises it.

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