

# Understanding SME Constraints in Public Procurement: A Capability-Based Synthesis of Barriers and Treatments

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**ABSTRACT:** Small and medium-sized enterprises (SMEs) play an essential role in national innovation systems, yet they remain persistently underrepresented in public procurement markets. This integrated narrative literature review synthesizes evidence from a structured review of 430 scholarly articles, including 26 empirical studies that directly examine the structural barriers, demand-side interventions, and supply-side capability supports influencing SME participation. Drawing on the Capability-Based View, the review identifies seven major categories of barriers that inhibit SME entry and competitiveness, along with institutional and capability-enhancing treatments aimed at mitigating these constraints. These dynamics appear across diverse procurement environments and intensify within high-cost, high-regulation sectors such as defense, which functions in this review as an illustrative application context rather than a distinct analytical domain. The review concludes with recommendations for future research, including qualitative multiple case studies and Modified Delphi designs, to advance understanding of capability formation, strategic adaptation, and procurement system reform.

**KEYWORDS:** SME participation, public procurement, defense acquisition, capability-based view, structural barriers, institutional treatments, innovation policy

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## Introduction

Small and medium-sized enterprises contribute significantly to national innovation and technological competitiveness, yet their participation in public procurement remains persistently limited across advanced economies (Flynn & Davis, 2017b; Glas & Essig, 2018; Loader & Loader, 2013; Nemec et al., 2021). Although procurement systems are formally structured to promote open competition, institutional and structural features frequently constrain SME access, particularly in markets characterized by high regulation or mission-critical requirements. These constraints reduce supplier diversity, slow the adoption of novel technologies, and diminish the economic and societal value derived from public contracting. Understanding these participation challenges requires synthesizing research that spans multiple procurement environments while

acknowledging contexts, such as defense, where familiar barriers manifest with heightened intensity.

Across empirical studies, a consistent pattern emerges. SMEs encounter high capital intensity, capability deficits, scale mismatches, bureaucratic complexity, incumbent advantage, and unpredictable or fragmented demand (Flynn & Davis, 2017b; Glas & Essig, 2018; Hoekman & Tas, 2022; Loader & Loader, 2013). Although governments have introduced policy mechanisms to promote SME engagement, results have been uneven, and the literature lacks an integrated theoretical framework explaining why interventions succeed in some contexts and fail in others. This review addresses that gap by synthesizing evidence across 430 screened articles and organizing it through the Capability-Based View, which provides a coherent basis for interpreting how structural barriers and capability formation jointly shape SME outcomes.

## **Problem Statement**

Small and medium-sized enterprises function as critical engines of innovation (Department of Defense, 2023), yet they remain underrepresented in public procurement markets across advanced economies. Even when policies explicitly promote supplier diversity, SMEs encounter structural barriers including high upfront capital requirements, complex and knowledge-intensive bidding processes, relational lock-in favoring established incumbents, and evaluation regimes that prioritize lowest-cost over best-value considerations (Flynn, 2017; Hoekman & Tas, 2022; Loader, 2015). These dynamics render procurement environments accessible in principle yet difficult to penetrate in practice, reducing competition, limiting innovation diffusion, and weakening the public sector's ability to leverage emerging technologies.

These constraints become even more pronounced in settings characterized by stringent regulatory oversight, lengthy acquisition cycles, and mission-driven risk aversion, such as the United States defense acquisition ecosystem. Although defense is not the focal domain of this article, it serves as an analytically useful application case illustrating how general procurement barriers intensify when program offices rely heavily on entrenched supplier networks, impose extensive compliance burdens, and operate under fragmented budget authorities (Armstrong, 2023; Cook, 2023; Greenwalt, 2021). Despite long-standing initiatives intended to expand SME participation, engagement levels continue to decline, indicating that structural reforms alone are insufficient. Yet the academic literature remains fragmented, offering limited insight into how structural barriers interact with firm capabilities or which combinations of interventions meaningfully improve SME competitiveness. This review seeks to address that gap.

## Purpose

The primary purpose of this integrated narrative literature review is to synthesize empirical research on the structural barriers that inhibit SME participation in public procurement and to evaluate the demand-side and supply-side treatments designed to mitigate these constraints. From an initial pool of 430 scholarly articles, 26 studies met the inclusion criteria of empirical grounding, methodological rigor, and direct relevance to SME participation. Their findings were organized into thematic categories that align with the conceptual structure reflected in Tables 1 through 3.

Table 1. Barriers to SME Participation in Public Procurement

Barrier	Authors
1. High capital costs to compete	(Bhattacharya, 2021; Flynn, 2017; Flynn & Davis, 2017b, 2017a; Glas & Essig, 2018; Hoekman & Tas, 2022; Lanahan, 2016; Link et al., 2022; Loader, 2015)
2. Lack of specialized knowledge	(Flynn, 2017; Flynn & Davis, 2017b; Glas & Essig, 2018; Hoekman & Tas, 2022; Nemec et al., 2021; Sueyoshi & Ryu, 2022)
3. Public procurement bias to lowest cost bidders	(Hoekman & Tas, 2022; Nemec et al., 2021)
4. Inability to fully satisfy complex/large requirements	(Hoekman & Tas, 2022; Loader, 2015; Nemec et al., 2021)
5. Bureaucratic tender requirements	(Bailey & Thomas, 2017; Dove, 2023; Flynn, 2017; Flynn & Davis, 2017a, 2017b; Glas & Essig, 2018; Hoekman & Tas, 2022; Link & Swann, 2024; Loader, 2015; Nemec et al., 2021)
6. Preference for incumbents	(Flynn & Davis, 2017b)
7. Low purchase volumes	(Bhattacharya, 2021; Rovito et al., 2024)

Table 2. Demand-Side Treatments for Barriers to SME Participation in Public Procurement

