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Digital Transformation and Competitive Advantage in Sri Lankan SMEs: A Systematic Literature Review

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ABSTRACT

Small and Medium Enterprises (SMEs) constitute the backbone of the Sri Lankan economy, yet digital transformation among these firms remains uneven and under-analyzed in the literature. This systematic literature review examines digital transformation and competitive advantage in Sri Lankan SMEs, with four objectives: identifying the technologies SMEs adopt, examining the factors that influence adoption, assessing the impacts on competitive advantage, and suggesting future research directions. The review follows PRISMA 2020 guidelines and synthesizes 54 sources (peer-reviewed studies, conference papers, books chapters, and institutional reports) published between 2015 and 2026, drawing on the Technology-Organisation-Environment Framework (TOE) and Resource-Based View (RBV) as its theoretical foundation. Findings reveal a divided adoption landscape: most SMEs (91%) rely on mobile phones, while only 28% have computers, channeling adoption toward mobile-centric tools. Adoption factors depend on specific conditions. Perceived benefits alone are insufficient without financial and infrastructure capacity. Competitive advantage emerges conditionally: adopting technology alone is insufficient and advantage requires complementary organizational capabilities and strategic alignment. The review identifies a structural paradox in which intense competitive pressure for digitalization coexists with insufficient institutional support, creating asymmetric adaptation burdens for resource-constrained enterprises. Effective interventions should address ecosystem-level constraints rather than focus solely on providing technology. This approach can help promote inclusive digital transformation in emerging economies.

1. Introduction

Small and Medium Enterprises (SMEs) are widely recognised as the backbone of global economies, serving as critical engines for innovation, employment generation, and sustainable economic growth. In the Sri Lankan context, SMEs constitute over 75% of total enterprises and contribute approximately 52% to the national Gross Domestic Product (GDP), playing a vital role in poverty alleviation and rural livelihood support. Despite their importance, these enterprises often face intense competition and significant resource constraints, particularly regarding finance, skilled labour, and management expertise (Rassool & Dissanayake, 2019; Jayarathne et al., 2023; Perera et al., 2024).

In response to these challenges, digital transformation has emerged as a strategic imperative for enhancing SME competitiveness and resilience. Technologies such as e-commerce, cloud computing, and artificial intelligence (AI) enable firms to transcend geographical boundaries, reduce transaction costs, and personalize customer experience through predictive analytics (Jayarathne et al., 2023; Ali & Hajjar, 2024; Perera et al., 2024). Despite Sri Lanka being a pioneer in South

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Asia for telecommunication liberalization and commercial internet access in 1995, current e-commerce penetration remains uneven and lags behind regional peers such as India and Bangladesh (Fonseka et al., 2022; Hewage & Stecenko, 2024; Madushani & Herath,2026). Many local SMEs continue to rely on traditional business channels due to barriers such as a lack of digital literacy, infrastructure limitations, and institutional defects (Upulwehera et al., 2021; Jayarathne et al., 2023; Madushani & Herath, 2026).

The COVID-19 pandemic acted as a significant catalyst for digital adoption in Sri Lanka, as lockdowns and supply chain disruptions compelled entrepreneurs to transition to online platforms to maintain business continuity (Perera et al., 2024; Riyath, 2024). These forced digital transitions yielded unexpected benefits, with many SMEs discovering new market segments, diversifying revenue streams, and building digital capabilities that enhanced their long-term resilience (Perera et al., 2024). However, the crisis also exposed a persistent digital divide, particularly for female entrepreneurs who face unique hurdles regarding access to technology, training, and formal credit (Rajapaksha, 2019; Jayarathne et al., 2023; Hewage & Stecenko, 2024).

This systematic literature review addresses this gap by synthesizing existing research to: (1) identify the key digital technologies adopted by Sri Lankan SMEs, (2) examine the factors influencing digital transformation, (3) assess the impact of digitalization on competitive advantage, and (4) propose future research directions. By systematically mapping the current state of knowledge, this review aims to provide actionable insights for entrepreneurs, policymakers, and researchers seeking to leverage digital transformation for inclusive and sustainable SME growth.

The remainder of this paper is structured as follows: Section 2 reviews the theoretical foundation and key concepts. Section 3 outlines the systematic review methodology. Section 4 presents the findings from the literature analysis. Section 5 discusses the implications and identifies research gaps. Section 6 concludes with recommendations for practice and future research.

2. Literature review & Theoretical framework

2.1. Theoretical framework

The literature on digital adoption in SMEs is grounded in several well-established theoretical models that, together, provide a comprehensive multi-level explanation of the adoption phenomenon. Rather than relying on a single theory, this study adopts a multi-theoretical approach to capture the technological, organizational, environmental, and individual dimensions of SME digitalization in Sri Lanka.

Rogers' Diffusion of Innovation (DOI) Theory (Rogers,2003) is frequently employed to understand how SMEs adopt new technologies based on five key attributes such as relative advantages, compatibility, complexity, trialability, and observability. In Sri Lankan SME context, DOI has been applied to explain variance in adoption pace, with relative advantage and compatibility emerging as the strongest predictors of uptake (Huang & Kumarasinghe, 2024; Nawaz & Thelijjagoda, 2025; Udakumbura et al., 2026). However, DOI's focus on the innovation itself, rather than the organizational or institutional environment, limits its explanatory power when firm-level constraints are central; a gap addressed by the Technology-Organization-Environment (TOE) Framework.

Completing this, the Technology-Organization-Environment (TOE) Framework (Tornatzky & Fleischer, 1990) complements DOI by categorizing adoption factors into three contexts: technological (characteristics of the technology), organizational (internal resources and management support), and environmental (external pressures and institutional support). It serves as the primary theoretical anchor for this study, given its consistent applicability across developing-economy SME research (Fonseka et al., 2022; Nawaz & Thelijjagoda, 2025; Madushani & Herath, 2026). Critically, top management attitude and competitive pressure have emerged as the strongest environmental and organizational drivers within TOE application in South Asian SME settings.

The resource-based view (RBV) (Barney, 1991). Further enriches this foundation by positing that SMEs achieve sustainable competitive advantage through internal resources that are valuable, rare, inimitable, and non-substitutable (VRIN). Digital capability qualifies as VRIN resources in the Sri Lankan context because they are difficult to replicate without firm-specific knowledge, infrastructure investment, and managerial commitment, making them a genuine source of competitive differentiation rather than a commodity input (Huang & Kumarasinghe, 2024; Siregar et al., 2026). This argument positions digital adoption not merely as an operational decision but as a strategic one with long-term competitiveness implications (Perera et al., 2024).

Completing RBV, Dynamic Capabilities Theory explains how firms build, reconfigure, and renew their resource base in response to environmental volatility, through the capacities of sensing (identifying threats and opportunities), seizing (mobilizing resources to address them), and reconfiguring (restructuring assets and routines accordingly). While RBV explains why certain resources confer advantage, dynamic capabilities theory explains how firms adapt those resources under disruption, a distinction with particular salience to the COVID-19 driven digitalization observed across the Sri Lankan SME literature, where digitally capable firms demonstrated markedly faster sensing and reconfiguring than their less digitalized counterparts. Despite this relevance, dynamic capabilities remain underemployed as an explicit analytical lens in the SME digitalization literature, more often invoked descriptively in discussion sections than operationalist as a guiding framework from the outlet, a gap this review

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addresses by incorporating it as a sixth complementary theoretical lens.

