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Digital Transformation and SME Growth in Emerging Markets

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ABSTRACT

Small and medium-sized enterprises (SMEs) are pivotal to local economic resilience, employment generation, and innovation in emerging markets. As urbanisation accelerates and digital economies expand, digital transformation emerges not only as a technological imperative but as a developmental and spatial strategy. This paper explores the evolving relationship between digitalisation and SME growth in developing contexts, drawing from the perspective of urban and regional planning. While digital tools offer SMEs new pathways to participate in broader markets and streamline operations, their uptake is often constrained by infrastructure deficits, regulatory uncertainty, and spatial disparities in digital access. Through a critical review of scholarly literature, policy documents, and institutional reports, this study identifies key barriers and strategic responses associated with SME digitalisation. Particular attention is paid to how digital infrastructure, governance environments, and urban–rural linkages influence the efficacy of digital transformation efforts. Strategies such as fintech integration, digital hubs, and public–private partnerships are evaluated for their relevance in spatially diverse regions. The findings highlight the need for place-based, multi-scalar policy responses that align digital transformation initiatives with inclusive urban development and spatial equity. This study contributes to a more integrated understanding of digital development, one that merges technology with territorial planning and offers insights for policymakers, planners, and SME practitioners navigating the digital economy in emerging markets.

Keywords: Digital Transformation; Emerging Markets; SMEs; Urban and Regional Planning; Spatial Development

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1. Introduction

Small and medium-sized enterprises (SMEs) are widely acknowledged as engines of economic development, job creation, and innovation across emerging markets [1,2]. Representing more than 90% of global businesses and over 50% of employment, SMEs are especially vital in developing economies where they often fill structural gaps left by larger corporations and limited public sector capacity. Yet, despite their significance, many SMEs in these regions face entrenched barriers to growth, including restricted access to finance, weak institutional support, infrastructural deficiencies, and human capital limitations [3,4].

Amid this complex landscape, digital transformation has emerged as a potentially transformative force. Defined as the integration of digital technologies into core business functions and strategies, digitalisation offers new avenues for SMEs to enhance competitiveness, access broader markets, and improve operational efficiency [5]. In many emerging markets, the rapid proliferation of mobile technologies, digital financial services, e-commerce, and cloud-based tools has allowed even resource-constrained SMEs to reimagine their growth trajectories. However, the promise of digital transformation is not uniformly realised. Persistent digital divides, particularly in infrastructure, access to finance, digital literacy, and institutional readiness continue to impede meaningful uptake, especially in peri-urban and rural areas where spatial and socio-economic disparities are most pronounced [6–8].

Existing research has tended to treat digital transformation as a purely technological challenge, often underestimating its institutional, spatial, and governance dimensions. Yet, as urban and regional planning perspectives highlight, SME digitalisation is deeply intertwined with questions of territorial development, infrastructure equity, and policy alignment. Integrating this lens into the digitalisation discourse helps illuminate how place-based disparities shape digital opportunity and how coordinated policy responses can address systemic exclusion and inefficiencies.

This study aims to contribute to this emerging interdisciplinary conversation by systematically reviewing academic and institutional literature on the barriers and strategic responses to SME digitalisation in emerging markets. By bridging the fields of digital development, management, and spatial policy, the research provides a more holistic understanding of how SMEs can navigate and benefit from digital transformation. Ultimately, the study affirms that integrated, context-sensitive strategies are essential for aligning digital innovation with inclusive economic growth and territorial equity. The findings not only confirm the relevance of the research aim but offer evidence-based recommendations for stakeholders engaged in shaping the digital futures of SMEs in developing contexts.

2. Materials and Methods

2.1. Study Design and Approach

This study adopts a qualitative, desk-based research design rooted in interpretivist methodology. The goal is to synthesize and interpret existing knowledge to better understand the barriers and strategic responses to digital transformation among small and medium-sized enterprises (SMEs) in emerging market contexts. The study is non-interventionary and does not involve human or animal subjects, experimental data, or ethical approval.

The research follows a structured literature review and qualitative thematic synthesis approach, allowing for inductive exploration of patterns, theoretical alignment, and comparative insights across diverse regional contexts. The analytical framework is based on two well-established models: the Technology Organization Environment (TOE) framework and the Resource-Based View (RBV) of the firm [9,10], both of which guided data selection, coding, and analysis.

