



The Art of Doing More with Less: Exploring Frugal Innovation Practices as Strategic Agility Drivers in SMEs

Denny Rakhmad Widi Ashari ⁽¹⁾, Gautama Sastra Waskita ⁽²⁾

¹ Universitas Nahdlatul Ulama Blitar, Indonesia

² Universitas Tulungagung, Indonesia

Email: ¹ drwashari@unublitar.ac.id, ² sastrawaskita@unita.ac.id

Informasi artikel	ABSTRACT
Received : Accepted : Published :	Small and medium-sized enterprises (SMEs) operating in resource-constrained environments often struggle to remain adaptive amid volatility, prompting the need for innovation approaches that enable agility despite structural limitations. This study examines how frugal innovation functions as a strategic driver of agility in SMEs, moving beyond its conventional framing as a cost-saving tactic. Using a qualitative research design involving semi-structured interviews, non-participant observations, and document analysis across selected SMEs, the study investigates the mechanisms that connect frugal innovation with strategic agility. The findings reveal three core mechanisms—strategic improvisation, resource recombination, and ecosystem engagement—that collectively enhance SMEs’ capacity to sense opportunities, respond swiftly, and reconfigure organizational processes. These mechanisms demonstrate that constraints can act as catalysts for adaptive capability rather than barriers to innovation. The study contributes to the theoretical integration of frugal innovation and strategic agility while offering practical insights for SME leaders, policymakers, and development institutions seeking to strengthen resilience and competitiveness. Broader implications highlight the role of frugal-agile practices in promoting inclusive and sustainable entrepreneurial ecosystems.
Kata kunci: Frugal Innovation Strategic Agility SMEs Dynamic Capabilities Resource Constraints	
	ABSTRAK
Keyword: Inovasi Frugal Kelincahan Strategis UMKM Kapabilitas Dinamis Keterbatasan Sumber Daya	Usaha mikro, kecil, dan menengah (UMKM) yang beroperasi dalam kondisi sumber daya terbatas sering menghadapi tantangan untuk tetap adaptif di tengah volatilitas pasar, sehingga diperlukan pendekatan inovasi yang memungkinkan kelincahan (<i>agility</i>) meskipun dengan keterbatasan struktural. Penelitian ini mengeksplorasi bagaimana inovasi hemat (<i>frugal innovation</i>) berfungsi sebagai pendorong strategis bagi kelincahan UMKM, melampaui pemahaman konvensional sebagai sekadar strategi penghematan biaya. Dengan menggunakan desain penelitian kualitatif, melibatkan wawancara semi-terstruktur, observasi non-partisipatif, dan analisis dokumen pada sejumlah UMKM terpilih, penelitian ini mengidentifikasi mekanisme yang menghubungkan inovasi hemat dengan kelincahan strategis. Temuan menunjukkan tiga mekanisme utama—improvisasi strategis, rekombinasi sumber daya, dan keterlibatan ekosistem—yang secara kolektif meningkatkan kemampuan UMKM untuk mendeteksi peluang, merespons secara cepat, dan merekonfigurasi proses organisasi. Mekanisme ini menunjukkan bahwa keterbatasan dapat berperan sebagai katalis bagi kapabilitas adaptif, bukan hambatan inovasi. Penelitian ini berkontribusi pada integrasi teoretis inovasi hemat dan kelincahan strategis sekaligus memberikan wawasan praktis bagi pengelola UMKM, pembuat kebijakan, dan lembaga pendukung untuk memperkuat ketahanan dan daya saing. Implikasi yang lebih luas menyoroti peran praktik frugal-agile dalam mendorong ekosistem kewirausahaan yang inklusif dan berkelanjutan.

Introduction

Small and medium-sized enterprises (SMEs) constitute the backbone of economic development, innovation capacity, and employment creation across both developed and emerging economies. Yet despite their significant contributions, SMEs consistently operate under substantial resource constraints, including limited capital, technological capability, and managerial expertise (Elgarhy & Abou-Shouk, 2023; Saleh et al., 2025). These limitations are further exacerbated by an increasingly volatile, uncertain, complex, and ambiguous (VUCA) environment in which rapid technological shifts, competitive pressures, and fluctuating consumer preferences demand more flexible and adaptive business models. Under such conditions, the ability to generate value through efficient, low-cost, and simplified solutions essentially the ability to “do more with less” has become a strategic imperative rather than a mere operational choice.

Frugal innovation has emerged as one of the most compelling responses to these systemic constraints. Rather than relying on sophisticated technologies or capital-intensive research and development, frugal innovation emphasizes efficiency, resourcefulness, and creativity in designing affordable yet high-quality products, processes, and services (Basu et al., 2013; Stöber et al., 2022). Research shows that frugal innovation can enable firms to overcome scarcity by leveraging local knowledge, improvisation capabilities, and flexible resource deployment (Tiwari et al., 2016). For SMEs in emerging markets, where limitations are deeply embedded in the business ecosystem, frugal innovation represents not only a cost-saving mechanism but also a means to unlock inclusive growth, enhance competitiveness, and create sustainable value in underserved markets (Hossain, 2018; Waskita et al., 2024).

At the same time, contemporary business environments require firms to possess strategic agility: the capability to sense opportunities and threats, seize them effectively, and rapidly reconfigure resources, structures, and processes to maintain strategic relevance (Doz & Kosonen, 2010). Strategic agility has been identified as a critical determinant of firm resilience and performance, particularly for SMEs attempting to navigate environmental turbulence, technological disruption, and market dynamism (Clauss et al., 2019). While the extant literature provides robust theoretical foundations for both strategic agility and frugal innovation independently, there remains limited empirical evidence that explores how these two constructs interact particularly how frugal innovation might activate, strengthen, or facilitate strategic agility in SMEs.

