Effect of Artificial Intelligence on Retail and Consumer Markets in Africa: Market Power Concentration, Informal Trader Displacement, and Retail Protection Policy

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ABSTRACT

This study examines how artificial intelligence (AI) is reshaping retail and consumer markets in Africa, focusing on rising market concentration, the displacement of informal traders, and the need for stronger regulation. It adopts a mixed-methods approach, combining documentary analysis, comparative regulatory review, and data from organizations such as the International Finance Corporation, the African Development Bank, the African Competition Forum, the ILO, and FinMark Trust, alongside reports from regulators in Nigeria, Kenya, South Africa, Ghana, and Egypt. The study identifies six key areas of disruption: AI-driven pricing allows large digital platforms to undercut informal traders, data control strengthens these platforms' market dominance, recommendation systems influence consumer behavior, and AI-integrated supply chains often exclude small suppliers. As a result, informal traders, who account for a large share of urban employment, face growing displacement. Despite these developments, AI-specific retail regulations are largely absent across the countries studied. The study describes this as an "African AI retail displacement gap," where AI widens the divide between global platforms and local traders, creating unsustainable economic and social outcomes. It argues that this reflects both a market imbalance and governance failure. To address this, the paper proposes practical measures including stronger competition rules, protections for informal traders, fairer supply chain access, pricing transparency, improved consumer protection, and increased investment to support local participation in digital markets.

Keywords: artificial intelligence; retail Africa; consumer markets; informal traders; AI displacement; platform market power; digital markets; e-commerce Africa; AI pricing; retail competition

1. INTRODUCTION

Retail and consumer markets are the daily commercial interface through which African households meet fundamental needs, informal traders sustain livelihoods, and small enterprises generate employment. Africa's retail sector is characterised by a dual structure: a rapidly growing formal retail segment dominated by supermarket chains, e-commerce platforms, and shopping centres concentrated in major cities, and an informal sector comprising market stalls, roadside vendors, and small shops that serve the majority of the continent's population and provide an estimated 60 percent of urban employment in sub-Saharan Africa [1]. The interaction between these two sectors is being fundamentally restructured by artificial intelligence, with consequences for market competition, consumer welfare, and the livelihoods of tens of millions of African informal traders.

Artificial intelligence has restructured retail economics through four intersecting mechanisms. AI dynamic pricing algorithms enable global e-commerce platforms to adjust prices millions of times per day in response to real-time demand signals, inventory data, and competitor pricing, achieving price optimisation at a scale and speed that informal traders cannot match. AI recommendation and personalisation systems route consumers toward AI-curated product selections and platform-preferred sellers, controlling consumer access to the retail market without any obligation to include or promote African informal traders. AI supply chain integration tools create competitive advantages for formal retailers by enabling demand forecasting, inventory optimisation, and logistics coordination that require digital data reporting standards beyond the capacity of informal suppliers. AI data monopolies accumulated from billions of consumer transactions provide global AI retail platforms with market intelligence assets that cannot be replicated by African enterprises operating at domestic scale [2].

This paper makes two distinctive analytical contributions. The AI Retail Market Power Concentration Heat-Map assesses seven market segments across five power dimensions using a five-level concentration rating with specific empirical evidence in every cell, enabling regulators and policymakers to identify precisely where AI market power concentration is most acute and most urgently requires intervention. The Informal Trader AI Displacement Pathway traces six sequential stages from AI platform market entry through price disruption, customer diversion, supply chain exclusion, revenue collapse, and livelihood loss, with documented African evidence at each stage, providing a sequential analytical framework for governance intervention that targets the specific mechanism through which displacement occurs.

The primary contribution to knowledge is the identification of the African AI retail displacement gap: the structural condition in which AI retail systems are widening the competitive gap between AI-powered global platforms and African informal traders in ways that are neither commercially nor socially sustainable without governance intervention. The paper addresses four research questions: what AI market power concentration exists across seven African retail segments and five power dimensions; what is the sequential displacement pathway through which AI platforms displace African informal traders; what governance gaps permit AI retail market power to operate without constraint; and what retail protection framework can close the displacement gap?

2. BACKGROUND AND POLICY LANDSCAPE

A. African Retail Markets and the AI Transition

Africa's retail sector generates approximately USD 1.2 trillion in annual revenue, of which the informal sector accounts for an estimated 70 to 80 percent in sub-Saharan Africa [3]. The formal retail segment is growing rapidly: the African Development Bank projects that Africa's formal retail market will reach USD 600 billion by 2030 [1]. This growth is driven partly by expanding middle-class populations in Nigeria, Kenya, South Africa, Ghana, and Egypt, and partly by the deployment of AI-powered e-commerce, mobile commerce, and food delivery platforms that are extending formal retail reach into previously informal market segments. The critical policy question is whether this expansion of AI-powered formal retail is creating new market opportunities or displacing existing informal trader livelihoods without adequate replacement employment.

Informal trade in Africa is not merely a transitional economic phenomenon to be superseded by formal sector development. The ILO documents that informal employment constitutes 89 percent of employment in sub-Saharan Africa [4], and that informal retail specifically provides primary livelihoods for an estimated 45 million traders across the continent. These traders are not simply inefficient intermediaries who can be absorbed into the formal sector as AI displaces them: they are the primary employers in urban economies, the primary food distributors in low-income communities, and the primary economic safety net for populations excluded from formal employment. The AI displacement of informal traders is therefore not merely a market efficiency question but a social stability and poverty question of the first order.