2.2. Data Sources and Selection Criteria

The study relies exclusively on secondary data sources comprising:

- Peer-reviewed journal articles,
- Reports from international institutions (World Bank, UNCTAD, ITU, OECD, GSMA) [2,4,6,11–16]
- Policy documents and white papers from government and development agencies.

Literature was identified using academic databases including Scopus, Web of Science, Google Scholar, and ScienceDirect, using keywords such as:

"digital transformation in SMEs," "emerging markets," "barriers to digital adoption," "digital infrastructure," "fintech," and *"spatial equity."*

Inclusion criteria:

- Publications dated between 2005–2024 (with emphasis on the last 10 years),
- English language,
- Focus on SMEs in low- and middle-income countries (LMICs) or emerging market economies,
- Thematic relevance to at least one domain of the TOE or RBV frameworks.

A total of 112 documents were initially reviewed. After screening for quality, duplication, and thematic depth, 65 documents were selected for full-text analysis.

2.3. Analytical Framework

The study uses qualitative thematic content analysis, guided by a coding structure aligned with the TOE and RBV models. Literature was manually coded into three primary dimensions:

- Technological (e.g., access to internet, platform use, mobile technology),
- Organizational (e.g., digital skills, leadership, strategic capacity),
- Environmental (e.g., regulatory environment, ecosystem support, spatial access).

This triangulated framework enabled structured comparison of digital transformation barriers and enabling strategies across diverse SME environments, while also accommodating insights into spatial policy, institutional capacity, and regional disparities.

2.4. Methodological Limitations

While this study provides a broad and structured synthesis of the digital transformation landscape for SMEs in emerging markets, it is limited by its exclusive reliance on secondary sources. Desk-based literature reviews offer valuable cross-contextual comparisons but cannot fully capture the lived experiences of SME actors, particularly those in informal or underserved settings. There is an inherent bias in institutional reports, which often reflect donor priorities or state ambitions more than operational realities on the ground. The underrepresentation of localized and grey literature may marginalize unique grassroots innovations or constraints. These limitations underscore the need for future primary data collection including interviews, ethnographic engagement, and field surveys to validate and enrich the findings presented here.

3. Results

The results of this study present a comprehensive synthesis of the thematic barriers and enabling pathways shaping digital transformation among SMEs in emerging markets. Findings are structured according to the three domains of the TOE framework and augmented by RBV concepts to emphasize internal firm capabilities and strategic resource allocation. Patterns are presented thematically and supported by figures and tables to enhance clarity and replication.

3.1. Technological Barriers and Readiness Gaps

Technological infrastructure remains a foundational enabler and, in many cases, a critical constraint in the digital transformation of SMEs across emerging markets. This study finds that infrastructural limitations are among the most pervasive and persistent barriers to digital adoption, particularly in secondary cities, peri-urban areas, and rural localities that fall outside core national development zones. Despite notable gains in mobile phone penetration and digital awareness, the quality, reliability, and affordability of internet access continue to impede meaningful engagement with digital tools. Issues such as unstable broadband connectivity, limited bandwidth, and intermittent power supply are frequently cited in the literature as key constraints [6,13].

The digital divide is not only national, it is spatially distributed within countries, often reflecting broader structural inequalities in public investment and infrastructure planning. SMEs located in capital cities or export-oriented clusters typically benefit from better network coverage, faster internet speeds, and more frequent access to public-private innovation hubs. In contrast, businesses operating in remote or underserved areas must often rely on slow, costly, or inconsistent connectivity, limiting their ability to scale, access e-commerce platforms, or engage in real-time communication with suppliers and customers. These disparities mirror spatial patterns of inequality observed in

other infrastructure domains, such as transport and utilities, reinforcing the importance of territorial planning in digital development. Additionally, even where basic digital connectivity is available, the depth of technological integration within SME operations remains shallow. Micro and small-scale enterprises in particular tend to use only rudimentary digital tools such as mobile money apps, WhatsApp Business, Facebook storefronts, and basic social media for customer engagement. While these tools are accessible and easy to use, they offer limited capacity for scaling operations, managing supply chains, or generating analytics for strategic decision-making. More advanced systems, such as cloud-based accounting platforms, Enterprise Resource Planning (ERP) systems, or integrated e-commerce platforms, remain largely underutilized due to prohibitive costs, complexity, and a lack of technical support [7].

