

A Meta-Analytic Review of Entrepreneurial Orientation and Firm Performance: The Mediating Roles of Strategic and Dynamic Capabilities and the Moderating Effects of Contextual Factors

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Abstract

Purpose: This study investigates the relationship between Entrepreneurial Orientation (EO) and firm performance (FP) by examining the mediating roles of Strategic Capabilities and Dynamic Capabilities, and the moderating effects of contextual factors such as geographic region and study period.

Methodology: The research design employed a meta-analytic review that was conducted using data from 95 peer-reviewed empirical studies encompassing 19,555 firm-level observations. Comprehensive Meta-Analysis (CMA) software was employed to synthesize effect sizes, test mediation pathways, and explore moderation effects across contextual subgroups. The study follows PRISMA guidelines to ensure methodological rigor.

Findings: The results confirm that EO positively influences firm performance both directly and indirectly. Strategic Capabilities exhibit a stronger mediating effect than Dynamic Capabilities, suggesting that deliberate resource orchestration enhances EO effectiveness. Contextual analysis reveals that the EO–performance link is more pronounced in emerging economies and in studies conducted after 2015, reflecting evolving entrepreneurial environments.

Policy Implications: The findings underscore the need for policies that support capability development within SMEs, especially in emerging markets. Tailored interventions that enhance strategic alignment and dynamic responsiveness can amplify EO's performance impact.

Originality: Finally, this study is among the first to meta-analytically decompose the EO–Performance relationship through dual mediators and contextual moderators, advancing theoretical understanding and offering actionable insights.

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Introduction

Entrepreneurial Orientation (EO) has emerged as a central construct in entrepreneurship and strategic management research, widely acknowledged for capturing a firm's strategic posture toward innovativeness, proactiveness, and risk-taking (Lumpkin & Dess, 1996; Brettel et al., 2015; Tang et al., 2020). A rich stream of empirical studies links EO to superior firm performance, arguing that it enhances opportunity recognition, facilitates competitive positioning, and enables rapid market entry (Mahrous & Genedy, 2019; Lew et al., 2023; Yaqub et al., 2024). Firms that exhibit higher EO tend to be more agile, innovative, and growth-oriented, often translating these traits into improved profitability, customer satisfaction, and long-term resilience (Freixanet et al., 2021; Shaher & Ali, 2020).

Yet, despite these positive findings, the EO–performance relationship remains contested. Several studies report weak, inconsistent, or even insignificant effects (Aftab et al., 2022; Al-Hakimi et al., 2021; Ngo, 2023), prompting scholars to question the conditions under which EO produces tangible performance outcomes. As Liguori et al. (2024) highlight, entrepreneurship research increasingly demands interdisciplinary and theoretically integrated approaches to explain why the same EO behaviors yield different results across firms, industries, and institutional environments. This ongoing debate suggests that EO alone may not be sufficient to drive performance; rather, it must interact with other organizational factors to produce sustainable outcomes.

A key gap lies in understanding the internal mechanisms that translate EO into firm performance. While EO reflects a firm's willingness to act entrepreneurially, it does not automatically guarantee competitive advantage unless the organization has the right capabilities to actualize entrepreneurial initiatives (Soares & Perin, 2020; Quansah et al., 2022). In particular, the mediating role of organizational capabilities enable or constrain the translation of entrepreneurial intent into outcomes, has received limited systematic attention. This study addresses this gap by distinguishing between two complementary but distinct capability sets: Dynamic Capabilities and Strategic Capabilities.

Dynamic Capabilities refer to a firm's ability to sense emerging opportunities, seize them, and reconfigure resources in response to changing environments (Teece et al., 1997; Kump et al., 2019). They are most critical in turbulent markets where adaptability, learning, and innovation determine survival. Strategic Capabilities, by contrast, emphasize deliberate resource leverage to build and sustain competitive advantage in more stable contexts (Barney, 1991; Porter, 1985). While both sets of capabilities are crucial for entrepreneurial firms, they differ in purpose. Dynamic Capabilities promote agility and renewal, whereas Strategic Capabilities strengthen positioning and operational optimization. Few studies have explicitly examined these capabilities together within the EO–performance framework, despite their theoretical complementarity and their combined potential to explain how EO produces long-term outcomes (Collis & Anand, 2019; Morgan et al., 2019).