Treatment	Associated Barrier	Authors
1. Dividing projects into smaller lots	Inability to satisfy complex/large tenders	(Hoekman & Tas, 2022; Nemec et al., 2021)
2. Directed SME set-asides	Preference for incumbents	(Hoekman & Tas, 2022)
3. Simplifying tendering requirements	Bureaucratic tender requirements	(Hoekman & Tas, 2022)
4. Increasing total award values to offset the high cost of competing	High capital cost to compete	(Bhattacharya, 2021)

Table 3. Supply-Side Treatments for Barriers to SME Participation in Public Procurement

<b>Treatment</b>	<b>Associated Barrier</b>	<b>Authors</b>
1. Facilitating alternative investment	High capital costs to compete	(Keller & Block, 2013; Lanahan, 2016; Lanahan & Feldman, 2015; Link & Swann, 2024; Rovito et al., 2024; Zhao & Ziedonis, 2020)
2. Co-locating SMEs within innovation clusters	Poor access to human resources/expertise	(Lanahan, 2016)
3. Building R&D experience and patents	Poor access to human resources/expertise	(Link & Swann, 2024; Rovito et al., 2024)
4. Leveraging social capital/networks as a strength	Poor access to human resources/expertise	(Sueyoshi & Ryu, 2022)
5. Attainment of industry-specific certifications, which reduce uncertainty of market fit and increase investability	High capital costs to compete	(Lanahan & Armanios, 2018; Rovito et al., 2024; Zhao & Ziedonis, 2020)
6. Building relational capacity	Preference for incumbents	(Flynn & Davis, 2017b; Johnson et al., 2022; Link & Swann, 2024; Radičić & Radicic, 2019)
7. Building procedural capacity	Bureaucratic tender requirements	(Flynn & Davis, 2017a, 2017b; Link & Swann, 2024)
8. Focus on preference-increased technologies during demand shocks	Preference for incumbents	(Wang et al., 2020)

A secondary purpose is to situate these findings within a broader theoretical and practical frame by applying procurement insights to contexts where structural pressures intensify. Defense acquisition functions in this review not as a distinct sectoral study but as an illustrative application case demonstrating how procurement mechanisms behave under conditions of heightened complexity, extended timelines, and institutional rigidity. This framing preserves generalizability while highlighting opportunities for future research on capability formation, strategic adaptation, and procurement system design.

### Significance

This review advances theoretical and practical understanding of SME participation in public procurement. Theoretically, it integrates the Capability-Based View with the heterogeneous empirical findings across the procurement literature. Prior studies often examine individual barriers or policy interventions in isolation, obscuring the central role of firm capabilities in shaping outcomes. By synthesizing structural and capability-based dynamics, this review provides a

conceptual framework explaining why SMEs experience divergent levels of success even under similar institutional conditions.

Practically, the review highlights how procurement systems may inadvertently discourage precisely the firms they aim to support. System architectures prioritizing administrative efficiency, economies of scale, and risk minimization frequently impose transaction costs and capability demands that smaller firms cannot readily meet (Glas & Essig, 2018; Loader & Loader, 2013). While these tendencies appear across civil procurement markets, defense acquisition offers a particularly vivid example, illustrating how long development cycles, stringent compliance standards, and entrenched supplier relationships further heighten participation barriers. Positioning defense as an application context rather than a central focus underscores the relevance of these insights to procurement reform efforts more broadly.

## **Nature of the Study**

This study employs an integrated narrative literature review, an approach well suited for synthesizing conceptually rich and methodologically diverse scholarship across procurement, entrepreneurship, and organizational capabilities. Searches conducted through Web of Science, Research Rabbit, and Google Scholar identified 430 unique articles. Of these, 26 met inclusion criteria specifying empirical grounding, relevance to SME participation, and sufficient methodological quality. Excluded materials included duplicates, studies focused solely on developing economies, spin-out-specific research, and articles that lacked substantive analysis of procurement barriers or interventions. Appendix 1 provides a PRISMA-style summary of this identification and screening process.

The selected studies were coded and analyzed thematically using structured qualitative synthesis informed by heuristic modeling through Heuristica.ai. Findings were organized across three domains: structural barriers, demand-side interventions, and supply-side capability supports. Appendix 2 summarizes the characteristics of the empirical studies reviewed. This review introduces no new empirical data; its contribution lies in integrating cross-disciplinary evidence and situating it within a coherent theoretical framework that clarifies how structural constraints and capability development jointly shape SME participation across procurement environments.

## **Narrative Literature Review**

### ***Overview of SME Participation in Public Procurement***

Small and medium-sized enterprises contribute substantially to national innovation and economic diversification, yet they remain consistently underrepresented in public procurement across advanced economies (Hoekman &

Tas, 2022; Loader & Loader, 2013). Despite explicit policy efforts to broaden participation, procurement architectures often impose structural, institutional, and capability-related burdens that smaller firms are less equipped to absorb. Evidence from the 430 studies screened for this review shows strong convergence: recurring barriers embedded within procurement systems restrict SME entry, limit competitive diversity, and dampen technology diffusion. Understanding these constraints requires close examination of the core impediments that shape SME decision-making, performance trajectories, and long-term market engagement.

### ***Structural Barriers to SME Participation***

#### ***Barrier 1. High Capital Costs***

High capital costs represent one of the most consequential obstacles limiting SME participation in public procurement because they make bidding and commercialization disproportionately expensive for smaller firms. The literature shows that SMEs must absorb fixed proposal preparation costs, including technical drafting, legal review, pricing analysis, and compliance documentation, without the ability to distribute these expenses across large tender pipelines as incumbents do (Bhattacharya, 2021; Flynn, 2017; Flynn & Davis, 2017b; Glas & Essig, 2018; Lanahan, 2016). This barrier matters because extended commercialization cycles—often five to seven years—force SMEs to operate without predictable demand during the “valley of death” between prototype and adoption (Rovito et al., 2024; Sueyoshi & Ryu, 2022). Evidence from multiple studies demonstrates that these liquidity pressures deter entry and drive attrition among firms unable to sustain long-cycle investment. This pattern supports the conclusion that high capital intensity structurally misaligns procurement participation with the resource profiles of most SMEs.

