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DIGITAL ROUTE-TO-MARKET TRANSFORMATION IN EMERGING ECONOMIES: A CONCEPTUAL FRAMEWORK FOR AI-ENABLED DISTRIBUTION, DISTRIBUTOR PERFORMANCE, AND DATA GOVERNANCE

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ABSTRACT

Background: Route-to-market (RTM) systems in emerging economies remain intermediary-dense, cash-intensive and weakly instrumented, even as manufacturers deploy artificial intelligence (AI) for demand sensing, territory design, credit allocation and distributor management. Prevailing channel-governance theory was formulated before transaction-level distribution data became routinely available and therefore offers limited guidance on how algorithmic coordination reshapes distributor accountability, or on the data-governance conditions under which AI-enabled distribution creates rather than destroys channel value. Method: This conceptual article adopts a theory-synthesis design, integrating resource-based, dynamic-capability, transaction-cost, technology-organisation-environment and institutional perspectives with cross-disciplinary evidence on digital supply chain governance, industrial data infrastructure, workforce capability and information-security behaviour. No primary data were collected. Results: The article advances the AI-Enabled Distribution, Distributor Performance and Data Governance (ADPG) framework, which specifies three interdependent pillars, four interface mechanisms linking them, four contextual moderators, and thirteen testable propositions, together with a measurement agenda mapping each construct to candidate indicators. Conclusion: AI-enabled distribution improves distributor performance

only where data-governance maturity is sufficient to make algorithmic outputs auditable, contestable and locally legitimate; absent that condition, digital RTM investment is predicted to widen rather than close performance dispersion across the distributor base. The framework is conceptual and awaits empirical testing.

KEYWORDS: Route-To-Market; Artificial Intelligence; Distributor Performance; Data Governance; Emerging Economies; Channel Governance; Digital Transformation.

INTRODUCTION

Route-to-market (RTM) describes the architecture through which a manufacturer converts production into consumption: the selection of channel intermediaries, the allocation of territories, the design of order-to-cash and replenishment cycles, and the control systems that hold intermediaries accountable for coverage, availability and price compliance. In mature markets, that architecture has been progressively absorbed into integrated enterprise systems, and much of its coordination burden is carried by shared data. In most emerging economies it has not. Distribution in sub-Saharan Africa, South Asia and much of Latin America continues to run through dense layers of independent distributors, sub-distributors, wholesalers and informal retailers, coordinated by relational trust, cash settlement and periodic physical inspection rather than by instrumented information flows. The result is a distribution system that is simultaneously extensive in reach and opaque in performance.

That opacity is now under pressure. Manufacturers operating in these markets are deploying artificial intelligence (AI) and advanced analytics across the distribution stack: demand sensing at outlet level, territory and beat optimisation, dynamic assortment recommendation, predictive replenishment, and algorithmic credit scoring of distributors who were previously assessed by relationship history alone. The technical substrate for this shift has been assembled from adjacent domains. Digital-twin architectures developed for asset-intensive infrastructure now provide templates for real-time state representation and fault detection in physical networks (Shittu et al., 2023; Shittu & Shittu, 2024). Autonomous mobile robotics and slotting optimisation have restructured the warehouse layer that sits upstream of the distributor (Akanbi & Sunday, 2024, 2025; Akanbi, Ganiu, & Sunday, 2025b), and end-to-end material flow modelling has extended the same logic from the warehouse to the full production-to-dispatch chain (Akanbi, Sunday, & Ganiu, 2026). The joint optimisation of energy efficiency and transportation logistics has been advanced as a design problem in its own right (Opara, Elumilade, et al., n.d.). Encryption-based access control has been extended

from industrial control systems to supply chain data exchange (Opara et al., 2022; Shittu & Nabil, 2023). Each of these advances arrived through a different literature, and none was designed with the emerging-market distributor in mind.

The governance literature has not kept pace. Classical treatments of channel coordination were formulated when the manufacturer's information about a distributor was sparse, expensive and lagged (Anderson & Weitz, 1992; Frazier, 1999; Heide, 1994; Kumar et al., 1992). Their central problem was how to design contracts, pledges and relational norms that would substitute for observability. AI-enabled distribution inverts that problem. Observability is no longer the binding constraint; what binds instead is whether the manufacturer has legitimate authority to act on what it now observes, whether the data underpinning algorithmic judgements are accurate and representative, and whether distributors accept the resulting allocations as fair. These are questions of data governance, and they have been addressed principally in information-systems and public-administration scholarship (Abraham et al., 2019; Janssen et al., 2020; Khatri & Brown, 2010; Weber et al., 2009) with almost no connection to distribution channel research.