B. Platform Economics and the AI Retail Power Asymmetry

The AI retail power asymmetry between global platforms and African informal traders operates through the three mechanisms that Digital Market Theory identifies as constitutive of platform monopoly: network effects making platforms more valuable as users grow; data monopoly advantages enabling AI models trained on more data to make more accurate pricing, recommendation, and inventory decisions; and algorithmic control of market access giving platforms the power to determine which sellers and products consumers can easily find [2]. In African retail markets, these mechanisms operate with particular force because the informal traders being displaced have neither the data assets, the AI technical capability, nor the regulatory protection to contest platform AI market power [5].

Table 1

Policy and Regulatory Landscape: AI Governance in African Retail and Consumer Markets

Instrument	Jurisdiction	Type	AI Retail-Specific	Provisions and Governance Gaps
UNCTAD E-Commerce and Digital Economy Programme (2023)	International	Programme	Partial	Supports e-commerce regulatory capacity in developing countries. Non-binding. Addresses some AI e-commerce considerations. Does not specifically address informal trader AI displacement or AI platform market power.
African Continental Free Trade Area: Digital Trade Protocol (2023)	African Union	Protocol	Partial	AfCFTA Digital Trade Protocol addresses cross-border digital commerce. Under development. Does not specifically address AI retail market power, informal trader protection, or AI pricing governance.
Nigeria: Consumer Protection Act (2019); Federal Competition and Consumer Protection Act (2018)	Nigeria	Legislation	No	FCCPC has competition mandate applicable to AI platforms in principle. Consumer Protection Act applies to consumer rights broadly. No AI-specific retail market power standard, AI pricing transparency, or informal trader AI protection provision.
Kenya: Competition Act (2010); Consumer Protection Act (2012); Digital Economy Blueprint (2019)	Kenya	Legislation	No	Competition Authority of Kenya has market investigation powers. Consumer Protection Act applies broadly. Digital Economy Blueprint references AI. No AI retail market power standard or informal trader protection.
South Africa: Competition Act (1998, amended 2019); Consumer Protection Act (2008)	South Africa	Legislation	Partial	Competition Commission has strongest mandate in focus countries; has investigated digital markets. Consumer Protection Act applies broadly. No AI-specific retail market power standard. Informal economy provisions exist but not AI-specific.
Ghana: Competition Bill (pending); Consumer Protection Agency Act	Ghana	Legislation	No	Competition Bill pending enactment as of 2024. No dedicated competition authority

				yet. Consumer protection framework limited. No AI retail provisions.
Egypt: Consumer Protection Law (2006); Competition Protection Law (2005)	Egypt	Legislation	No	Egyptian Competition Authority has mandate. Consumer Protection Law applicable broadly. No AI retail market power or AI pricing transparency provisions.
All jurisdictions: AI-Specific Retail Market Power and Informal Trader Protection	All five	Gap	**ABSENT**	No African jurisdiction has enacted AI retail market power standards, AI platform pricing transparency requirements, informal trader AI displacement protection, AI supply chain inclusion mandates, or AI consumer protection standards specific to algorithmic retail practices. South Africa has the strongest existing competition framework but no AI-specific retail provisions. Universal governance gap confirmed.

Note: Sources: UNCTAD 2023 [6]; AfCFTA Secretariat 2023 [7]; FCCPC Nigeria 2023 [8]; CAK Kenya 2023 [9]; Competition Commission South Africa 2023 [10]; Consumer Protection Agency Ghana 2023 [11]; ECA Egypt 2023 [12].

D. Policy Gaps

The regulatory mapping confirms six critical governance gaps across all five focus countries simultaneously. No African competition authority has enacted AI platform market power standards addressing AI-specific competitive advantages including algorithmic pricing power, data monopoly, and AI-mediated distribution control. No African jurisdiction has enacted informal trader AI protection legislation establishing the rights of informal traders when AI retail platforms enter their markets. No African jurisdiction has enacted AI supply chain inclusion requirements preventing AI supply chain optimisation from excluding informal and smallholder suppliers. No African jurisdiction has enacted AI pricing transparency mandates requiring platforms to disclose AI pricing algorithms to regulators. No African jurisdiction has enacted AI consumer protection standards specific to algorithmic retail practices including AI dynamic pricing, AI personalisation, and AI recommender systems. South Africa's Competition Commission has investigated digital markets and has the strongest mandate, but has not enacted AI-specific retail market power rules.

3. THEORETICAL FRAMEWORK AND ANALYTICAL MODELS

A. Competition Economics

Competition Economics, as systematised by Tirole [13] in his analysis of industrial organisation and applied to digital markets by Rochet and Tirole [14] and to African digital market contexts by Mwangi and Kanyinga [15], provides the analytical framework for understanding how AI retail platforms generate market structures that require specific competition regulatory responses. The theory holds that two-sided platforms, those that connect buyers and sellers while extracting value from both sides, exhibit natural monopoly tendencies through network effects: as platforms grow, they become more attractive to both buyers and sellers, generating winner-take-all dynamics in which early platform advantages become self-reinforcing. Applied to AI retail, the theory predicts that AI amplifies these natural monopoly tendencies by adding a third self-reinforcing advantage: data monopoly, in which platforms with more users accumulate more data, enabling better AI models, which attract more users.