Additionally, Institutional Theory (DiMaggio & Powell, 1983) examines how formal regulations, government policies, and informal cultural norms shape the pace and form of digital adoption. This is particularly relevant in the Sri Lankan context, where institutional deficiencies, including inconsistent policy implementation and limited access to government digital support programs, create structural barriers that neither DOI nor TOE fully capture at the macro level (Huang & Kumarasinghe, 2024; Perera et al., 2024).

The Technology Acceptance Model (TAM) (Davis, 1989) focuses on individual-level explanations, explaining owner-manager and employee acceptance of digital tools through perceived usefulness and perceived ease of use. While TAM offers valuable insight into adoption intentions, it has been criticized for treating adoption as a primarily psychological process while underweighting the organizational and resource constraints that are particularly pronounced among resource-limited SMEs. This limitation is precisely why TAM is used here as a complementary lens rather than the primary framework (Perera et al., 2024; Nawaz & Thelijjagoda, 2025).

Taken together, these six theories operate as complementary levels of analysis: DOI at the innovation level, TOE at the firm and environment level, RBV at the strategic resource level, Dynamic Capabilities Theory at the resource-renewal level, Institutional Theory at the macro level, and TAM at the individual level. The TOE framework serves as the integrating structure, with RBV providing the competitive advantage rationale, Dynamic Capabilities Theory explaining how that advantage is sustained under disruption, DOI explaining adoption variance, Institutional Theory contextualizing the Sri Lankan macro environment, and TAM capturing individual-level perception. This layered theoretical foundation informs the conceptual framework developed in Section 2.6, which maps these constructs onto the study's research variables. The TOE framework serves as the integrating structure, with RBV providing the competitive advantage rationale, dynamic Capabilities Theory explaining how that advantage is sustained under disruption, DOI explaining adoption variance, Institutional Theory contextualizing the Sri Lankan macro environment, and TAM capturing individual-level perception. This layered theoretical foundation informs the conceptual framework developed in section 2.6, which maps these constructs onto the study's research variables.

2.2. Conceptual Definitions

The following key constructs are defined as they are used throughout this study. Where multiple definitions exist in the literature, the definitions most appropriate to the Sri Lankan SME context and the firm-level unit of analysis of this research have been selected.

Digital transformation (DT) is defined as the long-term process of integrating digital technology into all facets of an organisation, fundamentally realigning business models, processes, and value propositions to generate new value for consumers and employees (Plekhanov et al., 2023). While some scholars define DT at a broader societal level, this study adopts a firm-level interpretation, focusing on how individual SMEs strategically integrate digital tools to reconfigure their operations and competitive positioning. This distinction is important because DT in resource-constrained SMEs is rarely a planned, organisation-wide transformation but rather an incremental, function-by-function process shaped by financial and managerial capacity (Vial, 2019).

Small and Medium Enterprises (SMEs), while varying in definition globally, are classified in the Sri Lankan context by employee count and turnover. According to the Ministry of Industry and Commerce (2015), a small enterprise consists of 11-50 employees or generates an annual turnover between Rs.16 million and Rs.250 million, while a medium enterprise employs 51-300 employees or generates annual turnover between LKR 257 and 750 million. This study applies these thresholds across the manufacturing and service sector, which together account for the majority of Sri Lankan SME activity. Enterprises falling below the small enterprise threshold, fewer than 11 employees or under LKR 16 million in turnover, are classified as micro-enterprises and are excluded from this study's scope.

Digital Literacy is defined as the interest, attitude, and ability of individuals to appropriately use digital tools to access, manage, evaluate, and communicate information to construct new knowledge (Hamid et al., 2020; Gilster, 1997). It has been described as a fundamental "survival skill" in the contemporary digital economy (Eshet-Alkalai, 2004), recognizing that technological access alone is insufficient without the capability to use it effectively. In the context of this study, digital literacy is treated as an organizational-level enabler, especially the aggregate digital skill level of the owner-manager and core employees, that moderates the relationship between adoption and competitiveness outcomes.

Digital adoption refers to the specific process through which organizations choose to acquire, implement and integrate new digital technologies, including tools, platforms, and digitally enabled processes, into their core business functions (Lasanthika & Pavithra, 2025; Thong and Yap, 1995). Successful adoption occurs when an organisation integrates the necessary digital strategies and technologies through appropriate channels to effectively serve its consumers, streamline operations and enhance business performance (Madurapperuma & Wijayanayake, 2021). In this study, digital adoption is treated as the mediating variable linking organizational and environmental factors to SME competitiveness outcomes.

Competitiveness is defined as a firm's capability to contend in the market relative to the environment in which it operates and it represents the ability and strength required for market contention and position gain, typically evidenced by expanding

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business prosperity, profitability, and market share (Upulwehera et al., 2021). From a resource-based perspective, competitiveness is achieved through the collection of unique, valuable, and non-substitutable resources, such as digital capabilities that are difficult for rivals to replicate (Barney, 2001; Rassool & Dissanayake, 2019).

2.3. Digital Transformation in SMEs: Global Perspective

SMEs are globally recognised as the "engine of growth" for national economies, contributing substantially to innovation, employment, and GDP; however, in the contemporary era, DT has evolved from an optional strategy into a fundamental necessity for these firms to remain competitive and survive Braunerhjelm, 2008; Prasanna et al., 2019; Madurapperuma & Wijayanayake, 2021). This transformation transcends mere digitization, involving a profound and accelerating shift in business activities and models through the strategic integration of advanced technologies such as Artificial Intelligence (AI), cloud computing, and the Internet of Things (IoT) (Vial, 2019; Rassool & Dissanayake, 2019). While DT offers resource-constrained SMEs the potential to achieve global market reach and optimise operational efficiency through predictive analytics, a significant digital divide persists between developed and developing nations (Chaffey & Ellis-Chadwick, 2019; Huang & Kumarasinghe, 2024). In developed economies, SMEs frequently leverage mature digital ecosystems to enhance market intelligence and personalise customer experience, whereas firms in emerging markets often grapple with foundational barriers including poor telecommunication infrastructure, limited financial resources, and persistent (Tharanga & Perera, 2018; Rassool & Dissanayake, 2019; Cui et al., 2023). Notably, however, the literature is not uniform on this point; several studies suggest that late-mover advantages in developing economies, including access to mobile-first platforms and lower legacy system constraints, can partially offset these structural disadvantages, a pattern documented in the broader technological leapfrogging literature through underexplored specifically within the Sri Lankan SME context. The COVID-19 pandemic served as a critical global catalyst, forcing a rapid transition to digital platforms and demonstrating that organizational resilience is increasingly dependent on firms' ability to transition from a stand-alone entity toward participation in interconnected, data-driven digital ecosystems (Redjeki & Affandi, 2021; UNCTAD, 2021; Plekhanov et al., 2023; Perera et al., 2024).

