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The Architecture of Endurance: A Systematic Review of SME Financial Sustainability in Emerging Markets

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ABSTRACT

The financial sustainability of small and medium-sized enterprises (SMEs) has become increasingly important in the context of economic volatility, technological disruption, and growing sustainability demands. However, existing studies remain fragmented and often examine financial, organizational, technological, and environmental factors in isolation. This study systematically reviews 49 articles indexed in the Scopus and Web of Science databases published between 2014 and 2026 to identify the dominant determinants, thematic patterns, and conceptual structure of financial sustainability in SMEs. Using the PRISMA protocol and NVivo-based bibliometric and thematic analyses, this study examines publication trends, geographic distribution, lexical structures, and thematic relationships across the literature. The results show that research is concentrated primarily in Asia and Europe, reflecting increasing scholarly attention to financial literacy, governance quality, resilience, digital transformation, FinTech adoption, ESG practices, and green finance. Thematic synthesis reveals three interconnected pillars—Internal Capability, Adaptive Resilience, and Digital–Green Transformation—which collectively form an ***architecture of endurance*** *framework that explains how SMEs maintain financial viability under conditions of uncertainty and change. This framework advances prior reviews by integrating organizational capability, resilience-building mechanisms, and sustainability-oriented transformation into a unified model of financial sustainability for SMEs. Practically, the findings highlight the importance of strengthening financial literacy, governance quality, risk management capability, digital adoption, and sustainability-oriented financing, while emphasizing the role of policy support and financial inclusion in fostering SME resilience. Future research should further explore the implications of generative artificial intelligence, blockchain-based finance, and decentralized finance (DeFi) on SME financial sustainability.*

ABSTRAK

Studi ini meninjau 49 artikel (2014–2026) tentang keberlanjutan keuangan UMKM menggunakan metode PRISMA dan analisis bibliometrik. Hasilnya menunjukkan dominasi penelitian dari Asia dan Eropa, dengan fokus pada literasi keuangan, tata kelola, resiliensi, transformasi digital, fintech, ESG, dan green finance.
Temuan utama mengidentifikasi tiga pilar: ***Internal Capability***, ***Adaptive Resilience***, *dan* ***Digital–Green Transformation***, *yang membentuk kerangka Architecture of Endurance. Kerangka ini mengintegrasikan kapabilitas organisasi, resiliensi, dan transformasi berkelanjutan untuk menjelaskan ketahanan UMKM.*
Rekomendasi praktis meliputi penguatan literasi keuangan, tata kelola, manajemen risiko, adopsi teknologi digital, dan akses pembiayaan berkelanjutan. Penelitian lanjutan disarankan untuk mengeksplorasi peran AI generatif, blockchain, dan decentralized finance (DeFi).

INTRODUCTION

In recent years, financial sustainability has become a critical issue for SMEs, particularly in emerging economies characterized by economic volatility, institutional constraints, and limited access to financial resources (Mbatha & Ngibe, 2017). Financial sustainability extends beyond short-term profitability and liquidity and encompasses the ability of SMEs to maintain financial viability, adapt to environmental changes, and sustain long-term growth (Andrés et al., 2024).

SMEs play a significant role in economic

development through employment generation, innovation, and poverty reduction (Jin & Ibrahim, 2024). However, compared with large firms, SMEs often face greater financial vulnerability owing to limited capital, restricted access to formal financing, weak governance structures, and inadequate risk-management capabilities (Mwenda et al., 2023).These challenges became increasingly evident during recent global disruptions, including the COVID-19 pandemic and geopolitical conflicts, which exposed the fragility of many SMEs and highlighted the importance of financial resilience (Castro-pardo & Santero-s, 2019; Lentner et al., 2025; R. Wang et al., 2023).

Simultaneously, digital transformation and sustainability-oriented finance have emerged as important SME development drivers. Financial technology (FinTech), digital payment systems, crowdfunding platforms, and green finance instruments provide new opportunities for SMEs to improve their financial access, operational efficiency, and long-term sustainability (Ahmed, 2025; S. Wang & Esperança, 2023). Consequently, understanding the interaction between internal capabilities, adaptive resilience, and transformative innovations has become increasingly important for both scholars and policymakers.(Lentner et al., 2025).

Despite the growing body of literature on SME financial sustainability, resilience, and performance, existing studies are fragmented in several important respects. First, many studies focus on isolated determinants, such as financial literacy, governance quality, access to finance, digital adoption, and green finance, without examining how these factors interact to shape long-term financial sustainability (Andrés et al., 2024; Jin & Ibrahim, 2024). Second, prior research has predominantly investigated financial outcomes from either an internal capability perspective or an external environmental perspective, resulting in limited theoretical integration between organizational resources, adaptive capabilities, and institutional influences.

Furthermore, recent disruptions, including the COVID-19 pandemic and geopolitical conflicts, have shifted scholarly attention toward resilience and crisis adaptation(Bondarenko et al., 2025; S. Wang & Esperança, 2023). However, the literature still lacks a comprehensive framework that simultaneously incorporates internal capabilities, adaptive resilience mechanisms, and emerging transformative drivers such as digitalization and green finance. Consequently, existing knowledge remains dispersed across multiple research streams, limiting the development of a holistic understanding of SME financial sustainability in emerging economies. Unlike prior frameworks that primarily emphasize either internal resources, adaptive capability, or financial access, the Architecture of Endurance framework integrates these dimensions into a recursive system that links capability development, resilience building, and transformation processes. This integrative perspective provides a more comprehensive explanation of the long-term financial sustainability of SMEs in emerging markets.

To address these limitations, this study conducted a systematic literature review (SLR) using the PRISMA protocol and Gioia thematic analysis. The review synthesizes evidence from 49 articles retrieved from the Scopus and Web of Science databases to identify the key determinants of SME financial sustainability in emerging markets.

Table 1. Comparison of Previous Reviews and the Present Study

Study	Main Focus	Context	Key Limitation
Morgan (2014)	Financial inclusion and SME finance	Asia	Limited discussion of resilience, digitalization, and sustainability
Siddik & Kabiraj (2018)	Financial inclusion and financial stability	Cross-country	Focuses on macro-financial stability rather than SME sustainability
Andrés et al. (2024)	Financial sustainability in SMEs	Specific industry context	Limited integration of crisis resilience and digital transformation
Wang et al. (2023)	Green finance and sustainable performance	Chinese SMEs	Emphasis on sustainability outcomes without resilience perspective
Existing Literature	Isolated determinants of SME sustainability	Various emerging markets	Fragmented theoretical perspectives and limited integration
Present Study	Financial sustainability, adaptive resilience, and digital–green transformation	Emerging markets	Develops the Architecture of Endurance Framework integrating RBV, Dynamic Capabilities Theory, and Institutional Theory

Unlike previous studies that primarily examine financial sustainability through isolated perspectives, this review integrates insights from the Resource-Based View (RBV), Dynamic Capabilities Theory, and Institutional Theory to develop a more comprehensive understanding of SME financial sustainability. Furthermore, the study proposes an "Architecture of Endurance" framework that conceptualizes financial sustainability as the

interaction between internal capability, adaptive

Three research questions guided this study: RQ1. What internal and external factors constitute the foundational pillars of financial sustainability for SMEs in emerging markets? RQ2. How do major external disruptions influence the financial resilience and long-term financial sustainability of SMEs? RQ3. What roles do digital transformation and green finance play in strengthening the financial sustainability of SMEs in a post-crisis environment?

This study contributes to the literature in three ways. First, it synthesizes evidence from 49 studies retrieved from the Scopus and Web of Science databases to provide a comprehensive understanding of SME financial sustainability in emerging markets. Second, it integrates insights from the resource-based view (RBV), dynamic capabilities theory, and institutional theory to explain how internal resources, adaptive capabilities, and institutional environments jointly shape SME financial sustainability. Third, the study develops the "Architecture of Endurance" framework, which conceptualizes financial sustainability as the interaction among internal capabilities, adaptive resilience, and digital–green transformation.

From a practical perspective, the findings provide guidance for SME managers to strengthen financial literacy, governance quality, crisis preparedness, and digital capability. For policymakers and development agencies, the results highlight the importance of creating supportive ecosystems through financial inclusion initiatives, digital infrastructure development, institutional strengthening, and green finance programs that enhance the long-term sustainability of SMEs.

THEORETICAL FOUNDATIONS

Dynamic Capabilities, Resource-Based View, and SME Financial Sustainability

This study draws on the resource-based view (RBV), dynamic capabilities theory, and institutional theory to explain the multidimensional nature of SME financial sustainability. While these perspectives are frequently applied independently, their integration provides a more comprehensive understanding of how SMEs achieve financial endurance in uncertain environments.