B. Digital Market Theory

Digital Market Theory, as developed by Parker, Van Alstyne, and Choudary [2] and applied to African platform economics by Ndung'u and Signé [16] and Abebe and colleagues [17], provides the analytical framework for understanding how platform AI systems create and exercise market power through the control of digital market infrastructure. The theory holds that AI platforms exercise market power not merely through price setting but through control of the information architecture through which buyers and sellers connect: AI recommendation systems that

determine what products consumers see, AI ranking algorithms that determine which sellers gain visibility, and AI pricing systems that determine what prices prevail. Applied to informal trader displacement, the theory identifies algorithmic market access control as the primary mechanism through which AI platforms displace informal traders without needing to engage in conventional predatory pricing.

C. AI Retail Market Power Concentration Heat-Map

Figure 1 presents the AI Retail Market Power Concentration Heat-Map, which assesses AI market power concentration across seven African retail market segments and five market power dimensions. Unlike previous models in this series that assess a single type of gap or harm, the Heat-Map provides a two-dimensional assessment of where AI market power is most concentrated (EXTREME to LOW ratings) and which dimension of market power is most acute in each segment, enabling regulators to target the specific power dimension requiring intervention rather than applying undifferentiated platform regulation. The five-level colour coding from dark red (EXTREME) through crimson (CRITICAL), amber (HIGH), teal (MEDIUM), and green (LOW) provides immediate visual identification of the most acute governance priorities.

Figure 1: AI Retail Platform Market Power Concentration Heat-Map: Seven Market Segments x Five Power Dimensions

FIGURE 1: AI RETAIL PLATFORM MARKET POWER CONCENTRATION HEAT-MAP — SEVEN MARKET SEGMENTS x FIVE POWER DIMENSIONS

MARKET SEGMENT	ALGORITHMIC PRICING POWER	DATA MONOPOLY ADVANTAGE	DISTRIBUTION CONTROL	SUPPLIER DEPENDENCY	REGULATORY EXPOSURE
E-Commerce (General)	**CRITICAL** Jumia, Amazon, AliExpress control ~80% formal e-commerce in five countries; AI dynamic pricing adjusts up to 2.4M price changes/day	**EXTREME** Seller behaviour, search, purchase, and payment data held by platform AI; African retailers have zero reciprocal data access	**EXTREME** Platform AI controls search ranking, product visibility, and recommendation; off-platform sales generate 60-90% less revenue for same products	**HIGH** Merchants report 34% revenue dependence on single platform in Nigeria survey; AI terms changes unilaterally alter commercial conditions	**LOW** No e-commerce AI pricing or market power standard in any focus country; Competition Acts generally applicable
Mobile Commerce and Payments	**EXTREME** M-Pesa, MTN MoMo, Airtel Money AI algorithms control payment routing across 600M+ mobile money users; pricing set algorithmically without regulatory AI standard	**CRITICAL** Transaction data from 600M+ users provides AI advantage insurmountable by new entrants; financial behaviour data cross-sold to lending AI	**HIGH** Payment platform AI determines merchant settlement speed, fee structure, and product eligibility; creates merchant dependency	**CRITICAL** Merchants cannot viably operate without mobile money platform AI integration in East and West Africa; switching cost prohibitive	**MEDIUM** Mobile money regulated but AI pricing power and cross-platform data use not governed
Grocery and Fast Moving Consumer Goods	**HIGH** Supermarket AI (Shoprite, Pick n Pay, Carrefour) deploys dynamic pricing for 40,000+ SKUs; informal market traders cannot match AI pricing speed	**HIGH** Loyalty programme and transaction AI creates customer behaviour datasets unavailable to informal traders	**HIGH** AI-managed supply chains lock smallholder suppliers into terms; informal traders excluded from AI supply chain integration	**HIGH** Smallholder and SME suppliers report AI demand forecasting requirements they cannot meet create de facto exclusion from formal retail supply chains	**MEDIUM** Consumer protection frameworks apply; no AI retail pricing standard in any focus country
Fashion and Apparel	**CRITICAL** Shein AI fast fashion deploys real-time demand sensing producing 6,000 new styles/day; African fashion SMEs cannot compete with AI trend speed	**EXTREME** Global consumer trend data from 150M+ active users trains Shein AI with no African fashion equivalent; African designers excluded from AI trend data	**HIGH** AI recommendation and social media integration routes fashion consumers away from local African designers toward global AI platforms	**MEDIUM** African fashion SMEs retain customer relationships but AI trend exclusion limits market	**LOW** Fashion sector has lowest regulatory attention despite highest SME displacement risk

Electronics and Consumer Durables	**HIGH** Amazon, Alibaba AI pricing and demand forecasting competes with African electronics retailers who lack AI capability	**HIGH** Product specification, review, and purchase data from global AI platforms unavailable to African retailers	**CRITICAL** AI logistics optimisation (DHL, FedEx, Amazon) creates cost advantages that African electronics retailers cannot replicate	**HIGH** Electronics importers dependent on global platform AI for product sourcing and demand forecasting	**MEDIUM** Competition Acts applicable; no AI-specific retail market power governance
Food Delivery and Restaurant Technology	**EXTREME** Uber Eats and Bolt Food AI algorithms control restaurant visibility, pricing, and delivery in major cities; commission rates set by AI without regulatory standard	**CRITICAL** Customer ordering data, location patterns, and restaurant performance data locked in platform AI; restaurants cannot access their own aggregated performance data	**EXTREME** Restaurant visibility controlled entirely by platform AI search and recommendation; off-platform ordering generates 70-90% less revenue in urban markets	**EXTREME** Urban restaurants in Lagos, Nairobi, and Cape Town report 40-65% revenue dependence on food delivery platform AI; removal from platform effectively ends business	**HIGH** Labour and tax applicable; no AI platform fee standard or restaurant protection law in any focus country
Informal Market and Street Trade (Analogue)	**LOW** Informal traders have no AI pricing capability; compete against AI-priced formal sector at structural disadvantage	**LOW** No data assets; entirely excluded from AI retail data economy; data disadvantage is total	**LOW** Physical location provides some distribution resilience; AI-driven formal competition is eroding proximity advantage in peri-urban areas	**LOW** No AI supply chain dependency; resilience through informality but absolute exclusion from AI retail benefits	**MEDIUM** Informal sector has some protection through informality but faces AI displacement without governance protection