2.4. SME Digitalization in Developing Countries

SME digitalization in developing countries is structurally distinct from that of developed economies, characterized by a "multidimensional digital divide" where firms often adopt new technologies only after they have matured elsewhere (Madurapperuma & Wijayanayake, 2021; Fonseka et al., 2022). Unlike the mature digital ecosystems found in developed nations, SMEs in emerging markets operate within environments shaped by significant resource scarcity and "institutional voids" that hinder standard pathways to transformation (Mehrtens et al., 2001; Rassool & Dissanayake, 2019). The literature emphasizes that in these contexts, DT is not merely an optional strategic choice but an essential survival mechanism required to withstand the pressures of economic globalization and intensified global competition (Prasanna et al., 2019; Upulwehera et al., 2021).

The barriers to adoption in these regions are frequently interconnected and self-reinforcing, creating compounding hurdles for resource-constrained firms (Sitharam & Hoque, 2016; Rassool & Dissanayake, 2019). Financial constraints are consistently identified as the primary barrier, encompassing both the high initial investment cost for technology acquisition and limited access to formal credit markets (Upulwehera et al., 2021; Huang & Kumarasinghe, 2024. According to the SME Financial Forum, the MSME finance gap in Sri Lanka is estimated at approximately US$17.46 billion, while SME lending accounted for only 9% of total private sector bank lending in 2023 (Ceylon Today, 2025). Beyond financial constraints, a persistent knowledge-supply gap characterised by low digital literacy and insufficient technical expertise among entrepreneurs prevents firms from effectively evaluating and leveraging the business value of advanced innovations such as AI and big data analytics (Madurapperuma & Wijayanayake, 2021; Upulwehera et al., 2021). Compounding these barriers, institutional deficiencies, such as bureaucratic friction and a lack of supportive regulatory frameworks, amplify perceived risks around cybersecurity and data protection, causing many SME owner-managers to conclude that the risks of adoption outweigh the anticipated benefits (Sinnathurai & Sedláček, 2012; Fonseka et al., 2022; Zamani, 2022).

Conversely, specific enablers have emerged that facilitate successful digital integration despite these structural constraints (Prasanna et al., 2019; Huang & Kumarasinghe, 2024). The widespread proliferation of mobile technology and affordable cloud computing has allowed many SMEs to "leapfrog" traditional legacy systems and participate in global value chains with minimal capital investment (Ranatunga et al., 2020; Huang & Kumarasinghe, 2024; Udakumbura et al., 2026). External drivers, including intense competitive pressure from rival firms and requirements from international trade partners, also serve as critical catalysts for adoption (Raymond et al., 2014; Cassetta et al., 2020; Madushani & Herath, 2026). However, evidence suggests that while e-commerce is often framed as a "great equalizer," its actual impact on firm performance is heavily moderated by internal organizational readiness and the strategic commitment of top management, indicating that technological tools alone cannot substitute for foundational management capabilities (Madurapperuma & Wijayanayake, 2021; Fonseka et al., 2022; Madushani & Herath, 2026).

A critical evaluation of existing scholarship highlights significant methodological and conceptual limitations that warrant further investigation (Huang & Kumarasinghe, 2024; Premathilaka, 2024). Most studies in developing-country

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contexts rely on cross-sectional data and small convenience samples, which limits the ability to establish long-term causality or generalize findings across the diverse landscape of emerging economies (Jayarathne et al., 2023; Huang & Kumarasinghe, 2024; Premathilaka, 2024).

Furthermore, there is a persistent lack of consensus regarding the relative weight of adoption factors; while some researchers argue that technological readiness is the primary determinant of adoption outcomes (Huang & Kumarasinghe, 2024), recent empirical findings suggest that environmental factors, such as competitive pressure and institutional support, are far more influential predictors of long-term competitive gains (Huang & Kumarasinghe, 2024; Madushani & Herath, 2026). This divergence in findings may itself reflect the cross-sectional, single-country designs that dominate the corpus, underscoring the need for more contextually grounded research.

This study addresses these identified gaps by systematically examining the digitalization journey of SMEs within the specific institutional and economic context of Sri Lanka. While the broader developing-country literature provides generalised insights into adoption barriers and enablers, there remains an urgent need for empirical research that synthesises internal organizational capabilities with the unique external pressures of the Sri Lankan digital landscape.

2.5. Sri Lankan SME context

Within the South Asian region, Sri Lanka presents a unique case study of SME digitalization characterized by both pioneering telecommunications infrastructure and persistent adoption barriers. SMEs are the undisputed backbone of the Sri Lankan economy, representing over 75% of all business entities and contributing approximately 52% to the national GDP (International Finance Corporation, 2026). These enterprises are vital for social inclusion and poverty reduction, employing nearly 45% of the working population (International Finance Corporation, 2026). While SME definitions vary globally, enterprises in Sri Lanka are classified by employee count and turnover. According to the Ministry of Industry and Commerce (2015), a small enterprise employs 11-50 people or generates annual turnover between Rs. 16 million and Rs.250 million, while a medium enterprise employs 51-300 people or generates annual turnover between Rs. 250 and Rs. 750 million. Despite their economic weight, these firms face intense competition and significant resource constraints, often leading to a high discontinuation rate where nearly 70% of SMEs cease operations within three years of commencement (Priyanath & Premaratne, 2014). Despite Sri Lanka being a pioneer in South Asia for telecommunication liberalization and commercial internet access in 1995, current e-commerce penetration remains uneven and lags behind regional peers such as India and Bangladesh (Fonseka et al., 2022; Hewage & Stecenko, 2024; Madushani & Herath,2026). Current statistics indicate that while internet penetration has reached approximately 50%, less than 10% of commerce is truly technology-driven, with many SMEs still relying on basic, low-level e-commerce activities (Madurapperuma & Wijayanayake, 2021; Erangi & Stecenko, 2024). This “digital divide” is geographically and demographically skewed, with metropolitan regions exhibiting much higher adoption rates than rural areas, where poor telecommunications infrastructure and limited access to high-speed internet continue to stifle connectivity Erangi & Stecenko, 2024; Riyath, 2024) . Furthermore, only 28% of local SMEs possess computers, while 91% rely almost exclusively on mobile phones for business communication, indicating limited sophisticated digital infrastructure (Galpaya, 2020).

The barriers to DT in the Sri Lankan SME sector are multidimensional, rooted in systemic financial gaps, institutional deficiencies, and human capital shortages. A critical constraint is the substantial credit gap, estimated at USD 13.7 billion, which stems from inadequate bookkeeping practices and a lack of financial traceability that prevents SMEs from meeting the stringent requirements of traditional lenders (World Bank, 2020; International Finance Corporation, 2022). Institutionally, the landscape is hampered by antiquated legislation, bureaucratic friction, and a lack of supportive regulatory frameworks for digital authentication, such as the delayed implementation of paperless international trade processes (Fonseka et al., 2022; Erangi & Stecenko, 2024). Human capital barriers are equally persistent, particularly among SME owners who often possess limited computer literacy and remain sceptical of the business value of advanced digital tools (Upulwehera et al., 2021; Jayarathne et al., 2023).

