



## The Role of Organizational Agility on Order Fulfillment in SMEs: A Literature-Based Perspective

George Atongang Owajege\*, Akram Abdulsamad

Lincoln University College, Wisma Lincoln, 12-18, Jalan SS 6/12, 47301 Petaling Jaya, Selangor, Malaysia

\*Corresponding Author's Email: [Owajege.phdscholar@lincoln.edu.my](mailto:Owajege.phdscholar@lincoln.edu.my)

### Abstract

**Introduction:** Operating in a volatile environment, Small and Medium-sized Enterprises (SMEs) must achieve reliable Order Fulfillment (OF) to compete. Organizational Agility (OA) is critical for this process, yet the specific mechanisms linking OA to OF performance in SMEs remain underexplored. **Methods:** A Systematic Literature Review (SLR) was conducted from 2020 to 2025, following PRISMA guidelines, to synthesize research on OA and OF within SME contexts. Based on the dynamic capabilities view, a conceptual framework defines OA in terms of five dimensions: sensing, decision-making, operational, resource reconfiguration, and workforce agility. These were mapped to key OF metrics (e.g., order cycle time, perfect order rate) to illustrate performance pathways. **Findings:** The review reveals that each agility dimension uniquely enhances OF. Sensing and decision-making agility reduce delays. Operational agility improves accuracy; Resource reconfiguration lowers costs, and workforce agility enables execution. These dimensions form an interdependent hierarchy that is essential to SME performance. **Results:** The review indicates that each dimension of agility uniquely enhances order fulfillment (OF). Sensing and decision-making agility help reduce delays; operational agility improves accuracy; resource reconfiguration reduces costs; and workforce agility facilitates execution. These dimensions form an interdependent hierarchy crucial to SME performance. SME-specific factors, such as digital readiness, moderate the relationship between OA and OF, underscoring the importance of coordinating the development of agility capabilities rather than pursuing isolated improvements. **Conclusion:** For SMEs, building targeted organizational agility is a practical necessity for superior order fulfillment. This study provides a clear framework for managers and a foundation for future empirical research.

**Keywords:** Dynamic Capabilities; Literature Review; Organizational Agility (OA); Order Fulfillment; SMEs (OF); Human-Centric Agility

### INTRODUCTION

Organizational Agility (OA) refers to a company's ability to identify environmental changes and reallocate resources to sustain value creation during turbulence. In environments characterized by Volatility, Uncertainty, Complexity, and Ambiguity (VUCA), agility has evolved from a reactive trait to a strategic focus embedded within organizational structures, decision-making, and operations (Atobishi *et al.*, 2024; Hutter *et al.*, 2025). This transition is especially important in supply chain management

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(SCM), where companies need to adapt to disruptions in supply and demand, as well as to technological progress (Syamsir *et al.*, 2025; Tuyen, 2025).

For Small and Medium-sized Enterprises (SMEs), agility is essential due to structural constraints such as limited financial resources, lower levels of automation, and reliance on external partners. Despite these challenges, SMEs have advantages, including flexible structures and faster decision-making, which enable them to adapt quickly to change (Thomas & Douglas, 2024; Albadry *et al.*, 2025). In this context, Order Fulfillment (OF) is a key operational outcome that shows a company's ability to deliver products accurately, on time, and at a reasonable cost. Metrics such as total order cycle time, perfect order rate, and delivery reliability demonstrate how well firms turn their capabilities into customer value (Croxtton, 2003; Ye *et al.*, 2025). While previous research consistently shows a positive link between organizational agility and firm performance (Arno, 2025), much of the literature discusses both concepts in abstract terms, often overlooking the specific ways in which agility leads to operational outcomes such as order fulfillment. There is limited attention to how different dimensions of agility, such as sensing, decision-making, and resource reconfiguration, interact within resource-limited SME settings to influence fulfillment performance (Yadav *et al.*, 2023). Additionally, existing studies tend to focus on technological drivers of agility while insufficiently examining human-centric factors, including leadership styles, employee engagement, and cross-functional collaboration, that support agile responses (Saghiri *et al.*, 2025; Yang *et al.*, 2025).

This study addresses existing research gaps by conducting a systematic literature review (SLR) to synthesize recent studies (2020–2025) on organizational agility and order fulfillment in small and medium-sized enterprises (SMEs). Applying the Dynamic Capabilities View, the study defines agility as a multidimensional concept that includes sensing, decision-making, operational, resource reconfiguration, and workforce agility. It also connects these dimensions with key order-fulfillment metrics to explain how agility improves performance.

By incorporating human-centric drivers and context-specific factors for SMEs into the analysis, this study provides a more nuanced view of the relationship between agility and performance. It advances the literature by moving beyond generalized associations and offering a clear explanation of how coordinated agility capabilities lead to measurable operational outcomes in resource-limited settings.

### **Problem Statement, Research Objectives, and Study Structure**

The connection between organizational agility and firm performance is well recognized in current research (Altaweel & Al-Hawary, 2021). However, there remains a gap in understanding how specific agility traits, such as sensing ability, decision-making speed, and resource flexibility, translate into measurable Order Fulfillment (OF) outcomes for resource-limited SMEs. Existing studies often treat agility as a broad concept and performance as a general outcome, overlooking its effects on specific operational metrics such as total order cycle time, perfect order rate, and delivery reliability (Yadav *et al.*, 2023). Additionally, many studies neglect human-centered factors, including leadership style, employee engagement, and cross-functional teamwork, which help SMEs manage contextual challenges such as limited cash flow and supply dependencies. Therefore, a literature-based investigation is necessary to identify the pathways through which organizational agility improves order fulfillment in a VUCA environment.

This study aims to identify key dimensions of agility to help practitioners prioritize strategies that yield the best practical results. It was driven by the following objectives:

- To conceptualize the dimensions of organizational agility as discussed within supply chain and operations literature.