The intersection between frugal innovation and strategic agility is particularly salient for SMEs in emerging economies, where constraints are not merely temporary challenges but structural conditions shaping daily managerial decisions. Existing studies highlight that innovation under resource constraints requires firms to develop higher levels of adaptability, improvisation, and rapid problem-solving, capabilities that align closely with the dimensions of strategic agility (Rosca et al., 2017). Yet the mechanisms through which frugal practices translate into agility whether through lean experimentation, simplified decision-making, local resource mobilization, or rapid product iteration remain underexplored. Consequently, a deeper examination is needed to understand how SMEs leverage frugal innovation to enhance their ability to respond swiftly to environmental shifts and capitalize on emerging opportunities.

Against this backdrop, investigating frugal innovation as a driver of strategic agility offers an important contribution to both theory and practice. Such an investigation enables a richer understanding of how SMEs transform scarcity into strategic capability, linking innovation management literature with emerging scholarship on organizational agility. Moreover, it carries significant practical implications for entrepreneurs, managers, and policymakers seeking scalable, low-cost pathways to strengthen SME competitiveness and resilience in uncertain environments. By exploring how SMEs enact the “art of doing more with less,” this study seeks to illuminate the strategic relevance of frugal innovation as a catalyst for agility, adaptability, and sustainable growth.

Problem Statement

Although the concept of frugal innovation has gained growing scholarly attention as a viable approach for overcoming resource scarcity, there remains limited understanding of how such practices are enacted within

SMEs and how they translate into strategic capabilities. Existing research predominantly conceptualizes frugal innovation as a cost-efficient or resource-light alternative to traditional innovation, but offers little empirical insight into its organizational processes, managerial routines, and strategic consequences particularly within the context of SMEs in emerging economies where constraints are systemic rather than incidental (Hossain, 2018). At the same time, while strategic agility has been widely recognized as a critical capability enabling firms to sense, seize, and reconfigure resources in turbulent environments (Doz & Kosonen, 2010; Clauss et al., 2019), the mechanisms through which SMEs cultivate such agility under conditions of acute scarcity remain insufficiently theorized.

Moreover, despite the intuitive alignment between frugal innovation and strategic agility, both emphasizing flexibility, improvisation, and efficiency, empirical research exploring their intersection is sparse. The literature lacks clarity regarding whether frugal innovation merely supports operational efficiency or whether it can function as a deeper strategic driver that strengthens firms' ability to respond quickly to environmental shifts and competitive pressures (Rosca et al., 2017). This gap is particularly salient in emerging markets, where SMEs must navigate structural barriers such as limited financing, inadequate infrastructure, and institutional voids that further complicate their ability to innovate and adapt (Elgarhy & Abou-Shouk, 2023).

Consequently, the central problem addressed in this study is the absence of empirical, context-sensitive understanding of how SMEs implement frugal innovation practices and in what ways these practices influence or enable strategic agility in environments characterized by resource constraints and environmental turbulence. Without this understanding, policymakers and practitioners lack evidence-based guidance on how SMEs can leverage frugal innovation not merely as a cost-saving mechanism but as a strategic pathway for enhancing agility, resilience, and long-term competitiveness. This research therefore seeks to illuminate these unexplored mechanisms by examining the lived experiences, decision-making processes, and innovation practices of SMEs operating in resource-limited contexts.

Research Objectives

The overarching objective of this study is to deepen the understanding of how frugal innovation practices function as strategic enablers of agility within resource-constrained SMEs. Rooted in a qualitative inquiry, this research seeks to explore the organizational processes, managerial logics, and contextual factors that shape the implementation of frugal innovation and its potential to enhance adaptive capability in uncertain environments. Specifically, the study pursues the following objectives:

1. To examine how SMEs conceptualize and enact frugal innovation practices within the constraints of limited resources, institutional voids, and volatile market conditions.
2. To investigate the mechanisms through which frugal innovation contributes to the development of strategic agility, particularly in terms of sensing opportunities, seizing them rapidly, and reconfiguring resources effectively.
3. To explore contextual factors, economic, cultural, and organizational that influence the relationship between frugal innovation and strategic agility in SMEs operating in emerging-market settings.
4. To generate an empirically grounded framework that explains how SMEs leverage frugal innovation not merely as a cost-saving tactic but as a strategic pathway to enhance agility, resilience, and long-term competitiveness.

Collectively, these objectives aim to advance theoretical insight at the intersection of innovation management and strategic agility while offering practical implications for SMEs navigating resource scarcity and environmental turbulence.

Gap Analysis

Existing scholarship on frugal innovation highlights its relevance for firms operating under severe resource constraints, emphasizing its potential to produce affordable, simplified, and high-value solutions for underserved markets (Rosca et al., 2017; Hossain, 2018). Studies have examined frugal innovation from multiple perspectives, including its role in sustainability, inclusive development, and cost-efficient product

design. However, much of the literature focuses on product-centric or technology-driven aspects of frugality, often overlooking the organizational and strategic dimensions that accompany its implementation.