The COVID-19 pandemic and the subsequent economic crisis served as a radical catalyst for change, forcing a rapid transition to digital platforms as a survival mechanism (Madurapperuma & Wijayanayake, 2021; Perera et al., 2024). This period saw a surge in the adoption of social media marketing and digital payment systems as entrepreneurs sought to identify new market segments and maintain financial stability amidst lockdowns (Perera et al., 2024). However, the crisis also exposed deep-seated vulnerabilities, particularly for female entrepreneurs who own roughly 25% of formal SMEs in Sri Lanka (Jayarathne et al., 2023). These women face a unique “gender digital divide,” where entrenched sociocultural attitudes and increased domestic responsibilities further restrict their access to digital training and technology (Perera et al., 2024).

A critical evaluation of local scholarship reveals that existing research is often geographically and methodologically constrained, leaving significant gaps in our understanding of the national digital ecosystem. Most Sri Lankan SME studies rely on small convenience samples concentrated in the Western Province, limiting the generalizability of their findings to rural and disadvantaged sectors (Perera et al., 2024). Furthermore, while there is a wealth of research on individual firm readiness, there is insufficient comprehensive analysis regarding how internal organizational capabilities interact with external institutional voids to shape long-term competitiveness (Upulwehera et al., 2021). Consequently, achieving a resilient

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and digitally enabled SME sector in Sri Lanka requires moving beyond fragmented, reactive interventions toward a holistic national strategy that integrates digital literacy programs, financial traceability mechanisms, and robust policy support (Ministry of Industry and Entrepreneurship Development, 2025).

These contextual realities, infrastructure gaps, institutional voids, and human capital constraints shape the lens through which this systematic review examines DT and competitive advantage in Sri Lankan SMEs.

2.6. Conceptual Framework

Based on the reviewed literature and theoretical foundations, this study proposes a conceptual framework to guide the systematic review and analysis. The framework integrates insights from the Resource-Based View (RBV) and the Technology-Organisation-Environment (TOE) framework to illustrate how DT leads to competitive advantages in Sri Lankan SMEs. This framework organizes the review around three core dimensions: antecedents (factors influencing adoption), DT process (technologies adopted), and outcomes (competitive advantage).

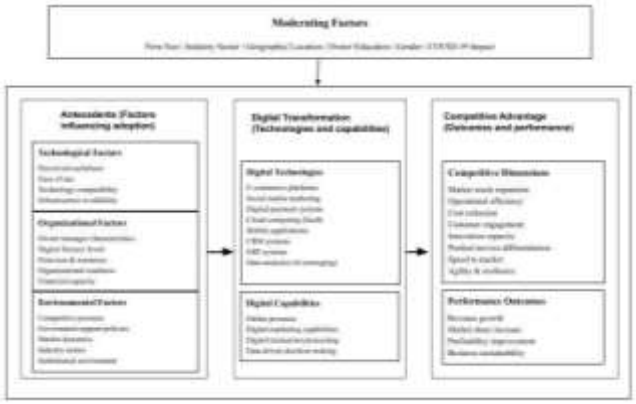


Figure 1. Conceptual framework for digital transformation and competitive advantage in Sri Lankan SMEs based on the TOE framework and RBV. Dynamic Capabilities Theory, Institutional Theory, DOI, and TAM operate as complementary analytics lenses discussed in section 2.1 and are not separately diagrammed.

Figure 1 illustrates how antecedent factors categorized into technological, organizational, and environmental dimensions following the TOE framework, influence the adoption of digital technologies by Sri Lankan SMEs. Technological factors include perceived usefulness, ease of use, technology compatibility, and infrastructure availability. Organizational factors encompass owner/manager characteristics, digital literacy levels, firm size and resources, organizational readiness, and financial capacity. Environmental factors comprise competitive pressure, government support and policies, market dynamics, industry norms, and the broader institutional environment. While Figure 1 visualizes the TOE-RBV structure underpinning the review, Dynamic capabilities Theory operates as a complementary, process-oriented lens that explains how the organizational factors and digital capabilities depicted in the framework are reconfigured under disruption such as COVID-19; it is therefore analytically discussed in section 5 rather than depicted as a discrete framework component.

The central component captures the range of digital technologies and capabilities that SMEs integrate into their operations. These include e-commerce platforms, social media marketing, digital payment systems, cloud computing solutions, mobile applications, Customer Relationship Management (CRM) systems, Enterprise Resource Planning (ERP) systems, and emerging technologies such as data analytics and artificial intelligence. Beyond technology adoption, the framework recognizes the development of digital capabilities including online presence, digital marketing capabilities, digital transaction processing, and data-driven decision-making capacity.

These DTs, when effectively leveraged, lead to competitive advantage across multiple dimensions. The framework is grounded in the RBV, which suggests that digital technologies function as strategic resources that, when valuable, rare, inimitable, and non-substitutable (VRIN), contribute to sustained competitive advantage. Competitive dimensions include market reach expansion, operational efficiency, cost reduction, enhanced customer engagement and satisfaction, increased innovation capacity, product and service differentiation, improved speed to market, and enhanced organizational agility and resilience. These advantages ultimately translate into tangible performance outcomes including revenue growth, market share increase, profitability improvement, and long-term business sustainability.

The Sri Lankan context, characterized by a gender digital divide, urban-rural disparities, infrastructure limitations, institutional voids, the post-COVID digitalization push, and a substantial credit gap (USD 13.7 billion), moderate these relationships throughout the framework. Additionally, firm-level moderating factors including firm size, industry sector, geographic location, owner education, and gender influence the strength and nature of the relationship between antecedents, DT and competitive outcomes. This recognition of contextual and moderating factors highlights the need for context-specific analysis in emerging markets, where institutional environments and resource constraints differ markedly from developed economies.

This conceptual framework serves as an organizing structure for the systematic literature review. In the findings section (Section 4), literature will be synthesized and categorized according to these three dimensions: (1) studies examining factors influencing digital adoption among Sri Lankan SMEs, (2) research documenting the types and patterns of digital technologies and capabilities adopted, and (3) empirical evidence on the impact of digitalization on competitive advantages and firm performance. This structured approach enables comprehensive mapping of existing knowledge while

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systematically identifying gaps where further research is needed.

3. Methodology

3.1. Research Design

This study employs a systematic literature review (SLR) methodology to synthesize existing research on DT and competitive advantage in Sri Lankan SMEs. A systematic review differs from traditional narrative reviews through its structured, transparent, and replicable approach to identifying, evaluating, and synthesizing relevant studies (Tranfield et al., 2003). This review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021) to ensure methodological rigor and transparency. The systematic review process consists of five main stages: (1) formulation of research questions, (2) comprehensive literature search, (3) screening and selection of relevant studies, (4) quality assessment, and (5) data extraction and synthesis. This approach enables the identification of patterns, themes, and gaps in existing knowledge while minimizing bias and ensuring reproducibility. To maintain analytical clarity, section 4 (Findings) reports descriptive patterns observed across the literature, while section 5 (Discussion) interprets these patterns theoretically and practically. Where a finding has a clear theoretical implication, this is indicated but elaborated only in section 5.