The resource-based view (RBV) argues that sustainable organizational performance originates from valuable, rare, inimitable, and non-substitutable (VRIN) resources (de Andrade et al., 2025). Within SMEs, these resources include financial literacy, managerial competence, governance quality, accounting capability, and

resilience, and digital–green transformation.

intellectual capital. RBV Therefore, the RBV explains why some SMEs are better positioned to achieve financial sustainability despite operating under similar market conditions. However, the RBV primarily emphasizes resource ownership and accumulation, offering limited explanation regarding how firms adapt when external environments change rapidly.

To address this limitation, dynamic capabilities theory extends the RBV perspective by emphasizing the firm's ability to sense opportunities and threats, seize strategic opportunities, and transform existing resources in response to environmental change (Teece, 2018). In the context of SMEs, sensing involves identifying emerging financial risks and opportunities, seizing refers to adopting alternative financing mechanisms such as fintech and green finance, and transforming reflects the reconfiguration of governance structures, operational processes, and financial systems during periods of uncertainty. Therefore, while RBV explains what strategic resources SMEs possess, dynamic capabilities theory explains how those resources are mobilized and reconfigured to sustain financial performance over time.

The complementary relationship between RBV and DC is particularly relevant in emerging markets, where financial sustainability depends not only on resource availability but also on organizational agility. SMEs may possess valuable resources; however, without adaptive capabilities, these resources can quickly lose their strategic value during periods of crisis, technological disruption, or institutional change.

Financial Sustainability and Institutional Context

In this study, financial sustainability is viewed as a multidimensional concept encompassing liquidity management, debt-servicing capacity, financial resilience, value preservation, and long-term organizational continuity. Rather than representing a purely financial outcome, financial sustainability reflects an organization's ability to maintain operational viability while adapting to changing economic conditions.

From an institutional theory perspective, organizational outcomes are shaped not only by internal capabilities but also by the broader regulatory, financial, and socioeconomic environment in which firms operate. SMEs in emerging economies frequently face institutional voids, including limited access to formal credit markets, weak regulatory support, underdeveloped financial systems, and dependence on informal financing mechanisms (Mwenda et al., 2023).

Consequently, even SMEs possessing strong internal capabilities may experience financial constraints when institutional support mechanisms are inadequate.

The literature consistently identifies financial literacy, governance quality, managerial competence, and accounting capability as important determinants of SME sustainability (Andrés et al. 2024). However, evidence from prior studies should be interpreted cautiously because many investigations rely on cross-sectional designs and country-specific samples, limiting the generalizability of the findings across different institutional contexts. Variations in financial infrastructure, regulatory quality, and market maturity across Asia, Africa, and Latin America may produce different sustainability outcomes, despite similar organizational characteristics.

Accordingly, Institutional Theory complements both RBV and Dynamic Capabilities Theory by explaining how external support systems influence the effectiveness of internal resources and adaptive capabilities. Financial sustainability, therefore, emerges from the interaction between organizational resources, adaptive capacity, and institutional conditions rather than from any single determinant alone.

Crisis, Digital Transformation, and Green Finance as Drivers of Financial Endurance

Recent global disruptions have challenged the traditional assumptions regarding SME financial stability. The COVID-19 pandemic, geopolitical conflicts, inflationary pressures, and supply chain disruptions have demonstrated that financial sustainability cannot be understood solely through conventional measures of profitability and liquidity (D. Wang et al., 2023). SMEs in emerging markets are particularly vulnerable because they often operate in environments characterized by institutional uncertainty, financial constraints, and limited risk-mitigation mechanisms (Lentner et al., 2025).

In response to these challenges, digital transformation has emerged as an important adaptive mechanism. Technologies such as fintech platforms, mobile banking, artificial intelligence-based credit assessment, and crowdfunding systems improve financial accessibility, strengthen monitoring capabilities, and increase organizational flexibility. These developments illustrate how dynamic capabilities are translated into practice through the adoption and reconfiguration of digital resources.

At the same time, green finance and Environmental, Social, and Governance (ESG) principles are increasingly influencing SME access to capital and long-term competitiveness. According to Concepcion de la Fuente Cabrero and Monica de Castro Pardo, SMEs adopting sustainable business practices tend to experience improved access to green financing opportunities while simultaneously reducing regulatory and reputational risks. Nevertheless, existing studies often focus on specific sectors or geographic contexts, making it difficult to generalize the effects of green finance across all emerging economies.

Taken together, digital transformation and green finance represent external and strategic enablers that strengthen SME financial sustainability. However, their effectiveness depends on the interaction between internal resources (RBV), adaptive capabilities (Dynamic Capabilities Theory), and institutional support structures (Institutional Theory). This integrated perspective forms the conceptual basis for the Architecture of Endurance Framework proposed in this study.

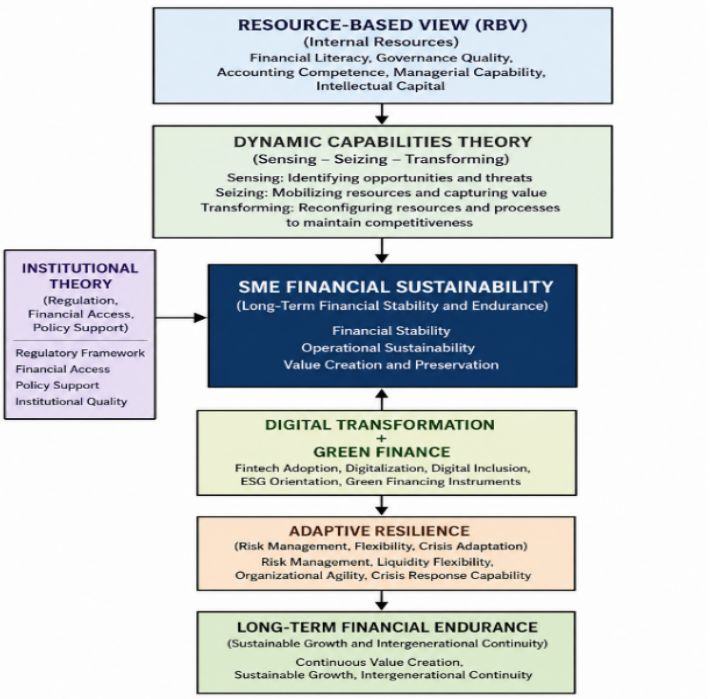


Figure 1. Preliminary Conceptual Foundation of SME Financial Sustainability in Emerging Markets

RESEARCH METHOD

Research Design

This study employs a systematic literature review (SLR) as its primary research design, following the methodological guidelines proposed

by (Tranfield et al., 2003) and reported in accordance with the PRISMA framework. The SLR approach was selected because it enables a transparent, rigorous, and reproducible synthesis of fragmented evidence concerning SME financial sustainability. Compared with traditional narrative reviews, SLR minimizes researcher subjectivity through explicit search, screening, and evaluation procedures, thereby enhancing the reliability and replicability of the review findings. Given the multidisciplinary nature of SME financial sustainability research, which spans accounting, finance, entrepreneurship, sustainability, and organizational studies, SLR provides an appropriate methodological foundation for integrating diverse streams of knowledge into a coherent conceptual framework.

The selection of SLR is further justified by the fragmented nature of the SME financial sustainability literature. Existing studies examine the phenomenon from diverse theoretical perspectives, including financial management, Resource-Based View (RBV), Dynamic Capabilities Theory, institutional economics, sustainable finance, and entrepreneurship. Consequently, the findings remain dispersed across multiple disciplinary domains and often emphasize isolated determinants rather than integrated explanations. The systematic review approach enables the consolidation of these fragmented insights and facilitates the identification of recurring patterns, conceptual relationships, and emerging research directions.(Ozturk et al., 2024).

To enhance the analytical depth beyond descriptive synthesis, this study integrated the Gioia methodology (Gioia et al., 2013) as an inductive qualitative coding approach. The Gioia method facilitates a systematic progression from first-order concepts extracted directly from the reviewed studies to higher-order theoretical themes and aggregate dimensions. Coding activities were conducted using NVivo software, which enabled the systematic organization, categorization, and comparison of textual evidence across selected articles. To improve analytical consistency, the coding decisions were continuously reviewed throughout the iterative coding process to ensure alignment between the emerging themes and the original empirical evidence.

The quality assessment indicated that most of the included studies demonstrated clear research objectives, appropriate methodological designs, and adequate reporting of findings. However, several limitations were identified. Most studies rely on cross-sectional survey data, limiting causal inference and longitudinal understanding of sustainability development. In addition, relatively few studies have provided in-depth qualitative evidence regarding organizational adaptation processes. Therefore, the predominance of quantitative approaches represents both a strength and a limitation of the current knowledge base.

Furthermore, this study consistently adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines throughout all stages, ensuring full transparency and methodological reproducibility at each step of the selection and reporting process, as illustrated in Figure 1.