- To identify and synthesize key order fulfillment key performance indicators (OF KPIs) relevant to SME operational effectiveness.

To analyze how specific dimensions of organizational agility influence distinct OF KPIs.

To explore how SME-specific contextual moderators shape the OA–OF performance relationship.

To propose a conceptual framework that illustrates the pathways through which agility drives order fulfillment performance in SMEs.

**METHODOLOGY**

This study employs a Systematic Literature Review (SLR) in accordance with PRISMA protocols to investigate the intersection of Organizational Agility (OA) and Order Fulfillment (OF) in Small and Medium-sized Enterprises (SMEs). The methodology emphasizes synthesizing high-quality evidence rather than collecting primary data (Sarkis-Onofre *et al.*, 2021).

**Data Source and Search Strategy**

A thorough search was conducted across Scopus, Google Scholar, and Semantic Scholar utilizing search strings that combined "SME," "Organizational Agility," and "Order Fulfillment" (Arshad & Riaz, 2025).

**The Boolean Keywords Listed Below Were Utilized**

("organizational agility" OR "supply chain agility" OR "operational agility"

OR "managerial agility" OR "strategic agility")

AND

("order fulfillment" OR "perfect order rate" OR "order cycle time" OR "cost per order"

OR "delivery performance")

AND

("SMEs" OR "small and medium enterprises" OR "resource-constrained firms") (Bera *et al.*, 2023)

**Table 1: Inclusion and Exclusion Criteria**

Criterion	Inclusion	Exclusion
Publication Years	2020–2025	Before 2020 (could be added due to its content and relevance to the study)
Firm Type	SMEs	Large enterprises
Language	English and those that could easily be translated	Non-English and difficult to translate into English
Publication Type	Peer-reviewed journal articles, conference papers	Theses, magazines, blogs
Focus	Studies linking OA dimensions to performance or OF outcomes	Studies not involving agility or fulfillment

Source: Researchers (2025)

Table 1 shows the criteria for including and excluding studies from the literature review. It lists the time period (2020–2025), the type of company (SMEs), the language, and the types of publications (conference papers and peer-reviewed journals). To maintain topical relevance, methodological rigor, and a concentrated, contemporary evidence base for correlating organizational agility dimensions with order fulfillment outcomes, studies published prior to 2020 were predominantly excluded due to insufficient emphasis on organizational agility or order fulfillment, being in non-English languages, or challenges in translation. These magazines and blogs were also left out.

**Study Selection Process (PRISMA Flow)**

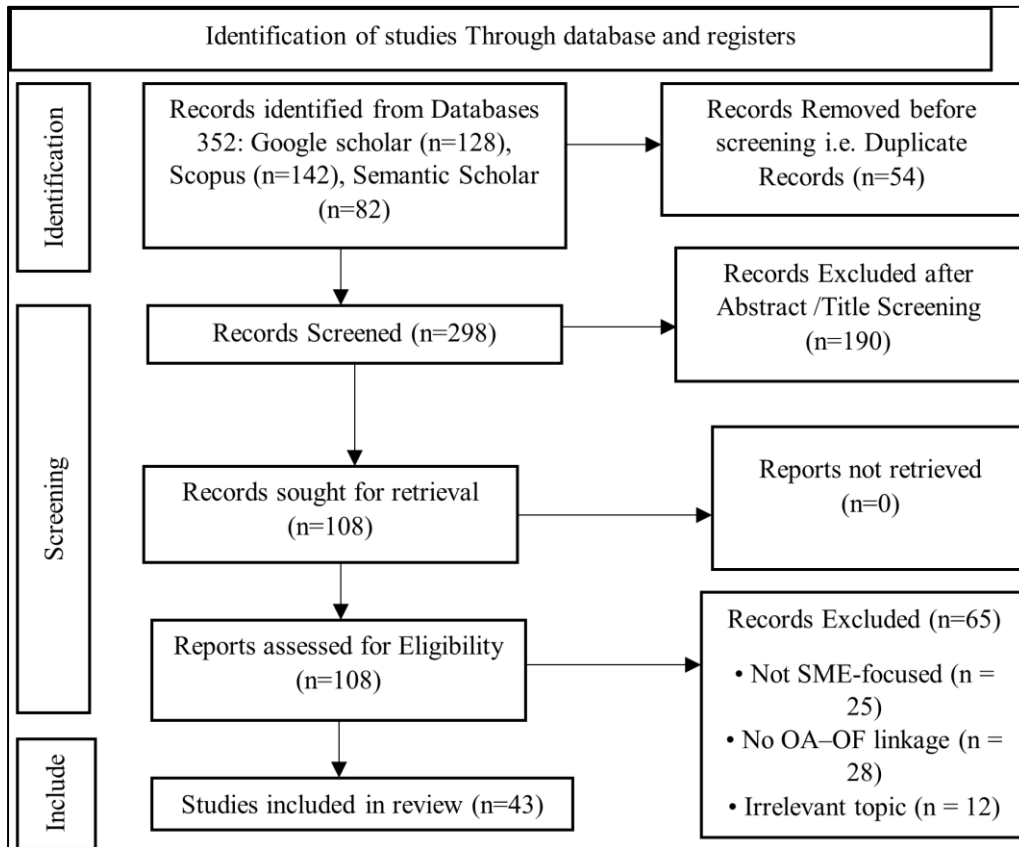
The study selection process followed four distinct stages: Identification, Screening, Eligibility, and Inclusion.

Identification: A total of 352 records were retrieved across all databases (Scopus = 142; Google Scholar = 128; Semantic Scholar = 82).

Screening: Title and abstract screening excluded 54 studies as irrelevant. This left 298 papers to be screened.