3.2. Literature Search Strategy

A comprehensive search was conducted across multiple academic databases to ensure broad coverage of relevant literature. The following databases were selected based on their coverage of business, management, and information system research: Scopus, Web of Science (Core collection), Google Scholar, Emerald Insights, and ScienceDirect. Additionally, grey literature sources including conference proceedings and government reports from international organizations such as the World Bank, the Asian Development Bank and Sri Lankan government agencies were consulted to capture contextually relevant insights.

The search strategy employed a combination of keywords related to four core concepts: DT, SMEs, geographic context, and competitive outcomes. The Boolean search string was developed and applied across databases.

(“digital transformation” OR "digitalization" OR “digital adoption” OR “digital technology” OR “e-commerce” OR “digital innovation” OR “technology adoption” OR “ICT adoption”) AND (“SME” OR “SMEs” OR “small and medium enterprise” OR “small business” OR “MSME” OR “small firm” OR “medium enterprise” OR “micro small medium”) AND (“Sri Lanka” OR “South Asia” OR “developing country” OR “emerging economy” OR “emerging market”) AND (“competitive advantage” OR "competitiveness" OR “performance” OR “firm performance” OR “business performance” OR “productivity” OR “growth” OR “Success”)

This search was conducted in English and covered publications from 2015 - 2026 to capture contemporary research while ensuring relevance to current digital technologies. This time frame encompasses the critical COVID-19 period (2020-2023) and economic crisis, which significantly accelerated DT. The initial search was conducted in April 2026. The search focused on titles, abstracts, and keywords to maximize precision while maintaining comprehensive coverage. Reference lists of key studies were also examined through backward snowballing to identify additional relevant publications not captured in the database searches.

3.3. Inclusion and Exclusion Criteria

To ensure relevance and quality, predetermined inclusion and exclusion criteria were established. Studies were included if they: (1) were peer-reviewed journal articles, conference papers, or book chapters, or reports from recognised institutional sources (retained as contextual sources and reported separately from primary empirical studies); (2) were published in English between 2015 and 2026; (3) (3) focused on Sri Lanka or, to supplement limited country-specific evidence, on comparable South and Southeast Asian developing economies; (4) examined DT or technology adoption in SMEs; (5) addresses competitive advantages, performance, or related outcomes; and (6) employed rigorous empirical or theoretical methods.

Studies were excluded if they: (1) focused solely on large enterprises or public sector organizations; (2) examined obsolete technologies with no contemporary relevance; (3) were abstracts-only or lacked full-text availability; (4) were duplicate publications of the same data; or (5) demonstrated significant methodological flaws as determined by quality assessment.

3.4. Study selection process

The study selection followed a four-stage PRISMA process (Page et al., 2021) as shown in Figure 2. Initial database searches (April 2026) across Scopus, Web of Science, Google Scholar, Emerald Insight, and ScienceDirect yielded 258 records in total, comprising 230 records retrieved from academic databases and 28 records sourced from grey literature, including government reports from the World Bank, the Asian Development Bank, the International Finance Corporation, and Sri Lankan government agencies.

Following the removal of four duplicate records, 254 unique records underwent title and abstract screening against the predetermined inclusion and exclusion criteria. This initial screening stage eliminated 181 records that were clearly irrelevant, including studies focused exclusively on large corporations, public sector organizations, or technologies with no contemporary relevance to the Sri Lankan SME context. The

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remaining 73 records were retrieved in full text for detailed assessment.

Full-text review resulted in the exclusion of a further 25 studies. The primary reasons for exclusion were: (1) studies focused on industries or economies not sufficiently comparable to Sri Lanka (n = 9); (2) studies that, while addressing digitalization, did not examine competitive advantage or firm-level performance outcomes (n = 8); (3) conference abstracts without sufficient methodological detail for quality appraisal (n = 5); and (4) studies identified as methodologically weak following quality assessment (n = 3). Following this stage, 48 studies met all inclusion criteria and were retained for data extraction and synthesis. Additionally, backwards snowballing through the reference lists of key retained studies identified six further relevant publications not captured in the initial database searches, yielding a final corpus of 54 studies included in this systematic review.

To ensure screening reliability and minimize selection bias, title and abstract screening was conducted by the author against predetermined inclusion and exclusion criteria two separate passes by the same reviewer, separated by a two-week interval, following the approach recommended for single-author systematic reviews (Kitchenham & Charters, 2007). Any borderline cases identified during screening were resolved through re-examination of the full text assessed against the criteria. The full PRISMA flow diagram detailing the identification, screening, eligibility, and inclusion stages is presented in Figure 2.

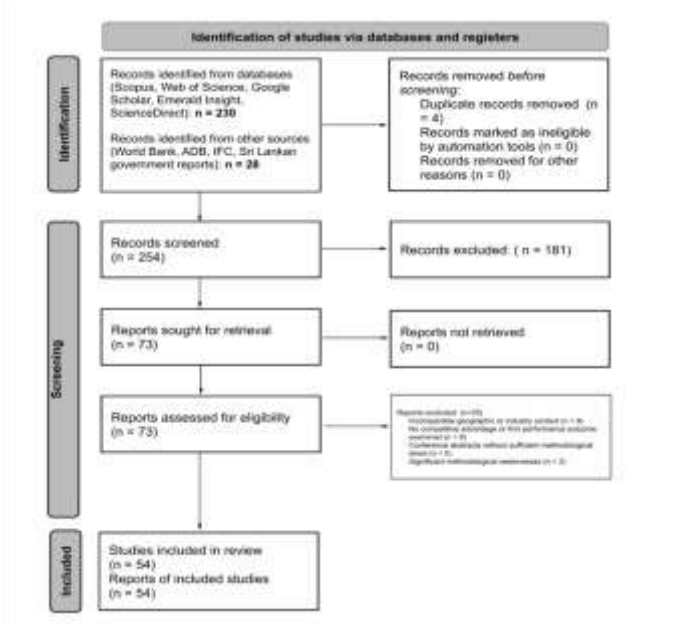


Figure 2: PRISMA 2020 Flow Diagram for Study Selection

3.5. Quality Assessment

Methodological quality was appraised using CASP checklist, matched to each study's design (Cohort Checklist for quantitative/ longitudinal studies, Qualitative Checklist for case studies, both combined for mixed methods). Conceptual articles, literature reviews, policy documents, industry reports, and institutional publications were retained in the review where they provided theoretical, contextual, or policy-relevant insights. For these sources, methodological quality criteria relating to sampling, data collection, and statistical analysis were not directly applicable; they were instead assessed for relevance, credibility, and contribution to the review objectives rather than assigned CASP quality scores.

For empirical studies, five dimensions were scored 0-2 each (aim clarity, sampling rigour, sample size adequacy, instrument validity, analytical transparency), for a maximum of 10. Studies scoring 7 or above were rated high quality, 4-6 moderate, and 3 or below low. A minimum score of 4 was required for inclusion; this threshold drove the exclusion of the three methodologically weak studies (n = 3) noted in section 3.4. Appraisal was conducted by the author alongside screening rather than as a separate blinded stage, a limitation discussed in section 5.5. Table 1 summarizes score distribution across the final corpus.