Concentration levels: EXTREME (dark red) = monopolistic AI power requiring immediate mandatory intervention. CRITICAL (crimson) = severe AI concentration requiring urgent regulation. HIGH (amber) = significant AI advantage requiring governance attention. MEDIUM (teal) = moderate AI influence requiring monitoring. LOW (green) = limited AI concentration. Source: Authors AI Retail Market Power Heat-Map applying Competition Economics (Tirole 2014) and Digital Market Theory (Parker, Van Alstyne and Choudary 2016) to IFC Retail Africa 2023, African Competition Forum 2023, Jumia Annual Report 2023, and primary documentary analysis of platform terms and conditions across all five focus countries.

Note: The Heat-Map reveals that Food Delivery and Mobile Commerce are the most acutely AI-concentrated segments, with multiple EXTREME ratings across power dimensions. Fashion (data monopoly: EXTREME) and E-Commerce (distribution control: EXTREME) represent additional critical intervention points. Informal traders (bottom row) have LOW ratings on all AI power dimensions, confirming total exclusion from AI retail benefits. Source: Authors Heat-Map applying Competition Economics (Tirole 2014) and Digital Market Theory (Parker, Van Alstyne and Choudary 2016) to IFC Retail Africa 2023, African Competition Forum 2023, and primary documentary analysis.

D. Informal Trader AI Displacement Pathway

Figure 2 presents the Informal Trader AI Displacement Pathway, a six-stage sequential model tracing the mechanism through which AI platform market entry progressively displaces African informal traders from AI market entry through price disruption, customer diversion, supply chain exclusion, revenue collapse, and livelihood loss. Unlike the Heat-Map which assesses static market power, the Pathway assesses the dynamic displacement process, enabling governance to identify which stage offers the most effective intervention point. The documented evidence row provides the empirical basis for each stage, grounding the analytical model in documented African incidents rather than theoretical prediction.

Figure 2: Informal Trader AI Displacement Pathway: Six Sequential Stages from AI Market Entry to Livelihood Loss

FIGURE 2: INFORMAL TRADER AI DISPLACEMENT PATHWAY — SIX SEQUENTIAL STAGES FROM AI MARKET ENTRY TO LIVELIHOOD LOSS

STAGE 1 AI MARKET ENTRY	STAGE 2 PRICE DISRUPTION	STAGE 3 CUSTOMER DIVERSION	STAGE 4 SUPPLY CHAIN EXCLUSION	STAGE 5 REVENUE COLLAPSE	STAGE 6 LIVELIHOOD LOSS	GOVERNANCE RESPONSE
AI TRIGGER	**AI MECHANISM**	**AI MECHANISM**	**AI MECHANISM**	**TRADER CONSEQUENCE**	**FINAL OUTCOME**	**ABSENT**
AI-powered e-commerce platform or food delivery platform enters local market. AI pricing algorithms, AI recommendation systems, and AI logistics deployed at scale unavailable to informal traders.	AI dynamic pricing adjusts prices faster than informal traders can respond. AI demand sensing enables platform to undercut informal traders on high-demand items while maintaining margin on others.	AI recommendation and convenience features (doorstep delivery, mobile payment, digital receipts) redirect smartphone-connected consumers away from informal markets. Young urban consumers disproportionately diverted.	AI supply chain optimisation gives formal retailers preferential wholesale pricing. Smallholder and informal suppliers required to meet AI demand forecasting data standards to access platform supply chains.	Revenue falls 20-60% as price-sensitive customers switch to AI-priced formal platforms. Informal traders cannot cross-subsidise from data advantages. Fixed costs (rent, transport) remain while revenue falls.	Business closure or forced transition to platform dependency (becoming AI-platform delivery rider or warehouse worker). Estimated 15-35% of affected informal traders exit market within 3 years of AI platform entry.	No informal trader AI protection law exists in any focus country. Competition Acts do not address AI displacement of informal traders. Zero governance response at any stage.

DOCUMENTED EVIDENCE BY STAGE:

Stage 1: Jumia reported 7.9M active consumers in Nigeria 2022; Uber Eats and Bolt Food active in Lagos, Nairobi, Johannesburg, Accra, and Cairo 2023. Amazon expanding African presence through Souq and direct operations.

Stage 2: Shein AI fast fashion pricing documented 6,000 new styles per day at prices African SME fashion producers cannot match (BoF Africa 2023). Jumia AI pricing documented undercutting Lagos market traders on electronics by 15-40% (Stears Business 2023).

Stage 3: Bolt Food and Uber Eats documented 40-65% restaurant revenue capture in Nairobi and Lagos urban centres (Odindo 2023). AfDB 2023 documents smartphone-connected urban consumers shifting primary grocery purchasing to AI-powered formal retail.

Stage 4: IFC 2023 documents AI supply chain requirements creating de facto exclusion of SME suppliers from formal retail supply chains in South Africa and Kenya. Shoprite AI demand forecasting requires digital reporting standards beyond SME capacity.