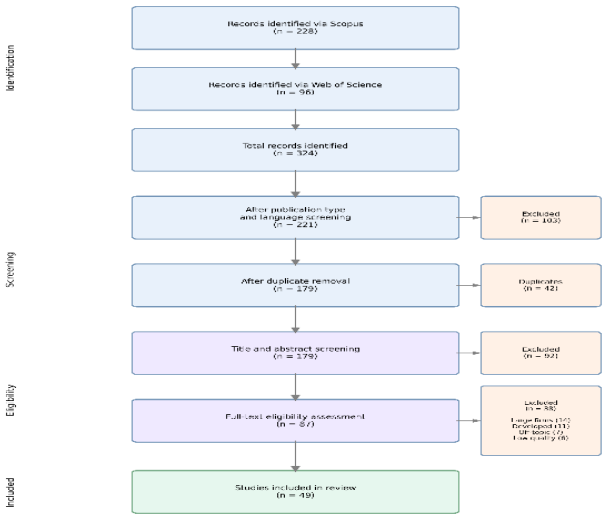


Figure 1. PRISMA Flow Diagram — Literature Selection Process

Search Strategy

The literature search was conducted using two internationally recognized bibliographic databases, Scopus and Web of Science (WoS). These databases were selected because they provide extensive coverage of high-quality peer-reviewed journals and are widely regarded as the most authoritative sources for systematic review studies in management, accounting, finance, and entrepreneurship research. The combined use of Scopus and WoS enhances both the comprehensiveness and quality of the review by reducing database-specific bias while ensuring that only scientifically rigorous publications are included in the analysis:

(("financial sustainability" OR "financial resilience" OR "financial stability" OR "financial health"OR "financial viability" OR "long-term financial performance" OR "business survival"OR "firm survival") AND ("SME"OR "small and medium enterprise*" OR "small business" OR "micro enterprise*"OR "MSME"))

The search terms were intentionally expanded to include related concepts such as

financial health, financial viability, and business survival, because these terms are frequently used interchangeably within the SME sustainability literature. This broader search strategy reduced the risk of excluding relevant studies that addressed long-term financial endurance using alternative terminologies.

The first cluster of the search string, comprising "financial sustainability, 'financial resilience,' financial stability, 'financial health," "financial viability, 'long-term financial performance," "business survival," and "firm survival, was designed to capture the broad conceptual domain of SME financial sustainability. These terms were incorporated because the literature employs diverse terminologies to describe phenomena related to long-term financial endurance, organizational continuity, and financial well-being. Including multiple synonymous and closely related expressions reduced the likelihood of excluding relevant studies addressing SME sustainability from different theoretical and empirical perspectives.

The second cluster encompassing "SME," "small and medium enterprise*," "small business," "micro enterprise*," and "MSME" utilized wildcard operators to capture variations in firm-size terminology across different national, institutional, and scholarly contexts. This approach ensured comprehensive coverage of studies examining financial sustainability among small and medium-sized business entities. The search string was applied simultaneously to article titles, abstracts, and keywords to maximize both retrieval accuracy and relevance.

No temporal restrictions were imposed on the search. This decision was theoretically motivated by the objective of capturing both foundational and contemporary contributions to SME financial sustainability literature. Earlier studies provide important conceptual foundations related to financial inclusion, governance quality, and organizational capability, while more recent research introduces emerging themes, such as digital transformation, fintech adoption, ESG integration, green finance, and crisis resilience. Including both streams enabled a more comprehensive understanding of how the concept of SME financial sustainability has evolved over time and facilitated developing a robust conceptual synthesis.

The literature search was conducted using the Scopus and Web of Science (WoS) databases. These databases were selected because they are widely recognized as the most authoritative sources of high-quality peer-reviewed research in accounting, finance, management, entrepreneurship, and sustainability studies. The combined use of Scopus and WoS enhanced the comprehensiveness, transparency, and methodological rigor of the review while ensuring that the analysis was grounded in scientifically robust and internationally recognized scholarly publications.

PRISMA-Based Selection and Screening Process

The records retrieved from the Scopus and Web of Science databases subsequently underwent a multistage screening protocol guided by the PRISMA framework, as illustrated in Figure 1. The screening process was designed to ensure methodological rigor, thematic relevance, and conceptual consistency with the objectives of this scoping review. At each stage, progressively stricter eligibility criteria were applied to identify studies that directly addressed SME financial sustainability, resilience, stability, viability, and long-term financial endurance in the context of emerging and developing economies.

Stage 1: Publication Type and Language Screening

The first screening stage applied two fundamental eligibility criteria. Only original peer-reviewed journal articles were retained because they provided the highest level of scholarly quality, methodological transparency, and scientific validation. Conference proceedings, book chapters, editorials, commentaries, technical reports, and other forms of gray literature were excluded to ensure consistency in publication standards. In addition, only English-language publications were retained because English is the dominant language of international scholarly communication and enables consistent comparative analysis across studies. The application of these criteria produced a refined dataset that was eligible for subsequent screening stages.

Stage 2 Duplicate. Following the initial eligibility screening, all retained records underwent systematic duplicate detection and were removed. Because the literature search was conducted across both Scopus and Web of Science databases, duplicate records were expected because of overlapping journal coverage. Duplicate identification was performed using reference management software and subsequently verified through manual inspection of article titles, authors, publication years, and Digital Object Identifiers (DOIs). This procedure ensured that each study was represented only once in the review dataset and prevented potential bias arising from duplicate inclusion.

Stage 3 Abstract Screening. The unique

records that remained after duplicate removal underwent a detailed title and abstract screening process based on the inclusion and exclusion criteria presented in Table 1. During this stage, studies were assessed for their relevance to SME financial sustainability, financial resilience, financial stability, financial viability, and long-term financial performance. Particular attention was given to the unit of analysis, geographical context, and thematic alignment with the objectives of the review. Studies that clearly failed to meet the eligibility criteria were excluded, while articles for which eligibility could not be determined solely from the title and abstract were retained for full-text assessment as a precautionary measure. This approach minimized the risk of prematurely excluding potentially relevant studies.

Stage 4: Full-Text Eligibility Assessment. Articles that passed the abstract screening subsequently underwent a comprehensive full-text eligibility assessment. At this stage, studies were evaluated not only for thematic relevance but also for methodological quality using an adapted Critical Appraisal Skills Program (CASP) framework. The quality assessment indicated that the majority of the included studies had satisfactory methodological quality. Most studies presented clearly defined research objectives, appropriate research designs, and adequate findings reporting. However, several recurring limitations were identified, including a strong reliance on cross-sectional survey data, limited longitudinal evidence, and insufficient exploration of organizational adaptation processes. Therefore, the predominance of quantitative approaches represents both a strength and a limitation of the current knowledge base. The assessment considered the clarity of the research objectives, transparency of the methodological procedures, adequacy of data collection, rigor of analytical techniques, and consistency between the findings and conclusions. Studies that failed to demonstrate sufficient methodological transparency or analytical rigor were excluded from the final synthesis process. This final screening stage ensured that only conceptually relevant and methodologically robust studies were included in this review.

Inclusion and Exclusion Criteria

Table 1. Inclusion and Exclusion Criteria Matrix

Dimension	Inclusion Criteria	Exclusion Criteria
Publication Type	Original peer-reviewed journal articles with clear empirical or theoretical contribution	Conference papers, book chapters, editorials, grey literature, technical reports, theses, dissertations
Language	English-language publications only	All non-English publications regardless of topic relevance
Enterprise Focus	SMEs, small businesses, micro enterprises, or MSMEs as primary unit of analysis	Studies where SMEs are peripheral, secondary, or mentioned only incidentally
Financial Construct	Studies explicitly addressing financial sustainability, financial resilience, financial stability, or long-term financial performance	Studies addressing financial topics without explicit connection to sustainability or resilience constructs
Geographic Context	Emerging markets, frontier economies, or developing economies; comparative studies with meaningful emerging market component	Studies exclusively focused on advanced/developed economies with no transferable relevance to emerging market contexts
Thematic Scope	Internal determinants (financial literacy, governance, capital structure); external determinants (institutional environment, credit access, policy); crisis responses (COVID-19, geopolitical conflict); digitalization, Fintech, green finance	Studies addressing entrepreneurship, innovation, or supply chain management without substantive financial sustainability focus
Methodological Quality	Empirical studies (quantitative, qualitative, mixed methods) and rigorous conceptual papers with clear, reproducible analytical procedures	Studies lacking methodological transparency, with unverifiable findings, or without clearly articulated research design
Temporal Scope	No date restriction — all years included to capture foundational and contemporary contributions	No temporal exclusion applied

Data Analysis: The Gioia Coding Process

The analytical treatment of the 49 final articles was structured around the three-stage coding cycle inherent in the Gioia methodology (Gioia et al., 2013), progressing systematically from raw textual evidence to an integrated theoretical framework. The coding process was conducted using NVivo to facilitate the organization, comparison, and synthesis of qualitative data extracted from the selected studies. To enhance analytical reliability, the coding decisions were reviewed iteratively throughout the analysis process. Where conceptual ambiguities emerged, the coding categories were refined through repeated comparisons between the original textual evidence and the emerging theoretical structure, ensuring consistency, transparency, and theoretical coherence across all coding stages.