Eligibility: Full-text assessment of 108 articles resulted in the exclusion of 65 studies due to lack of SME focus or absence of OA–OF linkage.

Inclusion: A final sample of 43 studies was included in the review.



**Figure 1: PRISMA flow diagram**

**Data Extraction and Syntheses**

Data was systematically extracted using a structured template designed to capture the following elements:

1. Author(s) and year
2. Study type (empirical, conceptual, Model-based, Review)
3. Industry context
4. Organizational agility dimensions examined
5. Order fulfillment performance matrix
6. Key findings and relationships

**Table 2: Distribution of studies by Methodology**

Study Type	Frequency	Percentage (%)
Empirical	25	58.1%
Conceptual	7	16.3%
Review	5	11.6%
Model-Based	3	7.0%
Case Study	3	7.0%
Total	43	100%

Source: Researchers (2025)

Table 2 above provides a detailed analysis of the methodological framework used to evaluate the existing evidence. Out of 43 analyzed articles, 58.1% were empirical studies (n=25), 16.3% were conceptual studies (n=7), 11.6% were systematic literature reviews (n=7), and 7% were case studies and model-based papers (n=3). The distribution indicates that organizational agility and performance are supported by the empirical literature, but systematic literature reviews, case studies, and model-based approaches remain scarce, especially in SME-specific Order-Fulfillment contexts, suggesting a need for further research in these areas to better understand their impact and applications.

### **Quality Appraisal**

To improve the methodological rigor of the study, all included articles were assessed using a modified quality evaluation framework commonly used in other Systematic Literature Reviews (SLRs) in management and information systems (Sauer & Seuring, 2023).

*Clear research objectives*

*Methodological clarity*

*Appropriate research design*

*Data sources and analytical procedures should be clear and bias-free*

*Studies should have a strong theoretical grounding*

*Studies should be relevant to the technology adoption-inventory control relationship*

*Contextual applicability to SMEs in developing countries*

For complete clarity, each appraisal criterion was rated on a three-point scale: low, moderate, and high. Studies rated low on multiple criteria were included only for their contextual relevance. Most studies used as theoretical anchors scored high on the appraisal scale. This approach significantly reduced bias and improved the credibility of the synthesized findings (Dixon-Woods *et al.*, 2007).

### **Conceptual Framework: Defining Agility and Performance**

The Dynamic Capabilities View (DCV) posits that agility is a key capability that enables organizations to identify, acquire, and reconfigure resources in volatile environments (Awwad *et al.*, 2022; Pertusa-Ortega *et al.*, 2024). Unlike static efficiency, agility in the DCV framework emphasizes a firm's ability to quickly adapt processes, decisions, and skills to external changes (Huikkola *et al.*, 2022). While responsiveness involves reactive adjustments, organizational agility (OA) is a strategic orientation rooted in the firm's culture, structure, and decision-making processes and is heavily influenced by leadership styles that foster an agile mindset (Ifeanyi, 2025).

In environments with shorter product life cycles and advancing technology, OA is a proactive approach to handling uncertainty (Arici & Gok, 2023). This approach involves three main capabilities: sensing to identify market shifts, seizing to quickly mobilize resources, and transformation or reconfiguration to ensure internal structures stay aligned with strategic goals (Zabel & O'Brien, 2024; Zahoor *et al.*, 2022). In supply chain management, Operational Agility (OA) greatly impacts the accuracy, timing, and cost of Order Fulfillment (OF) (Um, 2017). Agile Small and Medium-sized Enterprises (SMEs) use these abilities to reduce lead times, improve inventory strategies, and strengthen collaboration with suppliers and distributors (Loforte Ribeiro & Timóteo Fernandes, 2010). Quick decision-making enables real-time adjustments to fulfillment priorities, reducing the Total Order Cycle Time (TOCT), while advanced sensing technologies help companies predict early changes in order volume.

For SMEs, adaptability is vital for survival due to limited resources for large-scale logistics or buffer stocks (Rizos *et al.*, 2016; Zahoor *et al.*, 2022). Therefore, SMEs depend on employee engagement and digital platforms to reorganize operations and reassign personnel, which allows them to quickly respond to market changes and optimize their limited resources. This ensures that Operational Agility (OA) is crucial for achieving high Perfect Order Rates (POR) and for controlling costs. OA is a dynamic capability that improves fulfillment performance and provides a framework for assessing agility traits (Molina-Abril *et al.*, 2025).

**Dimensions of Organizational Agility**

Organizational agility (OA) is inherently complex, comprising interconnected concepts that collectively enhance a company's adaptability. To systematically link OA with Order Fulfillment (OF) performance, it is important to identify its core dimensions: Sensing, Decision-Making, Operational/Process, Resource Reconfiguration, and Workforce Agility (Žitkienė & Deksnys, 2018; Walter, 2020). These dimensions, grounded in strategic management and SME-specific empirical studies, provide a solid framework for implementing agility.

**Sensing Agility**

An organization's ability to consistently identify changes in its internal and external environments, such as shifts in client demand, supply chain disruptions, competitive actions, and technological advancements, is called sensing agility. Sensing agility allows SMEs in OF operations to recognize sudden increases in demand or supplier delays early on. This enables the organization to proactively adjust inventory or prioritize orders before disruptions become more severe (Khristianto *et al.*, 2024; Malik *et al.*, 2025).

**Decision-Making Agility**

This dimension includes the ability to assess information in real time and make informed decisions in uncertain situations. By adopting leadership styles that favor decentralized structures and shorter communication loops, agile SMEs can accelerate order scheduling and reduce lead times (Vummadi & Hajarath, 2024). This agility directly influences the Total Order Cycle Time (TOCT) and boosts the firm's responsiveness to changes in customer-specific orders.