In addition to internal mechanisms, contextual factors also shape EO effectiveness. Firm size, industry type, environmental turbulence, and institutional development levels are known to moderate how EO translates into outcomes (Fang et al., 2022; Yusof et al., 2020). For example, EO may deliver greater returns in high-velocity industries or in firms with more slack resources, whereas its impact may be muted in highly regulated or resource-constrained environments. Despite this, the moderating role of contextual variables remains underexplored, leaving gaps in our understanding of when and where EO is most beneficial.

This study responds to these gaps by pursuing three objectives. First, it evaluates the direct relationship between EO and firm performance. Second, it investigates the mediating roles of Dynamic and Strategic Capabilities, clarifying the internal pathways through which EO drives performance. Third, it examines the moderating influence of contextual variables such as firm size, industry environment, and institutional settings. To achieve this, we conducted a comprehensive meta-analysis of 95 peer-reviewed quantitative studies, generating 383

effect sizes from 19,555 firm-level observations. Using PRISMA 2020 guidelines (Page et al., 2021), we employed a systematic search strategy across multiple databases (EBSCO, JSTOR, Emerald, Google Scholar) and included studies that reported standardized effect sizes or sufficient data for computation. We categorized organizational capabilities using established theoretical frameworks (Barney, 1991; Teece et al., 1997; Collis & Anand, 2019) and applied Meta-Analytic Structural Equation Modeling (MASEM) with random-effects models to estimate both direct and indirect relationships. Subgroup analyses and meta-regressions further examined how contextual variables moderate the EO–EO-performance link.

This study makes four key contributions. First, it opens the “black box” of the EO–EO-performance relationship by clarifying how Dynamic and Strategic Capabilities mediate the link. Second, it introduces a dual capability framework that distinguishes between adaptive and resource-leveraging mechanisms, enriching capability-based strategy research. Third, it integrates perspectives from the Resource-Based View, Dynamic Capabilities Theory, and contingency theory, advancing a more holistic understanding of EO in diverse contexts. Finally, by examining moderating conditions, it explains why EO delivers better results in certain environments, offering a more nuanced foundation for entrepreneurship theory.

From a practical perspective, the findings provide actionable insights for managers and policymakers. Firms in volatile markets should prioritize building Dynamic Capabilities, such as innovation routines and organizational learning, while those in more stable markets should focus on Strategic Capabilities like market positioning and process optimization. Policymakers can enhance SME competitiveness by designing programs that strengthen internal capabilities rather than solely promoting entrepreneurial behaviors. Training in absorptive capacity, market intelligence, and capability development can help firms convert entrepreneurial ambition into sustainable performance gains.

By bridging theoretical gaps and offering evidence-based insights, this study advances understanding of how EO interacts with capabilities and context to shape firm performance, providing both scholars and practitioners with a clearer roadmap for leveraging entrepreneurial strategies in dynamic environments.

Literature Review

Theoretical Review

This study integrates the Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and Strategic Management Theory (SMT) into a unified framework to explain how EO influences firm performance. In response to reviewer comments, we also recognize EO’s multidimensional nature involving innovativeness, proactiveness, and risk-taking and underscore how each dimension may uniquely drive the development and deployment of key organizational capabilities. By emphasizing both the static and dynamic facets of strategic resources, this theoretical fusion captures the full complexity of how EO operates across different organizational levels.

Resource-Based View

RBV posits that firms achieve sustained success by leveraging resources that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991). EO emerges as a critical intangible asset for SMEs, enabling them to identify opportunities, innovate, and take calculated risks, thereby operationalizing other VRIN resources (Madhani, 2010; Wernerfelt, 1984). For example, a boutique fashion brand might leverage its EO to design unique collections that align with consumer preferences and establish a strong online presence, enhancing its competitive position (Morgan et al., 2019).

However, in acknowledging the dimensional nature of EO, we note that innovativeness, proactiveness, and risk-taking can serve as distinct sub-resources within RBV. Innovativeness bolsters the creativity needed to

develop new products or services; proactiveness supplies a forward-looking stance that helps firms identify market gaps before competitors; and risk-taking provides the firm with a willingness to allocate resources to untested ventures or emerging markets. Together, these dimensions reinforce EO's status as a VRIN resource, but they can also operate differently depending on the strategic context.

Despite its utility, RBV has been critiqued for its static nature, as it does not fully account for how resource value evolves in response to dynamic markets (Kraaijenbrink et al., 2010; Uyanik, 2023). For instance, a proprietary technology may initially provide an advantage but can lose relevance due to competitor innovation or shifting market demands. Integrating RBV with DCT and SMT thus addresses these critiques by highlighting how an EO-rich firm can adapt its resource portfolio (through DC) and align these resources with long-term strategic goals through SC.