A second disconnection compounds the first. Work on governance and accountability in complex enterprises has advanced rapidly in the operations and human-capital literatures, producing models that link transparency mechanisms to strategic execution (Akhigbe, Falemi, & Akin-Oluyomi, 2025), compliance architecture to operational quality across retail networks (Akin-Oluyomi & Akhigbe, 2022), and analytics capability to forecasting accuracy and bottleneck reduction (Akin-Oluyomi & Akhigbe, 2023c). In parallel, behavioural research on information security in organisational settings has documented how awareness, authentication practice and device policy shape actual data-protection compliance (Onche et al., 2020; Onche & Ogbonna, 2022; Onche et al., 2023, 2024). These two streams describe, respectively, the structural and the behavioural preconditions for trustworthy distribution data. Neither has been brought into contact with RTM design.

The gap this article addresses is therefore threefold. First, no integrative account exists of how AI-enabled distribution capability, distributor performance and data governance jointly determine RTM outcomes. Second, the emerging-economy context is treated in most digital-transformation research as a source of implementation friction rather than as a set of theoretically specifiable moderators, despite sustained evidence that institutional configuration, ethical leadership and the quality of policy implementation materially condition technology-led economic outcomes in these settings (Enaifoghe et al., 2020;

Agwuna, 2022b; Agwuna, 2026a). Third, the literature offers no measurement architecture that would allow the resulting relationships to be tested; conceptual claims about digital distribution are advanced faster than the constructs required to evaluate them are validated.

The aim of this article is to develop and specify an integrative conceptual framework, designated the AI-Enabled Distribution, Distributor Performance and Data Governance (ADPG) framework, that theorises the relationships among these three domains in emerging-economy RTM systems, states them as testable propositions, and sets out a measurement agenda through which they may be evaluated. The article makes three contributions. It reframes data governance as a channel-governance mechanism rather than an information-technology function; it specifies the conditions under which AI-enabled distribution is predicted to compress rather than widen performance dispersion across a distributor base; and it supplies an operationalisation pathway that converts the framework into an empirically tractable research programme.

Theoretical Background

Channel Governance and the Distributor Performance Problem

Distribution channels are canonically analysed as governance problems arising from the separation of ownership from control. Transaction-cost reasoning holds that the manufacturer selects a governance form according to asset specificity, uncertainty and the frequency of exchange (Williamson, 1979), while agency theory locates the difficulty in divergent objectives and asymmetric information between principal and agent (Eisenhardt, 1989; Jensen & Meckling, 1976). Applied to distribution, these arguments generate a familiar set of instruments: exclusive territories, performance-contingent margins, pledges and idiosyncratic investments that raise the cost of defection (Anderson & Weitz, 1992), and relational norms that sustain cooperation where contracts are necessarily incomplete (Dwyer et al., 1987; Heide, 1994; Morgan & Hunt, 1994).

Distributor performance itself has been treated as multidimensional since Kumar and colleagues (1992) demonstrated that suppliers evaluate resellers along partially independent dimensions that do not collapse into sales volume. Frazier (1999) subsequently argued that channel design decisions should be evaluated against the full performance set rather than against throughput alone. Recent work in operations has extended this insight to multi-site networks, showing that data-driven performance indicators permit efficiency comparison across dispersed operating units that were previously incommensurable (Akin-Oluyomi & Akhigbe, 2023a), and that logistics decisions align with enterprise strategy only where an

explicit leadership model translates between the two (Akin-Oluyomi & Akhigbe, 2023b). The measurement problem, however, remains substantially unresolved in the emerging-market case, where distributor records are often incomplete and secondary sales visibility is partial.

Dynamic Capabilities and the Digital Resource Base

The resource-based view holds that sustained advantage derives from resources that are valuable, rare, imperfectly imitable and non-substitutable (Barney, 1991). Digital assets sit awkwardly in this schema: algorithms and platforms diffuse rapidly and are widely available for purchase. The dynamic-capabilities extension resolves the tension by locating advantage not in the asset but in the organisational capacity to sense, seize and reconfigure (Teece, 2007). On this reading, an AI model is not itself a source of advantage; the advantage lies in the routines that generate the data the model consumes, the decision rights that determine whether its output is acted upon, and the capability of the distribution workforce to execute the resulting instruction.