**Operational/Process Agility**

Operational agility is the ability to quickly change fulfillment workflows, including logistics and warehousing (Vummadi & Hajarath, 2024). In OF, such flexibility is demonstrated by the fast reorganization of delivery routes or packing procedures. Increased agility, enabled by cross-functional teamwork, boosts the Perfect Order Rate (POR) and helps reduce bottlenecks.

**Resource Reconfiguration Agility**

This ability reflects an organization's skill in quickly redeploying or scaling technologies and resources in response to OF requirements (Thomas & Douglas, 2024). For resource-limited SMEs, this often involves temporarily outsourcing logistics or flexibly reallocating machinery to meet urgent orders. Effective reconfiguration improves resource use during demand changes, ultimately lowering the Cost Per Order (CPO).

**Workforce Agility**

Workforce agility encompasses employee flexibility, multiskilling, and adaptive behavior (Alviani *et al.*, 2024). A cross-trained workforce can quickly switch between receiving, picking, and shipping tasks, which is vital for SMEs with limited staff. This decreases dependence on specialized labor and helps prevent order delays, ensuring smooth operations during peak times.

These dimensions operate as a coordinated system rather than separate silos (Homayoun *et al.*, 2024). For instance, sensing agility without decision-making yields "insight without action," while decision-making without resource reconfiguration yields "intent without implementation." Collectively, they create the framework needed for better order fulfillment performance.

**Multidimensional Nature and Hierarchy of OA and Its Relevance to OF**

Organizational Agility (OA) is a multi-layered, hierarchical construct rather than a single competence (Žitkienė & Deksnys, 2018). In Order Fulfillment (OF), the five dimensions—sensing, decision-making, operational, resource reconfiguration, and workforce agility—form a self-reinforcing capability chain, in which each stage supports or constrains the next (Asghar *et al.*, 2025).

**The Agility Cascade**

The cycle begins with Sensing Agility, which involves recognizing external changes like demand surges or supply chain disruptions. However, sensing alone is limited without Decision-Making Agility, which translates these signals into strategic goals through rapid communication and adaptive leadership (Govuzela & Mafini, 2019). Agility becomes tangible through Operational/Process Agility, which incorporates action-oriented responses into workflows and logistical restructuring (Mahmud *et al.*, 2021).

The sustainability of these operational shifts relies on Resource Reconfiguration Agility, which reallocates technological and financial assets to meet changing fulfillment demands (Alshahrani & Salam, 2022; Chen *et al.*, 2025). Central to this is Workforce Agility, acting as the behavioral enabler. Employee engagement leads this, ensuring human capital has the multiskilling and flexibility needed to implement reconfigurations effectively (Asghar *et al.*, 2025). This dependency creates a "cascade hierarchy": triggered by sensing, driven by decisions, executed through operational agility, maintained by resource agility, and humanized by the workforce. When aligned, SMEs achieve a high Perfect Order Rate (POR), a lower Cost Per Order (CPO), and an optimized Total Order Cycle Time (TOCT) (Osei *et al.*, 2019; Vrontis *et al.*, 2022).

For SMEs, this hierarchy is more evident due to limited slack (Saka & Chan, 2020). Failure in any dimension disrupts high performance; agile decisions without reconfiguration cause bottlenecks, while excellent sensing without quick decision-making creates delays. Coordinated operation of these interconnected traits, supported by cross-functional collaboration, is crucial for effective SME fulfillment (Lefebvre, 2025). This view links specific agility dimensions to OF performance measures in the following conceptual matrix.

**Matrix-Based Mapping of OA Dimensions to OF Metrics**

Measuring agility with clear indicators is essential to explaining the link between Organizational Agility (OA) and Order Fulfillment (OF) performance in small- and medium-sized businesses. A matrix-based approach demonstrates how agility factors, driven by leadership, employee involvement, and cross-functional teamwork, influence Key Performance Indicators (KPIs) such as Delivery Reliability (DR), Order Fill Rate (OFR), Total Order Cycle Time (TOCT), Perfect Order Rate (POR), and Cost Per Order (CPO). Agility in sensing, enabled by employee engagement, allows for early detection of changes in demand, improving delivery reliability. Decision-making agility, driven by decentralized leadership, guarantees quick resource allocation, lowering TOCT, and boosting responsiveness. Operational Agility, through cross-functional teamwork, streamlines warehousing and shipping, increasing POR and OFR. Finally, resource reconfiguration agility supports asset scalability to lower CPO, while workforce agility provides human flexibility to reduce downtime and strengthen all aspects of agility in execution.

**Table 3: Conceptual Matrix Mapping OA Dimensions to OF Performance Metrics in SMEs**

OA Dimension	Relevance to SMEs	Linked OF Metrics	Expected Influence
Sensing Agility	Enables early detection of demand surges or disruptions with limited data access	DR, TOCT	Shortens reaction latency and reduces unexpected delays
Decision-Making Agility	Facilitates fast prioritization under resource constraints	TOCT, POR	Enhance speed of response and order accuracy
Operational/Process Agility	Supports flexible adjustment of OF workflows and logistics execution	POR, OFR, DR	Reduces bottlenecks, increases accuracy and consistency
Resource Reconfiguration Agility	Allows asset redeployment, outsourcing, or scaling despite financial limitations	CPO, TOCT	Optimizes cost efficiency and supports rapid cycle completion
Workforce Agility	Enables staff multi-tasking and redeployment in fulfillment tasks	All metrics (TOCT, POR, DR, OFR, CPO)	Acts as a systemic enabler, sustaining agility in all areas

Source: Researcher (2025)

The matrix in Table 3 connects the five Organizational Agility (OA) dimensions to key Order Fulfillment (OF) metrics. By reducing executional bottlenecks through cross-functional collaboration, operational agility boosts POR and OFR, while decision-making agility, supported by decentralized leadership, accelerates TOCT and improves order accuracy. Sensing agility, driven by employee engagement, reduces delays by enabling early detection of changes in demand. These mappings translate abstract agility capabilities into visible operational results, providing a framework for customizing agility efforts to specific fulfillment goals.

