**Journal of Information Systems Engineering and Management**
2025, 10(62s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

**Research Article**

# Revisiting Systems Thinking and Productivity in SMEs: Challenges and Opportunities

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**ARTICLE INFO**

Received: 30 Dec 2024

Revised: 05 Feb 2025

Accepted: 25 Feb 2025

**ABSTRACT**

Small and Medium Enterprises (SMEs) play a vital role in driving economic development, particularly in emerging economies. However, many SMEs encounter challenges related to productivity, often stemming from fragmented processes, limited coordination, and reactive decision-making. This article revisits systems thinking as a strategic approach to enhance productivity within SMEs. Based on an integrative review of relevant literature, the study explores the obstacles SMEs face in adopting systems thinking and identifies opportunities for integrating this methodology into small business operations. Findings indicate that while systems thinking can facilitate improved collaboration, efficiency, and adaptability, practical barriers—such as limited expertise, abstract conceptual frameworks, and resource constraints—may impede its implementation. Nonetheless, targeted strategies—including SME-specific training, simplified models, and digital tools—can facilitate adoption. This work contributes to the ongoing discussion on sustainable SME development by emphasizing the need for accessible systems thinking frameworks that foster resilience and competitiveness.

**Keywords**: SMEs, Systems Thinking, Productivity, Integration, Operational Efficiency

## INTRODUCTION

Small and Medium Enterprises (SMEs) are widely recognized as crucial contributors to economic growth, employment generation, and innovation, especially in developing economies (Gherghina, Botezatu, Hosszu and Simionescu, 2020). Their entrepreneurial agility, local economic influence, and ability to adapt position them as key drivers of inclusive development. Across countries in the Global South, including South Africa, SMEs represent a significant portion of employment and play an essential role in achieving national development goals. However, despite their strategic importance, many SMEs face challenges related to sustainability, scalability, and operational resilience due to persistent internal and external obstacles.

Primary barriers to SME growth include fragmented decision-making processes, inefficient operational models, and a lack of strategic alignment across departments and business functions (Molete, Mokhele, Ntombela and Thango, 2025). These internal issues are often compounded by external factors such as market volatility, limited access to affordable financing, inadequate infrastructure, and regulatory hurdles. As a result, many SMEs tend to operate reactively rather than proactively, which can hinder their long-term competitiveness and productivity.

In this complex and dynamic environment, systems thinking has emerged as a promising approach for addressing multidimensional challenges. Systems thinking considers an organization as a network of interconnected and interdependent components operating within a broader environment. It encourages leaders to understand relationships among elements, feedback mechanisms, and the unintended consequences of decisions (Roxas, Rivera and Gutierrez, 2020). Unlike traditional reductionist methods that focus on isolated problems, systems thinking emphasizes a holistic, long-term, and learning-oriented management perspective. This approach has been successfully applied in large corporations and public policy initiatives to improve strategic coherence, stakeholder engagement, and organizational adaptability.

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Research Article

For SMEs, systems thinking offers the potential to transform operational perspectives—from viewing processes as isolated tasks to recognizing them as parts of an interconnected value system. It can enhance productivity by promoting cross-functional collaboration, continuous learning, and alignment between strategy, personnel, and processes (Teo, Wang, Tan and Lee, 2023). Additionally, it can support more efficient resource allocation, reduce duplication and wastage, and foster a shared organizational vision. Nevertheless, the adoption of systems thinking within SMEs has been relatively slow and inconsistent, often limited by challenges such as limited technical capacity, insufficient training, resource constraints, and resistance to change (Rajagopal, Hettiarachchi and Zürn, 2024).

These challenges are further intensified by the increasing complexity of the global economic environment. Today's SMEs must navigate rapid technological change, shifting customer expectations, disruptions in global supply chains, and heightened competitive pressures. These factors highlight the importance of adopting adaptable, integrated management approaches capable of maintaining performance amid turbulence (Mishra, Gupta and Jha, 2024). Productivity—long regarded as a key indicator of business success—is increasingly linked to an organization's capacity for cohesive functioning, feedback responsiveness, and strategic alignment with operational activities. Reconsidering systems thinking within this context is both timely and vital.