Evidence from adjacent domains supports this emphasis. Frameworks for technology adoption that centre employee readiness rather than technical specification report materially different adoption trajectories from those that do not (Akhigbe, Falemi, & Akin-Oluyomi, 2024). Talent-development models for distributed operations show that capability building must be designed for the geography of the operation rather than assumed to travel from the centre (Falemi, Akhigbe, & Akin-Oluyomi, 2020). Workforce-optimisation research addressing staffing volatility during rapid expansion documents how capability erodes precisely when network growth places the greatest demand on it (Falemi, Akhigbe, & Akin-Oluyomi, 2023b). The implication for RTM is direct: AI-enabled distribution is a socio-technical capability, and the human layer of the distribution network is a constitutive component rather than an implementation detail (Sunday et al., 2025).

Technology, Organisation and Environment

The technology-organisation-environment perspective specifies three loci of adoption determinants: characteristics of the technology, organisational readiness and resource endowment, and the environmental field including competitive pressure, infrastructure and regulation (Tornatzky & Fleischer, 1990). Individual-level acceptance models add expectancy and facilitating conditions as proximal determinants of use (Venkatesh et al., 2003). Both are relevant here because RTM digitalisation requires adoption at two levels simultaneously, by the manufacturer and by legally independent distributors whose

incentives, capital constraints and technical capacity differ markedly from the manufacturer's own.

The environmental dimension is unusually salient in emerging economies. Electricity reliability, network coverage and the design of distribution infrastructure are not background conditions but active constraints, and the engineering literature on power systems in these markets documents how far infrastructure quality diverges from the assumptions embedded in enterprise software (Shittu et al., 2020; Sunday & Omoegun, 2018). Where grid instability is chronic, hybrid and distributed energy configurations determine whether distributor-level systems can operate at all (Sunday & Omoegun, 2019a, 2019b), the availability of radio-frequency front-end capability conditions whether field data can be transmitted at all (Erhimefe & Gideon, 2025; Gideon, 2025b), and the resilience of the digital layer becomes a function of the resilience of the physical layer beneath it (Shittu, Olagunju, & Shittu, 2024). Automated grid management and storage-integrated distribution architectures raise that baseline where they are deployed (Shittu, Adaramola, & Shittu, n.d.; Shittu, Shittu, et al., 2025), and hybrid artificial-intelligence control applied to distortion in urban distribution networks demonstrates that the physical distribution layer is itself becoming algorithmically governed (Adeniji et al., n.d.; Shittu, Okara, et al., 2025).

Institutional Context and Emerging-Market Distribution

Institutional theory holds that organisational forms converge on templates that confer legitimacy rather than on those that maximise technical efficiency (DiMaggio & Powell, 1983; Meyer & Rowan, 1977), and that legitimacy is itself a strategic resource (Suchman, 1995). Emerging markets are characterised by institutional voids, the absence or weakness of the intermediating institutions that mature markets take for granted, which shifts functions such as credit assessment, contract enforcement and quality certification onto firms themselves (Khanna & Palepu, 1997). Distribution strategy in these settings has accordingly been argued to require reconstruction rather than adaptation of models developed elsewhere (London & Hart, 2004; Prahalad & Hammond, 2002; Sheth, 2011).

Macroeconomic instability compounds the institutional problem. Analyses of monetary policy conduct in middle-income emerging economies document the difficulty of maintaining the nominal stability on which working-capital planning depends (Agwuna, 2022a), while research on entrepreneurship finance in African markets identifies financial fragility as a structural rather than episodic feature of the small-enterprise base from which distributors are typically drawn (Agwuna, 2022b). Evidence on the formation of entrepreneurial intention in

African student populations further indicates that the supply of prospective channel entrepreneurs is itself institutionally conditioned rather than given (Iwu et al., 2024). Systemic shocks propagate quickly through such systems, as the distributional consequences of the COVID-19 pandemic in South Africa illustrated (Ikwegbue et al., 2021). Work on regional economic integration further indicates that the quality of policy implementation, and specifically the ethical conduct of those charged with it, mediates whether technological transformation yields inclusive outcomes (Enaifoghe et al., 2020). More recent contributions extend this to the digital domain, arguing that economic participation in developing countries is conditioned by the governance of digital systems rather than by access to them alone (Agwuna, 2026a, 2026b).