Resource reconfiguration enhances cost-effectiveness (CPO) and cycle completion (TOCT) under varying loads, while workforce adaptability is the key factor ensuring performance across all parameters. This overview provides a guide to future research, helping practitioners identify the aspects of agility that deliver the greatest benefits for resource-constrained SMEs.

## LITERATURE REVIEW AND THEMATIC ANALYSIS

### ***Overview of Agility Research in Organizational and SME Contexts***

Organizational agility has evolved from simply being about operational responsiveness to a strategic capability grounded in Dynamic Capability Theory. While earlier research emphasized manufacturing flexibility, modern studies connect agility with resilience, digital tools, and strategic change. Since 2020, the number of studies has increased due to pandemic-related disruptions, with a growing recognition of agility as essential for SMEs to survive amid fluctuating demand and logistical issues. Current research on SMEs' agility highlights capability development within resource constraints, emphasizing streamlined structures, digital platforms, and workforce adaptability. However, there is a gap: studies often focus on "overall performance" and neglect the impact of agility on Order Fulfillment (OF) metrics such as Total Order Cycle Time (TOCT), Perfect Order Rate (POR), and Cost Per Order (CPO). This omission calls for a thematic analysis that connects OF indicators to agility within the constraints faced by SMEs (Saghiri *et al.*, 2025).

### ***Sensing Agility and Predictive Order Fulfillment***

By reducing prediction errors and unexpected replenishment needs, sensing agility boosts the company's early-warning capabilities for demand, supplier risk, and market signals. This, in turn, enhances inventory accuracy, fill rates, and delivery reliability. Using lightweight digital dashboards or a simple point-of-sale connector, SMEs can harness supply-chain sensing and hyper-agility, which have been shown to improve short-term visibility and responsiveness (Malik *et al.*, 2025).

Research Gap: Most studies report directional benefits, but few quantify the marginal returns to sensing in low-tech SME settings or provide longitudinal evidence of sustained reductions in TOC.

### ***Decision-Making Agility and Cycle-Time Optimization***

By converting detected signals into prioritized fulfillment activities and enabling quicker decision-making, heuristics and decision-support tools reduce overall order cycle time and internal delays. According to recent studies on SMEs, achieving responsiveness comparable to that of larger companies is possible through close managerial oversight and simple decision-making processes, combined with minimal digital support (Vummadi & Hajarath, 2024).

Research Gap: There is limited micro-level empirical work that isolates how specific decision rules (e.g., delegated thresholds, heuristics) translate into concrete time savings in pick/pack/dispatch operations in SMEs.

### ***Operational Agility and Executional Accuracy in Fulfillment***

The ability to modify picking and packing procedures, reroute logistics, and reorganize workflows is known as "operational" or "process agility," and it directly enhances internal throughput and the Perfect Order Rate. Since 2020, the literature has highlighted digitalization (WMS, lightweight automation) and

process redesign as essential tools for SMEs to adapt effectively, thereby minimizing errors and bottlenecks (Vummadi & Hajarath, 2024).

Research Gap: Comparative evidence is limited on which low-cost operational interventions produce the highest POR gains for SMEs across sectors.

### **Resource Reconfiguration, Agility, and Cost-Efficient Order Processing**

When SMEs can quickly access external partners or reallocate internal assets, resource reconfiguration—also known as quick redeployment or temporary scaling of assets—outsourcing and supplier substitution are closely linked to lower costs per order and shorter TOC. Research on SMEs that survive industry disruption shows that ambidexterity and reconfiguration enable continuous fulfillment under pressure (Thomas & Douglas, 2024).

Research Gap: Empirical quantification of the trade-offs between short-term outsourcing costs and long-term CPO reduction is necessary in SME settings.

### **Workforce Agility as the Human Enabler of Fulfillment Adaptation**

To translate sensing, decision-making, and resource reconfiguration capabilities into OF outcomes, workforce agility, cross-skilling, quick redeployment, and adaptable performance form the foundation of execution. Research indicates that even with modest capital spending, SMEs can often achieve notable improvements in agility by leveraging social and human capital (Alviani *et al.*, 2024).

### **Synthesis Across Agility Dimensions for Order Fulfillment (OF)**

Recent research (2020–2025) shows that sensing agility boosts predictive readiness by reducing demand uncertainty and aligning capacity with inventory. Decision-making agility quickly converts signals into decisions, speeding up cycle completion and preventing order backlogs. Operational agility enables real-time adjustments, reducing rework and fulfillment errors and improving the Perfect Order Rate (POR). Resource reconfiguration agility allows cost-effective scaling of inputs, lowering the Cost Per Order (CPO) while maintaining delivery performance across demand levels. Workforce agility supports sensing, decision-making, and resource flexibility in fulfillment tasks, which is especially important in SMEs where human capital often replaces technological intensity (Malik *et al.*, 2025), as it allows these businesses to quickly adapt to changing market conditions and customer demands.

### **SME Contextual Insight**

Shorter hierarchies, relational supplier networks, and informal decision-making processes provide SMEs with agility, but they are also limited by low digital maturity and financial constraints. Without systematically integrating all five characteristics into a unified OF model, previous research has shown fragmented effects on agility, leaving questions about which capabilities most significantly affect SME performance (Yusuf *et al.*, 2022; Žitkienė & Deksnys, 2018).

### **Emergent Propositions**

**P1:** Sensing agility indirectly improves order fulfillment performance by positively impacting inventory visibility and demand forecasting accuracy.

**P2:** The connection between decision-making agility and order fulfillment performance is influenced by the level of digital integration, so the relationship is stronger in SMEs with higher levels of digital integration.