Table 1. Quality score distribution (n = 54)

Category	n	%
High (7-10)	29	53.7%
Moderate	25	46.3%
Low (≤3, excluded)	3	-

4. Findings

4.1. Overview of Included Studies

The 54 studies included in this systematic review span the period 2015-2026, with a notable concentration of publications between 2021 and 2026, reflecting the accelerating research interest in SME digitalization following the COVID-19 pandemic. The majority of studies employed quantitative survey-based designs (n = 31), followed by mixed-methods approaches (n = 12), qualitative case studies (n = 7), and systematic or narrative literature reviews (n = 4). Geographically, 38 studies focused exclusively on Sri Lanka, while the remaining 16 examined comparable developing economies in South and Southeast Asia, providing contextual comparability. The most frequently studied sectors were retail and trade (n = 19), manufacturing (n = 14), and services including tourism and hospitality (n = 12), with the remaining studies spanning agriculture and agro-processing. This sectoral distribution reflects the composition of the Sri Lankan SME landscape, where trade and services dominate enterprise activity. The predominance of Western Province samples across Sri Lankan studies is a notable methodological limitation acknowledged across the corpus, constraining the generalisability of findings to rural and peripheral regions (Perera et al., 2024).

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4.2 Factors Influencing Digital Adoption Among Sri Lankan SMEs

Consistent with the TOE framework adopted as the theoretical anchor of this review, the literature identifies adoption factors operating across three interdependent dimensions: technological, organizational, and environmental. These factors do not operate in isolation; rather, they interact in compounding and sometimes contradictory ways that shape the pace, depth, and sustainability of DT among Sri Lankan SMEs.

4.2.1 Technological Factors

Perceived benefits present a critical paradox: while entrepreneurs recognised digitalization's theoretical value for market reach and operational efficiency, this awareness proves insufficient absent financial and infrastructural capacity. Quantitative findings reveal perceived benefits as significant adoption drivers only when firms possess baseline capital and connectivity; conversely, in resource-constrained environments, benefit recognition decouples from adoption behaviour, suggesting rational recognition of implementation infeasibility rather than entrepreneurial irrationality or benefit myopia. This pattern inverted dramatically during COVID-19, when existential pressure overrode financial constraints, enabling adoption despite weak benefit-cost calculus, a phenomenon with important implications for technology sustainability post-crisis.

Perceived relative advantage and technology compatibility emerge as the strongest technological predictors of digital adoption among Sri Lankan SMEs, consistent with Rogers' (2003) Diffusion of Innovation theory. Studies applying DOI in the Sri Lankan context consistently find that owner-managers are significantly more likely to adopt digital tools when they perceive a clear and immediate productivity or cost advantage relative to existing practices (Huang & Kumarasinghe, 2024; Nawaz & Thelijjagoda, 2025). Fonseka et al. (2022) demonstrate that perceived usefulness of e-commerce platforms is a statistically significant predictor of adoption intention among Sri Lankan SMEs, particularly when the technology is perceived as compatible with existing business processes and customer expectations. These findings converge with the global SME digitalization literature (Zamani, 2022), suggesting that Sri Lankan SMEs are not behaviorally distinctive in their evaluation of technology attributes; what distinguishes them is the severity of the infrastructure constraints that suppress actualization of adoption intent. Unreliable connectivity, limited broadband penetration outside urban centers, and the near-universal dependence on mobile devices, with 91% of SMEs relying on mobile phones as their primary digital interface and only 28% owning computers (Galpaya, 2020), mean that adoption intent and adoption outcome are systematically decoupled in ways that developed-economy models do not capture. This has a direct design implication: the viable technology frontier for the majority of Sri Lankan SMEs is mobile-first and low-bandwidth, not the enterprise-grade digital infrastructure that dominates the global DT literature.

4.2.2 Organizational Factors

Owner-manager characteristics function as the critical organizational bottleneck throughout the corpus. Across studies applying the TOE framework to Sri Lankan SMEs, top management attitude consistently emerges as the strongest internal predictor of both adoption initiation and depth of integration (Madhushani & Herath, 2026; Lasanthika & Pavithra, 2025). This is theoretically consistent with Thong and Yap's (1995) foundational argument that in SMEs, the CEO is effectively the organisation for purposes of technology adoption. What the Sri Lankan literature adds is a contextual dimension: owner-manager skepticism toward digital tools is not primarily attitudinal but epistemological, rooted in an inability to evaluate the business case for technologies whose benefits are uncertain and whose costs are immediate (Upulwehera et al., 2021; Huang & Kumarasinghe, 2024). Digital literacy, operationalized here as the aggregate capability of the owner-manager and core staff, mediates this relationship; Ranatunga et al. (2020) demonstrate empirically that digitally literate Sri Lankan small businesses exhibit significantly greater economic resilience under uncertainty, establishing literacy not merely as an adoption enabler but as a strategic organizational asset consistent with RBV logic (Barney, 1991).

Financial constraints fundamentally limit technology investment capacity and systematically exclude the majority of Sri Lankan SMEs from the external financing that could otherwise bridge the technology investment gap (World Bank, 2020; IFC, 2022). Premathilaka (2024) identifies a reinforcing paradox here: the inadequate financial traceability that excludes SMEs from formal credit also prevents them from accessing the digital payment infrastructure that would generate the traceability needed for future credit eligibility. This circularity is a structural feature of the Sri Lankan SME financial ecosystem, not a firm-level failure, and it cannot be resolved through firm-level digital capability building alone.

4.2.3 Environmental Factors

Competitive pressure serves as a preeminent environmental determinant for digital adoption among Sri Lankan SMEs, driving primarily reactive and survival-oriented digitalization (Madushani & Hearth, 2026). Government support, while prominently featured in Sri Lankan policy discourse, emerges in the empirical literature as a weak and inconsistent enabler. Fonseka et al. (2022) and Upulwehera et al. (2021) both document that institutional deficiencies, bureaucratic friction, absent digital authentication frameworks, and inconsistent policy implementation elevate the perceived cost and risk of adoption, particularly for enterprises without the legal or financial resources to navigate regulatory uncertainty. The National SME Strategy Framework (Ministry of Industry and Entrepreneurship Development, 2025) articulates ambitious digital inclusion targets, but the corpus provides little empirical

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evidence that prior policy initiatives have materially reduced structural adoption barriers at the firm level. The Sri Lankan SME environment exhibits a critical mismatch: intense competitive pressure for rapid digitalization collides with insufficient institutional support and infrastructure deficits, creating asymmetric adaptation burdens, particularly serving resource-constrained micro enterprises.

