

RETAIL FINANCE DISTRIBUTION: EVIDENCE BRIEF

Infrastructure Support and Geographic Accessibility: Presence or Function?

Background

Digital financial services have become an important mechanism for extending formal financial services to populations poorly served by conventional banking. Agent networks provide the physical interface through which customers deposit and withdraw cash, transfer funds and make payments.

In the EGM framework, infrastructure support encompasses point-of-sale devices, telecommunications connectivity, power solutions such as solar kits and power banks, network boosters and agent kiosks — measures that allow agents to establish and sustain service points where poor electricity or weak networks would otherwise make operations difficult.

Geographic accessibility is distinguished from counting agents. It concerns the physical ease with which users reach a service point: distance, travel time, waiting time and travel risk.

Scope of the Synthesis

This brief synthesises evidence at the intersection of infrastructure support as the intervention and geographic accessibility as the outcome. Consistent with the EGM's supply-side orientation, the focus is on how infrastructure and the physical organisation of agent networks shape the spatial reach of financial services rather than on broader consumer welfare outcomes.

Four papers are considered: Jack and Suri (2014) on the expansion and consequences of Kenya's M-PESA network; Aggarwal, Brailovskaya and Robinson (2020) on mobile money alongside savings interventions in Malawi; Senyo et al. (2022) on ecosystem practices shaping mobile-money-based inclusion in Ghana; and Annan et al. (2022) on retail digital finance distribution networks in LMICs. The evidence is heterogeneous: none of the four evaluates a discrete infrastructure package such as solar-powered kiosks or connectivity boosters against distance or travel-time outcomes, so the synthesis focuses on the mechanisms through which infrastructure affects accessibility.

1. Synthesis of Findings

Table 1. Evidence base for this cell

Source	Design and coverage
Jack & Suri (2014)	Panel analysis of household transaction data and network expansion; Kenya
Aggarwal et al. (2020)	Randomised savings intervention with lockboxes and mobile money; Malawi

Source	Design and coverage
Senyo et al. (2022)	Qualitative study of fintech ecosystem practices; Ghana
Annan et al. (2022)	Research agenda on retail digital finance distribution networks; LMICs

No included study measures distance, travel time or waiting time as a primary outcome.

1.1 Infrastructure and the Spatial Reach of Agent Networks

The strongest common finding is that physical agent infrastructure determines whether digital finance becomes genuinely accessible outside conventional banking locations. Jack and Suri (2014) show the importance of Kenya's widespread M-PESA agent network in reducing the transaction costs associated with transferring resources. Although their principal outcomes extend beyond geographic access, the functioning agent network was fundamental to enabling households to transact without relying on bank branches or physically transporting cash over long distances.

This mechanism corresponds closely to the EGM's theory of change, in which dense and reliable agent networks reduce physical barriers to adoption and extend provision into underserved areas. Geographic accessibility therefore depends on more than technological availability on a handset: customers still require sufficiently proximate infrastructure for cash-in and cash-out.

Annan et al. (2022) reinforce this supply-side perspective by treating retail financial distribution networks as critical infrastructure for extending digital finance in LMICs, and by drawing attention to the continuing challenge of reaching populations for whom conventional banking infrastructure is distant or commercially unviable.

1.2 Reliability of Infrastructure Determines Effective Accessibility

Geographic proximity alone does not guarantee meaningful access. An outlet located close to consumers offers limited benefit when network connectivity, electricity, liquidity or operating infrastructure prevents transactions from being completed.

Senyo et al. (2022), studying Ghana's mobile money ecosystem, demonstrate that financial inclusion is produced through interactions among multiple actors and practices rather than through technology alone. Agents are embedded within a broader ecosystem involving mobile network operators, financial institutions, customers and other intermediaries, so infrastructure and network functioning shape the capacity of local agents to translate nominal geographic presence into usable access.

The implication is that measures of accessibility should distinguish between distance to an outlet and distance to a functioning outlet. An agent may appear geographically accessible in administrative data while poor connectivity, lack of power or other operational failures effectively increase users' time and cost of obtaining a successful transaction.