Parallel research on strategic agility has underscored the importance of firms' ability to sense emerging opportunities, seize them rapidly, and reconfigure organizational structures to maintain competitiveness in turbulent environments (Doz & Kosonen, 2010; Clauss et al., 2019). While this body of work provides strong theoretical grounding, it centers predominantly on medium and large enterprises or digitally mature firms, with limited exploration of how SMEs particularly those in emerging economies develop agility under conditions of chronic scarcity.

Despite the conceptual proximity between frugal innovation and strategic agility, the two streams of research remain largely disconnected. Existing studies acknowledge that resource constraints motivate creative problem-solving and improvisational capability, yet empirical evidence examining how frugal innovation practices translate into agility-related outcomes remains scarce (Sengura et al., 2024; Fasnacht & Proba, 2024). The literature lacks a nuanced understanding of the mechanisms through which frugal innovation enables SMEs to develop sensing, seizing, and reconfiguring capabilities—three core components of strategic agility.

Furthermore, current research offers limited insights into the contextual conditions that influence this relationship, such as cultural orientations toward resourcefulness, institutional voids, or localized innovation ecosystems common in emerging markets. Most studies either generalize findings from developed economies or treat frugal innovation and agility as isolated constructs, thereby overlooking the lived realities of SMEs whose everyday operations are shaped by systemic resource scarcity (Kaur & Kumar, 2024). This leaves a critical gap in understanding how SMEs in resource-constrained environments strategically leverage “doing more with less” as a catalyst for long-term adaptability and resilience.

By addressing these gaps, the present study makes three key contributions. First, it integrates the domains of frugal innovation and strategic agility, two areas of research that have rarely been examined in conjunction, thereby offering a more holistic understanding of innovation under resource constraints. Second, through an in-depth qualitative exploration, this research reveals the micro-level practices, managerial decision-making processes, and contextual influences that enable SMEs to transform frugal innovation into a strategic capability rather than a mere operational response. Third, the study proposes an empirically grounded framework that explains how resource scarcity can be strategically reframed as a source of agility, resilience, and competitive advantage.

Overall, this research advances theoretical development at the intersection of innovation management and strategic agility, while simultaneously offering actionable insights for SMEs, policymakers, and ecosystem actors seeking to strengthen innovation capacity in environments characterized by volatility and limited resources.

Novelty and Theoretical Contributions

This study advances current scholarship at the intersection of frugal innovation and strategic agility by offering a set of contributions that remain underexplored in existing literature. While prior research has predominantly examined frugal innovation as a cost-efficient product design approach or as a resource-constrained innovation strategy, its role as a catalyst for organizational agility particularly within small and medium-sized enterprises (SMEs) has received limited empirical and theoretical attention. This article addresses this gap by conceptualizing frugal innovation not merely as an efficiency mechanism, but as a dynamic capability that enables SMEs to sense opportunities, seize market shifts, and reconfigure strategic routines rapidly.

First, the study introduces a new integrative framework that positions frugal innovation practices as micro-foundations of strategic agility. This perspective reframes resource-scarcity from being a structural disadvantage to a strategic enabler that strengthens rapid decision-making, improvisational problem-solving, and lean experimentation—elements rarely examined together in the existing body of work.

Second, in contrast to prior studies that focus on large corporations or emerging economies in general, this research offers contextual novelty by exploring SMEs operating within volatile and resource-constrained

environments, where frugality is not merely normative but strategically transformative. By analyzing lived experiences, localized knowledge, and embedded practices of SME actors, the study provides fresh empirical insights into how frugal logic is operationalized as an agility-driving mechanism.

Third, this study contributes methodological novelty by employing a qualitative, multi-perspective design grounded in deep stakeholder narratives. This approach allows the research to uncover tacit routines, informal decision logics, and emergent adaptive behaviors that quantitative studies often overlook. Through this lens, the article reveals the nuanced interplay between constraint-based innovation and agile strategic response.

Collectively, these contributions position the study as an important advancement in understanding how SMEs “do more with less” not only to survive, but to maintain strategic responsiveness in environments characterized by uncertainty and rapid change. The proposed conceptualization provides a foundation for future research seeking to link frugal innovation to dynamic capability theory, strategic renewal, and sustainable competitiveness in resource-constrained contexts.

Research Methodology

This study adopts a qualitative exploratory design to investigate how frugal innovation practices function as drivers of strategic agility within SMEs. A qualitative approach is particularly suitable because it enables researchers to capture nuanced, contextually embedded practices, sensemaking processes, and strategic behaviors that cannot be adequately represented through quantitative metrics (Gioia et al., 2013; Pratt et al., 2020). Consistent with recent calls for deeper inquiry into micro-foundational dynamics in innovation and agility research, this study employs a multiple case study design (Yin, 2018), allowing for analytical generalization rather than statistical generalization. The multi-case approach enriches theoretical insight by enabling cross-case comparison and pattern matching, which are essential for understanding how SMEs “do more with less” under varying resource constraints.