To enhance analytical rigor, the coding process was independently reviewed by all authors through several iterative rounds. Any discrepancies in theme classification and interpretation were discussed until consensus was reached. Because the review adopted an interpretive Gioia-based synthesis rather than a formal content analysis approach, intercoder reliability statistics were not calculated. Instead, trustworthiness was strengthened through peer debriefing, repeated comparisons of coding outcomes, and iterative validation of thematic interpretations.

First-Order Coding: Open Coding of Raw Concepts. During the initial coding stage, each of the 49 selected articles was examined in its entirety and subjected to inductive, open coding. Raw textual segments were coded using the terminology employed by the original authors, without imposing predefined theoretical categories. This approach enabled the identification of a diverse set of first-order concepts directly grounded in the literature reviewed. The representative concepts included financial literacy, governance quality, managerial capability, accounting competence, liquidity management, working capital efficiency, institutional support, access to finance, digital adoption, fintech utilization, green finance practices, sustainability orientation, crisis response capability, and organizational adaptability. These concepts form the empirical foundation for subsequent theoretical abstraction.

During the second Coding stage, the first-order concepts were iteratively compared, grouped, and abstracted into broader theoretical themes. Three principal second-order themes emerged from the data: The first theme, **Internal Capability**, consolidated concepts related to financial literacy, governance quality, managerial competence, accounting capability, and resource management. The second theme, **Adaptive Resilience**, captured crisis preparedness, liquidity management, financial flexibility, risk mitigation, and organizational adaptability in uncertain conditions. The third theme, **Digital–Green Transformation**, integrated findings related to digitalization, fintech adoption, technological innovation, ESG practices, green finance, and sustainability-oriented business transformations. These themes reflect recurring patterns consistently observed across the reviewed studies.

Third-Order Coding The final coding stage elevated the analysis to the highest level of abstraction within the Gioia framework by integrating the second-order themes into aggregate dimensions that collectively explain the architecture of SME financial sustainability. Three aggregate dimensions emerged from this synthesis: internal capability, adaptive resilience, and digital–green transformation. These dimensions represent the core pillars through which SMEs develop, protect, and sustain their financial viability over time. Rather than operating independently, the dimensions exhibit complementary and mutually reinforcing relationships that collectively shape long-term financial sustainability. The emergence of these aggregate dimensions constitutes the principal theoretical contribution of this review by providing an integrated explanation of how internal resources, resilience mechanisms, and transformational capabilities jointly influence SME financial outcomes.

Data Structure: From Raw Concepts to Theoretical Pillars

The complete output of the three-stage Gioia coding process is presented in figure 2, which maps the hierarchical analytical progression from first-order concepts through second-order themes to the three aggregate dimensions that form the *Architecture of Endurance* framework

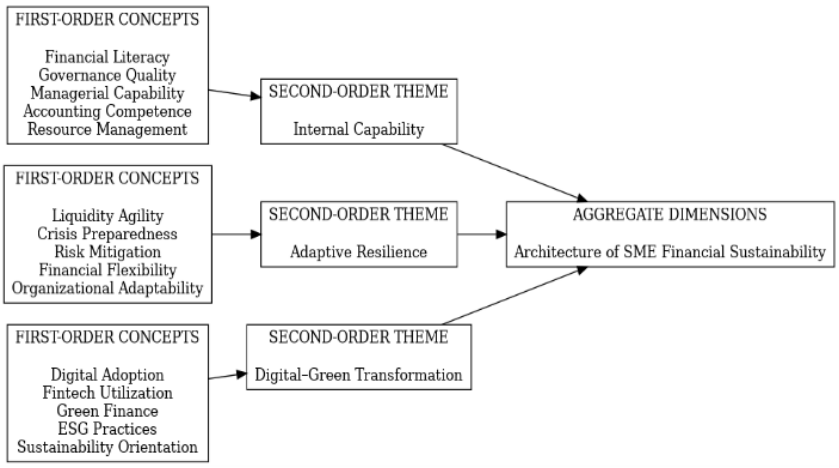


Figure 2 Gioia Data Structure

The thematic relationships emerging from the Gioia data structure were synthesized into the proposed conceptual framework, which conceptualizes SME financial sustainability as the outcome of dynamic interactions among Internal Capability, Adaptive Resilience, and Digital–Green Transformation. Internal Capability provides the foundational resources and competencies necessary for effective financial management, governance, and strategic decision-making. These capabilities subsequently strengthen Adaptive Resilience by enabling SMEs to absorb shocks, manage uncertainty, and maintain financial continuity during periods of disruption. In turn, resilient organizations are better positioned to pursue Digital–Green Transformation through the adoption of digital technologies, fintech solutions, sustainable finance practices, and environmentally responsible business models. Therefore, the framework suggests a sequential yet mutually reinforcing relationship among the three pillars, whereby internal strengths support resilience, resilience facilitates transformation, and transformation contributes to long-term financial sustainability and competitive endurance.

DATA ANALYSIS AND DISCUSSION

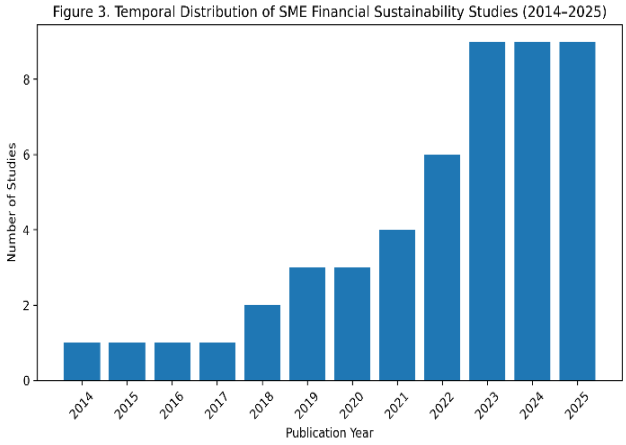
Descriptive Synthesis

Based on a systematic review of 49 selected studies, several important patterns were identified regarding the evolution of SME financial sustainability research. The reviewed literature demonstrates substantial variation in geographical focus, methodological orientation, and thematic emphasis. These variations indicate that SME financial sustainability has gradually shifted from a traditional perspective focusing on financial access and short-term stability toward a broader understanding that incorporates resilience, adaptive capability, technological transformation, and sustainability-oriented strategies.

Table 2 Synthesized Dimensions of SME Financial Sustainability Literature

Analytical Dimension	Dominant Evidence	Strategic Implication
Internal Capability	Financial literacy, governance, accounting skills	Foundation of SME sustainability
Crisis Resilience	Risk management, liquidity adaptation	Survival during systemic shocks
Digital Transformation	Fintech, digital inclusion, digital maturity	Enhances flexibility and access
Green Sustainability	ESG, green finance	Supports long-term endurance
Institutional Support	Government policy, institutional quality	Reduces vulnerability exposure

The synthesized dimensions presented in Table 2 show that SME financial sustainability is shaped by several interconnected factors. Internal capabilities, including financial literacy, governance quality, managerial capability, and accounting competence, represent the fundamental foundation for maintaining financial stability. Previous studies have consistently emphasized that financial literacy and managerial capability improve SME decision-making quality and long-term sustainability of SME decision-making (Ahmad, 2024; Msomi & Aliamutu, 2024; Ye & Kulathunga, 2019a). Meanwhile, adaptive resilience reflects SMEs' ability to manage uncertainty through liquidity management, risk mitigation, and organizational adjustment, particularly under crisis conditions (Kaya, 2022; Legenzova et al., 2025). Digital–green transformation represents the increasing importance of fintech adoption, digital capability, ESG



The temporal distribution of studies presented in **Figure 3** illustrates a significant increase in research attention to SME financial sustainability, particularly after 2022. Earlier studies have mainly focused on financial inclusion, access to formal financing, and institutional support as important determinants of SME stability (Morgan orientation, and sustainable finance as mechanisms that support long-term endurance (S. Wang & Esperança, 2023; Zheng et al., 2025).

Figure 3. Temporal Distribution of SME Financial Sustainability Studies (2014–2025)

2014; Siddik and Kabiraj 2018). However, recent studies have demonstrated a conceptual shift toward resilience, crisis adaptation, and organizational endurance following global disruptions, such as the COVID-19 pandemic, geopolitical uncertainty, and economic volatility. This transition is reflected in studies examining SME insolvency risk during crises (Kaya, 2022), financial resilience under unstable economic conditions (Iershova et al., 2024), and the impact of macroeconomic disruption on SME financial security (Bondarenko et al., 2025) [insert references]. Therefore, the increasing publication trend suggests that financial sustainability is increasingly understood as a dynamic capability, rather than merely a measure of financial performance.