Despite its conceptual advantages, practical implementation of systems thinking in SMEs remains limited. There exists a notable gap between its theoretical benefits and the availability of practical tools for SME managers to apply these approaches effectively. Developing tailored frameworks, case studies, and empirical research is essential to bridge this gap and to make systems thinking more accessible to resource-constrained enterprises (Edu, Ofosuhene, Agozie, Gyamfi and Asongu, 2025). Sector-specific analyses can also provide valuable insights into how systems thinking can be adapted for different types of SMEs, including those in manufacturing, services, agriculture, or technology.

This article aims to contribute to this evolving discussion by examining the challenges and opportunities of applying systems thinking within SME environments, with particular emphasis on improving productivity. Drawing on both theoretical concepts and practical examples, it explores how SMEs can transition from fragmented practices to integrated, learning-centric systems that enhance efficiency, foster innovation, and build resilience. Ultimately, it seeks to provide strategic insights for SME owners, policymakers, and development stakeholders interested in unlocking the full potential of this vital sector.

## Theoretical Perspectives-Systems Thinking

Small and Medium Enterprises (SMEs) are integral to the socio-economic development of both developed and developing countries. They are recognized for their contributions to employment generation, grassroots innovation, and economic inclusion (Abisuga-Oyekunle, Patra and Muchie, 2020). Nevertheless, despite their potential, SMEs often face challenges such as operational inefficiencies, fragmented decision-making processes, and low productivity, which can threaten their sustainability and growth. To address these issues, many scholars and practitioners advocate for the adoption of systems thinking as a strategic management approach. Reviewing systems thinking within the context of SME productivity reveals a strong alignment between holistic management principles and the complex nature of SME performance.

## Systems Thinking: A Framework for Managing Complexity

Systems thinking is a management paradigm that encourages organizations to view their operations as interconnected systems rather than isolated parts. It emphasizes understanding the relationships, feedback loops, and long-term consequences of decisions within an organization (Kump and Fikar, 2021). Unlike linear problem-solving methods, systems thinking is dynamic and integrative, prompting managers to look beyond immediate symptoms and identify underlying root causes of organizational challenges. In the SME context, this approach is particularly pertinent. SMEs often operate with limited resources and face external pressures such as market fluctuations, regulatory changes, and technological advances. Implementing a systems thinking approach enables SME leaders to adopt a strategic, long-term perspective, promoting integration across various functions such as finance, human resources, marketing, and production (Lafuente, Szerb and Rideg, 2020). Such integration is crucial for improving productivity, which is often hindered by siloed decision-making and processes.

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Research Article

### Enhancing Productivity Through Systems Alignment

Productivity in SMEs can be understood as the efficient transformation of inputs—such as labour, capital, and materials—into outputs that meet customer expectations and organizational objectives. However, many SMEs encounter difficulties in maximizing productivity due to internal disconnections, inconsistent workflows, and underutilized human resources (Bakare, Achumie and Okeke, 2024). Systems thinking supports productivity improvements by fostering process optimization, cross-functional collaboration, and continuous development. For example, systems thinking encourages mapping organizational processes to identify bottlenecks, redundancies, and delays. It facilitates better coordination among departments that might otherwise operate independently, thereby reducing miscommunications and rework. According to York, Turner and Hussels (2024), systems thinking helps organizations develop "learning loops" where feedback informs decision-making and practice adjustments. For SMEs, such adaptability is vital in responding to customer needs and maintaining quality standards—key factors influencing productivity.

Moreover, systems thinking aligns employee roles and responsibilities with the organization's broader strategic goals. When staff understand how their tasks contribute to overall organizational success, engagement and efficiency tend to increase (Ahmed, Khan, Thitivesa, Siraphatthada and Phumdara, 2020). This alignment can lead to enhanced job performance and higher employee retention, further boosting productivity.

### Challenges in Implementing Systems Thinking in SMEs

Despite its benefits, adopting systems thinking presents several challenges for SMEs. First, it requires a shift from reactive, short-term problem-solving to proactive, long-term strategic planning. Many SME owners and managers, particularly those operating with limited resources, may lack the necessary training or capacity to implement this approach effectively (Atiase, Wang and Mahmood, 2023). Second, implementing systems thinking often requires investments in tools and processes such as workflow mapping, data integration systems, and team training. For small businesses with constrained financial and human capital, such investments may be perceived as burdensome or non-essential (Vives, 2022). Furthermore, the holistic and complex nature of systems thinking can seem abstract or intimidating to managers accustomed to linear or intuitive decision-making frameworks (Howden, 2022).