4.3 Digital Technologies and Capabilities Adopted

Sri Lankan SMEs adopt a bifurcated technology portfolio: foundational mobile-centric tools dominate, while emerging technologies remain nascent. This mobile-first reality reflects infrastructure constraints; 91% of SMEs rely on phones while only 28% possess computers (Galpaya, 2020). Social Media Marketing (SMM) and basic e-commerce platforms serve as the most accessible entry points, particularly for resource-constrained firms seeking to enhance customer reach and reduce marketing costs Madurapperuma & Wijayanayake, 2021; Perera et al., 2024). However, a transition toward more sophisticated applications is emerging through the adoption of cloud computing and cloud-based ERP systems, which are increasingly recognised as critical enablers for Business Model Innovation (BMI) (Nawaz & Thelijjagoda, 2025; Udakumbura et al., 2026).

Yet technology-driven commerce remains limited-fewer than 10% of SMEs employ integrated e-business systems; the integration of Internet Payment Gateways (IPGs) is gaining momentum as a vital means to maintain business continuity during crises (Erangi & Stecenko, 2024; Premathilaka, 2024). This represents one of the few self-reinforcing dynamics in the review; Premathilaka (2024) shows that Sri Lanka's USD 13.7 billion SME credit gap stems from lenders' inability to verify SME financial history absent tangible collateral; IPGs address this directly by generating transaction records that substitute for conventional collateral, easing the traceability-credit paradox discussed in section 4.2.2. This cycle remains only partially realised, however, as KYC requirements, high gateway fees, and data-security regulations restrict IPG access mainly to better-resource SMEs (Hewage & Stecenko, 2024; Premathilaka, 2024).

AI-specific evidence in this corpus is limited to four studies. Ali and Hajjar (2024) identify cost, skill gaps, and weak regulatory frameworks as global AI adoption barriers. Within Sri Lanka specifically, Fonseka et al. (2022) link AI adoption to owner-manager education and absorptive capacity, while Buddhika (2025) finds resource shortage and cultural resistance discourage AI-based tools relative to larger firms. Huang and Kumarasinghe (2024) similarly position Sri Lankan SMEs as likely AI "laggards" given compounding financial and technological constraints. These findings suggest AI adoption barriers largely mirror general digitalization barriers, with an added layer of AI-specific literacy constraints, a gap addressed further in Section 5.3.

Beyond technology adoption, three critical digital capabilities emerge. First, financial traceability via digital payments mitigates the information asymmetry that excludes SMEs from traditional lending, creating alternative financing pathways. Second, data analytics shift SMEs from experience-based to evidence-based decision-making. Third, dynamic capabilities enable rapid response to market disruptions (Premathilaka, 2024). Furthermore, the adoption of data analytics and predictive tools, often powered by AI, allows SMEs to enable data-driven customer targeting and inventory optimization (Ali & Hajjar, 2024; Riyath, 2024; Ezaki, 2025). Collectively, these capabilities facilitate transitions from isolated enterprises toward interconnected digital ecosystem participants.

4.4 Impact of Digitalization on Competitive Advantage

Digitalization enables Sri Lankan SMEs to transcend traditional resource constraints by achieving global market reach and accessing specialised niches previously inaccessible due to geographic and financial barriers. Empirical evidence indicates that firms leading in DT see nearly twice the revenue growth of their less digitally inclined counterparts (Perera et al., 2024). From a Resource-Based View (RBV) perspective, digital capabilities constitute VRIN resources bolstering competitive position. Digitally-enabled SMEs demonstrate significantly higher resilience and recovery speed, critically evident during COVID-19 when digital adopters-maintained operations while traditional competitors halted (Mudalige, 2022). The ability to reduce transaction costs through predictive analytics and automation, combined with financial traceability reducing the information barriers that exclude SMEs from capital markets, enhances financial resilience and creates distinctive competitive positioning unavailable to non-digital competitors.

Strategic advantage increasingly derives from ecosystem participation rather than standalone capabilities. Within interconnected digital networks, competitive differentiation depends on value co-creation capacity with customers and partners. Cloud-based ERPs and data analytics enable evidence-based decision-making, personalised customer engagement, and brand loyalty building capabilities, transforming SME position within global digital economies (Ezaki, 2025). While transition costs are substantial, long-term digitalization effects fundamentally enhance organizational performance and resilience (Fonseka et al., 2022).

4.5 Gender-Specific Digitalization Pathways

In Sri Lanka, 25% of formal SME ownership is held by female entrepreneurs, yet only three studies in the corpus address gender-specific digitalization pathways directly. Synthesising across them reveals a consistent, compounding set of barriers rather than three isolated findings.

Jayarathne et al. (2023) identify a digital literacy gap among female entrepreneurs as a likely driver of disproportionately high business failure rates, compounded by restricted access to ICT resources relative to male-owned firms. Siregar et al.

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(2026), studying 140 women-owned SMEs, find that digitalization mediates competitiveness and performance for this group, but that women entrepreneurs remain systematically underserved by existing policy support structures. Shukla (2025) extends this to the financing dimension, showing that gender discrimination in formal credit access pushes women toward informal, high-cost lenders, while household responsibilities further constrain time available for digital skill acquisition.

5. Discussion

5.1 Synthesis of Findings

This systematic review synthesizes 54 studies to address four interrelated research objectives concerning DT and competitive advantage in Sri Lankan SMEs. Regarding RO1, the evidence reveals a bifurcated technology adoption landscape wherein mobile-centric tools dominate foundational adoption while sophisticated technologies remain nascent. This divide reflects not entrepreneurial irrationality but rational adoption to binding infrastructure constraints: 91% of SMEs depend on mobile phones while only 28% possess computers, fundamentally filtering the viable technology frontier toward low-bandwidth, mobile-first solutions. The dominance of social media marketing and basic e-commerce as entry points represents pragmatic adaptation rather than strategic choice, with implications for long-term capability development.

5.2 Theoretical Implications

These findings advance understanding of digital adoption and competitive advantage in three critical directions. First, they demonstrate that technology adoption models must incorporate institutional context as a constitutive rather than peripheral element. The TOE framework effectively categorizes adoption factors, yet inadequately captures how institutional voids, particularly Sri Lanka's credit gap and regulatory uncertainty, fundamentally reshape relationships between technological attributes and outcomes. Future theorizing must integrate institutional theory more centrally, recognizing that adoption barriers often reflect systemic failures rather than firm-level deficiencies.

Second, the evidence reinforces and extends RBV logic by distinguishing between technology adoption (widely diffused, easily replicated) and digital capability development (socially complex, difficult to imitate). This distinction explains performance heterogeneity among digitally-adopting firms; those developing complementary organizational routines, digital skills, and strategic alignment realize VRIN resources and sustained advantage; others merely digitalize inefficiencies. Further research should explicitly measure capability development alongside technology adoption.

Third, the findings reveal dynamic capabilities theory's profound relevance yet under deployment in SME digitalization literature. During COVID-19, digitally-capable SMEs demonstrated superior sensing (recognizing pandemic threats), seizing (rapidly pivoting to online channels), and reconfiguring (restructuring supply chains) compared to traditional counterparts. Yet only 2 longitudinal studies examine capability evolution, precluding understanding of how organizations build and sustain dynamic capabilities under resource constraints.