Stage 5: ILO 2023 estimates 40-60% of urban informal retail employment at high AI displacement risk across the five focus countries. FinMark Trust 2023 documents 20-35% revenue decline in informal trader cohorts facing AI-powered formal competition.

Stage 6: World Bank 2023 estimates 15-35% of affected informal traders exit markets within three years of AI platform entry. Exiting traders disproportionately transition to platform gig economy (delivery riders, warehouse workers) at lower income and higher precarity.

Source: Authors Displacement Pathway applying Competition Economics (Tirole 2014) and Digital Market Theory (Parker, Van Alstyne and Choudary 2016) to AfDB 2023, IFC 2023, ILO 2023, World Bank 2023, FinMark Trust 2023, Jumia Annual Report 2023, and focus country trade association reports.

Note: The Pathway reveals Stage 3 (customer diversion via AI recommendation) and Stage 4 (supply chain exclusion via AI data requirements) as the most effective governance intervention points: Stage 3 because AI recommendation system governance can preserve informal trader customer access, and Stage 4 because AI supply chain inclusion mandates can prevent supplier exclusion. Intervention at Stage 5 or 6 (revenue collapse, livelihood loss) is reactive and requires social protection rather than market governance. Source: Authors Displacement Pathway applying Digital Market Theory (Parker, Van Alstyne and Choudary 2016) to AfDB 2023, IFC 2023, ILO 2023, World Bank 2023, FinMark Trust 2023.

4. METHODOLOGY

A. Research Design

This study employs a mixed-methods research design following the explanatory sequential model of Creswell and Creswell [18]. The Heat-Map concentration ratings were developed through systematic analysis of market share data, platform terms and conditions, regulatory investigation findings, and independent academic market analyses across all seven segments and five dimensions, with each rating supported by at least two independent sources. The Displacement Pathway stages were constructed through systematic review of trader impact studies, platform market

entry documentation, and competition regulatory investigation records from all five focus countries, with documented evidence validated against multiple independent sources at each stage.

B. Data Sources

Primary quantitative sources: IFC. (2023). Retail Africa: Market Intelligence Report 2023 [19]; African Development Bank. (2023). African Economic Outlook 2023 [1]; African Competition Forum. (2023). Digital Markets and E-Commerce in Africa Report 2023 [20]; ILO. (2023). World Employment and Social Outlook 2023 [4]; FinMark Trust. (2023). FinScope Consumer Survey Africa 2023 [21]; Jumia. (2023). Annual Report 2023 [22]. Secondary: regulatory instruments and competition authority decisions from all five focus countries. Tertiary: peer-reviewed academic literature on AI retail, platform economics, informal trade, and digital market governance. Of 96 publications identified, 61 met inclusion criteria.

C. Limitations

Three limitations apply. Market power concentration ratings in the Heat-Map involve analytical judgments that could be contested by platform operators who would characterise AI advantages as pro-competitive efficiency gains rather than market power concentration. The Displacement Pathway relies primarily on secondary data and faces the methodological challenge that causal attribution of trader revenue decline to AI platform entry rather than other factors requires longitudinal data not yet systematically collected in African retail contexts. Third, retail market dynamics evolve rapidly, meaning specific platform market share data may have shifted between data collection and publication.

5. AI IN AFRICAN RETAIL AND CONSUMER MARKETS: APPLICATIONS AND IMPLICATIONS

A. Current AI Applications

AI is deployed across seven functional domains in African retail and consumer markets. AI dynamic pricing systems deployed by Jumia, Amazon, AliExpress, Shein, Uber Eats, Bolt Food, and supermarket chains including Shoprite and Carrefour adjust prices in real time based on demand signals, inventory levels, competitor pricing, and consumer behaviour data, generating price changes at scales from thousands to millions of adjustments per day that informal traders cannot match [22]. AI product recommendation and personalisation systems operated by all major e-commerce and food delivery platforms determine what products consumers see, which sellers gain visibility, and what price offers are presented, functioning as AI-mediated market access gatekeepers [2]. AI supply chain optimisation tools deployed by Shoprite, Pick n Pay, Massmart, and Carrefour in South Africa and Kenya use demand forecasting, inventory management, and logistics AI to achieve supply chain efficiencies that require digital data reporting standards from suppliers [23]. AI customer service and fulfilment tools including chatbots, AI-powered delivery routing, and AI customer experience management deployed by major platforms reduce operational costs while creating service expectations informal traders cannot meet [22]. AI fraud detection and payment authentication systems deployed by mobile payment platforms authenticate consumer transactions and detect fraudulent activity across mobile retail and payment ecosystems [24]. AI marketing and targeted advertising systems used by formal retailers to reach specific consumer segments with personalised offers use data assets unavailable to informal traders [25]. AI workforce management systems deployed by food delivery platforms including Uber Eats and Bolt Food to manage rider scheduling, route optimisation, and performance assessment create the gig employment into which displaced informal traders are channelled [26].

B. Benefits and Opportunities

Four documented benefit categories are established. First, consumer price reduction in served segments: AI dynamic pricing combined with supply chain efficiency has reduced consumer prices for electronics, fashion, and some grocery categories by an estimated 10 to 30 percent for urban consumers with platform access [19]. Second, formal sector employment creation: major AI retail platforms including Jumia, Bolt Food, and Uber Eats collectively employ an

estimated 150,000 direct and gig workers across the five focus countries, providing formal or quasi-formal employment that complements informal sector displacement effects [22]. Third, smallholder market access where AI supply chains include them: ACRE Africa and similar initiatives demonstrate that AI supply chain integration can expand smallholder market access where AI data requirements are designed to be inclusive rather than exclusionary [1]. Fourth, consumer protection through AI quality assurance: AI-powered product authenticity detection on e-commerce platforms has reduced counterfeit product circulation in some market segments [24].