Additionally, the limited availability of tailored frameworks and practical case studies tailored to SMEs complicates the application of systems thinking. Much of the existing literature and tools focus on large corporations, making it challenging for SME managers to adapt these concepts to their specific contexts (McDougall, Webber and Petrie, 2023). This gap in practical guidance can hinder broader adoption among small business stakeholders.

### Opportunities and Strategic Implications

Despite these challenges, integrating systems thinking into SME operations offers considerable strategic advantages. In today's environment of global uncertainty, rapid digital transformation, and heightened competition, SMEs must become more adaptable and resilient. Systems thinking provides a valuable framework for developing flexible and sustainable business models. Governments, industry development agencies, and business support organizations can facilitate this transition by incorporating systems thinking into SME development initiatives. Providing targeted training, mentorship programs, and digital tools that support systems-based analysis can empower SMEs to enhance internal efficiencies and create sustained value. Embedding systems thinking principles into entrepreneurial education will also equip future business leaders with the skills necessary to manage complexity and improve productivity.

Furthermore, adopting systems thinking enables SMEs to contribute more effectively to broader socio-economic goals, such as sustainability, inclusive growth, and employment generation. By viewing their activities as interconnected within larger ecosystems—including customers, suppliers, communities, and the environment—SMEs can make more responsible and balanced decisions that support long-term profitability and social impact (Vanpetch and Sattayathamrongthian, 2024).

## LITERATURE REVIEW

### The Strategic Role of SMEs in Economic Development

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Research Article

Small and Medium Enterprises (SMEs) are widely acknowledged as vital contributors to employment creation, innovation, and inclusive economic growth, particularly in developing economies (Abisuga-Oyekunle, Patra and Muchie, 2020). In South Africa, SMEs represent over 60% of employment and play a significant role in the national GDP (Mugano, 2023). Despite their increasing importance, SMEs frequently face challenges such as limited access to financing, infrastructural deficiencies, and managerial inefficiencies, all of which impact their productivity and long-term viability (Naradda-Gamage, Ekanayake, Abeyrathne, Prasanna, Jayasundara and Rajapakshe, 2020).

**Productivity Challenges in SME Operations**

Productivity, defined as the effective utilization of resources to produce outputs, is a key performance metric for SMEs. However, various factors hinder productivity within these enterprises, including fragmented business processes, lack of standardization, and reactive decision-making approaches (Krishnan, 2024). Research indicates that many SMEs operate in siloed structures, where departments and functions lack effective communication, leading to duplicated efforts, delays, and compromised output quality (Jeleel-Ojuade, 2024). Inadequate performance measurement frameworks further hinder SMEs from identifying inefficiencies or tracking progress effectively (Mendy, 2021). In environments with limited resources, external pressures such as increasing input costs, intense market competition, regulatory complexities, and technological disruptions exacerbate productivity issues (Omowole, Olufemi-Philips, Ofadile, Eyo-Udo and Ewim, 2024). According to Etim and Daramola (2020), South African SMEs are particularly susceptible to declines in productivity during economic shocks, especially due to reliance on manual systems and informal management practices.

**Systems Thinking as a Strategic Approach in SMEs**

The literature increasingly emphasizes the importance of holistic management approaches. Systems thinking, though traditionally associated with larger organizations, is progressively recognized as a valuable framework for integrating disparate functions and enhancing organizational coordination in SMEs (Lafuente, Szerb and Rideg, 2020). Several studies have shown that SMEs adopting systemic perspectives tend to achieve better resource efficiency, more informed decision-making, and increased organizational resilience (Sánchez-García, Núñez-Ríos, López-Hernández and Rodríguez-Magaña, 2023).

For example, empirical evidence suggests that SMEs aligning their processes around core value chains—rather than isolated departments—demonstrate improved efficiency and greater capacity for scaling operations (Zaridis, Vlachos and Bourlakis, 2021). Incorporating feedback mechanisms and fostering cross-functional collaboration have also been linked to increased adaptability and customer responsiveness (Ahmad, Boit and Aakula, 2023). Collectively, these findings support the notion that systems thinking can drive productivity improvements, foster innovation, and promote organizational learning within SMEs.