**P3:** Acting agility enhances order fulfillment performance by increasing responsiveness, but this effect depends on inventory accuracy and the availability of real-time information.

**P4:** Organizational agility affects order fulfillment performance through a sequential mediation pathway involving inventory control effectiveness and process responsiveness.

**P5:** The impact of organizational agility on order fulfillment performance depends on environmental uncertainty and organizational resource capacity, so high agility leads to better performance only when both conditions are favorable.

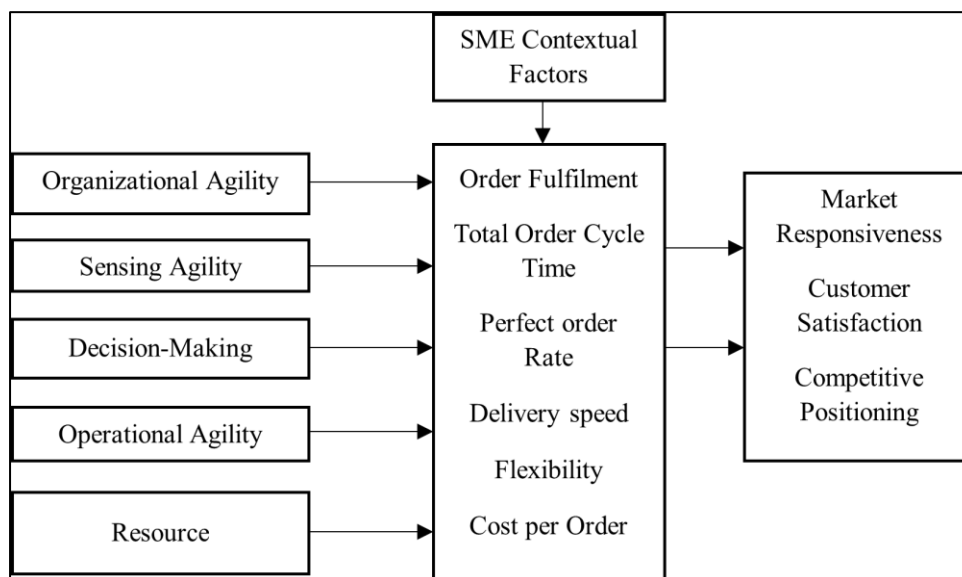
**P6:** The relationship between organizational agility and order fulfillment performance follows an inverted U-shape, where too much agility can cause inefficiencies due to over-adjustment and operational instability.

### **Conceptual Framework and Theoretical Model**

Dynamic Capability Theory (DCT), the foundation of the proposed framework, highlights a firm's ability to identify opportunities and threats, respond quickly, and reallocate resources to maintain performance in uncertain environments (Battisti & Deakins, 2016). Agility is a dynamic capability that turns environmental shocks into competitive advantages for SMEs, especially when resource shortages increase vulnerability to supply disruptions. This aligns with current theoretical claims that performance value is created solely through strategic responsiveness when implemented via outcome-based processes such as Order Fulfillment (OF) (Ifeanyi, 2025).

Total Order Cycle Time, Perfect Order Rate, Delivery Speed, Flexibility, and Cost per Order are among the (OF) performance metrics directly affected by the dynamic capabilities of the Organizational Agility (OA) dimensions, such as Sensing, Decision-Making, Operational Reconfiguration, and Workforce Agility within the model. Resource constraints, informal structures, and centralized leadership are examples of SME characteristics that serve as contextual moderators, influencing the strength of the relationship between agility capabilities and OF outcomes (Homayoun *et al.*, 2024; Manzoor *et al.*, 2022).

### **Narrative Description of the Model**



Source: Researchers (2025)

**Figure 2: Conceptual Framework**

An outline of the causal pathway is shown in Figure 2: Delivery Reliability, Total Order Cycle Time, Perfect Order Rate, Order Fill Rate, and Cost per Order measure the core Order Fulfillment (OF) performance block, driven by five Organizational Agility (OA) capabilities: workforce, operational/process, decision-making, sensing, and resource reconfiguration agility. Between OA inputs and OF outcomes, "SME Contextual Factors" (resource limitations, informal structures, and market uncertainty) highlight how internal and external SME conditions influence the impact level. Higher customer satisfaction, stronger competitive positioning, and increased market responsiveness are strategic outcomes of improved OF performance, demonstrating how agility-driven improvements lead to broader market advantages.

**Table 4: Reviewed Literature**

No.	Author(s) & Year	Study Type	Context	Agility Dimension(s)	OF / Performance Focus	Key Contribution
1	Albadry <i>et al.</i> (2025).	Empirical	SMEs	OA (general)	Service & operational performance	OA improves SME performance outcomes
2	Alviani <i>et al.</i> (2024).	SLR	Cross-sector	Workforce agility	Execution efficiency	Workforce agility enables fulfillment execution
3	Arno (2025)	Review	SMEs	Multi-dimensional OA	Operational adaptability	Defines the SME agility capability framework
4	Asghar <i>et al.</i> (2025).	SLR	General	5 OA dimensions	Performance linkage	Basis of 5-dimensional model
5	Atobishi <i>et al.</i> (2024).	Empirical	Public/SMEs	Digital → OA	Performance	OA mediates the digital-performance link
6	Chen <i>et al.</i> (2025).	Model-based	Retail SCM	Process agility	Order fulfillment efficiency	Links agility to OF optimization
7	Himawan & Jonathan (2025)	Case study	Textile SMEs	Operational agility	Perfect Order Rate	ERP improves fulfillment accuracy
8	Hutter <i>et al.</i> (2025).	Longitudinal	Firms	OA transformation	Operational scalability	Agility improves process performance
9	Johnson <i>et al.</i> (2024).	Conceptual	SMEs	OA (resilience)	Survival performance	Agility as an SME survival mechanism
10	Khristianto <i>et al.</i> (2024).	Empirical	SMEs	Sensing agility	Responsiveness	Sensing improves demand response
11	Lefebvre (2025)	Empirical	SMEs	Resource agility	Continuity & cost	Agile inventory supports OF continuity
12	Malik <i>et al.</i> (2025).	Theoretical	Digital firms	Sensing → Decision	Strategic agility	Explains sensing-decision linkage
13	Manzoor <i>et al.</i> (2022)	Empirical	SMEs	SC agility	Operational performance	Confirms the agility-performance relationship
14	Molina-Abril <i>et al.</i> (2025)	Review	SMEs	Decision agility	Optimization	Decision agility reduces cycle time
15	Saghiri <i>et al.</i> (2025).	Empirical	SCM	Operational agility	Execution accuracy	Improves fulfillment precision
16	Silva <i>et al.</i> (2025).	Empirical	SMEs	OA moderators	Performance barriers	Context affects agility outcomes
17	Thekkoote (2024)	Empirical	SMEs	OA resilience	Crisis performance	Agility supports disruption survival
18	Thomas & Douglas (2024)	Empirical	SMEs	Resource reconfiguration	Cost & continuity	Reconfiguration lowers cost per order