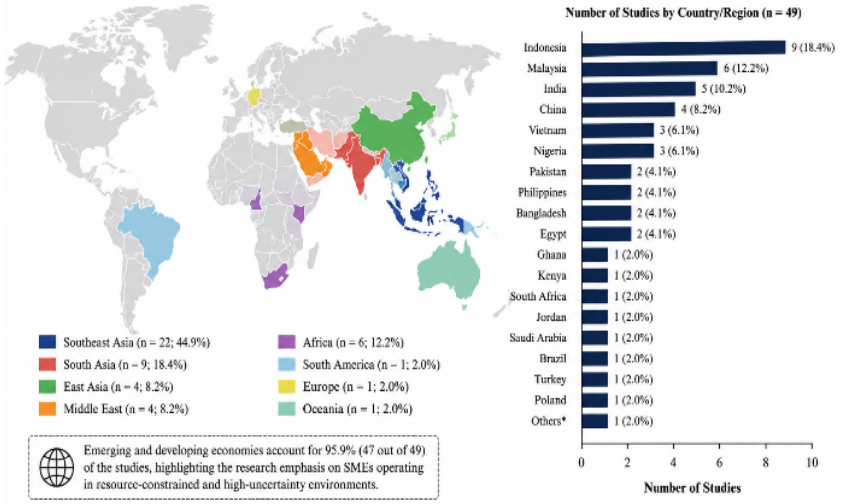
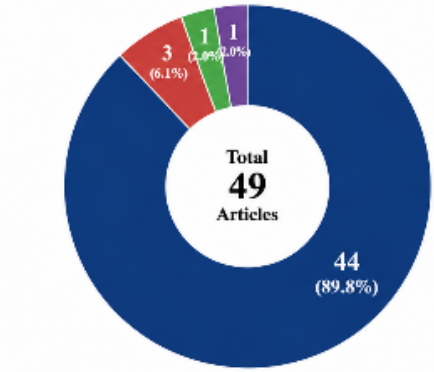


Figure 4. Geographical Distribution of Studies on SME Financial Sustainability (N=49)

The geographical distribution shown in **Figure 4** demonstrates that SME financial sustainability research is predominantly concentrated in emerging and developing economies. Studies from Southeast Asia, South Asia, Africa, and other emerging regions dominate the literature, reflecting the greater vulnerability of SMEs to institutional limitations, financial constraints, and economic uncertainty. Previous evidence from developing countries highlights that SMEs often depend on financial inclusion, institutional support, and alternative financing mechanisms to maintain their sustainability (Ma'aji et al., 2023; Siddik & Kabiraj, 2018). Furthermore, studies of crisis-affected environments indicate that geopolitical instability and weak institutional conditions increase the importance of resilience strategies and adaptive financial management (Bondarenko et al., 2025; Mulska et al., 2023). This geographical concentration also indicates a research gap, as evidence from developed economies is comparatively limited.



Methodological Approach	Number of Studies	Percentage (%)
Quantitative (Survey, cross-sectional, panel data, PLS-SEM, regression, SEM)	44	89.8%
Qualitative (Case study, interview, documentary, content analysis)	3	6.1%
Mixed Methods (Combination of quantitative and qualitative approaches)	1	2.0%
Conceptual / Theoretical (Framework development, literature analysis, conceptual model)	1	2.0%
Total	49	100.0%

Figure 5. Methodological Distribution of Studies on SME Financial Sustainability (N=49)

The methodological distribution presented in **Figure 5** indicates that SME financial sustainability research is dominated by quantitative approaches, with 44 studies (89.8%) employing survey-based methods, regression analysis, structural equation modeling, or panel data techniques. This pattern is consistent with recent studies applying quantitative models to examine the relationships between financial literacy, governance, risk orientation, and sustainability outcomes (Agostino et al., 2024; Reddy et al., 2025; Urooj et al., 2022). Although quantitative dominance provides strong empirical evidence regarding variable relationships, it may limit deeper understanding of how SMEs experience adaptation processes, managerial responses, and transformation strategies in real contexts. Therefore, future research should expand qualitative and mixed-method approaches to capture the mechanisms underlying SME resilience and sustainability development.

Overall, the descriptive synthesis confirms that SME financial sustainability is no longer interpreted solely as a consequence of financial resources or capital access. Instead, recent literature increasingly positions sustainability as an integrated capability involving internal resources, resilience mechanisms, institutional support, technological advancement and sustainability-oriented transformation. These findings provide the foundation for the subsequent thematic synthesis and development of the Architecture of Endurance framework.

Lexical Landscape and Word Frequency

To gain a preliminary empirical overview of the thematic landscape, a word frequency query was conducted using NVivo 12 across the 49 selected articles. This analysis identifies the most prominent terms, providing an initial 'thematic footprint' before the detailed coding process

Table 3 Top Word Frequencies in SME Financial Sustainability Literature

Rank	Term	Count	Weighted (%)	Relevance to Pillars	Strategic Interpretation
1	Resilience	638	4.21%	Pillar 2	It focuses on the SME capacity to absorb shocks, recover, and maintain continuity during crises.
2	Digital / Fintech	571	3.77%	Pillar 3	This indicates an increasing reliance on technology-driven financial access and business adaptation.
3	Sustainability	486	3.21%	Pillar 3	Reflects the transition toward long-term endurance rather than short-term performance.
4	Risk / Crisis	421	2.78%	Pillar 2	It highlights the attention toward uncertainty, disruption, and risk mitigation strategies.
5	Financial Literacy	365	2.41%	Pillar 1	It represents managerial capability and financial knowledge as internal foundations.
6	Institutional	329	2.17%	Pillar 1	This shows the importance of policy support, regulation, and external enabling factors.
7	Liquidity	301	1.99%	Pillar 2	It emphasizes cash flow management and financial flexibility during uncertainty.
8	Green / ESG	276	1.82%	Pillar 3	Demonstrates the increasing integration of environmental responsibility and finance.

The word frequency results in Table 3 reveal that SME financial sustainability research has increasingly shifted from the conventional financial stability perspective to the dynamic sustainability perspective. The dominance of the terms "resilience" (4.21%) and "risk/crisis" (2.78%)

indicates that recent literature emphasizes the ability of SMEs to absorb external shocks, maintain operational continuity, and adapt to uncertain environments. This finding is consistent with recent studies highlighting the importance of crisis adaptation, financial flexibility, and resilience mechanisms in sustaining SMEs under disruptive conditions (Bondarenko et al., 2025; Iershova et al., 2024; Kaya, 2022).

The high frequency of "digital/fintech" (3.77%) and "sustainability" (3.21%) demonstrates a transformation in the conceptualization of SME endurance. Digital capability is increasingly positioned as a strategic resource that improves access to finance, operational efficiency, and adaptive capacity of firms. Similarly, sustainability-oriented practices, including green finance and ESG adoption, represent a broader transition toward responsible and long-term business models (Wang & Esperança, 2023; Zheng et al., 2025).

The appearance of "financial literacy" and "institutional" themes further confirms that SME financial sustainability depends on the interaction between internal capabilities and external support. Financial knowledge, managerial competence, and governance capability provide the internal foundation for effective decision-making, whereas institutional environments influence SMEs' ability to access resources and overcome financial constraints (Ahmad, 2024; Ye & Kulathunga, 2019b).

The co-occurrence pattern among these keywords also strengthens the Architecture of Endurance perspective. Resilience frequently appears together with risk, crisis, and liquidity-related concepts, indicating that adaptive capacity is closely connected to financial survival mechanisms. Meanwhile, digital/fintech concepts increasingly overlap with sustainability and green/ESG themes, suggesting that technological transformation has become an important pathway for sustainable SME development.

Overall, the lexical landscape confirms that SME financial sustainability is not determined by a single factor but emerges from the interaction between internal capability, adaptive resilience, and digitalgreen transformation.

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Thematic Synthesis

To identify the dominant conceptual structures underlying SME financial sustainability research, a thematic analysis was conducted using NVivo on the full texts of selected studies. Following the Gioia methodology, first-order concepts were systematically coded and aggregated into higher-order themes, enabling the identification of recurring patterns across diverse empirical and conceptual studies. Beyond simple theme identification, the analysis sought to uncover the underlying relationships, tensions, and contextual variations that shape SME financial sustainability in emerging markets.

The coding process generated a structured hierarchy of themes encompassing internal capabilities, adaptive resilience, digital transformation, green finance, institutional support, and crisis-related factors. Importantly, the synthesis revealed that these themes do not operate as independent determinants. Rather, they form an interconnected system in which organizational resources, adaptive mechanisms, and external enabling conditions jointly influence the long-term financial sustainability. This finding supports the view that SME financial sustainability is a dynamic capability that evolves through continuous adaptation to changing economic, technological, and institutional environments.