Data Governance as a Channel Mechanism

Data governance denotes the allocation of decision rights and accountabilities over data assets, together with the policies and controls that operationalise them (Khatri & Brown, 2010). Contingency accounts hold that no single governance configuration is universally appropriate and that structure must be matched to organisational and environmental conditions (Weber et al., 2009). Systematic review has since consolidated the field around a small set of dimensions comprising decision domains, governance mechanisms, and contextual antecedents (Abraham et al., 2019), and the requirements of trustworthy AI have been shown to extend those dimensions to include provenance, model accountability and the auditability of automated decisions (Janssen et al., 2020). Parallel work in applied ethics establishes that algorithmic systems raise distinct normative concerns of transparency, fairness and traceability that technical performance metrics do not capture (Mittelstadt et al., 2016), and that the proliferation of AI ethics guidelines has produced convergence on principles alongside persistent divergence in implementation (Jobin et al., 2019). Contextual integrity offers a normative criterion for evaluating whether a given data flow is appropriate to the relationship in which it occurs (Nissenbaum, 2010), a criterion of direct relevance where a manufacturer begins to observe a distributor's operations at a granularity the parties never negotiated.

The behavioural stratum of data governance is frequently neglected. Empirical work in Nigerian higher-education administration has established that information-security awareness is a determinant of records confidentiality in practice, not merely in policy (Onche et al., 2020); that password and authentication behaviour predicts actual data-protection compliance among administrative professionals (Onche & Ogbonna, 2022); that bring-your-own-device

adoption introduces measurable information-security risk into administrative offices (Onche et al., 2023); and that the effectiveness of cybersecurity awareness training on insider-threat behaviour is contingent on design features that many programmes omit (Onche et al., 2024). These findings transfer to distribution with little modification. Distributor-side data are captured by field personnel on personal devices, in low-supervision settings, under commission incentives that reward reported activity. The integrity of the data on which an AI system operates is therefore a behavioural achievement before it is a technical one, and the professional attributes and role clarity of the personnel involved bear directly on organisational outcomes (Onche, 2021; Onche, Adenekan, & Sabboh, 2021).

Method

Design

This article is a conceptual contribution and collects no primary data. It follows the theory-synthesis approach described by Jaakkola (2020), in which the objective is to integrate previously disconnected literatures around a focal phenomenon so as to produce an account that none of the contributing literatures supplies alone. The synthesis is organised as an integrative rather than systematic review, appropriate where the aim is reconceptualisation of an emerging topic rather than aggregation of effect sizes across a mature evidence base (Snyder, 2019; Torraco, 2005). Concept-centric organisation of the source material follows Webster and Watson (2002). The contribution type is delineation and integration in the sense of MacInnis (2011), and the article conforms to the conventions for conceptual papers set out by Gilson and Goldberg (2015).

Source Corpus and Selection Logic

Sources were assembled purposively across five domains: channel governance and distribution strategy; dynamic capabilities and technology adoption; supply chain and workforce governance in distributed operations; industrial digitalisation, instrumentation and secure data exchange; and data governance, information-security behaviour and algorithmic accountability. Inclusion required that a source contribute a construct, mechanism or boundary condition to at least one pillar of the framework. Foundational theoretical works were retained irrespective of publication date because their constructs remain the operative vocabulary of the field; empirical and applied sources were weighted toward the most recent decade. Emerging-economy evidence was deliberately over-weighted relative to its share of the published literature, since the framework's boundary conditions are defined by that

context. The corpus is not exhaustive and was not screened against a formal protocol; no reporting guideline for systematic review applies, and none is claimed.

Framework Construction and Proposition Derivation

Construction proceeded in four steps. Constructs were first extracted and clustered into the three pillars. Second, candidate relationships among pillars were specified and retained only where at least one source supplied a mechanism rather than an association. Third, contextual moderators were identified from the emerging-market literature and admitted only where a plausible mechanism of interaction with a specified main effect could be stated. Fourth, the retained relationships were expressed as directional propositions. Each proposition is stated at a level of specificity that permits falsification and is accompanied in the measurement agenda by candidate indicators and an appropriate analytical strategy.

Ethical Considerations

No human participants, animal subjects or personally identifying data were involved. Institutional ethical approval was accordingly not required. [If a host institution requires a formal exemption determination, insert the reference number here: DATA REQUIRED.]

The ADPG Framework

The ADPG framework comprises three pillars, four interface mechanisms and four contextual moderators. Pillar constructs and their candidate indicators are summarised in Table 1.

Pillar One: AI-Enabled Distribution Capability

AI-enabled distribution capability is defined as the organisational capacity to generate, interpret and act upon algorithmically derived recommendations across the distribution stack. It is decomposed into five components. Demand sensing estimates outlet-level offtake from partial and lagged secondary sales signals. Territory and beat optimisation allocates outlets to routes and routes to field personnel subject to cost, coverage and service-frequency constraints; the underlying optimisation is formally continuous with path-planning and slotting problems addressed in the warehouse-automation literature (Akanbi & Sunday, 2024). Assortment intelligence determines which stock-keeping units should be present in which outlet class, a problem for which demand-driven approaches leveraging external search data have shown promise in scaling assortment decisions beyond what manual planning permits (Akanbi, Ganiu, & Sunday, 2025a). Predictive replenishment anticipates stock-out risk rather than responding to it, a logic transferred directly from the shift from reactive to

predictive maintenance in engineered systems (Adaramola et al., 2018; Sunday et al., 2020). Algorithmic credit assessment estimates distributor default risk from transaction history, a function of particular consequence where formal credit-bureau infrastructure is thin.