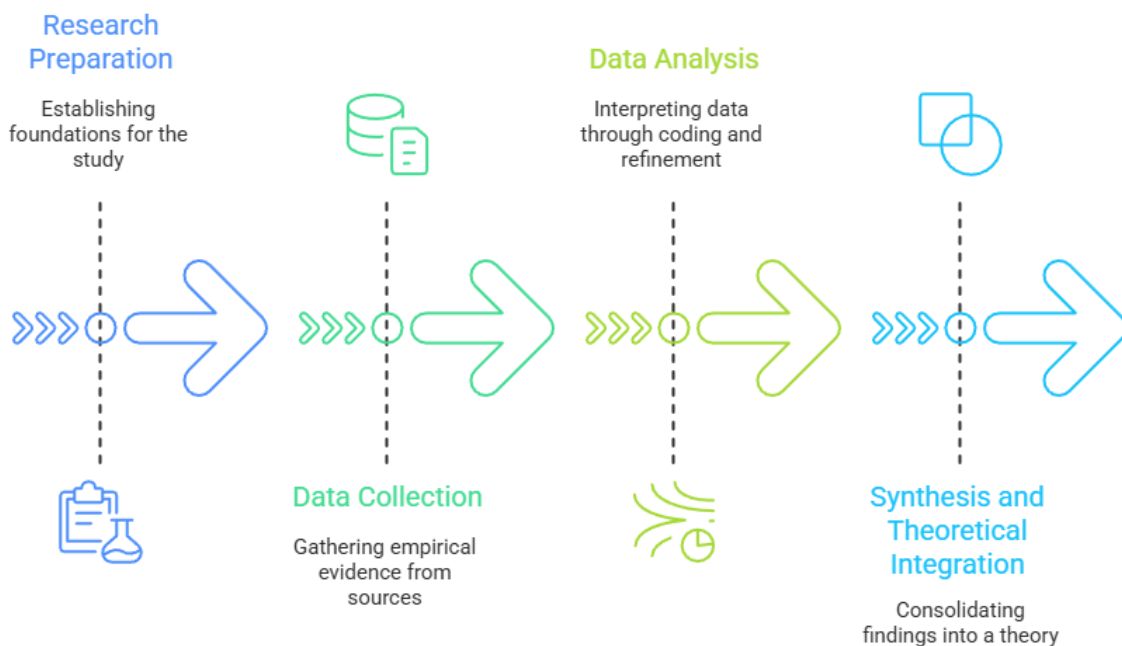


Figure 1. Research Process
Source: Author

The research follows a structured and iterative analytical process, encompassing four key stages:

1. Case Selection. SME cases were selected using purposive sampling, focusing on businesses known for implementing frugal innovation practices and operating within volatile or resource-limited contexts. Cases were chosen to ensure variation in size, sector, and market maturity, in line with theoretical sampling logic (Eisenhardt & Graebner, 2007).

2. Data Collection. Data were gathered through multiple qualitative sources—semi-structured interviews, non-participant observations, and document analysis—to ensure methodological triangulation (Bogna et al., 2020). Interviews targeted founders, managers, and key operational actors who directly engage with strategic and innovation-related decisions.
3. Data Analysis. Analysis followed a Gioia-based systematic coding structure, which included first-order coding, second-order theme development, and the aggregation of overarching dimensions (Gioia et al., 2013). This inductive–deductive hybrid technique allows for theoretical insight to emerge from empirical patterns while remaining anchored in established constructs of frugal innovation and strategic agility.
4. Cross-Case Synthesis. Patterns were compared across cases using replication logic (Yin, 2018), enabling identification of both convergent practices and contextual variations. The synthesis process supports abductive reasoning, allowing researchers to refine theoretical propositions iteratively (Timmermans & Tavory, 2012).

Table 1. Research Procedure

Stage	Description	Key Activities	Expected Outputs
Stage 1: Research Preparation	Establishes conceptual and methodological foundations for the study.	<ul style="list-style-type: none"> • Conduct preliminary literature review on frugal innovation & strategic agility. • Define research questions and refine theoretical framing. • Identify SME cases and secure research access. 	<ul style="list-style-type: none"> • Refined research focus • Initial conceptual model • Ethical clearance & access approval
Stage 2: Data Collection	Gathers empirical evidence from multiple sources to capture the depth and complexity of the phenomenon.	<ul style="list-style-type: none"> • Conduct semi-structured interviews with SME leaders and key stakeholders. • Perform non-participant observations of workplace practices and routines. • Collect internal documents (SOPs, meeting notes, innovation logs, digital artifacts). 	<ul style="list-style-type: none"> • Triangulated raw dataset • Field notes and observation logs
Stage 3: Data Analysis	Interprets empirical data using iterative coding and analytical refinement.	<ul style="list-style-type: none"> • Transcribe interviews and clean observational data. • Perform open, axial, and selective coding. • Develop categories linking frugal innovation practices to agility outcomes. • Conduct constant comparison across cases. 	<ul style="list-style-type: none"> • Analytical themes • Emergent conceptual links • Preliminary propositions
Stage 4: Synthesis and Theoretical Integration	Consolidates findings into a coherent theoretical explanation.	<ul style="list-style-type: none"> • Integrate empirical patterns with relevant literature. • Refine conceptual framework. • Validate theoretical insights with participants (member checking). • Prepare manuscript for journal submission. 	<ul style="list-style-type: none"> • Final conceptual model • Theoretical contributions • Manuscript draft

To illuminate the multi-dimensional, embedded, and practice-based nature of frugal innovation and strategic agility within SMEs, this study employs a robust combination of complementary data collection techniques. Given that SMEs often operate through informal routines, tacit knowledge, and adaptive behaviors that may not be immediately observable, relying on a single data source would yield an incomplete representation of their strategic processes. Therefore, the study integrates semi-structured interviews, non-participant observations, and document analysis to produce a rich, triangulated dataset capable of capturing both articulated experiences and naturally occurring practices. This multi-method strategy ensures analytical depth, strengthens construct validity, and enables the identification of patterned behaviors that reveal how resource-lean innovation contributes to organizational agility in real-world settings. To capture the multi-dimensional nature of frugal innovation and agility practices, the study uses three complementary data collection techniques:

1. **Semi-structured Interviews.** Interviews were conducted with 15–25 key informants across selected SMEs. Questions focused on decision-making behaviors, resource utilization, innovation routines, and adaptive responses to market volatility. Semi-structured formats enable rich narrative data while allowing flexibility to probe emerging themes (Brinkmann, 2022).
2. **Non-Participant Observation.** Direct observations were conducted in each SME's operational environment to understand real-time improvisation, workflow adjustments, and resource bricolage. Observational data enhance validity by capturing behaviors difficult for participants to articulate (Martínez, 2019).
3. **Document Review.** Internal documents such as process manuals, product design notes, financial records, marketing materials, and innovation logs were analyzed. This documentation provided contextual clarity and supported triangulation of interview claims (Bogna et al., 2020).