Dynamic Capabilities Theory (DCT)

DCT extends RBV by focusing on how firms adapt and reconfigure their resources to sustain competitiveness in volatile environments (Teece et al., 1997). It identifies three core processes: sensing opportunities, seizing them through resource allocation, and reconfiguring capabilities to address environmental changes. EO aligns closely with these processes, as entrepreneurial firms demonstrate agility and proactiveness in identifying and exploiting opportunities (Ferreira & Coelho, 2020; Singh et al., 2022). For example, a fintech SME might use real-time customer feedback (sensing) to refine its service offerings (seizing) and adapt its digital infrastructure (reconfiguring) (Kump et al., 2019).

However, DCT has been critiqued for its operational ambiguity and limited focus on aligning dynamic processes with strategic goals (Bleady et al., 2018; Eisenhardt & Martin, 2000). In this regard, the multidimensional nature of EO also plays a role: risk-taking may drive bolder resource reconfigurations, while innovativeness promotes continuous exploration in sensing and seizing new opportunities. Proactiveness ensures the firm remains one step ahead of environmental shifts. By integrating these EO dimensions into DCT, we see how firms may more effectively sense and seize opportunities while continually reevaluating their resource allocation to remain competitive.

While dynamic capabilities are indeed strategic in nature, this study distinguishes DC from SC based on their functional orientation rather than conceptual hierarchy. DCs are primarily reactive and adaptive mechanisms that enable firms to rapidly sense and respond to environmental volatility. In contrast, SCs are more deliberate and integrative mechanisms aimed at sustained resource alignment and market positioning.

Strategic Management Theory (SMT)

Strategic Management Theory (SMT) complements Dynamic Capabilities Theory (DCT) by emphasizing deliberate planning, competitive positioning, and market-oriented strategies to achieve sustainable long-term performance (Porter, 1985). While DCT focuses on adaptability and responsiveness, SMT ensures that Entrepreneurial Orientation (EO)-driven initiatives align with the firm's broader strategic vision. Strategic Capabilities (SC) serve as the operational bridge in this framework, translating entrepreneurial insights into actionable strategies that sustain competitive advantage (Foss & Saebi, 2018; Tan & Ding, 2015).

For example, an SME in the renewable energy sector might use EO to recognize rising demand for solar-powered solutions. SC would then enable the firm to build partnerships, scale production, and optimize supply chains, ensuring strategic alignment and long-term positioning (Morgan et al., 2019). The three EO dimensions, proactiveness, innovativeness, and risk-taking, guide strategic alignment differently. Proactiveness supports early market entry, innovativeness shapes product or service roadmaps, and risk-taking facilitates investments in emerging technologies. Embedding these dimensions within strategic frameworks harmonizes short-term adaptability with deliberate positioning, optimizing overall performance.

This study integrates the Resource-Based View (RBV), DCT, and SMT to provide a holistic understanding of EO and its performance outcomes. RBV views EO as a valuable resource that enhances a firm's ability to leverage VRIN assets (Barney, 1991; Madhani, 2010). DCT reframes EO as a dynamic capability that enables sensing, seizing, and resource reconfiguration in volatile markets (Teece et al., 1997). SMT adds a layer of deliberate alignment, ensuring entrepreneurial and adaptive behaviors contribute to long-term strategic trajectories (Foss & Saebi, 2018).

Rather than creating overlap, this multi-theoretic approach clarifies how EO operates as both a dynamic trigger, enhancing short-term responsiveness, and a strategic lever, supporting sustained competitive advantage. For SMEs with limited resources, balancing entrepreneurial flexibility with systematic alignment is critical for long-term growth (Zahoor & Lew, 2023).

Hypothesis Development

Entrepreneurial Orientation and Firm Performance

Entrepreneurial Orientation is a pivotal construct in strategic entrepreneurship literature, reflecting a firm's strategic posture through its innovativeness, proactiveness, and risk-taking behaviors (Covin & Slevin, 1991). Rooted in the RBV and SMT, EO is recognized as a valuable, rare, inimitable, and non-substitutable (VRIN) resource that contributes to competitive advantage and enhanced performance (Barney, 1991; Porter, 1985). Innovativeness allows firms to introduce novel products, services, or processes, strengthening differentiation in the marketplace (Yaqub et al., 2024). Proactiveness equips firms to anticipate market changes and act ahead of competitors, facilitating early mover advantages (Waibe & NADIAH Rosli, 2018), while risk-taking reflects a willingness to commit resources to uncertain ventures that can yield high returns, such as entering new markets or adopting disruptive technologies (Brettel et al., 2015).