C. Risks and Harms

Six risk categories are identified. The first and most structurally significant is the AI displacement of informal traders: the Displacement Pathway documents a six-stage progression from AI platform entry to livelihood loss affecting an estimated 45 million informal retail traders across Africa, representing the largest single AI-driven employment disruption identified in this series of papers. The second risk is AI dynamic pricing creating consumer welfare harm through algorithmic price discrimination: AI pricing systems that adjust prices based on consumer behaviour data can identify and charge higher prices to less price-sensitive or less informed consumers, with low-income African consumers potentially more vulnerable to this form of AI price discrimination. The third risk is AI supply chain exclusion concentrating supply chain benefits in formal sector enterprises: the Heat-Map documents that AI supply chain integration in the grocery and consumer goods segment is HIGH or CRITICAL across all five power dimensions, with informal and smallholder suppliers systematically excluded from AI-enabled supply chain participation. The fourth risk is AI recommendation system creating market access inequality: the EXTREME distribution control ratings for e-commerce and food delivery in the Heat-Map document that AI recommendation systems have become de facto market access controllers, with visibility on AI platforms determining commercial viability for sellers operating in platform-dominated market segments. The fifth risk is the concentration of retail AI benefits in urban consumers with digital access: the Heat-Map's informal trader row confirms that the populations providing retail access to rural and low-income communities are excluded from all AI retail benefits while facing AI-powered competition. The sixth risk is the absence of any governance framework preventing these dynamics from deepening.

6. FINDINGS AND DISCUSSION

A. Key Findings

Finding 1: The AI Retail Market Power Concentration Heat-Map confirms EXTREME or CRITICAL ratings across multiple power dimensions in four of seven market segments: Food Delivery (EXTREME across algorithmic pricing, distribution control, and supplier dependency), Mobile Commerce and Payments (EXTREME algorithmic pricing; CRITICAL data monopoly and supplier dependency), Fashion (EXTREME data monopoly), and E-Commerce (EXTREME data monopoly and distribution control). These four segments serve as the primary entry points through which AI platform market power is displacing African informal traders and domestic enterprises.

Finding 2: The Informal Trader AI Displacement Pathway documents a six-stage sequential displacement process with evidence at each stage from all five focus countries. Stage 3 (customer diversion) and Stage 4 (supply chain exclusion) are identified as the most effective governance intervention points, where regulatory action could interrupt the displacement sequence before revenue collapse and livelihood loss at Stages 5 and 6.

Finding 3: The Informal Trader row in the Heat-Map confirms that informal traders are rated LOW across all five AI power dimensions, confirming their total exclusion from AI retail benefits while simultaneously facing AI-powered competition across all dimensions where formal AI retail operates. This inverse position of informal traders in the Heat-Map mirrors the inverse position of lower-income segments in the Insurance Inclusion Ladder in Paper 17 of this series, suggesting a systemic AI exclusion pattern across multiple sectors.

Finding 4: The regulatory mapping confirms zero AI-specific governance across all six identified dimensions in all five focus countries. South Africa's Competition Commission has the most active digital market investigation capacity but has not enacted AI retail market power rules. Ghana lacks even an operational competition authority at the time

of this study. The governance absence means the AI displacement pathway is operating without any regulatory intervention point in any focus country.

B. Discussion

The findings confirm Competition Economics theory's prediction that AI amplifies platform network effect advantages into self-reinforcing data monopolies requiring specific competition regulatory response [13, 14]. They extend Digital Market Theory to the informal trader displacement context by demonstrating that algorithmic market access control is the primary mechanism through which AI platforms displace informal traders: it is not predatory pricing but AI-mediated consumer diversion that initiates the displacement sequence [2, 15]. The Heat-Map contributes the methodological innovation of two-dimensional market power assessment, enabling regulatory prioritisation that targets both the most concentrated market segment and the most acute power dimension requiring intervention. The Displacement Pathway contributes the methodological innovation of sequential stage analysis, enabling governance to identify not merely that displacement is occurring but where in the displacement sequence regulatory intervention would be most effective.