Together, these three data collection techniques form a triangulated methodological foundation that captures the phenomenon from complementary perspectives. Their integration enables a holistic, empirically grounded portrayal of strategic agility as it emerges through frugal innovation practices, allowing the study to reveal both the deliberate and improvised dimensions of managerial action. By combining narrative insights, situated observations, and documentary evidence, the research uncovers the multifaceted mechanisms through which SMEs transform resource constraints into agile strategic responses.

The literature review draws from cutting-edge research in innovation management, strategic agility, and SME capability development. Recent studies emphasize the increasing relevance of resource-constrained innovation (Li et al., 2025; Ukbaeva et al., 2025), microfoundations of agility (Sampath et al., 2021; Vario, 2022), and the strategic role of improvisation under uncertainty (Hadida & Odiase, 2023). Literature review approach was adopted, involving keyword-based searches, screening for peer-reviewed articles within the last 10 years, and evaluating conceptual relevance and methodological rigor.

The review integrates three major streams:

1. **Frugal innovation literature,** focusing on resource efficiency, affordability, and creative problem-solving under constraints (Sarkar & Mateus, 2024).
2. **Strategic agility research,** emphasizing sensing, seizing, and reconfiguring capabilities (Balzano & Bortoluzzi, 2024; Mueller-Saegbrecht & Walter, 2025).
3. **SME capability and dynamic capabilities studies,** highlighting how small firms leverage simplicity, speed, and improvisation (Saputra et al., 2024).

This consolidated body of literature provides the conceptual scaffolding for the study, shaping the development of the coding structure, guiding the theoretical interpretations, and offering a robust analytical rationale for examining the intersection between frugal innovation and strategic agility. By drawing on insights from innovation management, dynamic capability theory, and micro-foundational agility studies, the literature base ensures that the empirical patterns identified in the data are situated within a coherent and contemporary intellectual landscape. This alignment strengthens the study's interpretive depth and positions its contributions within ongoing scholarly debates.