The thematic interpretation should also be considered in light of the methodological characteristics of the reviewed literature. The majority of the included studies employed quantitative research designs, particularly survey-based analyses, structural equation modeling, and panel-data approaches. While these studies provide robust evidence regarding the statistical relationships among key variables, they offer more limited insight into the organizational processes through which SMEs develop resilience, reconfigure capabilities, and implement sustainability-oriented transformations. Consequently, the themes identified in this review reflect both substantive patterns within the literature and the dominant methodological orientation of the field.

Overall, the thematic synthesis indicates a gradual shift in the SME financial sustainability literature. Earlier studies have primarily emphasized access to finance, financial inclusion, and governance quality as determinants of financial stability. Recent studies increasingly focus on resilience, digitalization, sustainability-oriented finance, and organizational adaptability, reflecting the growing recognition that financial sustainability extends beyond short-term profitability and liquidity to long-term organizational endurance.

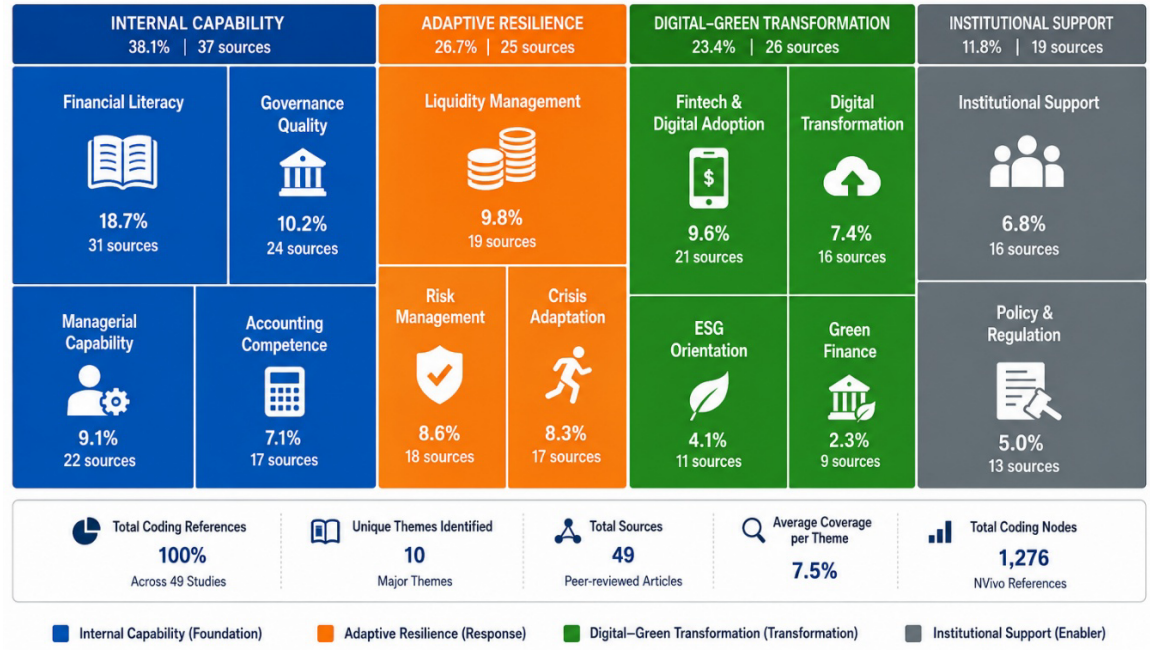

Figure 6. NVivo Map of Thematic Distribution in SME Financial Sustainability Literature

Figure 6 illustrates the thematic distribution of SME financial sustainability research across the 49 reviewed studies. The results indicate that internal capability constitutes the most dominant thematic domain, particularly through financial literacy, governance quality, managerial capability, and accounting competence. This finding reinforces prior studies suggesting that organizational and managerial competencies are fundamental drivers of SME sustainability and long-term financial performance (Dura, 2024; Hutamy et al., 2023).

Adaptive Resilience emerged as the second most prominent domain, highlighting the increasing importance of liquidity management, risk management, and crisis adaptation in response to recent economic disruptions. The prominence of these themes reflects a growing shift in the literature from static financial performance measures to dynamic resilience-oriented perspectives, where sustainability is closely associated with the ability to withstand and recover from external shocks (Alharbi et al., 2023; Kadyan et al., 2022).

Digital–Green Transformation and Institutional Support appear as complementary domains that enable long-term sustainability. The increasing attention to fintech adoption, digital transformation, ESG orientation, and green finance suggests that SMEs are progressively integrating technological and sustainability considerations into their financial strategies (Remo-Diez et al., 2023).

THEME (PILLAR)		REGION: ASIA (n = 24)	AFRICA (n = 10)	EUROPE (n = 9)	CONFLICT-AFFECTED REGIONS (n = 6)	TOTAL FREQUENCY (N)	THEME COVERAGE (%)
INTERNAL CAPABILITY (Foundation)	Financial Literacy	118 (18.6%)	45 (14.8%)	32 (12.6%)	20 (10.1%)	215	16.9%
	Governance Quality	102 (16.1%)	38 (12.5%)	46 (18.1%)	18 (9.1%)	204	16.1%
	Managerial Capability	96 (15.1%)	32 (10.5%)	31 (12.2%)	15 (7.6%)	174	13.7%
	Accounting Competence	74 (11.7%)	24 (7.9%)	22 (8.7%)	8 (4.0%)	128	10.1%
ADAPTIVE RESILIENCE (Response)	Liquidity Management	78 (12.3%)	72 (23.7%)	29 (11.4%)	47 (23.7%)	226	17.8%
	Risk Management	82 (12.9%)	63 (20.7%)	30 (11.8%)	35 (17.7%)	210	16.6%
	Crisis Adaptation	61 (9.6%)	58 (19.1%)	18 (7.1%)	39 (19.7%)	176	13.8%
DIGITAL-GREEN TRANSFORMATION (Transformation)	Fintech & Digital Adoption	114 (18.0%)	18 (5.9%)	36 (14.2%)	10 (5.1%)	178	14.0%
	Digital Transformation	93 (14.6%)	16 (5.3%)	38 (15.0%)	9 (4.5%)	156	12.3%
	ESG Orientation	47 (7.4%)	6 (2.0%)	41 (16.1%)	4 (2.0%)	98	7.7%
	Green Finance	36 (5.7%)	4 (1.3%)	32 (12.6%)	3 (1.5%)	75	5.9%
INSTITUTIONAL SUPPORT (Enabler)	Institutional Support	54 (8.5%)	74 (24.3%)	26 (10.2%)	36 (18.2%)	190	15.0%
	Policy & Regulation	49 (7.7%)	65 (21.4%)	25 (9.8%)	29 (14.6%)	168	13.2%
	TOTAL FREQUENCY (N)	804 (100%)	515 (100%)	366 (100%)	249 (100%)	1,934	100%

Collectively, the thematic distribution indicates that SME financial sustainability is not determined by a single factor but by the interaction between internal capability, adaptive resilience, transformation capacity, and supportive institutional environments.

Figure 7 Matrix Coding of SME Financial Sustainability Themes Across Regions

Figure 7 demonstrates that the thematic emphasis on SME financial sustainability varies across regional contexts. Asian studies predominantly focus on internal capabilities and digital transformation, particularly financial literacy, governance quality, and fintech adoption, reflecting the rapid digitalization of SME ecosystems and expanding financial inclusion initiatives in the region (Quenum et al., 2025; S. Wang & Esperança, 2023; Ye & Kulathunga, 2019b). In contrast, African studies place greater emphasis on institutional support and liquidity management, highlighting the continued importance of access to external financing and policy interventions in overcoming the structural constraints faced by SMEs (Ma'aji et al., 2023; Msomi & Aliamutu, 2024).

European studies show stronger associations with ESG orientation, green finance, and innovation-driven sustainability strategies, suggesting that environmental and social considerations are increasingly integrated into SME financial decision-making (La Rocca et al., 2025; Wang & Esperança, 2023). Studies from conflict-affected regions, particularly Ukraine, emphasize crisis adaptation, liquidity preservation, and risk management as critical determinants of financial sustainability under conditions of economic disruption and geopolitical uncertainty (Bondarenko et al., 2025; Iershova et al., 2024; Mulska et al., 2023). These findings indicate that resilience mechanisms become substantially more important when SMEs operate in environments that are characterized by institutional instability and external shocks.

Overall, the matrix coding analysis suggests that although internal capability, adaptive resilience, and digital–green transformation are recurring dimensions across all regions, their relative importance differs according to institutional quality, technological maturity and exposure to systemic risks. This evidence supports the argument that SME financial sustainability is context-dependent and cannot be explained by a single universal pathway.