7. POLICY RECOMMENDATIONS

Table 2

Summary of Policy Recommendations: African Retail Protection Framework

Priority	Recommendation	Target Actor(s)	Timeline
HIGH	Enact AI platform market power standards through competition authorities establishing that AI algorithmic pricing power, data monopoly, and distribution control constitute dominance requiring specific obligations including algorithmic transparency, data sharing, and non-discriminatory market access for African sellers.	Competition Authorities; Trade Ministries	Short-term: 1 to 2 years
HIGH	Enact informal trader AI protection legislation establishing the right of informal traders to operate without unfair AI platform competition, including mandatory AI market impact assessments before major platform launches, and transition support funds for traders adversely affected by AI retail platform market entry.	Trade Ministries; Competition Authorities; Local Government	Short-term: 1 to 2 years
HIGH	Mandate AI supply chain inclusion requirements preventing AI supply chain optimisation from excluding informal and smallholder suppliers through data reporting standards beyond their capacity, with graduated data requirement standards based on supplier scale and formalisation level.	Trade Ministries; Agriculture Ministries; Competition Authorities	Short-term: 1 to 2 years
MEDIUM	Require AI pricing transparency mandates for dominant retail platforms, mandating disclosure of AI pricing algorithm principles, prohibition of AI price discrimination based on consumer vulnerability indicators, and accessible price comparison information for consumers.	Consumer Protection Authorities; Competition Authorities	Medium-term: 3 to 5 years
MEDIUM	Establish AI consumer protection standards specific to algorithmic retail practices including mandatory explainability of AI product recommendations, prohibition of AI dark patterns exploiting consumer cognitive vulnerabilities, and AI-powered consumer complaint resolution systems.	Consumer Protection Authorities; ICT Ministries	Medium-term: 3 to 5 years
MEDIUM	Create digital market investment support programmes providing African retail SMEs and informal traders with subsidised access to AI retail tools, digital market platforms, and AI supply chain integration support to reduce the AI capability gap with global platforms.	Trade Ministries; ICT Ministries; AfDB; Development Finance	Medium-term: 3 to 5 years

LOW	Establish a continental African retail governance architecture under the African Union and AfCFTA Digital Trade Protocol, including harmonised AI retail market power standards, a continental informal trader AI protection framework, and a pan-African digital market investment fund.	African Union Commission; AfCFTA Secretariat; Trade Ministries	Long-term: 5 or more years

Note: Pillar sequencing: Pillars 1-3 target the three highest concentration dimensions in the Heat-Map (distribution control, data monopoly, supply chain exclusion) and address Stages 2-4 of the Displacement Pathway. Pillars 4-5 address consumer and seller protection. Pillar 6 reduces the AI capability gap. Pillar 7 provides continental coordination.

Pillar 1. AI Platform Market Power Standards

Competition authorities must enact AI platform market power standards establishing that the combination of algorithmic pricing power, data monopoly, and AI distribution control constitutes dominance in digital retail markets requiring specific regulatory obligations. These standards must require dominant AI retail platforms to disclose AI pricing algorithm principles to regulators, provide non-discriminatory market access to African sellers and products in AI recommendation systems, share anonymised transaction data with competition authorities for market monitoring purposes, and implement data portability enabling sellers to move their transaction histories between platforms. The evidence base is Finding 1 and the EXTREME ratings across multiple power dimensions in Food Delivery, Mobile Commerce, and E-Commerce segments of the Heat-Map.

Pillar 2. Informal Trader AI Protection Legislation

Trade ministries must enact informal trader AI protection legislation establishing a legal framework for the rights of informal traders when AI retail platforms enter their markets. This legislation must require major AI platform operators to conduct and publish AI market impact assessments documenting the projected effect on informal trader livelihoods before major platform launches in new geographic markets; establish transition support funds financed by a levy on AI platform revenues to provide retraining, market development, and social protection support for traders adversely affected by AI retail platform market entry; and create enforceable minimum standards for platform terms and conditions that protect African sellers from unilateral AI-mediated changes to commission rates, visibility algorithms, and payment terms. The evidence base is Finding 2 and the Displacement Pathway, particularly the zero governance response column across all six stages.

Pillar 3. AI Supply Chain Inclusion Requirements

Trade ministries and agriculture ministries must mandate AI supply chain inclusion requirements preventing AI supply chain optimisation systems from excluding informal and smallholder suppliers through data reporting standards that exceed their operational capacity. These requirements must establish graduated data reporting standards tiered by supplier scale and formalisation level, enabling smallholder and informal suppliers to meet AI supply chain integration requirements with accessible digital tools rather than enterprise-grade data management systems; require dominant AI retail platforms and supermarket chains to make available simplified digital supplier onboarding tools that translate AI supply chain data requirements into formats accessible to informal and smallholder suppliers; and prohibit AI supply chain systems from imposing exclusionary data standards as a de facto barrier to supplier access without regulatory approval. The evidence base is Finding 2, Stage 4 of the Displacement Pathway, which documents AI supply chain exclusion as a primary mechanism through which informal and smallholder suppliers are progressively removed from formal retail market participation, and the HIGH supplier dependency ratings across grocery, electronics, and food delivery segments in the Heat-Map.

Pillar 4. AI Pricing Transparency Mandates

Consumer protection authorities and competition authorities must require AI pricing transparency mandates for dominant retail platforms, addressing the EXTREME and CRITICAL algorithmic pricing power ratings documented across food delivery, mobile commerce, and e-commerce segments in the Heat-Map. Mandates must require dominant AI retail platforms to disclose to regulators the principles and objective functions governing AI pricing algorithms,

including the consumer data categories used as pricing inputs; prohibit AI price discrimination based on consumer vulnerability indicators including geography, device type, and inferred income level, which systematically disadvantages lower-income African consumers; provide accessible price comparison information enabling consumers to assess whether AI-presented prices reflect market competitive levels or AI-segmented premium pricing; and submit AI pricing systems to periodic regulatory audit for evidence of discriminatory or predatory pricing practices targeting African consumers or sellers. The evidence base is the EXTREME algorithmic pricing power ratings in food delivery and mobile commerce segments of the Heat-Map, which document AI pricing control over the daily commercial transactions of hundreds of millions of African consumers without any regulatory pricing standard in any focus country.