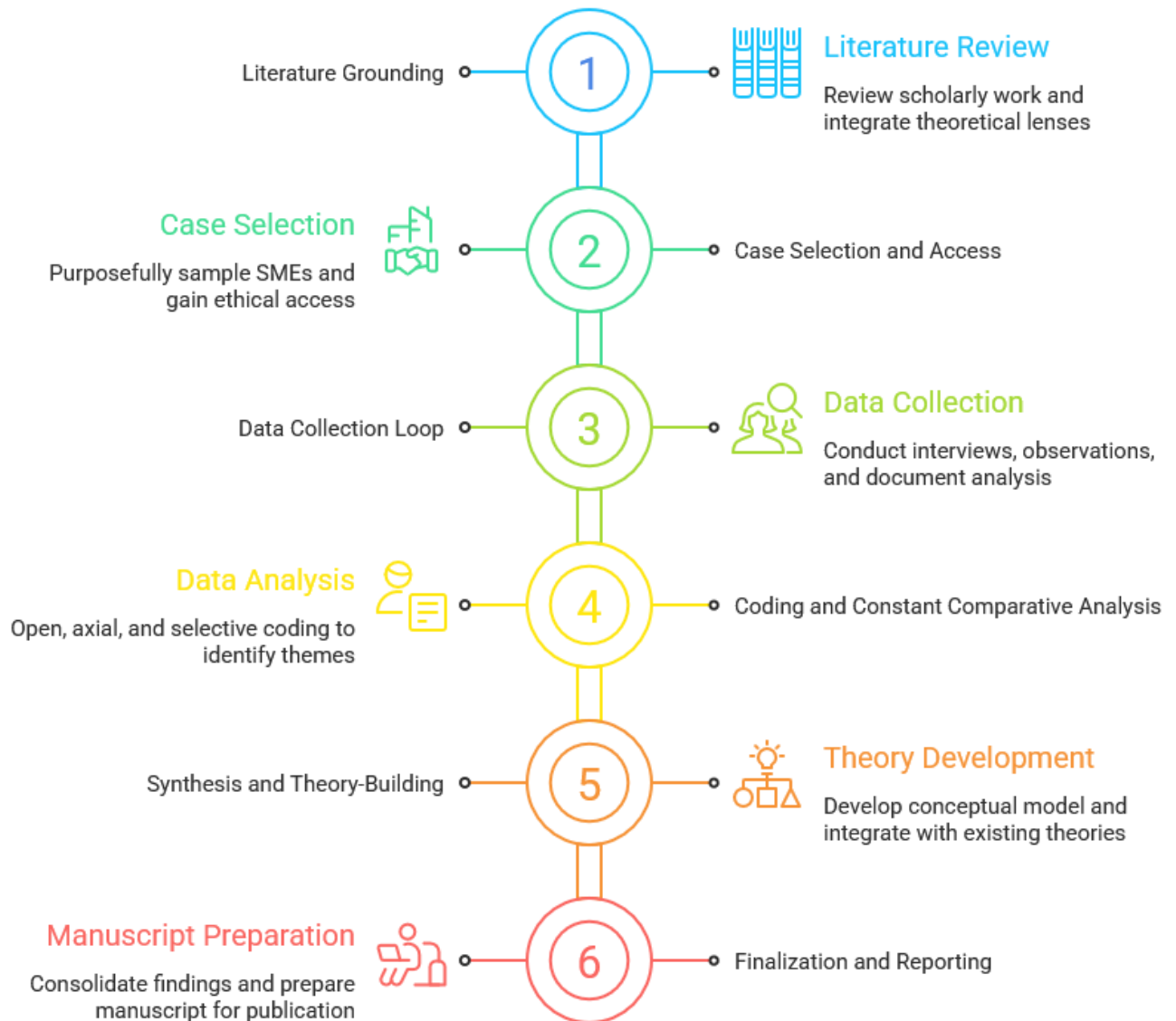


Figure 1. Key Stages in Qualitative Research on Frugal Innovation and Agility
 Source: Author

Results & Discussions

Emerging Patterns of Frugal Innovation as Catalysts for Strategic Agility

The analysis reveals that SMEs employ frugal innovation not merely as a cost-saving mechanism, but as a strategic behavior that strengthens their ability to sense opportunities, seize shifting market demands, and reconfigure operational routines. Across cases, frugality manifests as an intentional set of practices rapid adaptation, resource recombination, and value-driven experimentation that enable firms to navigate uncertainty with limited means. The results indicate that frugal innovation operates as both a mindset and a capability, shaping how SMEs enact agility in volatile environments.

Dimension 1: Opportunity Sensing Through Resource-Aware Experimentation

SMEs demonstrate a heightened ability to sense market changes by engaging in low-cost exploratory activities, such as micro-prototyping, small-batch testing, and informal customer immersion. These frugal sensing behaviors allow firms to gather strategic insights without committing substantial financial resources. Respondents describe these practices as enabling “fast learning with minimal risk,” effectively expanding their environmental awareness despite financial constraints. The results confirm that frugality amplifies the speed, frequency, and diversity of sensing routines, thereby strengthening the antecedents of strategic agility.

Dimension 2: Opportunity Seizing via Lean, Adaptive Decision-Making

The firms exhibit agile seizing behaviors through lean decision structures, characterized by minimal hierarchy, real-time communication, and improvisational problem solving. Frugal innovation facilitates efficient seizing by keeping operational processes lightweight, enabling owners and managers to pivot quickly in response to customer needs. Decisions such as product adjustments, new service rollouts, or digital marketing experiments are often executed within hours or days rather than weeks. These findings highlight that frugal innovation reduces organizational inertia, allowing SMEs to convert sensed opportunities into strategic responses swiftly.

Dimension 3: Reconfiguration Through Creative Resource Mobilization

A key finding is that SMEs continuously reconfigure their business models and processes by creatively mobilizing existing resources. Resource bricolage repurposing unused materials, leveraging community networks, and co-sharing equipment emerges as a dominant mechanism. These frugal reconfiguration routines lead to operational flexibility, rapid reallocation of assets, and the ability to scale or downscale without significant restructuring costs. The data suggest that frugal reconfiguration acts as a structural backbone for sustained agility, enabling firms to maintain adaptability even under persistent resource scarcity.

Integrative Finding: Frugal Innovation as a Systemic Driver of Strategic Agility

Taken together, the results indicate that frugal innovation is not an isolated practice but a systemic driver of agility, influencing sensing, seizing, and reconfiguring capabilities simultaneously. Rather than compromising strategic ambition, resource constraints foster a disciplined yet creative form of innovation that enhances SMEs’ competitive responsiveness. The cross-case analysis reveals a recursive cycle where frugal practices sharpen agility, and improved agility further reinforces frugal experimentation, creating a self-reinforcing capability loop essential for SMEs operating in dynamic environments.