These usage patterns point to a layered form of digital engagement in which SMEs are digitally connected but not digitally empowered. This distinction is vital: basic connectivity alone does not equate to transformation. True digital readiness requires the capacity to integrate, customize, and strategically leverage digital tools to improve productivity and competitiveness. The results of this study indicate that in many emerging economies, SMEs are constrained to the lower tiers of the digital maturity spectrum able to access basic tools but lacking the infrastructure and support to move into deeper integration.

These disparities are captured in **Table 1**, which provides a comparative overview of infrastructure access and platform utilization across selected regions [4,13,15]. **Table 1** highlights notable differences between Sub-Saharan Africa, South Asia, Southeast Asia, and Latin America, with the former two regions exhibiting more acute infrastructural and service delivery gaps. While Southeast Asia and Latin America show relatively higher adoption of cloud-based tools and e-commerce platforms, even within these regions, disparities persist between urban and rural SMEs.

The findings underscore a pressing need for place-based, equity-focused digital infrastructure strategies. National broadband rollouts and public–private connectivity initiatives must explicitly address geographic inequality to avoid reinforcing patterns of spatial exclusion. From a planning perspective, this involves integrating digital infrastructure planning into municipal development frameworks, economic zoning, and regional growth corridors. Prioritizing connectivity in high-potential but underserved SME zones can unlock latent entrepreneurial potential and promote inclusive economic development.

Technological readiness must be reframed not as a technical issue alone, but as a developmental and spatial policy imperative. Building affordable, resilient, and regionally inclusive digital infrastructure is central to enabling SMEs to participate fully in the digital economy. Without this foundation, other enablers, such as finance, training, and regulatory reform, will have limited transformative effect.

Table 1. Infrastructure and Platform Access Across Selected Emerging Markets.

Region	Internet Penetration (%)	Mobile Money Adoption	Cloud Tool Use Among SMEs (%)	Electricity Reliability (1–7 scale)
Sub Sahran Africa	29	High	Low	3.2
Southeast Asia	58	Medium	Medium	5.5
South Asia	43	High	Low	4.1
Latin America	67	Low	Medium	5.9

Source: ITU (2022) [15], World Bank (2021) [4], UNCTAD (2021) [13].

3.2. Organizational Capabilities and Strategic Gaps

Within Beyond infrastructure and policy, the internal capacity of SMEs to adopt and integrate digital technologies remains a central determinant of digital transformation success. Drawing on the RBV, this study affirms that a firm's ability to leverage digital tools is not only a matter of access but of strategic resource mobilization and organizational readiness [9,17]. In emerging markets, internal resource limitations especially human capital, digital skills, and strategic planning capacity continue to constrain SME digitalisation trajectories.

Many SMEs operate with minimal or no dedicated IT

personnel, lack structured digital strategies, and are often managed by leaders who have limited exposure to digital innovation. This technological illiteracy at the leadership level creates hesitation toward digital investments and perpetuates dependence on legacy systems or manual operations. These limitations are further compounded by financial constraints, where SMEs struggle to allocate funds for hardware upgrades, software subscriptions, cybersecurity tools, or even basic connectivity enhancements. As Kraus et al. (2021) note, SMEs often face a unique resource paradox: they need digital tools to grow and compete yet lack the financial and strategic capacity to implement them effectively [7].

However, the findings also highlight promising adaptive behaviors among more digitally proactive SMEs. Firms that succeed in digital integration typically exhibit a culture of experimentation, marked by informal learning, iterative use of affordable digital platforms (e.g., mobile payment apps, inventory management tools), and continuous adaptation to customer feedback. In these enterprises, digitalisation is viewed not as a one-time investment but as an evolving process—aligned with the firm's goals and operational realities. This informal, grassroots approach to digital capability-building resonates with research by Mutula and Van Brakel (2022), who emphasize the role of experiential learning and peer-to-peer knowledge exchange in resource-constrained environments [18].

Organizational culture thus emerges as a crucial enabler or inhibitor. In firms with risk-averse leadership or hierarchical decision-making structures, digital adoption tends to be slow, fragmented, or limited to low-cost, low-impact tools such as social media marketing or basic mobile banking. Conversely, SMEs that encourage cross-functional collaboration, decentralized decision-making, and openness to innovation are better positioned to embed digital tools in meaningful ways. These internal behavioral dynamics reflect what Teece (2007) describes as dynamic capabilities the ability to sense, seize, and reconfigure resources in response to technological change [17].