**Operational Barriers to Systems Thinking in SMEs**

Despite its potential benefits, the implementation of systems thinking in SMEs faces several practical obstacles. Key barriers include limited awareness of the approach, insufficient managerial expertise, and the lack of tailored implementation frameworks (Rajagopal, Hettiarachchi and Zürn, 2024). Many SME owners lack formal training in business systems and tend to rely on intuitive or survival-oriented decision-making processes (Ohimor, 2022). Furthermore, the often-abstract nature of systems thinking concepts can pose challenges in translating theory into actionable strategies without expert guidance. Research by Quartey and Oguntoye (2020) highlights that even when support programs promote integrated thinking, the tools provided are frequently designed with larger enterprises in mind, rendering them less suitable for small business contexts. This disconnect results in a significant gap between strategic intentions and practical application. Consequently, although the principles of systems thinking receive broad endorsement in SME research, their effective adoption remains inconsistent and underexplored.

**Opportunities for Advancing SME Productivity Through Integration**

Despite these challenges, integrating systems thinking offers numerous opportunities to enhance SME productivity. Scholars advocate for developing simplified, SME-friendly frameworks that incorporate systems concepts into everyday operations (Mughal, 2023; Thomassen and Haner, 2024). Such approaches could include visual workflow tools, team-oriented problem-solving models, and lean process mapping tailored to the capacities of small businesses.

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Research Article

Additionally, the increasing accessibility of digital technologies—such as cloud-based enterprise resource planning (ERP) systems, customer relationship management (CRM) software, and collaborative platforms—can facilitate systems-based management practices (Mahmood, Abdulqader, Abdullah, Rasheed, Ismael and Sami, 2024). The adoption of these tools enables better data collection, real-time monitoring, and more informed decision-making, ultimately boosting productivity. Furthermore, capacity-building efforts led by incubators, government agencies, and academic institutions can serve as avenues for embedding systems thinking into SME operations. These organizations can provide training, mentorship, and diagnostic services that help SMEs visualize workflows and streamline processes, thereby strengthening their operational effectiveness (Wang, Xu, Mao, Deng and Cao, 2025).

## METHODS

This study utilized an integrative literature review to examine and analyze the relationship between systems thinking and productivity in SMEs. The integrative review methodology, as described by Whittemore and Knafl (2005), allows for a comprehensive evaluation of existing evidence, increasing the rigor of the analysis across various primary studies employing different research approaches. Our search criteria focused on peer-reviewed research relevant to systems thinking and productivity in SMEs. Data collection involved multiple research databases, including Scopus, Emerald, Wiley Online Library, and ABI/Inform, to identify relevant studies. Additionally, we accessed several freely available online resources such as ScienceDirect, SABINET, Bing, and Google Scholar to supplement our findings. Both primary and secondary data sources—such as journal articles, reports, biographies, and supplementary materials—were included, using search terms related to the intersection of systems thinking and productivity in SMEs, as well as relevant best practice recommendations.

## Discussion

### SMEs: Critical Yet Fragile

This study reinforces the well-established understanding that small and medium-sized enterprises (SMEs) are essential drivers of socio-economic development, especially in developing countries. In South Africa, SMEs significantly contribute to gross domestic product (GDP) and employ a large portion of the workforce (Tsatsenko, 2020). However, their growth potential is often hampered by operational vulnerabilities rooted in internal inefficiencies, such as fragmented workflows, the absence of formalized systems, and reactive decision-making processes (Seppänen, 2025). Additionally, Jeleel-Ojuade (2024) observe that many SMEs operate in silos, with departments functioning independently and lacking a unified strategic vision—limiting coordination, flexibility, and overall productivity. These challenges are particularly prevalent in smaller firms where strategic decisions are typically centralized in the owner-manager. Limited financial and technical resources often hinder investment in effective management systems and business process improvements (Hendrawan, Chatra, Iman, Hidayatullah and Suprayitno, 2024).

### Systems Thinking as an Integrative Framework

The reviewed literature highlights systems thinking as a promising and impactful approach to addressing many internal coordination and efficiency issues faced by SMEs. Unlike linear problem-solving methods that isolate individual symptoms, systems thinking offers a comprehensive perspective, emphasizing the interconnectedness of business functions, feedback mechanisms, and sustainability over the long term (Khodair, 2024). SMEs can view their operations as integrated systems rather than isolated units by adopting systems thinking. This shift is vital for aligning strategic objectives with operational processes, enhancing communication, and fostering collaborative problem-solving (Ahmad, Boit and Aakula, 2023). When effectively applied, systems thinking promotes shared accountability, improves coordination among staff, and elevates decision-making quality, all of which contribute to increased productivity.