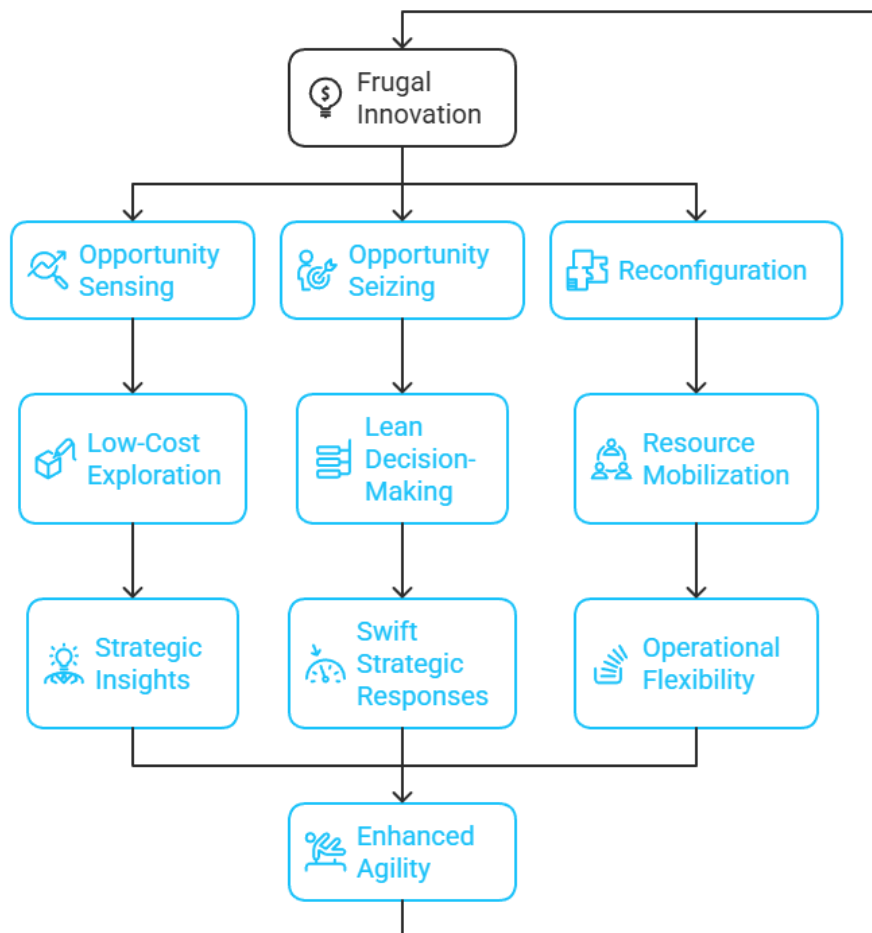


Figure 3. Frugal Innovation as a Driver of Strategic Agility

The findings of this study reveal a nuanced and contextually embedded understanding of how frugal innovation operates as a catalyst for strategic agility in SMEs. Rather than functioning merely as a resource-saving approach, frugal innovation emerges as a dynamic capability that reshapes how firms sense opportunities, make adaptive decisions, and reconfigure their operational and relational resources. This interpretation aligns with and extends prior scholarship on strategic agility, which emphasizes rapid responsiveness and continuous recalibration in turbulent environments (Doz & Kosonen, 2010; Clauss et al., 2019). However, the present study advances the theoretical conversation by demonstrating that in resource-constrained settings, agility does not originate from sophisticated digital infrastructures or extensive strategic planning as commonly portrayed in the agility literature but from disciplined improvisation, ecosystem embeddedness, and creative resource recombination. In this sense, the empirical evidence suggests that constraints themselves operate as drivers of agility, offering an alternative pathway to achieving organizational flexibility that diverges from the traditional resource-based or technology-driven perspectives.

Conclusion and Recommendations

This study demonstrates that frugal innovation serves not only as a cost-efficient approach to overcoming resource constraints but also as a transformative capability that enables SMEs to cultivate strategic agility in volatile and uncertain environments. The findings reveal that SMEs leverage frugality through three interconnected mechanisms—strategic improvisation, resource recombination, and purposeful ecosystem engagement—which collectively enhance their ability to sense emergent opportunities, respond with speed, and continuously reconfigure internal processes. By showing that constraints can operate as drivers rather than inhibitors of adaptive organizational behavior, this study challenges dominant assumptions in the agility literature, which often associate responsiveness with technological sophistication or abundant resources. Instead, the results highlight an alternative pathway for developing strategic agility grounded in creative discipline and contextual ingenuity.

Theoretically, the study contributes to the innovation management domain by integrating frugal innovation and strategic agility into a cohesive explanatory model that advances current understanding of dynamic capability development in SMEs. This integration enriches existing discourse by illuminating how frugal innovation functions as a precursor to agility rather than a mere operational choice. Practically, the findings provide actionable insights for SME leaders, policymakers, and development institutions, suggesting that fostering frugal mindsets, nurturing cross-sector collaborations, and legitimizing experimentation can significantly strengthen SMEs' resilience and long-term competitiveness. These insights are particularly relevant for firms in emerging markets, where institutional voids and financial constraints often shape entrepreneurial strategies and growth trajectories.

Nevertheless, the study acknowledges several limitations that provide direction for future research. First, qualitative insights derived from a limited set of SMEs restrict the generalizability of findings, calling for larger-scale or mixed-method investigations to validate the emergent framework. Second, while the study illuminates how frugal innovation drives agility, it does not examine long-term performance outcomes or the potential trade-offs associated with sustained frugality, which would benefit from longitudinal research designs. Future studies may also explore comparative analyses across industries or regions, assess the role of digital tools in augmenting frugal innovation, or investigate how managerial cognition influences the adoption of frugal–agile strategies.

In broader societal terms, the findings underscore the ethical and social relevance of frugal innovation as a pathway for inclusive and sustainable economic participation. By enabling SMEs to thrive despite structural disadvantages, frugal innovation supports equitable development, enhances local empowerment, and fosters resource-responsible business practices. Encouraging SMEs to embrace “doing more with less” is therefore not only a strategic imperative but also a socially meaningful contribution to building resilient entrepreneurial ecosystems.