19	Tuyen (2025)	Conceptual	Firms	Decision agility	Responsiveness	Leadership enhances agility decisions
20	Vummadi & Hajarath (2024)	Conceptual	SCM	Decision & process agility	Efficiency	AI improves agile operations
21	Yadav <i>et al.</i> (2023).	Empirical	SMEs	SC agility	Operational effectiveness	Confirms that agility improves SME performance
22	Ye <i>et al.</i> (2025).	Model-based	Logistics	Process agility	OF optimization	Agility improves fulfillment under uncertainty
23	Yang <i>et al.</i> (2025)	Empirical	Retail SCM	Sensing agility	Inventory & OF	Enhances forecasting and fulfillment
24	Arici & Gok (2023)	Empirical	Firms	Strategic agility	Performance	Agility improves adaptability
25	Awwad <i>et al.</i> (2022).	Empirical	IT firms	Dynamic capabilities → OA	Performance	Validates DCV–OA link
26	Battisti & Deakins (2016)	Empirical	SMEs	Dynamic capability	Performance	Foundational DCV support
27	Govuzela & Mafini (2019)	Empirical	SMEs	Agility	Business performance	Early SME agility evidence
28	Huikkola <i>et al.</i> (2022)	Empirical	Manufacturing	Resource reconfiguration	Transformation	Supports reconfiguration logic
29	Homayoun <i>et al.</i> (2024).	Empirical	SMEs	IT → OA	Innovation & performance	IT enhances agility pathways
30	Jayawardena <i>et al.</i> (2024).	Empirical	SMEs	Digital agility	Market performance	Digital tools enhance agility
31	Liu & Yang (2019)	Empirical	SMEs	Capability agility	Competitive advantage	Agility drives competitiveness
32	Naughton <i>et al.</i> (2019).	Empirical	SMEs	SC agility	Adaptation	Agility supports uncertainty response
33	Ndiege (2019)	Empirical	SMEs	Digital agility	Strategic positioning	Tech enhances agility outcomes
34	Pertusa-Ortega <i>et al.</i> (2024)	Empirical	Services	OA mediator	Performance	Agility mediates performance outcomes
35	Rizos <i>et al.</i> (2016).	Empirical	SMEs	Resource constraints	Adaptability	Constraints shape agility
36	Sagala & Ōri (2024)	SLR	SMEs	Digital agility	Resilience	Digitalization strengthens agility
37	Zahoor <i>et al.</i> (2022)	Case study	SMEs	Strategic agility	Crisis response	Agility supports resilience
38	Zabel & O'Brien (2024)	Empirical	Tech firms	Dynamic capability	Innovation performance	Supports agility sequencing
39	Žitkienė & Deksnys (2018)	Conceptual	Firms	OA dimensions	Conceptual clarity	Defines agility structure
40	Yusuf <i>et al.</i> (2022)	Empirical	SMEs	Business agility	Competitive advantage	Agility improves SME advantage

41	Saka & Chan (2020)	Empirical	SMEs	Capability constraints	Adoption performance	Constraints affect agility
42	Osei <i>et al.</i> (2019).	Empirical	Firms	Marketing agility	Market performance	Agility improves responsiveness
43	Vrontis <i>et al.</i> (2022).	Empirical	Firms	Strategic agility	Firm performance	Agility-performance validation

Source: Researchers (2025)

Table 4 above summarizes 43 recent empirical, conceptual, review, and model-based studies that demonstrate a link between organizational agility (OA) and order fulfillment (OF) outcomes in small and medium-sized enterprises (SMEs). The literature consistently describes operational agility (OA) as a multidimensional capability encompassing sensing, decision-making, and execution agility, which enhances operational efficiency, service quality, resilience, and fulfillment reliability, especially amid environmental volatility and digital transformation. The table indicates that the evidence base is solid and comprehensive, confirming the theoretical framework and construct choices used in this study. Additional references were used solely for theoretical grounding and are not part of the systematic review dataset.

**Quantitative Syntheses of Findings (Vote Counting)**

To complement the qualitative synthesis, which included only the final 43 articles that met the inclusion criteria, a vote-counting method was employed to assess the direction and consistency of relationships reported in the literature. Each study was classified as indicating a positive, mixed, or non-significant relationship between dimensions of organizational agility and order fulfillment performance metrics.