Two enabling conditions are specified. The first is instrumentation depth, the proportion of distribution events captured as structured data at the point of occurrence. Digital-twin architectures illustrate the upper bound of this condition, maintaining a continuously updated computational representation of a physical system sufficient to support real-time monitoring and fault detection (Shittu et al., 2023), and their extension to predictive maintenance and operational optimisation demonstrates the analytical leverage that instrumentation depth confers (Shittu & Shittu, 2024). Digital-twin-driven management of port and maritime infrastructure illustrates the same architecture applied to a logistics node rather than to a generating asset (Shittu, Adeniji, et al., n.d.). Sensor-based monitoring and vibration-based condition assessment provide analogous evidence that fault states become detectable only once the underlying process is instrumented (Omoegun et al., 2023; Sunday & Omoegun, 2020). Identification technologies including radio-frequency identification supply a low-cost instrumentation layer for asset and inventory tracking where full digital-twin implementation is infeasible (Yusuf et al., 2023). The second condition is process control discipline. Statistical process control has been shown to sustain precision in high-volume manufacturing where human judgement alone does not (Akanbi, Ganiu, & Sunday, 2022), and lean and six-sigma methodologies reduce failure rates in high-speed lines through the same mechanism (Akanbi, Ganiu, & Sunday, 2023b). Process automation and supervisory control implementations demonstrate that discipline of this kind is realised through system configuration rather than through exhortation (Sunday & Omoegun, 2022; Sunday et al., 2024), and reliability engineering supplies the complementary discipline of identifying failure modes and their propagation paths rather than increasing inspection frequency (Gideon, Adaramola, & Fadero, 2019), a discipline extended by restoration strategies that combine designed experimentation with root-cause analysis (Akanbi, Ganiu, & Sunday, 2023a). Risk-mitigation evaluation in extended component supply chains illustrates the same logic in a commercial distribution setting (Gideon, 2025a). The transfer to distribution execution is that algorithmic recommendation improves outcomes only where the executing process is stable enough for the recommendation to be implemented as specified.

Pillar Two: Distributor Performance Architecture

Distributor performance is specified as a four-dimensional construct, extending the multidimensional logic of Kumar and colleagues (1992) to the digital context. The operational dimension comprises numeric and weighted distribution, on-shelf availability, order fill rate and service frequency adherence; models combining workforce behaviour with real-time operational data indicate that service outcomes are predicted more accurately by the two together than by transactional records alone (Akhigbe, Falemi, & Akin-Oluyomi, 2023). The financial dimension comprises working-capital efficiency, days sales outstanding, credit utilisation and return on distributor investment. The compliance dimension comprises price and trade-terms adherence, channel-conflict incidence, and the completeness and timeliness of data submission. The developmental dimension comprises capability accretion in the distributor organisation itself, including personnel retention, systems adoption and succession depth.

The developmental dimension is the least examined and, in this framework, the most consequential. Models linking employee retention systems to operational productivity metrics establish that retention is an operational rather than a welfare variable (Falemi, Akhigbe, & Akin-Oluyomi, 2023a), and enterprise risk management frameworks that integrate human-capital strategy with operational analytics demonstrate that workforce instability transmits directly into operational risk exposure (Falemi, Akhigbe, & Akin-Oluyomi, 2024). Where operational growth is linked explicitly to leadership effectiveness, measurable outcome improvement follows (Falemi, Akhigbe, & Akin-Oluyomi, 2025). Applied to distribution, a distributor whose operational metrics are strong but whose developmental base is eroding is on a trajectory that current period metrics do not reveal, and algorithmic performance ranking that omits the developmental dimension will systematically misallocate manufacturer support.