1.3 Infrastructure Expansion Can Reduce Travel and Transaction Costs

A third cross-study pattern concerns reductions in the costs of obtaining financial services. Jack and Suri (2014) show that mobile money fundamentally altered the costs of

transferring resources across distances in Kenya, highlighting how agent-based infrastructure can substitute for costly physical movements of people and cash.

Aggarwal et al. (2020), working in Malawi, demonstrate the relevance of mobile money infrastructure within financial management among populations facing constraints in access to formal services. Their findings are useful in showing that digital mechanisms operate alongside other savings technologies, and that accessibility to the supporting infrastructure affects the practicality of using such services.

The EGM's conceptual framework identifies the same mechanism: localised agents reduce search and transaction costs by embedding financial services within communities rather than requiring travel to conventional institutions. Infrastructure investments that permit agents to operate nearer underserved communities can therefore affect accessibility through reduced distance, shorter travel time and lower travel costs.

1.4 Rural Infrastructure Remains a Binding Constraint

Extending agent networks into rural areas involves more than recruiting additional agents. Rural locations frequently present weaker commercial incentives and more challenging operating conditions, including unreliable electricity, limited telecommunications coverage and greater distances to liquidity-management points.

Annan et al. (2022) highlight these supply-side distribution issues as a major research agenda for financial inclusion in LMICs, and Senyo et al. (2022) show that mobile money access emerges from an ecosystem in which infrastructure, institutions and network relationships are interdependent. This reinforces the logic behind targeted interventions — point-of-sale equipment, connectivity support, backup power and physical kiosks — which are potentially most consequential where conventional market incentives are insufficient to support reliable agent operations.

1.5 Geographic Accessibility Requires Both Presence and Functionality

Collectively the studies suggest that geographic accessibility has two dimensions: spatial availability, or whether an outlet exists sufficiently close to prospective users; and effective availability, or whether the service point can consistently complete transactions when users reach it.

Jack and Suri (2014) illustrate the value created by an extensive agent network; Senyo et al. (2022) demonstrate the importance of ecosystem functioning; Aggarwal et al. (2020) illustrate how mobile money complements other mechanisms for managing resources; and Annan et al. (2022) identify retail distribution infrastructure as a central research and policy issue.

These findings imply that infrastructure investments should not be judged by the number of installed devices or new outlets. Appropriate outcomes include distance and travel

time to a functioning service point, the proportion of rural populations within a reasonable radius of an active agent, waiting time, and the frequency with which customers travel unsuccessfully because services are unavailable.

Table 2. Direction of evidence in this cell

Pathway	Direction of evidence
Agent network density and transaction-cost reduction	Positive (strong)
Ecosystem functioning as a condition for usable access	Positive (qualitative)
Mobile money infrastructure within household financial management	Positive (experimental, adjacent)
Retail distribution networks as critical infrastructure	Positive (conceptual)
Specific infrastructure packages and measured distance or travel time	Not tested
Rural targeting and closure of spatial access gaps	No direct evidence

“Not tested” and “no direct evidence” denote absence of evidence, not evidence of absence.

2. Cross-Cutting Trends and Insights

Several cross-cutting patterns emerge from the four studies:

- Last-mile infrastructure matters: digital finance does not eliminate geography, and agent and merchant outlets remain an essential physical layer between platforms and users wherever cash retains a role.
- Network density and infrastructure reliability are complementary: increasing outlets without ensuring electricity, connectivity and operational capacity may create nominal rather than effective access.
- Infrastructure is particularly important in rural and underserved markets, where branches are scarce and travel costs are relatively high.
- Accessibility is multidimensional: distance, travel time, waiting time and travel risk are distinct indicators, and proximity alone is not sufficient evidence of access.
- Infrastructure deployment differs from infrastructure use: hardware creates potential access, while network reliability, liquidity, business incentives and ecosystem coordination determine whether that potential becomes service availability.