From a planning and development perspective, the capacity of SMEs to adapt internally must be supported by external ecosystem interventions that provide access to digital mentoring, skills development, and localized innovation support. Public institutions, local governments, and development partners can facilitate this through targeted training programs, partnerships with educational institutions, and incentives for digital upskilling especially among micro-enterprises and women- or youth-led businesses. The integration of digital literacy initiatives into municipal enterprise development programs or spatial economic zones can help align local development strategies with SME digital inclusion goals.

In sum, the organizational capacity of SMEs is not fixed but adaptable. While internal limitations are a clear barrier, strategic orientation, cultural openness, and managerial vision can significantly offset structural disadvantages. Policies that focus solely on infrastructure or finance without addressing organizational learning, leadership development, and capacity-building will have limited impact on long-term digital resilience in the SME sector.

3.3. Environmental Barriers and Institutional Readiness

The digital transformation of SMEs in emerging markets is not solely a function of technology availability or internal capacity; it is deeply conditioned by the external institutional ecosystem in which firms operate. This includes national regulatory frameworks, financial systems, and public-sector strategies for digital and economic development. The evidence synthesized in this study underscores that while many countries have adopted overarching digital economy policies, these are often insufficiently aligned with the practical realities of SMEs particularly those operating in informal, rural, or resource-constrained settings.

A major challenge is the misalignment between national digital policy goals and implementation capacity at the local level. Many strategies are top-down, generalized, and fail to consider the spatial heterogeneity of SME ecosystems. As a result, policies that aim to promote digital uptake may be irrelevant or inaccessible to the vast majority of SMEs outside formal industrial zones or tech-driven sectors. Regulatory fragmentation particularly between national, regional, and municipal authorities further compounds this gap, creating layers of complexity that inhibit small businesses from navigating digital licensing, e-commerce compliance, or fintech registration processes [8,16].

The findings also highlight persistent barriers to fi-

nancing for digital adoption. Access to affordable credit, investment capital, or digital innovation grants remains heavily skewed toward high-growth tech start-ups, which are typically urban-based, male-led, and well-networked. In contrast, micro-enterprises, women-led businesses, and informal SMEs face systemic exclusion from mainstream financial services due to risk-averse banking practices, lack of credit history, or insufficient collateral [19]. Even where public or donor-backed digital finance schemes exist, awareness is low and administrative requirements are often prohibitive.

Equally critical is the uneven availability of enabling ecosystems. Innovation hubs, business accelerators, digital skills centers, and co-working spaces are predominantly clustered in capital cities or designated economic corridors. SMEs located outside these zones, particularly in secondary cities, peri-urban areas, and rural municipalities are often disconnected from these networks. This spatial dislocation restricts their access not only to infrastructure but also to knowledge exchange, mentoring, and market linkages that are central to digital competitiveness.

These institutional constraints, summarized in **Table 2**, highlight the urgent need for multi-scalar governance reforms that decentralize digital strategy implementation, reduce regulatory friction, and extend support to marginalized SME segments. Local governments and municipal agencies, though often overlooked in national strategies, have a critical role to play in adapting digital policies to local realities, facilitating access to public-private partnerships, and ensuring that underserved SMEs are not left behind in the digital transition.

Table 2. Summary of Environmental Constraints by Domain.

Environmental Factor	Barrier Identified	Affected SMEs
Regulation	Complex compliance, lack of SME focus	All SMEs
Financing	Limited credit for digital tools	Micro and informal SMEs
Digital strategy alignment	Generic national strategies	Nonurban and non-export SMEs
Ecosystem access	Unequal access to digital incubators/hubs	Rural SMEs, women led SMEs

In addition to regulatory and financial constraints, cultural and communication challenges also shape the institutional environment for SME digital adoption. In many emerging markets, linguistic diversity, low levels of digital literacy, and informal communication practices complicate interactions with formal digital systems. For example, mobile banking apps, e-commerce platforms, and online tax systems are often designed with a limited set of national or global languages, which may not align with the languages spoken by small business owners, in rural or indigenous communities. Digital mistrust and preference for face-to-face transactions persist in many informal economies, presenting a cultural hurdle to full digital integration. These communication barriers are often underacknowledged in policy frameworks but are critical to consider when designing inclusive digital platforms and outreach strategies.