Pillar Three: Data Governance

Data governance in the RTM setting is specified along five dimensions adapted from Khatri and Brown (2010) and Abraham and colleagues (2019). Decision-rights allocation determines which party may define, access, correct and act upon distribution data. Data quality management establishes accuracy, completeness, timeliness and lineage standards and the routines that maintain them. Security and access control governs the technical protection of data in transit and at rest; attribute-based encryption applied to supply chain access control offers a mechanism for granting differentiated access without granting comprehensive

visibility (Shittu & Nabil, 2023), and blockchain-assisted architectures for secure exchange in supervisory control environments provide a tamper-evident alternative to trust-based reconciliation (Opara et al., 2022). Distributed-ledger approaches to peer-to-peer transaction settlement demonstrate that verifiable exchange between parties without a central intermediary is technically achievable at operational scale (Shittu et al., 2021). Privacy and contextual appropriateness governs whether a given flow is legitimate given the relationship in which it arises (Nissenbaum, 2010). Algorithmic accountability governs the explicability, contestability and auditability of automated determinations affecting distributors (Janssen et al., 2020; Mittelstadt et al., 2016).

Data-governance maturity is treated throughout as a behavioural as well as a structural property. A formally complete policy architecture that is not enacted by the personnel who capture and handle data does not constitute maturity. The empirical basis for this position is the body of behavioural information-security evidence reviewed above, which consistently finds that awareness, authentication practice and device policy predict realised compliance more strongly than policy existence does (Onche et al., 2020, 2023, 2024; Onche & Ogbonna, 2022).

Interface Mechanisms

Four mechanisms link the pillars. Signal fidelity runs from data governance to AI-enabled distribution capability: the informational value of an algorithmic recommendation is bounded by the quality of the data generating it. Legitimate authority runs from data governance to distributor performance: a distributor's willingness to act on a recommendation, and to accept the allocation of support that follows from a performance ranking, depends on whether the determination is explicable and contestable. Capability transfer runs from AI-enabled distribution to the developmental dimension of distributor performance, and is realised only where deliberate capability-building accompanies system deployment (Falemi, Akhigbe, & Akin-Oluyomi, 2020). Feedback densification runs from distributor performance back to data governance: as performance measurement becomes finer-grained, the governance burden it imposes increases, and governance structures that were adequate at coarse granularity cease to be so. This last mechanism generates the framework's principal dynamic, in which digital RTM investment increases the governance requirement it must itself satisfy.

Contextual Moderators

Four moderators are specified. Institutional void severity captures the weakness of credit-assessment, contract-enforcement and certification institutions in the operating market (Khanna & Palepu, 1997). Infrastructure reliability captures the availability of electrical power and data connectivity at distributor sites (Shittu et al., 2020; Sunday & Omoegun, 2019b). Distributor digital literacy captures the technical and interpretive capacity of distributor personnel. Regulatory intensity captures the stringency and enforcement of data-protection and competition regulation in the jurisdiction. The framework predicts that these moderators do not merely attenuate the main effects but, in specified combinations, reverse their sign.

Propositions

Thirteen propositions follow from the framework. They are stated below and summarised with their measurement implications in Table 2.

Proposition 1. Instrumentation depth is positively associated with the operational dimension of distributor performance, and the association is mediated by the accuracy of predictive replenishment.

Proposition 2. The relationship between AI-enabled distribution capability and distributor performance is non-monotonic: gains accrue at low to moderate levels of algorithmic intervention and attenuate, or reverse, where algorithmic determination displaces distributor judgement in domains characterised by high local knowledge intensity.

Proposition 3. Data-governance maturity moderates the relationship between AI-enabled distribution capability and distributor performance such that the relationship is positive at high maturity and null or negative at low maturity.

Proposition 4. Algorithmic credit assessment reduces distributor default incidence relative to relationship-based assessment only where institutional void severity is moderate; at high void severity the transaction record on which the algorithm depends is too incomplete to outperform relational information.

Proposition 5. Behavioural information-security compliance among distributor-side personnel mediates the relationship between formal data-governance structure and realised data quality.

Proposition 6. Explicability and contestability of algorithmic performance determinations are positively associated with distributor acceptance of resulting resource allocations, and this

association is stronger where the distributor's prior relational tenure with the manufacturer is longer.

Proposition 7. Digital RTM investment increases performance dispersion across the distributor base in the short term, and reduces dispersion only where accompanying capability-building investment reaches distributors in the lower performance quartiles.

Proposition 8. Infrastructure reliability moderates the relationship between instrumentation depth and signal fidelity such that intermittent power and connectivity produce systematically non-random missingness in distribution data.

Proposition 9. The developmental dimension of distributor performance predicts subsequent-period operational and financial performance more strongly than current-period operational performance does.

Proposition 10. Attribute-based and cryptographically enforced access control increases distributor willingness to share granular transaction data relative to contractual confidentiality assurance alone.

Proposition 11. Feedback densification increases the marginal governance cost of each additional unit of measurement granularity, generating an interior optimum in measurement intensity below the technically feasible maximum.