### Barriers to Adoption in SME Contexts

Despite its advantages, the adoption of systems thinking within SMEs remains limited and inconsistent. This is largely due to capacity constraints. Loufrani-Fedida and Aldebert (2021) note, many SMEs lack the human capital and managerial expertise needed to implement structured or process-oriented management approaches. Often, SME

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https://www.jisem-journal.com/

Research Article

owners and managers have not received formal training in systems thinking and tend to rely on intuition and short-term survival strategies.

Another significant obstacle is the lack of frameworks designed specifically for SMEs. Most existing systems thinking tools are developed with large corporations in mind, where resources, scale, and expertise allow for complex modeling and integration (Hossain, Dayarathna, Nagahi and Jaradat, 2020). This mismatch creates a disconnect between the theoretical potential of systems thinking and its practical application in small business environments. Xue, Nasir, Cheng, Wu and Cao (2024) also points out that resistance to organizational change, coupled with the absence of immediate tangible benefits, often discourages small business owners from embracing new management paradigms, despite their long-term advantages.

### Emerging Opportunities for Integration

Despite these challenges, recent developments indicate promising opportunities for integrating systems thinking into SME operations gradually and accessibly. Advances in affordable digital technologies have lowered barriers to operational integration. Tools such as cloud-based Enterprise Resource Planning (ERP) systems, Customer Relationship Management (CRM) platforms, and mobile project management applications enable SMEs to streamline processes, centralize data, and facilitate real-time collaboration (Egbuhuzor, Ajayi, Akhigbe, Agbede, Ewim and Ajiga, 2021).

### Context-Specific Tools for Gradual Adoption

Recent research by Abonguie, Nyam and Hoeyi (2025) introduces simplified, adaptable systems thinking tools tailored for SMEs operating in developing contexts. These include visual process mapping, customer feedback loops, and lean workflow management strategies that can be implemented in phases. Unlike complex conceptual models, these practical tools are affordable, scalable, and sensitive to local contexts—permitting SMEs to adopt systems thinking incrementally without necessitating comprehensive structural changes. Such simplified tools also foster inclusivity by involving employees at all levels in process improvement initiatives. This inclusive approach enhances ownership, boosts morale, and stimulates innovation (Javed, 2024). Through this modular and iterative approach, SMEs can work toward operational excellence while maintaining the flexibility needed to adapt to uncertain and volatile market conditions.

Moreover, initiatives by business incubators, development agencies, and academic institutions play a critical role in promoting systems-oriented thinking through training, mentorship, and diagnostic tools (Kamuri, 2022). These capacity-building efforts help raise awareness and develop competencies related to process integration and strategic planning.

### Toward a Scalable Approach to Operational Excellence

Collectively, these insights indicate that implementing systems thinking within small and medium-sized enterprises (SMEs) does not need to be an all-or-nothing process. Instead, it can be achieved through scalable, phased approaches tailored to the organization's size, capacity, and industry context. With appropriate institutional support and access to user-friendly tools, SMEs can transition from fragmented, reactive operations to integrated and resilient processes that enhance productivity, foster innovation, and support sustainable growth. This strategic shift is especially important in an environment characterized by rising competition, technological advancements, and economic fluctuations—factors that necessitate greater organizational coherence and agility within the SME sector (Omowole, Olufemi-Philips, Ofadile, Eyo-Udo and Ewim, 2024).

## CONCLUSION

This study highlights the significance of systems thinking as a transformative method for enhancing productivity within small and medium-sized enterprises (SMEs). Although traditionally associated with large organizations, the underlying principles of systems thinking are increasingly applicable to small businesses seeking to improve integration, adaptability, and performance. The research identifies key challenges faced by SMEs, including limited expertise, abstract frameworks, and resource constraints, while also outlining viable pathways for adoption.

By developing SME-specific systems thinking models, utilizing cost-effective digital tools, and investing in targeted capacity-building initiatives, stakeholders can facilitate the practical and impactful integration of systems thinking into SME operations. For policymakers, incubators, and academic institutions, this underscores the importance of adopting a more inclusive and context-sensitive approach to management education and business support. Ultimately, embedding systems thinking within SMEs can promote a more resilient, efficient, and sustainable enterprise sector, thereby contributing significantly to economic development in the Global South.

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