#### ***Barrier 2. Limited Procurement Knowledge and Capability Gaps***

Limited procurement knowledge creates a barrier because SMEs often lack the specialized regulatory, compliance, and procedural expertise required to submit competitive bids. Studies across procurement systems show that complex rules, rigid evaluation criteria, and extensive documentation requirements increase bid errors, disqualification rates, and procedural uncertainty for smaller firms (Flynn, 2017; Glas & Essig, 2018; Hoekman & Tas, 2022; Nemec et al., 2021; Sueyoshi & Ryu, 2022). This barrier matters for SME outcomes because large incumbents maintain institutional knowledge and dedicated proposal teams, allowing them to absorb complexity and outperform newer entrants. Evidence demonstrates that knowledge gaps discourage first-time bidders and inhibit repeat participation, particularly when firms face ambiguous requirements or lack resources for specialized compliance functions (Chambers & O'Reilly, 2022). This supports the conclusion that capability deficits function as both entry deterrents and persistent competitive disadvantages for SMEs.

*Barrier 3. Lowest-Cost Bias and Value-for-Money Orientation*

A lowest-cost orientation in public procurement creates a barrier because it systematically disadvantages SMEs whose innovative or differentiated offerings cannot match incumbent cost structures. Research shows that evaluation regimes frequently equate value for money with lowest price, prioritizing cost predictability over potential performance gains and thereby diminishing the competitiveness of SMEs operating with higher marginal costs and limited economies of scale (Hoekman & Tas, 2022; Nemec et al., 2021). This barrier matters because it reduces market contestability and skews award patterns toward established suppliers, even when SMEs offer higher-quality or more technologically advanced solutions. Evidence across reviewed studies indicates that the lowest-cost bias compounds other structural disadvantages, particularly scale mismatches and capability gaps, resulting in constrained SME bidding activity. These findings support the conclusion that pricing-centric evaluation frameworks restrict innovation and disproportionately penalize emerging firms.

*Barrier 4. Scale and Complexity of Tenders*

Large and complex tenders create barriers because they exceed the operational capacity and perceived reliability of many SMEs. Governments frequently bundle requirements to reduce administrative burden or pursue integrated solutions, but research demonstrates that such consolidation disproportionately favors incumbents with extensive infrastructure and experience managing large contracts (Hoekman & Tas, 2022; Loader, 2015; Nemec et al., 2021). This barrier matters because SMEs are often excluded from competition due to capacity constraints, risk perceptions held by contracting authorities, or the potential for overextension if they attempt to scale rapidly to meet tender requirements. Evidence additionally shows that SMEs that do succeed at this scale face heightened acquisition risks, including being targeted for post-award acquisition by larger firms seeking capability absorption (Keller & Block, 2013). These patterns lead to the conclusion that scale-related requirements structurally bias procurement outcomes toward entrenched incumbents.

*Barrier 5. Administrative Burden and Bureaucratic Friction*

Administrative burden functions as a barrier because documentation, reporting, audit compliance, and communication demands scale with contract complexity rather than firm size, causing SMEs to shoulder disproportionate transaction costs. Research shows that these bureaucratic requirements reduce contract attractiveness, raise bid preparation costs, and create uncertainty regarding timelines and evaluation practices (Bailey & Thomas, 2017; Dove, 2023; Flynn & Davis, 2017b; Hoekman & Tas, 2022; Link & Swann, 2024; Loader, 2015; Nemec et al., 2021). This barrier matters because SMEs lack dedicated administrative personnel and must divert limited resources away from core

operations to manage compliance tasks. Evidence consistently demonstrates that bureaucratic friction discourages first-time entrants and reduces repeat participation among firms that struggle to meet administrative expectations. These findings support the conclusion that bureaucratic complexity limits SME engagement even when technical capabilities are sufficient.

#### *Barrier 6. Incumbent Advantage and Relational Lock-In*

Incumbent advantage creates a barrier because established suppliers possess reputational capital, performance histories, and longstanding relationships with contracting authorities that reduce perceived risk relative to unfamiliar SMEs. Empirical studies show that this relational lock-in reinforces procurement path dependence, with contracting officials defaulting to known suppliers, especially in mission-critical contexts or where failure tolerance is low (Hoekman & Tas, 2022; Nemec et al., 2021). This barrier matters because SMEs without prior performance records or relational ties struggle to gain visibility or credibility, even when offering superior technical solutions. Evidence underscores that relational disadvantages interact with capability gaps and lowest-cost tendencies, reducing SME award likelihood. These dynamics support the conclusion that incumbency functions as a structural barrier that perpetuates market concentration and limits supplier diversity.

#### *Barrier 7. Low and Unpredictable Purchase Volumes*

Unpredictable purchase volumes create barriers because they introduce revenue volatility that destabilizes resource planning and investment decisions for SMEs. Studies show that inconsistent or irregular procurement cycles hinder production scheduling, complicate inventory management, and make workforce planning difficult for firms that depend heavily on steady cash flow (Bhattacharya, 2021; Rovito et al., 2024). This barrier matters because demand uncertainty discourages SMEs from investing in capability development or from pursuing multiple tenders simultaneously, especially when contract outcomes are highly variable. Evidence indicates that revenue volatility also deters external investors who view procurement inconsistency as a proxy for market risk. These findings support the conclusion that unpredictable demand reduces SME resilience and constrains long-term engagement in procurement markets.