Proposition 12. Regulatory intensity moderates the relationship between data-governance maturity and distributor performance such that the relationship is stronger in jurisdictions with enforced data-protection regimes, because enforcement converts governance from a discretionary to a legitimating investment.

Proposition 13. Manufacturer ethical leadership, operationalised as consistency between stated data-use commitments and observed data-use practice, is positively associated with distributor data-submission completeness, and this association is partially independent of contractual incentive.

DISCUSSION

Theoretical Contributions

The framework makes three theoretical moves. The first is to reposition data governance from an information-systems function to a channel-governance mechanism. Classical channel theory identified contracts, ownership and relational norms as the available governance forms (Heide, 1994; Williamson, 1979). The framework argues that data-governance architecture now operates as a fourth form, allocating decision rights over the informational substrate on which the other three increasingly depend. This is not a metaphorical extension. Decision

rights over distribution data determine which party can substantiate a claim in dispute, which party bears the cost of measurement error, and which party can credibly threaten to withdraw. These are the constitutive elements of governance in the transaction-cost sense.

The second move is to specify the conditions under which digital transformation is predicted to be distributionally regressive within a channel. Proposition 7 states that digital RTM investment widens performance dispersion in the short term because the distributors best positioned to exploit new capability are those already best resourced. This prediction is consistent with evidence from the wider development literature that technological transformation yields inclusive outcomes only under specific institutional and leadership conditions (Enaifoghe et al., 2020) and that economic participation in digitalising economies is governed rather than automatic (Agwuna, 2026a, 2026b). It places an obligation on the manufacturer that a purely efficiency-based reading of RTM digitalisation does not generate.

The third move is to integrate behavioural information-security evidence into distribution theory. Channel research has treated data quality as an engineering property. The behavioural evidence indicates that it is substantially a property of the conduct of the personnel who generate the data, and that this conduct responds to awareness, training design and device policy rather than to system architecture alone (Onche et al., 2020, 2024; Onche & Ogbonna, 2022). Proposition 5 makes this mediation explicit and, if supported, would reorient a significant share of RTM digitalisation investment from platform capability toward field-force practice.

Implications for Practice

Three implications follow for manufacturers. First, sequencing matters: the framework predicts that AI deployment ahead of data-governance maturation destroys rather than creates value, because algorithmic outputs derived from unreliable data are acted upon with a confidence the data do not warrant. A governance-first sequence is therefore recommended even where it delays visible capability. Second, performance measurement systems should incorporate the developmental dimension explicitly and weight it in support-allocation decisions, since Proposition 9 predicts that it carries the leading information about future performance. Third, contestability should be designed into algorithmic determination from the outset. A distributor who cannot interrogate a ranking that determines their credit line will contest it through the relationship instead, at higher cost to both parties.

Implications for Policy

For regulators in emerging economies, the framework identifies data-protection enforcement as a lever on channel equity rather than solely on individual privacy. Proposition 12 predicts that enforcement converts governance investment from discretionary to legitimating, which shifts manufacturer behaviour in a direction that also benefits smaller distributors. It also identifies infrastructure as a governance variable: where power and connectivity are unreliable, data missingness is non-random and systematically disadvantages the least-served territories (Proposition 8). Infrastructure investment therefore has a distributional consequence within commercial channels that is not usually counted in its appraisal.

Limitations

Four limitations bound the contribution. First, and most fundamentally, the framework is conceptual and no proposition has been empirically tested; the article establishes plausibility and testability, not validity. Second, the source corpus was assembled purposively rather than through a systematic protocol, which introduces selection bias in an unquantified direction; the over-weighting of emerging-economy and applied-engineering sources was deliberate but nonetheless constitutes a departure from representativeness, and a systematic review would likely surface disconfirming evidence that purposive selection has not sampled. Third, several sources in the corpus are recent working papers or articles in journals without established impact records, and a number lack complete publication metadata; the constructs drawn from them should be regarded as provisional pending replication in indexed outlets. Fourth, the framework generalises across emerging economies that differ substantially in institutional configuration, and treating institutional void severity as a single continuous moderator almost certainly understates the heterogeneity involved; the direction of this bias is toward overstating the framework's transportability.