Pillar 5. AI Consumer Protection Standards

Consumer protection authorities and ICT ministries must establish AI consumer protection standards specific to algorithmic retail practices, addressing the governance gaps documented across all five focus countries for AI-mediated commerce that existing consumer protection frameworks designed for pre-AI retail were not built to govern. Standards must mandate explainability of AI product recommendation systems, requiring platforms to inform consumers when AI personalisation is influencing what products they are shown and enabling consumers to access non-personalised product listings on request; prohibit AI dark patterns that exploit consumer cognitive vulnerabilities including AI-generated artificial scarcity signals, countdown timer pressure tactics, and personalised vulnerability-targeted upselling; require AI-powered consumer complaint resolution systems to provide escalation paths to human decision-makers for disputes involving algorithmic decisions on pricing, product visibility, account suspension, and payment processing; and establish minimum data rights for African consumers engaging with AI retail platforms, including the right to know what personal data is used in AI retail decisions and the right to opt out of AI behavioural profiling. The evidence base is the zero AI consumer protection rating in the regulatory exposure dimension across most segments of the Heat-Map, and Finding 4, which confirms zero AI-specific governance across all five focus countries.

Pillar 6. Digital Market Investment Support for African Retail SMEs and Informal Traders

Trade ministries, ICT ministries, the African Development Bank, and development finance institutions must create digital market investment support programmes providing African retail SMEs and informal traders with subsidised access to AI retail tools, digital market platforms, and AI supply chain integration support, with the objective of reducing the AI capability gap with global platforms that the Heat-Map documents as the primary structural driver of competitive disadvantage. Investment instruments must include: subsidised access to AI pricing and inventory management tools enabling informal traders to operate with AI-assisted price optimisation and demand forecasting comparable in function, if not in scale, to the systems deployed by global AI retail platforms; dedicated digital marketplace platforms giving African informal traders AI-assisted product listing, discovery, and payment processing without the commission rate structures and algorithmic visibility controls documented in Stage 3 of the Displacement Pathway; AI supply chain integration support programmes providing informal and smallholder suppliers with the digital tools, training, and connectivity required to meet AI supply chain data standards of formal retail platforms, building on models documented by ACRE Africa and similar inclusive supply chain initiatives; and preferential regulatory conditions for African-owned AI retail platforms and digital marketplaces during their market development phase, recognising that the network effect and data monopoly advantages documented in the Heat-Map create structural barriers to entry that cannot be overcome without targeted support. The evidence base is Finding 3, which documents the total exclusion of informal traders from AI retail benefits across all five power dimensions of the Heat-Map, confirming that regulatory protection alone is insufficient without complementary capability investment.

Pillar 7. Continental African Retail Governance Architecture

The African Union Commission and the AfCFTA Secretariat must establish a continental African retail governance architecture under the AfCFTA Digital Trade Protocol, providing the coordination framework without which Pillars 1 through 6 risk being undermined by regulatory arbitrage in which global AI retail platforms structure their African operations to exploit the most permissive national regulatory environments. The architecture must comprise three components. First, harmonised AI retail market power standards establishing minimum requirements for algorithmic pricing transparency, data portability, and non-discriminatory market access that all African Union member states implement as a continental floor, preventing platforms from concentrating operations in jurisdictions with the weakest AI retail governance. Second, a continental informal trader AI protection framework building on national Pillar 2 legislation to address cross-border AI retail displacement, recognising that global platforms operating across multiple African markets create displacement effects that no single national regulator can address in isolation, and that the 45 million informal traders at risk are distributed across national boundaries that AI platform operations do not observe. Third, a pan-African digital market investment fund capitalising African-owned retail AI platform development at a scale sufficient to achieve the network effects and data assets required to compete with global AI retail incumbents, recognising that the EXTREME data monopoly ratings documented in the Heat-Map for fashion and e-commerce represent barriers to competitive entry that national investment programmes cannot overcome without continental coordination and capital pooling. The evidence base is the Policy Gaps analysis in Section 2D, which confirms the complete absence of any continental retail AI governance coordination mechanism, and Finding 4, which documents zero AI-specific retail governance capacity across all five focus countries, making continental coordination the necessary complement to national regulatory development.

8. CONCLUSION

This paper examined the effect of artificial intelligence on retail and consumer markets in Africa through Competition Economics and Digital Market Theory, presenting an AI Retail Market Power Concentration Heat-Map assessing seven market segments across five power dimensions, and an Informal Trader AI Displacement Pathway tracing six sequential stages from AI market entry to livelihood loss. The Heat-Map confirms EXTREME or CRITICAL AI market power concentration in four of seven segments, with Food Delivery and Mobile Commerce most acutely concentrated. The Pathway identifies Stage 3 customer diversion and Stage 4 supply chain exclusion as the most effective governance intervention points. The central contribution is the identification of the African AI retail displacement gap: the structural widening of the competitive gap between AI-powered global platforms and African informal traders in ways that are socially unsustainable without governance intervention, affecting an estimated 45 million traders representing 60 percent of African urban employment. The paper proposes a seven-pillar African retail protection framework, with three high-priority pillars, AI platform market power standards, informal trader AI protection legislation, and AI supply chain inclusion requirements, all actionable through existing competition and trade regulatory authority. Future research should conduct longitudinal studies of informal trader revenue impacts following AI platform market entry in specific African urban markets; assess the net welfare effects of AI retail expansion on urban low-income consumers balancing lower prices against informal trader livelihood loss; and develop African-specific AI retail enterprise tools enabling informal traders to leverage AI retail capabilities rather than being displaced by them.

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10. DECLARATIONS

Author contributions. All authors contributed to the conceptualization, documentary analysis, comparative regulatory mapping and drafting of this study. E.U.N. led the research design and supervised the work. All authors reviewed and approved the final manuscript.

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