### ***Demand-Side Treatments: Modifying System Structures***

#### *Treatment 1. SME Set-Asides and Direct Awards*

SME set-asides and direct awards serve as important demand-side treatments because they modify the competitive environment to reduce structural disadvantages that SMEs face when bidding against large incumbents. Evidence shows that such programs, including the United States Small Business Innovation Research initiative, create protected procurement pathways that allow SMEs to

compete on more favorable terms by limiting competition to firms with similar resource profiles (Hoekman & Tas, 2022). This matters because early-stage contracts provide essential non-dilutive capital and build past performance credentials that SMEs would otherwise struggle to obtain in open competition. Studies indicate that set-asides stimulate market entry and supplier diversity but also reveal that their benefits taper when SMEs attempt to transition from early research awards to later-stage production contracts, where structural barriers reassert themselves. These findings lead to the conclusion that set-asides are effective catalysts for initial engagement but insufficient as standalone solutions to long-term capability and scaling constraints.

#### *Treatment 2. Lot Size Management*

Lot size management functions as a demand-side treatment because it restructures procurement design to align contract scale with SME capacities. Research demonstrates that subdividing large tenders into smaller, more manageable components increases SME participation by reducing operational risk, lowering capital requirements, and narrowing the scope of technical deliverables (Hoekman & Tas, 2022; Nemec et al., 2021). This treatment matters because SMEs are structurally disadvantaged by bundled or consolidated procurements that favor large firms with substantial production infrastructure. Evidence from the European Union shows that lot size adjustments can meaningfully expand SME participation and reduce administrative burden by clarifying requirements and enabling narrower competitive scopes. However, the literature also cautions that fragmented procurement can raise coordination costs for contracting authorities and may complicate integration across suppliers. These insights support the conclusion that while lot size management mitigates scale-related exclusion, it is most effective when coupled with complementary institutional supports.

#### *Treatment 3. Simplification of Procurement Processes*

Process simplification acts as a demand-side treatment because it reduces bureaucratic friction that disproportionately burdens SMEs. Governments may streamline forms, eliminate redundant reporting, shorten tender documentation, or introduce digital procurement portals to ease navigation through administrative requirements (Hoekman & Tas, 2022). This matters because SMEs lack administrative infrastructure and face steep opportunity costs when diverting resources from core operations to compliance work. Evidence shows that even modest simplification can reduce bid preparation time, lower error rates, and increase first-time participation by clarifying expectations and reducing administrative uncertainty. Yet studies also indicate that simplification alone cannot overcome deeper structural disadvantages, and excessive simplification may introduce ambiguity that inadvertently increases risk for SMEs. These findings lead to the conclusion that simplification is best conceptualized as an enabling

mechanism that enhances the effect of other treatments rather than a primary solution in its own right.

#### *Treatment 4. Incentivizing Procurement Through Early Payments or Reduced Requirements*

Financial and administrative incentives operate as demand-side treatments because they adjust contract terms to make procurement participation more viable for capital-constrained SMEs. Early payment schedules, bid cost reimbursements, reduced bonding thresholds, and preferential scoring mechanisms lower barriers by improving cash flow and reducing upfront financial exposure (Bhattacharya, 2021). This matters because SMEs typically lack the liquidity reserves required to absorb delayed payments or high bonding requirements and may therefore avoid bidding altogether. Evidence shows that such incentives can increase SME competitiveness and reduce attrition during contract execution. However, the literature also notes risks associated with these interventions, including administrative burden on contracting offices and potential perceptions of favoritism if incentives are not transparently applied. These findings support the conclusion that financial and administrative incentives offer targeted relief for capital-related barriers but require careful policy design to maintain fairness and trust in procurement systems.

### ***Supply-Side Treatments: Enhancing SME Capabilities***

#### *Treatment 1. Access to Investment*

Access to investment functions as a core supply-side treatment because it equips SMEs with the financial capacity needed to withstand long procurement timelines and high initial bid preparation costs. Evidence shows that public grants, private equity, credit programs, and hybrid public–private financing reduce liquidity constraints and enable SMEs to invest in compliance infrastructure, technical development, and organizational readiness (Keller & Block, 2013; Lanahan, 2016; Lanahan & Feldman, 2015; Link & Swann, 2024; Rovito et al., 2024; Zhao & Ziedonis, 2020). This matters because public procurement markets often involve extended commercialization cycles and winner-take-all competitive structures that are structurally misaligned with SME resource profiles. Studies demonstrate that well-capitalized SMEs are more likely to persist through early-stage contracting, meet procurement requirements reliably, and transition into follow-on opportunities. These findings support the conclusion that access to investment not only mitigates capital-related barriers but also enhances the firm's ability to develop capabilities required for sustained participation in procurement markets.

#### *Treatment 2. Innovation Clusters and Entrepreneurial Networks*

Innovation clusters and entrepreneurial networks serve as supply-side treatments because they provide SMEs with relational and knowledge resources that

substitute for in-house procurement expertise. Research indicates that clusters enable firms to access mentorship, technical guidance, and peer learning, while network ties foster collaborations that reduce uncertainty and share market intelligence (Lanahan & Armanios, 2018; Sueyoshi & Ryu, 2022). This matters because procurement environments impose specialized knowledge requirements—regulatory, technical, and procedural—that SMEs rarely possess internally. Empirical studies show that SMEs embedded in strong innovation ecosystems exhibit higher bid participation, increased contract wins, and greater resilience when navigating administrative or technical complexities. These insights justify the conclusion that clusters and networks help SMEs overcome capability deficits while amplifying their credibility with public agencies.

#### *Treatment 3. Internal Research and Development Capability*

Internal research and development capability operates as a supply-side treatment because it strengthens the technical capacity needed to interpret requirements, generate competitive solutions, and respond to evolving procurement needs. Evidence shows that SMEs with robust R&D functions are better equipped to prototype quickly, manage iterative design demands, and demonstrate technical differentiation during evaluation (Lanahan & Armanios, 2018; Link & Swann, 2024; Rovito et al., 2024). This matters because procurement processes often privilege firms capable of meeting stringent technical specifications or adapting solutions to mission or agency-specific needs. Studies consistently show that stronger R&D maturity correlates with higher win rates in competitive tenders and enhances the likelihood of transitioning from early-stage awards to production contracts. These findings support the conclusion that internal R&D capability is a foundational mechanism for translating technical potential into procurement success.