**Table 5: Vote Counting Outcome**

OA Dimension	No. of Studies	Positive	Mixed	No Effect	Key OF Metrics Impacted
Sensing Agility	12	10	2	0	DR, TOCT
Decision-Making Agility	11	9	2	0	TOCT, POR
Operational Agility	14	12	2	0	POR, OFR, DR
Resource Reconfiguration	10	9	1	0	CPO, TOCT
Workforce Agility	9	8	1	0	All metrics

Source: Researchers (2025)

The results demonstrate strong evidence of agreement, with most studies indicating positive relationships across all agility dimensions. Operational agility and sensing agility have the strongest empirical support, particularly for enhancing Perfect Order Rate and reducing Total Order Cycle Time. Significantly, no studies reported entirely negative relationships, confirming the strong link between OA and OF in SME settings. Building on this quantitative review, the next section provides a detailed thematic analysis of how each agility dimension influences specific order-fulfillment outcomes.

**DISCUSSION**

The synthesis of 43 studies (2020–2025) affirms that agility is critical to the survival of resource-constrained SMEs and directly influences order fulfillment metrics. This section evaluates the study's six propositions (P1–P6) and examines their practical and theoretical implications.

**Evaluation of Propositions & Managerial Implications**

**P1:** Sensing, inventory visibility, and forecasting are considered valid. The analysis supports Malik et al. (2025), asserting that sensing agility acts as a "navigational trigger".

Managerial Implication: SME proprietors are advised to prioritize adopting cost-efficient digital dashboards and supplier communication channels to enhance real-time visibility before committing resources to physical expansion.

**P2:** Decision-Making and Digital Integration: A Confirmed Perspective. Research by Vummadi and Hajarath (2024) shows that digital tools enhance decision-making speed in small and medium-sized enterprises (SMEs).

Managerial Implication: To improve Total Order Cycle Time (TOCT), managers must integrate flat organizational structures with cloud-based collaborative tools, ensuring decisions are data-driven.

**P3:** Acting Agility, Responsiveness, and Real-Time Information. Verdict: True. Yusuf *et al.* (2022) assert that operational agility yields superior performance only when supported by precise data.

Managerial Implication: Responsiveness is less effective if inventory records are inaccurate; thus, managers must ensure data integrity at the warehouse level to maintain a high Perfect Order Rate (POR).

**P4:** Sequential mediation involving inventory and process is valid. As found by Žitkienė and Deksnys (2018), the research shows that agility operates through a distinct mechanism: it enhances the effectiveness of inventory control, thereby improving process responsiveness.

Managerial Implication: Performance improvements are not immediate; agility must first be "converted" through proficient inventory management before it influences the end customer.

**P5:** Environmental Uncertainty and Resource Capacity. Conclusion: True. Alviani *et al.* (2024) emphasize that agility is most advantageous in contexts characterized by high environmental uncertainty.

Managerial Implication: In stable markets, significant investment in agility may yield diminishing returns. It is advisable to calibrate agility according to market volatility and resource buffers.

**P6:** The Inverted U-Shape and Over-Adjustment. Conclusion: Valid. A significant new dimension identified by Homayoun *et al.* (2024) is that excessive agility can be detrimental.

Managerial Implication: Managers must avoid the "agility trap," where frequent reconfigurations for minor market changes cause operational instability and increased Cost Per Order (CPO).

### ***Theoretical Contributions and New Aspects***

This study offers three significant theoretical contributions that illuminate novel and critical aspects emphasized in the research.

**The Agility Cascade:** The study moved beyond viewing agility as a general trait to identifying it as a sequential dependency (Sensing → Decision-Making → Reconfiguration). This approach provides a more detailed framework for future scholarly investigation.

**Social-Operational Sync:** A notable finding is that SMEs effectively use high-trust, informal networks as an alternative to costly ERP systems. This observation challenges the technology-centric perspective on agility and underscores the significance of human capital.

**The "Balanced Agility" Model:** This study supports the Inverted U-Shape (P6) and contributes to the "Goldilocks" theory of supply chain management, identifying optimal flexibility that balances stability and efficiency.

### **Limitations**

This study acknowledges limitations that open opportunities for future validation. First, the 2020–2025 timeframe may exclude research conducted before 2020; future studies should incorporate earlier data to reinforce the theoretical foundation. Second, the search was limited to Google Scholar, Scopus, and Semantic Scholar. Including Web of Science and gray literature would expand coverage. Third, focusing on English-language, peer-reviewed publications might introduce language and publication bias; adding multilingual and practice-based insights would provide a broader perspective.

Significant heterogeneity in study designs and measurements limits causal inference. Future research should adopt standardized measures and longitudinal designs to enhance generalizability. The absence of a formal risk-of-bias assessment, such as Critical Appraisal Skills Programme (CASP) or Mixed Methods Appraisal Tool (MMAT), may affect perceived reliability.

Addressing these issues will improve the rigor and validation of research on the link between organizational agility and order fulfillment performance.

## CONCLUSION

This literature-based analysis substantiates that Organizational Agility (OA) is an essential functional requirement for achieving superior Order Fulfillment (OF) in resource-constrained Small and Medium-sized Enterprises (SMEs). By synthesizing research from 2020 to 2025, the study identifies OA as a sequential, multi-dimensional capability.

Final Verdict on Propositions:

Propositions P1, P2, P3, and P4 are validated: Agility substantially decreases cycle times and enhances accuracy through the mediation of inventory visibility.

Propositions P5 and P6 are affirmed: The influence of agility is constrained by resource capacity and exhibits an inverted U-shaped relationship.

The policy and strategic roadmap suggest that policymakers should endorse initiatives to enhance digital literacy among SMEs and implement adaptable labor regulations to promote "Balanced Agility." The analysis concludes that SMEs can gain a competitive advantage by leveraging workforce flexibility and ensuring data accuracy, thereby mitigating inefficiencies caused by excessive adjustments. This framework outlines a roadmap for operational excellence in dynamic environments.

## Conflict of Interest

The authors declared that they have no competing interests.

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