This analysis reinforces the idea that digital policy must intersect with spatial and economic development planning. Aligning regulatory reform with infrastructure delivery, financial inclusion, and enterprise support can help create localized digital ecosystems that are more inclusive, responsive, and sustainable. These efforts require coordination across national ministries, financial institutions, sub-national governments, and civil society actors, underscoring the complexity but also the opportunity of building digitally inclusive economies in emerging markets.

National digital strategies in many emerging markets suffer from implementation asymmetries. While policy documents often articulate ambitious targets such as broadband penetration, SME digital training, or fintech integration actual delivery mechanisms remain under-resourced, centralized, and technocratically designed. Local governments are rarely empowered or capacitated to operationalize these strategies. Evidence from Nigeria, Kenya, and India shows that sub-national governments frequently lack budgetary autonomy, digital planning expertise, or access to national ICT funds. Additionally, bureaucratic fragmentation among ministries (e.g., commerce, communications, education) dilutes policy coherence, creating confusion for SMEs navigating compliance or seeking support. This policy-to-practice gap contributes to institutional inertia, undermining trust among SMEs and resulting in low uptake of national programs.

Intersectional inequalities, related to gender, informality, and geography amplify digital exclusion. Women entrepreneurs, especially in informal sectors, face layered

barriers such as limited mobility, unequal access to training, discriminatory credit systems, and socio-cultural expectations that devalue digital engagement. Even when mobile internet is available, women in rural areas are less likely to own devices, control usage, or engage with digital platforms that are not offered in vernacular languages or adapted to low literacy levels. Informal SMEs those not registered with state authorities face additional hurdles such as invisibility in policy design, lack of access to government support programs, and exclusion from digital tax and financial systems. Ignoring these layered realities risks reinforcing the very inequalities that digital development seeks to address.

3.4. Summary of Findings

The results of this study reveal that digital transformation among SMEs in emerging markets is governed by multi-level, interdependent factors spanning technological, organizational, and institutional domains. These factors are not isolated but rather interact dynamically across spatial and sectoral contexts. Access to reliable digital infrastructure, internal capacity to adopt and integrate new technologies, and supportive institutional frameworks all serve as key enablers or, in many cases, inhibitors of SME digital progression. The study confirms that barriers do not operate uniformly; instead, they are experienced differently depending on the firm's size, location, informality status, and sectoral alignment.

A critical insight emerging from this analysis is that digital readiness is deeply uneven, not only across countries but also within national territories. Urban SMEs, particularly those in capital regions or connected to export markets, generally experience greater infrastructure access, institutional support, and innovation exposure. In contrast, firms located in secondary cities, peri-urban areas, and rural regions face compounded structural disadvantages. Similarly, sectoral differences such as between ICT-enabled services and traditional retail or agriculture shape the nature and depth of digital integration. These patterns highlight the territorial dimensions of digital transformation and the need for spatially differentiated strategies that go beyond generic national digital policies.

As illustrated in **Table 3**, a structured mapping of barrier domains, strategic responses, and spatial planning relevance confirms the value of cross-sectoral, context-sensitive approaches. Such frameworks are essential to operationalizing inclusive digital growth strategies that address both economic and territorial disparities. Planning relevance is especially pronounced where infrastructural investment, enterprise support mechanisms, and policy reform intersect. For instance, mobile-first strategies in infrastructure-poor regions, partnerships with digital innovation hubs in secondary cities, and spatial targeting of digital finance initiatives all emerge as viable, scalable responses.

This synthesis supports the argument that integrated policy alignment, across infrastructure, economic development, and local governance, is crucial for enabling equitable SME digital transformation. Digital inclusion must therefore be treated as both an economic and spatial policy imperative. Embedding digital planning within regional and urban development agendas offers a powerful lever to accelerate SME growth, enhance competitiveness, and strengthen long-term economic resilience across diverse geographies.

Table 3. Digital Transformation Pathways and Enablers.

Barrier Domain	Key Constraints	Strategic Response	Planning Relevance
Technological	Infrastructure & platform gaps	Mobile first strategies, public Wi-Fi zones	Spatial infrastructure planning
Organizational	Skills & strategic alignment	Informal learning, partnerships with tech hubs	Local enterprise support
Environmental	Regulatory complexity, finance	Simplified licensing, digital vouchers, grants	Policy harmonization

4. Discussion

The results of this study provide a multidimensional understanding of how digital transformation unfolds within the small and medium enterprise (SME) sector in emerging markets. By applying the Technology Organization Environment (TOE) framework and the Resource Based View (RBV) as analytical tools, the study demonstrates that digital adoption is neither a uniform process nor solely dependent on technology access. Rather, it is the product

of overlapping infrastructural, institutional, and organizational factors, shaped by region-specific dynamics, policy structures, and firm-level strategic capabilities.