#### *Treatment 4. Social Capital and Relational Networks*

Social capital and relational networks function as supply-side treatments because they help SMEs overcome information asymmetries and mitigate perceived supplier risk. Relationships with contracting authorities, industry partners, and peer firms provide SMEs with access to informal knowledge, including decision processes, evaluation norms, and timing of procurement cycles (Lanahan & Armanios, 2018; Sueyoshi & Ryu, 2022). This matters because public procurement is deeply relational, often relying on trust-based assessments of supplier reliability when selecting among technically comparable bids. Empirical research shows that SMEs with stronger relational networks experience higher bid success rates and increased continuity across procurement cycles. These insights support the conclusion that social capital not only offsets relational lock-in favoring incumbents but also enhances the credibility and perceived reliability of SMEs within public procurement ecosystems.

### *Treatment 5. Certifications and Quality Signals*

Certifications serve as supply-side treatments because they provide formal signals of operational maturity and reduce perceived performance risk for procurement authorities. Studies show that quality certifications, cybersecurity credentials, and industry-specific compliance standards increase SME legitimacy and improve evaluator confidence, especially in high-stakes or technically demanding procurements (Lanahan & Armanios, 2018; Rovito et al., 2024; Zhao & Ziedonis, 2020). This matters because public procurement relies on defensible, auditable evaluation criteria that often equate certification with reduced supplier risk. Evidence indicates that certified SMEs are more likely to secure external financing and achieve higher win rates, reflecting the dual signaling value of certifications to both investors and government buyers. These findings support the conclusion that certifications operate as low-cost capability enhancers that meaningfully improve SME visibility and competitiveness.

### *Treatment 6. Procedural and Relational Capabilities (CBV-Aligned Supply-Side Supports)*

Procedural and relational capabilities represent essential supply-side treatments because they constitute the internal capability sets SMEs must develop to navigate procurement environments effectively. Procedural capabilities include the ability to interpret complex requirements, prepare compliant proposals, maintain audit-ready documentation, and manage contract performance, while relational capabilities involve building trust with procurement authorities and collaborating effectively with partners (Flynn & Davis, 2017a, 2017b). This matters because evidence consistently shows that SMEs succeed not merely by accessing external supports but by internalizing routines and competencies that enable them to operate reliably within procurement constraints. Studies reveal that firms with strong procedural and relational capabilities outperform peers despite operating under equivalent structural conditions, underscoring the mediating role of capabilities in procurement outcomes (Flynn & Davis, 2017b, 2017a; Johnson et al., 2022; Link & Swann, 2024; Radičić & Radicic, 2019). These findings lead to the conclusion that internal capability formation is the most critical determinant of long-term SME viability in public procurement markets.

### ***Cross-Cutting Theoretical Integration: The Capability-Based View***

The Capability-Based View provides a central theoretical lens for interpreting the uneven success of SMEs in public procurement, explaining why some firms advance despite structural barriers while others struggle under comparable conditions. From a CBV perspective, firms perform more effectively when they possess or develop the capabilities required to sense opportunities, mobilize resources, and execute strategies within institutionally structured environments.

Because public procurement systems are highly formalized and procedurally complex, they place a premium on procedural and relational capabilities that enable SMEs to interpret requirements, prepare compliant bids, build credibility with contracting authorities, and manage contract performance (Flynn & Davis, 2017a, 2017b). Across the empirical literature, successful SMEs are distinguished not merely by their access to external supports but by their internalization of routines, processes, and relationship-building competencies that allow them to operate reliably within procurement constraints. This insight helps reconcile the variation in SME outcomes documented in the review: even when facing identical structural conditions, firms differ substantially in their ability to translate resources into performance through coherent capability sets.

The CBV framework also offers a structured way to integrate the evidence summarized in Tables 1 through 3 by positioning structural barriers as manifestations of capability deficits. Knowledge gaps reflect insufficient procedural capability, relational lock-in signals weak relational capital, and high capital costs indicate constrained financial capability. Conversely, demand-side and supply-side treatments operate as external enablers that either reduce capability shortfalls or accelerate capability development. Set-asides, for example, create protected environments in which SMEs can build procedural familiarity without immediate incumbent competition; innovation clusters facilitate experiential learning and reduce informational and relational barriers; and certifications signal legitimacy that mitigates evaluator uncertainty. Collectively, the literature indicates that capability development mediates the relationship between procurement system structures and SME performance. CBV therefore provides a coherent theoretical scaffolding through which barriers and treatments can be understood not as discrete phenomena but as interconnected elements of a broader capability formation and deployment process.

### *Relevance to the United States Defense Marketplace*

Although much of the literature on SMEs in public procurement focuses on civilian markets, the structural conditions described across these studies closely mirror, and in many cases intensify, the challenges encountered in the United States defense marketplace. In this respect, defense acquisition is best understood not as a distinct procurement regime, but as an application context in which familiar procurement dynamics operate under heightened conditions of complexity, risk sensitivity, and scale. Framing defense in this way broadens rather than narrows the applicability of the review, because it illustrates how general procurement mechanisms behave when institutional demands become exceptionally stringent.

Defense acquisition features extensive regulatory requirements, long contracting cycles, mission-driven evaluation criteria, and deeply risk-averse procurement cultures, all of which raise the threshold for SME entry and success.

Core barriers identified in Table 1 manifest in magnified form. High capital costs become more severe due to multi-year technology development frameworks, dispersed program office authority, and budget volatility. Knowledge gaps grow wider as SMEs must navigate defense-specific regulations, cybersecurity mandates, export controls, and classified program requirements. Value-for-money orientations often prioritize proven reliability and low production risk, reinforcing incumbent advantage and limiting opportunities for new entrants. These dynamics do not represent a fundamentally different procurement logic but rather a more extreme expression of structural forces present throughout public procurement.