References

- Balzano, M., & Bortoluzzi, G. (2024). Strategic agility in dynamic business environments. *International Series in Advanced Management Studies, Doi, 10*, 978–3.
- Basu, R. R., Banerjee, P. M., & Sweeny, E. G. (2013). Frugal innovation: Core competencies to address global sustainability. *Journal of Management for Global Sustainability, 1*(2), 5.
- Bogna, F., Raineri, A., & Dell, G. (2020). Critical realism and constructivism: Merging research paradigms for a deeper qualitative study. *Qualitative Research in Organizations and Management: An International Journal, 15*(4), 461–484.
- Brinkmann, S. (2022). *Qualitative interviewing: Conversational knowledge through research interviews*. Oxford University Press.
- Clauss, T., Abebe, M., Tangpong, C., & Hock, M. (2019). Strategic agility, business model innovation, and firm performance: An empirical investigation. *IEEE Transactions on Engineering Management, 68*(3), 767–784.
- Doz, Y. L., & Kosonen, M. (2010). Embedding strategic agility: A leadership agenda for accelerating business model renewal. *Long Range Planning, 43*(2–3), 370–382.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal, 50*(1), 25–32.
- Elgarhy, S. D., & Abou-Shouk, M. (2023). Effects of entrepreneurial orientation, marketing, and innovation capabilities, on market performance: The mediating effect of sustainable competitive advantage. *International Journal of Contemporary Hospitality Management, 35*(6), 1986–2004.
- Fasnacht, D., & Proba, D. (2024). Leveraging inter-organizational agility for innovation. *Strategy & Leadership, 52*(1), 15–22. <https://doi.org/10.1108/SL-08-2023-0087>
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods, 16*(1), 15–31.
- Hadida, A. L., & Odiase, N. O. (2023). Agility and improvisation. *The Routledge Companion to Improvisation in Organizations, 367–388*.
- Hossain, M. (2018). Frugal innovation: A review and research agenda. *Journal of Cleaner Production, 182*, 926–936.
- Kaur, K., & Kumar, S. (2024). Resource-based view and SME internationalization: A systematic literature review of resource optimization for global growth. *Management Review Quarterly, 1–43*.
- Li, C., Shafait, M., Li, W., & Liu, H. (2025). Investigating the Influence of Network Ties on Frugal Innovation Through Resource Bricolage: Insights From a Resource-Constrained Environment. *Creativity and Innovation Management*.
- Martínez, M. S. V. (2019). Focused Ethnography. *Kleines Al (e) Phabet Des Kommunikativen Konstruktivismus: Fundus Omnium Communicativum-Hubert Knoblauch Zum 60. Geburtstag, 351*.
- Mueller-Saegebrecht, S., & Walter, A.-T. (2025). Strategic Agility—An Urgent Capability for Successful Business Model Innovation? A Conceptual Process Model and Theoretical Framework. *Strategic Change, 34*(3), 407–428.

- Pratt, M. G., Kaplan, S., & Whittington, R. (2020). Editorial essay: The tumult over transparency: Decoupling transparency from replication in establishing trustworthy qualitative research. *Administrative Science Quarterly*, 65(1), 1–19.
- Rosca, E., Arnold, M., & Bendul, J. C. (2017). Business models for sustainable innovation—an empirical analysis of frugal products and services. *Journal of Cleaner Production*, 162, S133–S145.
- Saleh, M. A. K., Belhaj, F. A., Patrick, H. A., & Gharsi, A. Y. A. (2025). Unleashing potential for SMEs in resource-constrained economies through decision making practice: The mediating role of organisational learning and IT adoption. *International Journal of Management and Decision Making*, 24(5), 423–451.
- Sampath, G., Bhattacharyya, S. S., & Krishnamoorthy, B. (2021). Microfoundations approach to strategic agility—Exploration to operationalization. *Journal of General Management*, 46(2), 103–128.
- Saputra, M. H., Utomo, M. N., Ariansyah, K., Wismayanti, Y. F., & Ansyah, R. H. A. (2024). Small and medium-sized enterprises dynamic capabilities and competitive advantage: The mediating effect of digitalization. *Entrepreneurial Business and Economics Review*, 12(3), 41–67.
- Sarkar, S., & Mateus, S. (2024). RESOURCE-CONSTRAINED PRODUCT INNOVATION—AN EVIDENCE-BASED REVIEW AND RESEARCH AGENDA. *International Journal of Innovation Management*, 28(05n06), 2430003.
- Sengura, J. D., Mu, R., & Zhang, J. (2024). Towards Frugal Innovation Capability in Emerging Markets within the Digitalization Epoch: Exploring the Role of Strategic Orientation and Organizational Ambidexterity. *Journal of Theoretical and Applied Electronic Commerce Research*, 19(3), 2000–2029. <https://doi.org/10.3390/jtaer19030098>
- Stöber, L. F., Sommer, D., & Ebersberger, B. (2022). The impact of frugal innovation on sustainability: A systematic literature review. *International Journal of Innovation Management*, 26(08), 2230002.
- Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociological Theory*, 30(3), 167–186.
- Tiwari, R., Fischer, L., & Kalogerakis, K. (2016). Frugal innovation: An assessment of scholarly discourse, trends and potential societal implications. In *Lead market India: Key elements and corporate perspectives for frugal innovations* (pp. 13–35). Springer.
- Ukbaeva, Z., Wöllner, T., & Bican, P. M. (2025). Constraints and Frugal Innovation: Enabling Sustainable Production Through the New Product Development Process. *Sustainable Development*.
- Vario, M. (2022). *The microfoundations of marketing agility: A dynamic capabilities perspective*. Universität St. Gallen.
- Waskita, G. S., Ashari, D. R. W., Al Haris, M. B., Rifa'i, A., & Eldon, M. (2024). Integrating Sustainable Development Goals into Coffee Shop Operations: Insights from Kedai Kosim, Indonesia. *SINDA: Comprehensive Journal of Islamic Social Studies*, 4(3), 243–252.
- Yin, R. K. (2018). *Case study research and applications* (Vol. 6). Sage Thousand Oaks, CA.