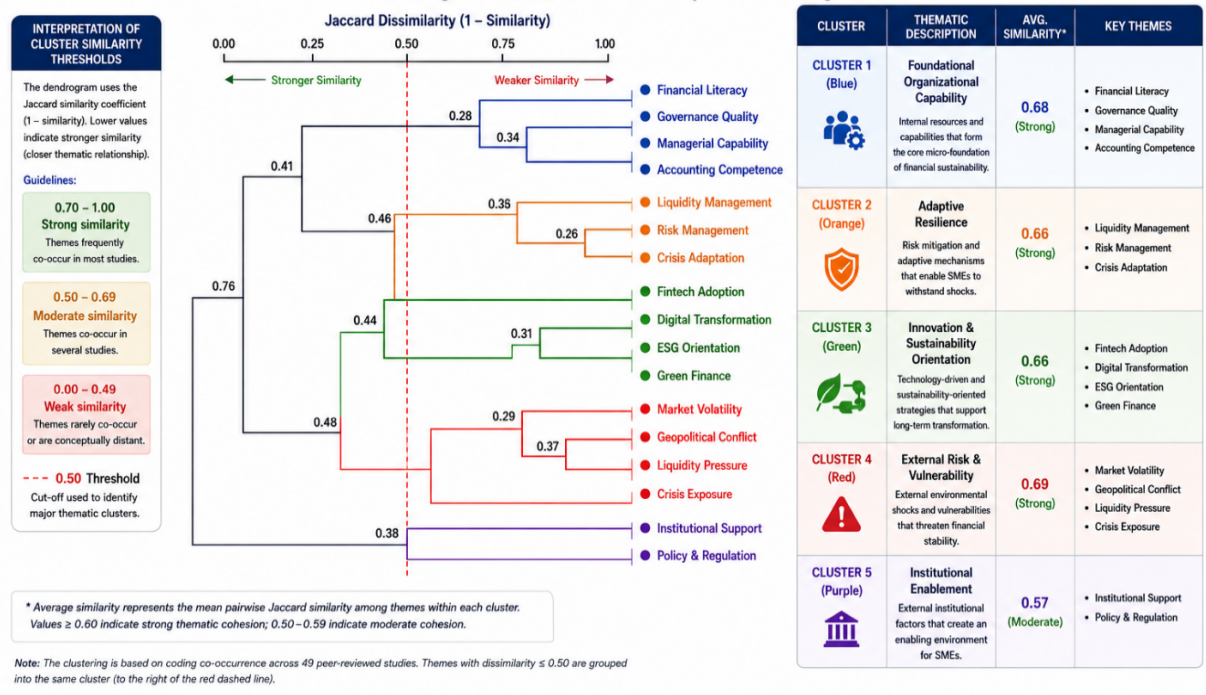

Figure 8. Hierarchical Cluster Analysis of Thematic Relationships in SME Financial Sustainability Literature

Figure 8 presents the hierarchical cluster analysis of thematic relationships within the SME financial sustainability literature. Using the Jaccard similarity coefficient, themes were grouped according to their co-occurrence patterns, where higher similarity values indicate stronger conceptual relationships. The clustering results reveal four major thematic structures: foundational organizational capability, institutional enablement,

innovation and sustainability orientation, and external risk and vulnerability.

The strongest thematic cohesion is observed within the External Risk and Vulnerability cluster, suggesting that crisis exposure, market volatility, liquidity pressure, and geopolitical uncertainty are frequently discussed together in the literature (Bataineh, 2021; Ghorbani Pashakolaie et al., 2024). Similarly, the Foundational Organizational Capability cluster demonstrates strong internal consistency, highlighting the close relationship between financial literacy, governance quality, managerial capability, and accounting competence as core determinants of sustainability (Matarazzo et al., 2021; Nelson, 2023).

Importantly, the dendrogram indicates that these clusters are not isolated, thematic domains. Institutional support appears to function as a bridging mechanism that links internal organizational capabilities to innovation-driven sustainability initiatives. At the same time, digital transformation, fintech adoption, ESG orientation, and green finance form a closely connected innovation cluster, suggesting that technological modernization and sustainability practices increasingly operate as complementary rather than separate strategies (Byzzanthi & Ermawati, 2021; Gutiérrez-Ponce & Wibowo, 2023)

Overall, the cluster structure supports the proposed Architecture of Endurance framework by demonstrating that SME financial sustainability emerges from the interaction between internal capability, adaptive resilience, institutional enablement, and digital–green transformation. Rather than representing independent drivers, these dimensions form an interconnected system that collectively strengthens long-term organizational endurance in conditions of uncertainty and change.

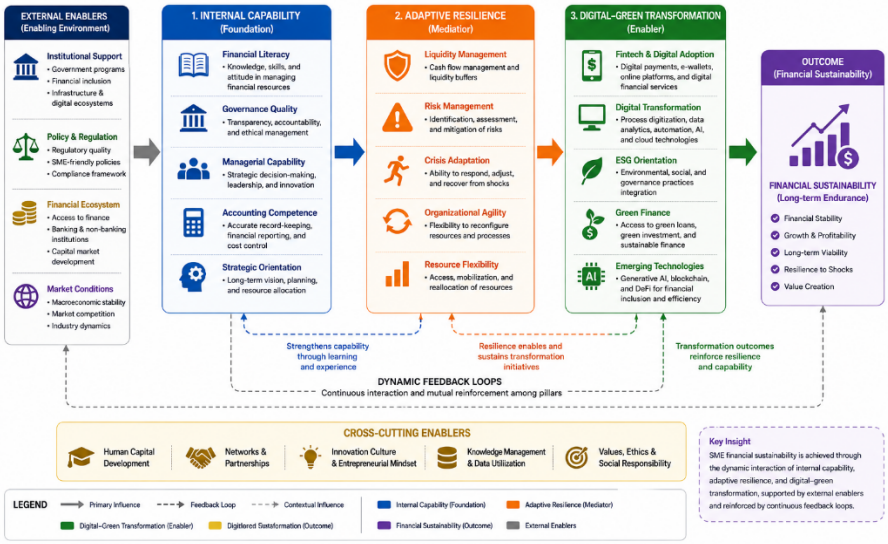

Figure 9. Architecture of Endurance Framework for SME Financial Sustainability

Figure 9 presents the proposed architecture of the endurance framework, which synthesizes the findings of the systematic review into an integrated model of SME financial sustainability. The framework conceptualizes financial sustainability as the outcome of dynamic interactions among three mutually reinforcing pillars: internal capability, adaptive resilience, and digital–green transformation, supported by enabling institutional conditions.

Internal capability serves as the foundational pillar of the framework. Financial literacy, governance quality, managerial capability, and accounting competence provide the organizational resources necessary for effective decision-making and financial management. Consistent with the Resource-Based View, these internal capabilities constitute strategic assets that enable SMEs to build sustainable competitive advantages and maintain financial stability over time (Legenzova et al., 2025; Ye & Kulathunga, 2019b).

Building upon this foundation, Adaptive Resilience functions as a mediating mechanism that allows SMEs to absorb shocks, manage uncertainty, and maintain operational continuity during periods of disruption. The literature demonstrates that liquidity management, risk mitigation, and crisis adaptation have become increasingly important following recent economic and geopolitical disturbances, highlighting resilience as a critical determinant of long-term financial endurance (Chen et al., 2022; Farsani et al., 2011).

The third pillar, Digital–Green Transformation, represents the strategic renewal dimension of SME sustainability. Digital technologies, fintech

adoption, ESG practices, and green finance initiatives enhance organizational flexibility, improve access to financial resources, and support sustainable growth in the banking sector. Recent evidence suggests that digital transformation and sustainability-oriented innovation increasingly operate as complementary mechanisms that strengthen both competitiveness and resilience (S. Wang and Esperança, 2023; Yang and Xiao, 2024).

Importantly, the framework proposes that these pillars interact recursively rather than sequentially. Internal capability strengthens adaptive resilience, resilience facilitates successful transformation, and transformation further enhances organizational adaptability and long-term sustainability. At the same time, institutional support—including regulatory quality, financial infrastructure, and government intervention—acts as an external enabler that reinforces the effectiveness of all three pillars.

The framework also highlights the potential strategic trade-offs. Investments in digitalization, ESG implementation, and green finance may impose short-term financial pressure and liquidity constraints before generating long-term benefits. Consequently, SME financial sustainability depends not only on the adoption of individual strategies but also on the ability to balance short-term stability and long-term transformation objectives. Therefore, the Architecture of Endurance framework extends the traditional views of SME financial stability by emphasizing sustainability as a multidimensional capability involving organizational preparedness, resilience building, and continuous transformation.

Comparison with Existing Frameworks

To further clarify the novelty of the Architecture of Endurance framework, it is useful to compare its underlying logic with the dominant perspectives previously used to explain SME financial sustainability.