Defense procurement also heightens relational barriers. Long-standing relationships between program managers and prime contractors create entrenched relational lock-in, making visibility difficult for SMEs unless they subcontract or offer distinctly differentiated capabilities. The scale and duration of defense programs mirror the large tender barrier found in civilian markets, with many efforts involving multi-billion-dollar investments across decades. For SMEs entering the defense sector, these constraints interact in cumulative ways. Yet the literature also suggests that this environment may create openings for venture-backed SMEs capable of leveraging robust supply-side treatments. Venture capital investors, by design, target high-risk, long-horizon markets where winner take all dynamics and long-tail returns are common (Keller & Block, 2013). Their involvement can offset SME weaknesses by providing capital, strategic guidance, and access to entrepreneurial networks. In this sense, barriers that deter most SMEs may create defensive moats for firms with sufficient capability depth and investor support.

Integrating insights from public procurement research with the conditions of defense acquisition reveals that capability development is central to SME performance in both environments. Procedural capabilities, including understanding requirements, building compliant bids, and navigating acquisition pathways, underpin entry into the defense market. Relational capabilities, including building trust with program managers, aligning with mission needs, and sustaining communication, are essential for earning follow-on awards and integrating into program ecosystems. Supply-side supports such as certifications, cluster participation, and relational networking closely align with defense requirements, while demand-side mechanisms such as SBIR, set-asides, and flexible contracting authorities serve as defense-specific entry pathways. Viewed through a CBV lens, the defense market offers a particularly illuminating setting where external treatments open access but internal capabilities determine which firms progress beyond early-stage opportunities.

### ***Summary of Insights from the Narrative Literature Review***

This narrative literature review shows that SME participation in public procurement is constrained by a recurring set of structural barriers observed across

national systems and policy contexts. High capital costs, knowledge deficits, scale mismatches, administrative burden, incumbent advantage, and unpredictable purchase volumes combine to shape a competitive landscape that favors established firms and systematically disadvantages smaller entrants. Governments have introduced a variety of demand-side treatments—such as set-asides, simplified tenders, and lot size management—and supply-side treatments such as access to capital, innovation clusters, R&D investments, social capital formation, and certification attainment. While each treatment mitigates specific obstacles, the literature makes clear that no single intervention is sufficient. Instead, SME success depends heavily on the formation of procedural and relational capabilities that enable firms to navigate procurement systems effectively.

The Capability-Based View provides a coherent theoretical explanation for why interventions demonstrate uneven effects and why SME outcomes diverge under comparable structural conditions. Treatments act as enablers of capability development, but long-term success depends on the extent to which firms internalize these capabilities and deploy them strategically. Applying these insights to defense procurement illustrates the intensification—not alteration—of core public procurement dynamics: barriers are higher, stakes are greater, and relational lock-in is more deeply rooted. Yet these same conditions create opportunities for SMEs that can cultivate strong procedural and relational capabilities while leveraging external supports such as investment, networks, and certifications. The literature thus highlights a clear research gap: understanding how capability development unfolds in complex procurement environments, how external supports interact with firm-level capabilities, and which combinations of barriers, treatments, and competencies best enable sustained SME performance across civilian and defense markets. Addressing these gaps provides a foundation for important future empirical and conceptual advances.

## Conclusion

The central conclusion of this review is that SME participation in public procurement is shaped by a consistent constellation of structural, procedural, and relational barriers that persist across national systems. Evidence demonstrates that high capital intensity, capability gaps, scale misalignments, incumbent advantages, and administrative burdens systematically restrict SME access and competitiveness. These barriers remain durable even in settings where reforms have been implemented, suggesting that structural change alone cannot fully overcome SME disadvantages. This pattern reinforces the need to conceptualize procurement participation not merely as market access but as a capability-dependent process involving firm-level readiness and adaptation. Taken together, the findings suggest that procurement challenges are systemic rather than episodic,

requiring analytic approaches attentive to both institutional structures and firm capabilities.

The review also concludes that the Capability-Based View offers a coherent framework for explaining why SME performance varies under similar conditions. Evidence shows that demand-side and supply-side treatments produce heterogeneous outcomes because they exert influence through firm capabilities—particularly procedural and relational competencies that shape how SMEs interpret requirements, build trust, and manage risk. This capability-centered lens further clarifies why procurement dynamics intensify in more complex environments such as defense, even though the underlying mechanisms remain consistent. By linking structural barriers, external treatments, and the developmental processes that shape capabilities, the review provides a conceptual foundation for studying SME strategy in heavily institutionalized markets. This synthesis highlights the need to examine how SMEs build and deploy capabilities over time, offering a platform for future empirical and theoretical research.

### **Recommendations for Future Research**

Future research should prioritize qualitative multiple case study designs to advance understanding of how SMEs develop procedural and relational capabilities within procurement contexts. The literature indicates that capability formation is path dependent and shaped by how firms interpret and respond to barriers, making case study methodology especially suited to capturing longitudinal adaptation and contextual nuance. Examining SMEs that persist, exit, or succeed under varying procurement structures would illuminate the routines, relationship strategies, and decision processes that distinguish more successful firms. Such work would contribute meaningfully to extending the Capability-Based View in public procurement scholarship and clarifying which combinations of treatments and internal practices most effectively support SME competitiveness.