Technological barriers are foundational and often the most visible in public discourse on digital transformation in emerging economies. The infrastructural deficits highlighted in the findings, such as unreliable internet access, high data costs, and limited power reliability align with prior research by ITU (2022) [6], UNCTAD (2021) [13], and Kraus et al. (2021) [7], which consistently flag these as first-order constraints for digital development in the Global South. However, this study goes further by mapping these barriers spatially, revealing that digital infrastructure challenges are not homogenous across countries or even within them. Rural areas and informal settlements often underserved by national broadband rollouts face structural exclusion from digital opportunities, reinforcing a geography of digital disadvantage that parallels broader inequalities in health, education, and economic mobility [2].

This spatial perspective draws important connections with urban and regional planning. Infrastructure investment decisions where internet backbones are laid, where data centers are sited, where mobile towers are installed are inherently spatial and political. If these investments do not prioritize SME-dense but underserved regions, the digital economy will deepen spatial disparities rather than reduce them. In this context, planners and policymakers have a critical role to play in aligning digital infrastructure strategies with inclusive development objectives, as argued by Ghosh and Vinuesa (2022) [20].

From an organizational standpoint, this study confirms the RBV assertion that internal firm capabilities particularly intangible ones such as leadership, learning orientation, and adaptability are essential for effective digital transformation [9,16]. SMEs that demonstrate openness to experimentation, that build informal alliances with tech service providers, and that integrate digital tools incrementally rather than pursuing wholesale transformation tend to outperform their peers. This reflects findings from Chen et al. (2020) and Singh & Hess (2017), who emphasize that SME innovation is often more agile and responsive than that of larger firms, even if it is less resourced [5,21].

Yet, this capacity for responsiveness is unevenly distributed. The majority of SMEs, especially in informal sectors, lack the foundational business and digital literacy required to navigate complex tools like cloud software, customer relationship management (CRM) systems, or digital supply chain platforms. This supports the argument by Mutula and Van Brakel (2022) that without targeted training and digital capability-building interventions [18], SMEs will remain confined to low-value digital adoption, unable to scale their operations or diversify revenue streams.

The environmental dimension of digital transformation adds another critical layer to the analysis. While governments in many emerging markets have adopted national digital economy strategies, these often lack clarity on how to engage or support SMEs specifically. This aligns with research by Klapper and Love (2019) [19], who found that financial policies rarely cater to small, informal, or rural enterprises. Moreover, regulatory complexity and poor enforcement discourage SMEs from entering formal digital platforms, pushing them toward informal or semi-formal models of digital engagement [8]. This study's findings also reinforce the notion that ecosystemic support—such as incubators, accelerators, digital literacy hubs, and mobile business advisory services has a disproportionate impact on digital outcomes for SMEs, particularly those led by women or youth in marginal locations.

These observations have wide-ranging implications for development policy and urban governance. Policymakers must adopt a multilevel approach to SME digitalisation that integrates national strategies with sub-national planning. Local governments and municipal development agencies, often overlooked in digital policy debates, are ideally positioned to provide context-sensitive support. They can offer training through community centers, ensure last-mile infrastructure delivery, simplify local licensing processes for digital micro-enterprises, and create spatially targeted grants for digital upgrades. In short, they are the connective tissue between national ambition and local action.

This study also calls for a reconsideration of how success in digital transformation is defined. The binary framework where firms are classified as either "digitally enabled" or "digitally excluded", is overly simplistic and fails to capture the gradational nature of SME engagement with technology. Many enterprises occupy hybrid digital states, adopting tools in fragmented, adaptive, and often

temporary ways depending on market dynamics, cash flow, and regulatory conditions. This echoes calls by Kraus et al. (2021) and Vial (2019) for a more nuanced, longitudinal understanding of digital maturity [7,22].

Moreover, as a planning scholar, the study highlights that digital transformation is not simply a technological challenge but a spatial development issue. Just as cities plan for physical infrastructure; roads, housing, water, and sanitation—there is a need to plan for digital infrastructure in a way that is inclusive, equitable, and economically catalytic. Digital access should be seen as a public good, essential for SME survival in the modern economy, and treated with the same urgency as other basic services.