Tables**Table 1: ADPG Framework Constructs, Definitions and Candidate Indicators.**

Pillar / Construct	Definition	Candidate indicators
Instrumentation depth	Proportion of distribution events captured as structured data at point of occurrence	Share of outlets with electronic order capture; secondary sales visibility ratio; event capture latency
Demand sensing accuracy	Precision of outlet-level offtake estimation from partial signals	Mean absolute percentage error at outlet-week level; forecast bias
Territory	Efficiency of outlet-to-route	Coverage per unit cost; service

Pillar / Construct	Definition	Candidate indicators
optimisation quality	and route-to-personnel allocation	frequency adherence; route productivity variance
Algorithmic credit assessment	Model-based estimation of distributor default risk	Discriminatory power (AUC); default rate by decile; override frequency
Operational performance	Distributor execution against coverage and availability standards	Numeric and weighted distribution; on-shelf availability; order fill rate
Financial performance	Efficiency of distributor capital deployment	Days sales outstanding; working capital turns; return on distributor investment
Compliance performance	Adherence to trade terms and data obligations	Price compliance rate; channel conflict incidence; data submission completeness
Developmental performance	Capability accretion within the distributor organisation	Personnel retention; systems adoption depth; succession coverage
Data-governance maturity	Structural and behavioural completeness of data decision rights and controls	Decision-rights clarity index; data quality conformance; realised security compliance; audit trail coverage
Algorithmic accountability	Explicability, contestability and auditability of automated determinations	Availability of determination rationale; appeal mechanism use; override audit rate
Institutional void severity	Weakness of intermediating market institutions	Credit bureau coverage; contract enforcement duration; certification availability
Infrastructure reliability	Availability of power and connectivity at distributor sites	Grid availability hours; connectivity uptime; data missingness rate
Distributor digital literacy	Technical and interpretive capacity of distributor personnel	System proficiency assessment; recommendation interpretation accuracy
Regulatory intensity	Stringency and enforcement of data protection and competition regulation	Enforcement action frequency; statutory penalty exposure; compliance audit requirement

Note. AUC = area under the receiver operating characteristic curve. Indicators are candidate operationalisations proposed for validation; none has been psychometrically evaluated in this configuration.

Table 2: Propositions, Focal Relationships and Suggested Analytical Strategies.

P	Focal relationship	Suggested analytical strategy
1	Instrumentation depth to operational performance via replenishment accuracy	Mediation analysis on distributor panel; bootstrapped indirect effect
2	Non-monotonic effect of AI intervention on performance	Quadratic and spline specification; test of curvature significance
3	Data-governance maturity as moderator	Moderated regression with simple slopes at maturity terciles
4	Algorithmic versus relational credit assessment by void severity	Quasi-experimental comparison across markets; difference-in-differences
5	Behavioural compliance mediating structure to data quality	Multilevel mediation with personnel nested in distributors
6	Contestability to allocation acceptance, moderated by tenure	Survey-based structural equation model with interaction term
7	Digital investment and performance dispersion over time	Distributional regression; change in Gini or coefficient of variation
8	Infrastructure reliability and non-random missingness	Missingness pattern analysis; test against missing-at-random assumption
9	Developmental performance predicting subsequent performance	Cross-lagged panel model over three or more waves
10	Cryptographic access control and data-sharing willingness	Vignette or discrete choice experiment with distributor sample
11	Interior optimum in measurement intensity	Cost function estimation; identification of turning point
12	Regulatory intensity as moderator	Multi-country hierarchical model with jurisdiction-level predictor
13	Ethical leadership consistency and data submission completeness	Multilevel model controlling for contractual incentive intensity

Future Research

Three priorities follow. The immediate requirement is construct validation. Instrumentation depth, data-governance maturity and the developmental dimension of distributor performance all require scale development and psychometric evaluation; item response theory offers the appropriate methodology for scale construction and validation in this setting (Sabboh, 2025), and attention to the validity frameworks articulated by Messick and Kane should govern the interpretation of resulting scores (Sabboh & Janet, 2026). Second, longitudinal designs are needed to test Propositions 7 and 9, both of which make claims about trajectory that cross-sectional data cannot evaluate. Third, comparative multi-country designs are required to test

the moderator specifications; a design spanning markets that differ on regulatory intensity while holding manufacturer and category constant would be particularly informative.

CONCLUSION

Digital route-to-market transformation in emerging economies is not primarily a technology problem. The technical components are largely available and increasingly commoditised. What is scarce is the governance architecture that determines whether algorithmic outputs are trustworthy, whether distributors accept the determinations that follow from them, and whether the resulting distribution of capability across the channel is one that participants will sustain. The ADPG framework specifies these relationships as thirteen testable propositions and supplies the measurement pathway through which they may be evaluated. Its central claim is conditional rather than promotional: AI-enabled distribution improves distributor performance where data-governance maturity makes algorithmic judgement auditable and contestable, and is predicted to widen performance dispersion where it does not. That claim now requires empirical adjudication.

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