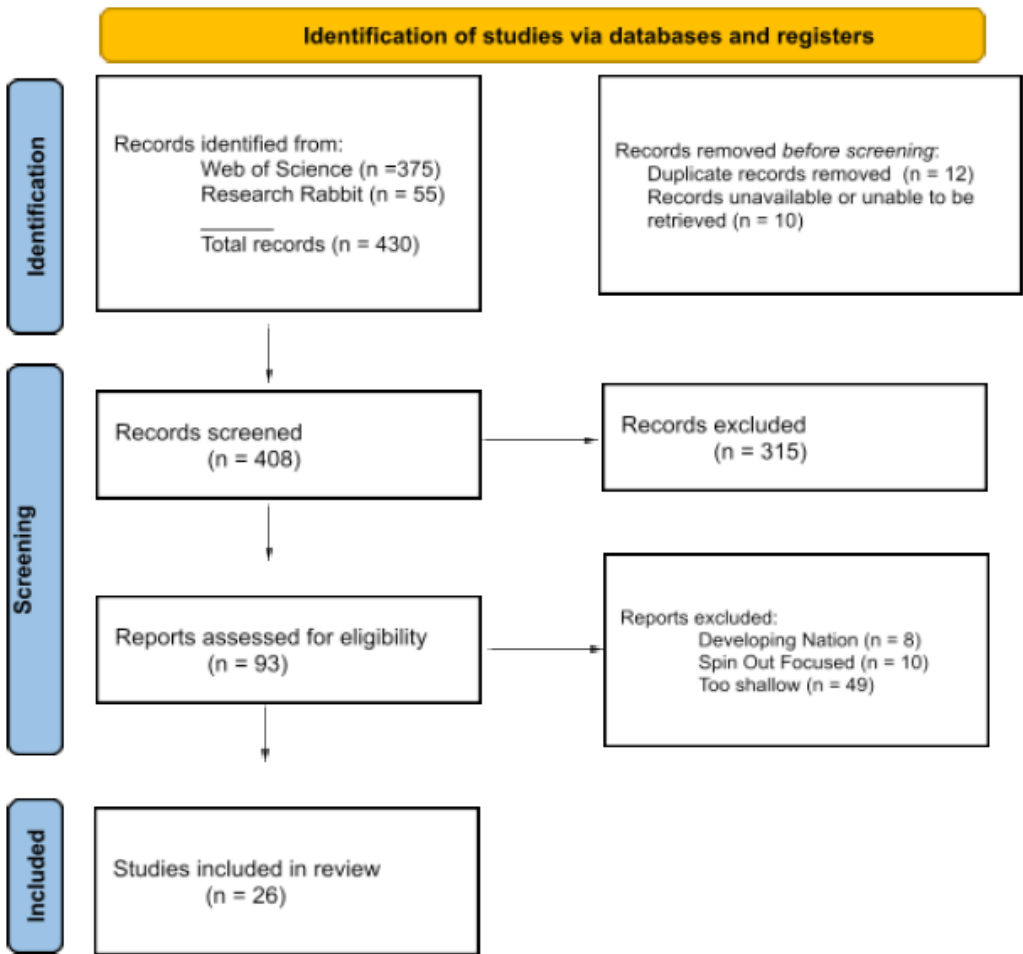
Complementing this approach, a Modified Delphi study would offer a structured method for consolidating insights across stakeholder groups who influence or experience procurement outcomes. SMEs, contracting officials, investors, and policymakers often hold different assumptions about which barriers matter most and which interventions produce the greatest effect. A Delphi process would allow researchers to synthesize these perspectives through iterative rounds of feedback, generating consensus-based priorities for barriers, capability requirements, and policy levers. This method enhances analytic clarity by distinguishing areas of agreement from areas of contention and can produce actionable insights for procurement reform. Together, multiple case studies and Delphi methods provide a rigorous and complementary research agenda capable of advancing theory, informing policy, and improving practical strategies to support SME participation in public procurement.

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Appendix 1: Article Search and Inclusion



METHODS	
Databases used	Web of Science; Research Rabbit
Screening Criteria	((("startup*" OR "small business*" OR "new venture*" OR "SME*" OR "entrepreneur*" OR "early-stage compan*") AND ("defense sector" OR "military technolog*" OR "government contract*" OR "public procurement" OR "federal market*" OR "defense innovation" OR "national security" OR "defense tech*" OR "federal" OR "defense")) AND [ABDC Text String]
Eligibility Criteria	Following the initial screening for publications addressing SME and public procurement, I further excluded publications that A) addressed challenges unique to developing countries; B) focused on impacts to private sector spin-out versus the public market; C) made no meaningful contributions to the analysis of barriers to SME participation or associated treatment strategies

**Appendix 2: Summary of Studies Reviewed**

<b>Publication Year</b>	<b>Author</b>	<b>Title</b>	<b>Publication Title</b>	<b>Regional Focus</b>	<b>Barriers</b>	<b>Treatments</b>
2013	Keller, Matthew R.; Block, Fred	Explaining the transformation in the US innovation system: the impact of a small government program	Socio-Economic Review	United States	N/A	Addresses the significant influence of Venture Capital on SMEs and the direct relationship between VC and SBIR.
2013	Loader, Kim	Is Public Procurement a Successful Small Business Support Policy? A Review of the Evidence	Environment and Planning C: Government and Policy	European Union	Not in a position to manage complex contracts; too much formality; slow payment;	Subcontract through larger firms
2015	Lanahan, Lauren; Feldman, Maryann P.	Multilevel innovation policy mix: A closer look at state policies that augment the federal SBIR program	Research Policy	United States	Funding gaps to bridge the valley of death	It addresses the use of SMP-1, SMP-II, and LM programs to augment federal SBIR programs and help companies extend their runway.
2015	Loader, Kim	SME suppliers and the challenge of public procurement: Evidence revealed by a UK government online feedback facility	Journal of Purchasing and Supply Management	European Union	Comprehensive listing of barriers SMEs face when competing in the public sector.	N/A
2016	Flynn, Anthony; Davis, Paul;	Firms' experience of SME-friendly policy and their participation and success in public procurement	Journal of Small Business and Enterprise Development	European Union	Recounts well-cited barriers for SME participation; minimal unique contribution..	Highlights that common treatments are generally ineffective in increasing SME participation rate, but does increase SME success rate suggesting broad trust in the viability of the public market is insufficient to sway commercial entities toward the public market.
2016	Lanahan, Lauren	Multilevel public funding for small business innovation: a review of US state SBIR match programs	Journal of Technology Transfer	United States	Funding gaps, post initial R&D investment	Amplify federal funding with state R&D awards,