Looking ahead, there are multiple pathways for future research. First, empirical studies using longitudinal and mixed-methods designs could investigate how SMEs transition across digital maturity stages and what institutional factors enable or inhibit progression. Second, more work is needed on the gendered and intersectional dimensions of SME digitalisation particularly how digital exclusion intersects with geography, informality, and social norms. Third, comparative policy analyses could help determine which institutional models centralized versus decentralized, public-led versus private-led—are most effective in fostering inclusive digital ecosystems. Finally, there is significant scope to explore how urban planning frameworks, particularly in secondary cities, can be designed to accommodate and support the growth of digitally enabled SMEs, including zoning for digital hubs, integration with transport networks, and coordination with education and innovation sectors.

These findings also highlight the normative assumptions embedded in many digital policies, which implicitly privilege formal, urban, male-led, and tech-oriented SMEs. As a result, entire segments of the economy dominated by informal, rural, or gender-diverse actors are either excluded from policy frameworks or placed at a structural disadvantage. Bridging this gap requires more than digital tools; it requires institutional reform, participatory policy processes, and decentralization of digital governance. It also demands recognition of diverse user needs where inclusion is not only technical but social, cultural, and political.

In conclusion, this discussion has shown that the digital transformation of SMEs in emerging markets is a multi-scalar, multi-dimensional process. It is contingent on both firm-level resourcefulness and the responsiveness of broader infrastructural and institutional ecosystems. The findings underscore the importance of aligning digital transformation initiatives with spatial equity, inclusive planning, and development policy. Bridging the digital divide for SMEs is not just about technology, it is about governance, space, and capacity.

5. Conclusions

This article has explored the barriers and strategic pathways associated with digital transformation among SMEs in emerging markets, integrating insights from the TOE framework and the RBV, and expanding the analysis through the lens of urban and regional planning. The findings reveal that digital transformation is not a linear or universally accessible process. Rather, it is shaped by a confluence of infrastructural, organizational, and institutional dynamics that vary across geographies and sectors.

Building on this study, several concrete avenues for future research are recommended. First, longitudinal qualitative research could illuminate the adaptive strategies SMEs employ as digital ecosystems evolve. Second, comparative studies across cities and districts could explore how local governance and spatial planning influence digital outcomes, with a focus on secondary cities, peri-urban zones, and rural economies. Third, intersectional and gender-focused studies should examine how power, patriarchy, and informality shape SME engagement with digital platforms. Fourth, participatory action research with SME associations and local authorities could generate grounded, co-designed policy solutions. Finally, impact evaluations of specific digital interventions such as mobile money platforms, digital tax tools, or microlearning programs would provide much-needed evidence on what works, for whom, and under what conditions.

The study demonstrates that many SMEs, particularly those in rural and underserved areas, continue to face infrastructural deficits that limit their participation in the digital economy. Organizational constraints, such as limited digital skills, low leadership readiness, and resource scarcity, further inhibit adoption. Meanwhile, policy environments often lack SME-specific provisions or spatial sensitivity, leaving small enterprises disconnected from

national digital agendas.

Despite these challenges, the research also identifies promising strategies for inclusive digital growth. These include mobile-first digital models, informal peer learning, partnerships with digital platforms, and locally embedded innovation ecosystems. By situating digital transformation within broader spatial development frameworks, the paper underscores the need for coordinated, place-based policies that bridge the gap between technological innovation and inclusive economic development.

The importance of this work lies in its interdisciplinary approach. By linking SME digital transformation to urban and regional planning, the study calls for more integrated policymaking that aligns infrastructure investment, institutional support, and spatial equity. It contributes to both academic literature and practical policy design, offering clear, actionable insights for planners, SME leaders, and decision-makers seeking to build resilient, digitally inclusive economies in the Global South.

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Informed Consent Statement

Not applicable.

Data Availability Statement

This study is based on a qualitative, desk-based research design and relies exclusively on secondary data sources. All data analyzed are publicly available through peer-reviewed journal articles, international institutional reports (e.g., World Bank, UNCTAD, ITU, OECD, GSMA), and publicly accessible policy documents and white papers from government and development agencies. No new data were generated during the course of this research.

Conflicts of Interest

The author declares no conflict of interest.

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