Fourth, the finding that competitive pressure is the preeminent driver of digital adoption carries an important theoretical implication the existing literature has insufficiently addressed: if competitive pressure is the proximate adoption trigger, the depth and strategic quality of resulting adoption is likely to be reactive and imitative rather than proactive and differentiating. Adoption driven by competitive mimicry may generate parity with rivals but is unlikely to generate the VRIN digital capabilities that RBV theory identifies as necessary for sustained competitive advantage [3, 21]. This suggests a theoretical tension between TOE's environmental-pressure construct, which predicts adoption, and RBV's resource-uniqueness requirement, which predicts advantage: the same competitive pressure that accelerates adoption may simultaneously undermine the strategic differentiation needed to convert that adoption into lasting advantage.

5.3 Research Gaps and Future Directions

Critical gaps warrant urgent investigation. Methodologically, the corpus is dominated by cross-sectional surveys (n=31) with minimal longitudinal designs (n=2), precluding causal inference and understanding of digitalization sustainability beyond immediate post-adoption periods. The Western Province concentration in Sri Lanka studies systematically excludes rural enterprises facing distinct constraints. Future research requires multi-year longitudinal designs with explicit rural-urban comparative frameworks.

Conceptually, despite the synthesis presented in section 4.5, female entrepreneur digitalization remains severely underexplored relative to its prevalence despite (25% female SME ownership); none of the three identified studies employed intersectional frameworks examining how gender intersects with firm size, sector, and geography. Sectoral variations equally deserve attention: agriculture and agro-processing, constituting significant SME populations, appear in only 8% of studies despite distinct DT challenges.

Empirically, pandemic-driven adoption sustainability remains unknown. While 73.6% of included studies post-date 2020, most treat COVID-19 as a contextual backdrop rather than an analytical focus. Longitudinal investigation of whether forced adopters consolidated digital capabilities or regressed post-crisis is essential for distinguishing genuine transformation from crisis-driven reactivity.

Theoretically, the interaction between forced adoption (crisis-driven) and strategic adoption (planned) requires deeper investigation. How do organizations transition from reactive

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crisis response toward deliberate capability development? What institutional supports facilitate this transition?

Relatedly, while four studies in this corpus touch on AI adoption barriers (Section 4.3), none treat AI as a primary research focus, and AI-specific adoption pathways for Sri Lankan SMEs remain substantially underexplored. Further studies should examine whether AI adoption follows the same TOE-predicted barriers as general digitalization, or introduces a distinct second-order literacy and absorptive-capacity gap on top of existing constraints, as the preliminary evidence in Section 4.3 suggests.

5.4 Practical Implications

For SME owners, the evidence suggests a phased capability-building approach rather than wholesale technology deployment. Beginning with low-cost, high accessibility tools (social media), complemented by digital literacy investment, creates foundations for sophisticated technology adoption. Supply chain integration and ecosystem participation amplify technology benefits beyond isolated adoption.

For policymakers, infrastructure investment (broadband access, reliable power), digital literacy programs (targeting owner-managers), and credit mechanisms (leveraging digital payment traceability) address structural adoption barriers. However, the literature reveals policy-implementation gaps: while the National SME Strategy Framework [30] articulates ambitious digitalization targets, empirical evidence of prior policy effectiveness remains scarce, suggesting monitoring and evaluation mechanisms require strengthening.

For support organizations, evidence indicates that technology training alone proves insufficient absent organizational readiness assessment and change management support. Effective interventions address complementary capabilities alongside technology provision.

5.5 Limitations of This Review

This systematic review has important limitations. First, literature incorporation was selective, potentially introducing publication bias towards positive digitalization narratives. Second, heterogeneous study designs and outcomes precluded meta-analysis; synthesis remains narrative. Third, the review's 2015-2026 timeframe, while capturing COVID-19 acceleration, excludes earlier foundational work potentially relevant to the Sri Lankan context. Fourth, screening and quality appraisal were conducted by a single author, precluding formal inter-rater reliability statistics. This was partially mitigated through the two-pass screening described in section 3.4. A post-hoc re-screening of a random 20% sample of the included studies (n = 11) confirmed 4 of 11 (36%) as meeting the criteria for primary empirical studies. The remaining 7 (64%) were contextual or comparative sources, including one grey literature source and one adoption-intention study, which inform the review's background and comparisons rather than its empirical synthesis. This shows that the corpus combined primary evidence with supporting sources and that the initial criteria did not distinguish them clearly. Fifth, the corpus examined a pronounced temporal skew, with 73.6% of included studies published after 2020. While it reflects a genuine surge in research interest following the COVID-19 pandemic, it also means the reviews' synthesis is disproportionately shaped by crisis-driven adoption narratives. Structural, non-crisis dynamics of SME digitalization, including pre-pandemic baseline adoption trajectories and slower-moving institutional or infrastructural change, are correspondingly underrepresented. Readers should interpret the review's emphasis on competitive pressure and reactive adoption with this temporal concentration in mind, as findings may partly reflect crisis-period conditions rather than steady-state SME digitalization behaviour in Sri Lanka. Finally, the inclusion of comparable developing-economy studies alongside Sri Lanka-specific research introduces contextual heterogeneity that may obscure country-specific patterns.

6. Conclusion

This systematic review synthesizes 54 studies to examine DT and competitive advantage in Sri Lankan SMEs, addressing four critical research objectives. The evidence reveals a bifurcated digitalization landscape wherein resource-constrained micro enterprises adopt mobile-centric tools reactively, while medium enterprises strategically integrate sophisticated technologies into integrated business models. Critically, the review demonstrates that technological adoption alone proves insufficient for competitive advantage; technology must combine with organizational capability development, strategic alignment, and ecosystem participation to generate sustained VRIN resources consistent with Resource-Based View logic.

The review's core finding, that digitalization generates conditional competitive advantage, reconciles apparent contradictions in the literature by revealing that performance heterogeneity among digitally-adopting firms reflects capability development differences rather than technology adoption variations. Sri Lankan SMEs face a structural paradox: intense competitive pressure driving urgent digitalization collides with insufficient institutional support, infrastructure deficits, and financing constraints that systematically exclude the majority from technology investment. This mismatch cannot be resolved through firm-level capability building alone; it requires coordinated policy intervention addressing infrastructure development, digital literacy programs, and credit mechanisms.

The COVID-19 pandemic, while catalyzing rapid adoption, revealed both the potential and fragility of forced digitalization. Pandemic-driven adopters who consolidated capabilities into deliberate digital strategies achieved sustained competitive gains; those treating digitalization as temporary crisis response largely regressed post-crisis. This distinction underscores that

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sustainable DT requires planned capability development, not reactive technology deployment.

Looking forward, achieving digitally-enabled, resilient, and inclusive SME sectors in Sri Lanka and comparable developing economies requires moving beyond fragmented interventions toward holistic strategies integrating infrastructure investment, capability development support, and policy modernization. Future research must employ longitudinal designs examining capability evolution, incorporating understudied populations (female entrepreneurs, rural enterprises, agricultural sector), and theoretically integrate institutional context with traditional adoption frameworks. For policymakers and support organizations, the evidence suggests that technology provision without complementary capability development yields limited returns; effective interventions address the full ecosystems of adoption constraints rather than technology alone.

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