2017	Bailey, James B.; Thomas, Diana W.	Regulating away competition: the effect of regulation on entrepreneurship and employment	Journal of Regulatory Economics	United States	Reinforces the finding that regulation in the US public market discourages entrepreneurship.	N/A
2017	Flynn, Anthony	Re-thinking SME disadvantage in public procurement	Journal of Small Business and Enterprise Development	European Union	Adopts a Resource-Based View to illustrate how larger firms are better positioned to overcome common barriers in the public market.	It does not recommend strategies for SMEs to compete; however, analysis provides a means to hone where SMEs must go up level to compete in the market.
2017	Flynn, Anthony; Davis, Paul	Investigating the effect of tendering capabilities on SME activity and performance in public contract competitions	International Small Business Journal- Researching Entrepreneurship	European Union	Unwieldy tendering systems; unfamiliarity with public sector culture; SME's inherent resource limitations	Ability of SMEs to manifest relational and procedural capability.
2017	Flynn, Anthony; Davis, Paul	Explaining sme participation and success in public procurement using a capability-based model of tendering	Journal of Public Procurement	European Union	Addresses a range of common challenges, most notably the need for SMEs to navigate complex relational and procedural hurdles.	Posits a Capability Based View that contends that SMEs require both relational and procedural capabilities to be successful in public procurement.
2018	Glas, Andreas Herbert; Eßig, Michael	Factors that influence the success of small and medium-sized suppliers in public procurement: evidence from a centralized agency in Germany	Supply Chain Management	European Union	Overly strict qualification standards, imprecise tender specifications, extreme resource requirements, appropriate resources to engage in public bidding, and skills to complete a bid are low.	Posits that an increase in competition is favorable to SMEs; however, it rejects claims that an increase in the number of lots impacts success rates.
2018	Lanahan, Lauren; Armanios, Daniel	Does More Certification Always Benefit a Venture?	Organization Science	United States	Inability to attract capital due to uncertainty of market fit	Certification serves to reduce uncertainty and increase the investability of a venture.
2019	Radicic, Dragana	Effectiveness of public procurement of innovation versus supply-side innovation measures in manufacturing and service sectors	Science and Public Policy	United States and European Union	Poor relational capacity hinders connections between suppliers and customers;	Addresses a range of demand and supply side treatments. Argues that while complementary, demand side treatments are most effective.
2020	Wang, Tang; Aggarwal, Vikas A.; Wu, Brian	Capability interactions and adaptation to demand-side change	Strategic Management Journal	United States	Customer intimacy as a barrier to successful marketing of preference-increased technological capabilities during demand shocks	N/A; SMEs can leverage this barrier to counter the incumbent advantage.

2020	Zhao, Bo; Ziedonis, Rosemarie	State governments as financiers of technology startups: Evidence from Michigan's R&D loan program	Research Policy	United States	Introduces the "Lemon Premium" concept whereby investors pay a discounted rate for technology they may be less familiar with.	It contends that the award of a competitive federal grant can help validate a product externally, thus reducing lemon risks and making external financing more likely.
2021	Bhattacharya, Vivek	An Empirical Model of R&D Procurement Contests: An Analysis of the DoD SBIR Program	Econometrica	United States	Cost of capture activity relative projected reward	Identified alternative structures, such as capped competition and high net procurement, to incentivize participation.
2021	Nemec, Peter; Džupka, Peter	Determinants Of Sme Access To Public Procurement: Empirical Evidence From The Visegrad Group Countries	Proceedings of CBU in Economics and Business	European Union	Lack of specialized knowledge, inadequate financial and technical requirements, and over-indexing of low cost are primary factors.	N/A
2022	Hoekman, Bernard; Tas, Bedri Kamil Onur	Procurement policy and SME participation in public purchasing	Small Business Economics	European Union	"Value for money" contracts skew to large firms able to achieve economies of scale; access to finance; limited human resources	Public side interventions to level the playing field, such as breaking contracts into small pieces and awarding contracts based on the most economically advantageous versus the lowest price.
2022	Johnson, Evan; Hemmatian, Iman; Lanahan, Lauren; Joshi, Amol M.	A Framework and Databases for Measuring Entrepreneurial Ecosystems	Research Policy	United States	N/A	Provides a rich means to analyze entrepreneurial ecosystems and highlights evidence that 'place-based' biases of innovation clusters may no longer be geographically proximal.
2022	Link, Albert N.; Swann, Christopher A.; van Hasselt, Martijn	An assessment of the US Small Business Innovation Research (SBIR) program: A study of project failure	Science And Public Policy	United States	Funding gaps, post initial R&D investment	Connect successful SMEs with angel investors, VCs, and private investors to sustain research post-initial public investment.
2022	Sueyoshi, Toshiyuki; Ryu, Youngbok	Performance assessment on technology transition from small businesses to the US Department of Defense	Socio-Economic Planning Sciences	United States	Lack of well-educated workers, well-secured financial resources, and limited access to valuable information	Lean on and mature social capital to leverage networks to support financing and recruitment goals and address information gaps.

2023	Dove, John A. A.	One size fits all? The differential impact of federal regulation on early-stage entrepreneurial activity across US states	Journal of Regulatory Economics	United States	The main finding is that heavily regulated markets tend to create entry barriers and crowd out SME entry.	N/A
2024	Link, Albert N.; Swann, Christopher A.	SBIR mills and the US Department of Defense	Journal of Technology Transfer	United States	N/A	The study highlighted a counter-example of 22 small businesses that were able to commercialize public R&D repeatedly.
2024	Rovito, Sarah M.; Kamp, John; Etemadi, Amir	Exploring Department of the Navy SBIR Phase III awards and corresponding public sector commercialization success factors	Journal of Technology Transfer	United States	Extended commercialization pathways due to programmatic and funding delays	Involvement of private sector financial stakeholders.