Table 4. Comparison of Architecture of Endurance with Existing Frameworks

Framework	Primary Focus	Key Limitation	Contribution of the Architecture of Endurance Framework
Resource-Based View (RBV) Perspective	Internal resources, managerial capability, and organizational assets	Primarily emphasizes internal resources and provides limited explanation of how SMEs respond to external shocks and environmental disruptions	Integrates internal capability with resilience-building and transformation processes under changing environmental conditions
Dynamic Capability Perspective	Organizational adaptation, learning, and capability reconfiguration	Focuses on adaptation mechanisms but provides limited attention to sustainability-oriented finance and institutional support	Combines adaptive resilience with digital–green transformation and institutional enablement
Financial Inclusion and Access-to-Finance Perspective	Access to financial services, external financing, and financial infrastructure	Concentrates mainly on financial access and external support mechanisms without fully explaining internal organizational preparedness	Integrates financial access with internal capability development, resilience, and long-term transformation

The comparison demonstrates that previous frameworks tend to focus on specific dimensions of SME sustainability, such as internal resources, adaptive capabilities, and access to finance. In contrast, the Architecture of Endurance framework integrates these perspectives into a recursive and mutually reinforcing system linking internal capability, adaptive resilience, and digital–green transformation. This integrative perspective provides a more comprehensive explanation of how SMEs achieve long-term financial sustainability in increasingly uncertain and dynamic environments.

Cross-Pillar Interactions and Strategic Trade-Offs

The findings suggest that the three pillars of the Architecture of Endurance framework operate as an interconnected system rather than as independent determinants of SME financial sustainability. Internal Capability provides the foundation through financial literacy, governance quality, and managerial competence, enabling SMEs to develop Adaptive Resilience and pursue digital-green transformation initiatives. Resilience supports the

continuity of transformation efforts during periods of uncertainty, whereas digitalization, fintech adoption, and sustainability-oriented practices further enhance organizational adaptability and long-term competitiveness (Morales-Ramos et al., 2025; Xia et al., 2025).

However, these relationships are accompanied by important strategic trade-offs that must be considered. Investments in digital technologies, ESG practices, and green finance may improve long-term sustainability, but often require substantial upfront resources, which can temporarily constrain liquidity and financial flexibility. Consequently, SME financial sustainability depends not only on adopting innovative strategies but also on balancing short-term financial stability with long-term transformation objectives. This finding reinforces the view that financial sustainability is a dynamic process of capability development, resilience building, and strategic adaptation rather than a static financial outcome (Ukko et al., 2019; Yang & Xiao, 2024).

Alternative Pathways and Outliers

Although the dominant pattern supports the Architecture of Endurance Framework, the reviewed studies also reveal alternative pathways to SME financial sustainability. Several SMEs operating in traditional sectors achieve long-term financial stability despite limited digital adoption, relying on conservative financial management, strong customer relationships, and community-based financing mechanisms. These cases suggest that sustainability can emerge through different combinations of resources and capabilities rather than through a single developmental trajectory.

Similarly, evidence from crisis-affected contexts, particularly Ukraine, highlights the importance of organizational agility, informal support networks, and adaptive financing strategies in sustaining business operations under severe uncertainty (Bondarenko et al., 2025; Iershova et al., 2024). These findings indicate that while internal capability, resilience, and transformation remain important, their relative contributions vary across institutional and geopolitical environments. Therefore, SME financial sustainability should be understood as a context-dependent process, rather than a universally uniform pathway.

Reconceptualizing SME Financial Sustainability

These findings challenge the traditional views that equate SME financial sustainability primarily with profitability, liquidity, or access to finance. Instead, the evidence suggests that financial sustainability is better understood as a multidimensional capability encompassing organizational preparedness, adaptive resilience, and transformation capacity. SMEs are increasingly required to manage financial resources efficiently and adapt to technological changes, institutional pressures, and external disruptions.

This reconceptualization shifts the focus from short-term financial performance to long-term organizational sustainability. From this perspective, sustainable SMEs are not necessarily the most profitable but those capable of continuously renewing their capabilities, responding to uncertainty, and aligning strategic transformation with evolving environmental conditions.

Emerging Technologies and Future Sustainability Drivers

Recent developments suggest that emerging technologies may reshape the financial sustainability of SMEs. Generative AI has begun to support financial forecasting, automated accounting, credit assessment, and decision-making processes, enabling SMEs to improve their efficiency and reduce information asymmetries. Simultaneously, blockchain-based systems and decentralized finance (DeFi) platforms offer alternative financing channels that may expand financial inclusion and reduce dependence on conventional intermediaries.

Although empirical evidence remains limited, these technologies represent promising extensions of the digital-green transformation pillar. Therefore, future research should examine how AI-enabled financial management, blockchain infrastructure, and decentralized financial ecosystems influence SME resilience, financing accessibility, and long-term sustainability outcomes.

Practical Implications

The findings have several practical implications for SME managers, policymakers, and financial institutions seeking to strengthen long-term financial sustainability.

SME managers should prioritize strengthening financial literacy, governance practices, and risk management capabilities as foundational elements of long-term sustainability. SMEs are encouraged to conduct regular financial capability assessments, establish liquidity contingency plans, and adopt cloud-based accounting systems to improve their financial monitoring and decision-making. Investments in digital technologies and fintech solutions can further enhance operational efficiency, financial transparency, and access to external funds. In addition, the gradual integration of ESG practices and green financing instruments may strengthen

organizational resilience in response to increasing sustainability expectations from investors, customers, and regulators.

For policymakers, the findings highlight the importance of creating enabling ecosystems that support SME transformation and resilience. Policy interventions should focus on improving financial inclusion, expanding digital infrastructure, facilitating access to green finance, and providing targeted support to SMEs operating in crisis-prone environments. Public programs that combine financial literacy development, digital capability enhancement, and sustainability incentives are likely to have stronger long-term impacts than isolated interventions. Establishing SME resilience funds and providing incentives for digital and green transformations may further strengthen long-term financial sustainability.

For financial institutions, the findings suggest the need to develop more inclusive and adaptive financing mechanisms tailored to SME characteristics. Financial institutions can support sustainability by expanding fintech-assisted lending, implementing alternative credit scoring models, and offering sustainability-linked or ESG-oriented financing products. Greater collaboration between banks, fintech providers, and government agencies may also improve financing accessibility for underserved SMEs, while supporting their long-term resilience and transformation efforts.

Integrative Synthesis: Toward an Architecture of Endurance

The thematic, lexical, and cluster analyses collectively demonstrate that SME financial sustainability is a multidimensional phenomenon shaped by the interaction of internal capabilities, adaptive resilience, and digital–green transformation. Rather than functioning as separate determinants, these dimensions operate as mutually reinforcing mechanisms that enable SMEs to withstand disruptions, adapt to changing environments and sustain long-term growth.

The proposed architecture of the endurance framework extends conventional perspectives on SME financial sustainability by emphasizing dynamic capability development over static financial performance indicators. The findings suggest that sustainable SMEs are characterized not only by profitability or liquidity but also by their capacity to learn, adapt, transform, and maintain continuity under conditions of uncertainty. Consequently, financial sustainability should be viewed as an evolving organizational capability that integrates financial management, resilience-building, technological innovation, and sustainability-oriented transformation.

CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

This systematic literature review synthesizes evidence from 49 studies retrieved from the Scopus and Web of Science databases to examine the determinants of SME financial sustainability. The findings reveal that financial sustainability is shaped by the dynamic interaction of three interconnected pillars—Internal Capability, Adaptive Resilience, and Digital–Green Transformation. Together, these dimensions form an integrated *Architecture of Endurance* that enables SMEs not only to maintain financial stability but also to adapt, transform, and sustain long-term growth under conditions of uncertainty.

This study contributes to the literature by extending traditional perspectives that primarily associate SME sustainability with profitability, liquidity, and access to finance. Instead, the findings suggest that financial sustainability is a multidimensional organizational capability that emerges from the continuous interaction between managerial competence, resilience-building mechanisms, technological innovation, and sustainability-oriented transformation. The proposed *Architecture of Endurance* framework provides a more comprehensive explanation of how SMEs develop and maintain financial viability in increasingly complex and volatile business environments.

From a practical perspective, the findings highlight the importance of strengthening financial literacy, governance quality, and risk management capabilities as foundational resources for SME sustainability. SME managers should complement these capabilities through the strategic adoption of digital technologies, FinTech solutions, ESG practices and green finance initiatives to enhance organizational resilience and competitiveness. At the policy level, efforts to improve financial inclusion, digital infrastructure, sustainability-oriented financing, and institutional support mechanisms are essential for strengthening SME endurance, particularly in economically vulnerable and crisis-prone environments.

This review is subject to several limitations. The analysis was restricted to studies indexed in the Scopus and Web of Science databases and published in English, which may have excluded relevant evidence from other sources. In addition, the reviewed literature remains predominantly quantitative, limiting deeper insights into the contextual and organizational processes underlying SME financial sustainability. Future research should incorporate qualitative and mixed-method approaches and further examine the role of emerging technologies, such as generative AI, blockchain-based financial systems, and decentralized finance (DeFi), in shaping SME sustainability outcomes. Evidence from crisis-affected and geopolitically vulnerable contexts would also help refine and extend the proposed Architecture of Endurance framework.

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