3. What Works

- Combining decentralised agent presence with reliable supporting infrastructure: dense local networks lower the distance and transaction costs of obtaining services, as illustrated by the Kenyan mobile money experience (Jack & Suri, 2014).
- Infrastructure that enables agents to operate consistently, including connectivity, power and appropriate transaction equipment.
- Coordinated ecosystem practices rather than isolated technological interventions, since inclusion is produced through relationships among actors (Senyo et al., 2022).
- Targeting infrastructure toward locations where formal financial institutions are absent or difficult to reach, consistent with the EGM’s last-mile objective.
- Treating liquidity management points as part of the infrastructure question, since distance to rebalancing affects whether a rural outlet can transact.

4. What Doesn’t Work

- Treating agent numbers alone as proof of accessibility: an outlet lacking electricity, connectivity or liquidity may be physically present without providing reliable access.
- Infrastructure deployment without attention to the surrounding agent ecosystem: a point-of-sale terminal, kiosk or connectivity device cannot independently overcome weak liquidity arrangements, poor provider support or unsuitable network economics (Senyo et al., 2022).
- Assuming generic expansion reaches the most excluded communities: commercial networks may remain concentrated where transactions are most profitable unless rural deployment is explicitly incentivised.
- Judging investments by installed capacity rather than by whether customers reach a functioning service point at lower cost.

5. Challenges

- Infrastructure reliability, particularly electricity and telecommunications connectivity in remote areas, which creates a gap between outlet coverage and actual accessibility.
- Rural viability: low transaction volumes and higher operating costs weaken incentives to establish and sustain agents in sparsely populated communities.
- Interaction with liquidity and network management: customers may make repeated journeys when agents cannot meet cash-in or cash-out requirements even where connectivity exists.
- Measurement: much of the literature measures agent presence, service use or downstream financial outcomes rather than distance, travel time, waiting time

or travel risk, making the causal contribution of infrastructure hard to isolate.

- e. Attribution: infrastructure interventions are typically bundled with liquidity, training and marketing support, so their independent contribution is rarely identified.

6. Areas for Further Research

- a. Rigorous evaluation directly linking specific infrastructure interventions — solar-powered agent facilities, network boosters, point-of-sale provision, dedicated kiosks — to distance travelled, travel time, waiting time and unsuccessful trips.
- b. Measurement of distance to the nearest active and transaction-capable agent rather than to the nearest registered outlet, distinguishing nominal from functional access.
- c. Rural heterogeneity: whether infrastructure produces different effects in remote communities, secondary towns and dense urban areas.
- d. Gender-sensitive analysis, because the location of service points and risks associated with travel can affect women differently.
- e. Combined geospatial agent-location data, transaction records and household travel information to establish whether investments close spatial access gaps.
- f. Persistence: whether accessibility improvements hold once project support ends and subsidised equipment requires replacement.

7. Conclusion

The available evidence supports the proposition that infrastructure is a foundational condition for extending agent-based digital financial services geographically. Jack and Suri (2014) demonstrate the importance of widespread agent infrastructure in reducing transaction barriers; Senyo et al. (2022) show that access depends on a functioning ecosystem rather than technology alone; Aggarwal et al. (2020) illustrate the role mobile money infrastructure can play within households' financial management options; and Annan et al. (2022) identify retail distribution networks as an essential yet under-researched component of inclusion in LMICs.

Across these studies the central lesson is that geographic accessibility requires both proximity and reliability. Infrastructure support can help extend agent operations into underserved locations, but investment in hardware or physical outlets will have limited impact if agents cannot transact consistently because of weak connectivity, electricity, liquidity or supporting systems.

For policymakers and providers, the implication is to move beyond counting installed infrastructure or registered agents. The more meaningful test is whether investments reduce the distance, time, risk and inconvenience involved in reaching a functioning financial service point. The evidence base remains thin on direct causal evaluation of this specific intervention–outcome relationship, which makes it a priority area for future research.

About this Evidence Brief

This evidence brief is a cell-wise summary of studies of the cell “Infrastructure support → Geographic accessibility” from ICED’s Evidence and Gap Map of the Retail Finance Distribution Initiative.

For the full map, visit www.iced-eval.org/evidence-and-gap-maps

References

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