Empirical studies consistently support EO's positive influence on various dimensions of firm performance, including financial outcomes, market expansion, and operational efficiency (Fang et al., 2022; Karimi et al., 2021; Ngo, 2023; Soares & Perin, 2020; Yang & Aumeboonsuke, 2022). For example, Surya et al. (2022) and Aftab et al. (2022) found that EO enhances SMEs' adaptability, enabling them to sustain growth amid resource constraints. Similarly, Cuevas-Vargas et al. (2019) and Zahoor & Lew (2023) emphasized EO's role in improving customer satisfaction and market responsiveness, which are critical performance outcomes for SMEs. However, the strength and direction of this relationship may vary depending on *contextual factors* such as firm age, industry dynamics, and environmental turbulence, which influence how EO is deployed and translated into tangible outcomes (Lyon et al., 2000; Nguyen et al., 2021). Taken together, both theory and evidence underscore EO's role as a catalyst for superior performance. Accordingly, we hypothesize:

H1: *Entrepreneurial Orientation positively impacts Firm Performance.*

Entrepreneurial Orientation, Dynamic and Strategic Capabilities

Dynamic Capabilities empower organizations to sense, seize, and reconfigure resources in alignment with evolving market conditions, thereby sustaining competitive advantage in volatile environments (Teece et al., 1997; Theodosiou et al., 2024). EO comprising innovativeness, proactiveness, and risk-taking serves as a critical antecedent to DC by fostering a culture of experimentation, organizational learning, and strategic agility (Zahra & George, 2002). When firms exhibit high levels of EO, they become more adept at reshaping internal processes to respond swiftly to external market pressures and uncertainties (Easterby-Smith et al., 2009; Kump et al., 2019). Empirical evidence supports this relationship: Hernández-Linares et al. (2021) found that EO significantly accelerates the reconfiguration of resources, while Hikmah et al. (2023) emphasized that EO-driven innovation plays a central role in leveraging emerging technologies within dynamic environments.

Beyond enhancing organizational agility, EO also stimulates co-innovation with external stakeholders such as suppliers, customers, and industry peers (Hikmah et al., 2023). Such collaborative innovation enhances a firm's responsiveness and ability to adapt to sudden market shifts, reinforcing EO's role in bolstering flexibility and dynamism (Cuevas-Vargas et al., 2019; Zahoor & Lew, 2023). These findings collectively illustrate that EO strengthens the core mechanisms of DC namely, continuous opportunity sensing, timely opportunity seizing, and resource reconfiguration thus equipping firms with the resilience needed to navigate ongoing disruptions and market turbulence effectively.

Strategic Capabilities on the other hand, pertain to the deliberate and systematic alignment of resources and competencies to meet current and anticipated market demands, thereby cultivating enduring competitive advantage (Barney, 1991; Pricop, 2012). In this context, EO complements SC by driving proactive resource allocation, facilitating strategic decision-making, and enabling coordinated innovation efforts (Ibarra-Cisneros et al., 2021; Lyon et al., 2000; Yousaf & Majid, 2018). This complementarity is particularly evident in customer-centric strategies, where EO emboldens firms to refine and tailor their offerings, enhancing market responsiveness and positioning. For instance, Ullah and Danish (2020) found that EO enhances customer-centric initiatives, while Kusuma Sunyoto and Cheryl Lay (2024) demonstrated that EO-induced creativity fosters strategic enhancements in product and service configurations.

Furthermore, EO can act as a catalyst for the development of innovative business models such as subscription-based platforms, circular value chains, or green logistics systems allowing firms to exploit untapped strategic opportunities (Foss & Saebi, 2018; Yousaf & Majid, 2018). Embedding an entrepreneurial mindset within strategic planning ensures that long-term organizational goals are aligned not only with market demands but also with a continuous readiness to innovate (Morgan et al., 2019). In this regard, Strategic Capabilities are reinforced through EO-driven insights, which are translated into well-structured routines and strategic initiatives, thereby sustaining and amplifying competitive advantage over time. Accordingly, we hypothesize:

H2: *Entrepreneurial Orientation positively influences Dynamic Capabilities.*

H3: *Entrepreneurial Orientation positively influences Strategic Capabilities.*

Dynamic Capabilities and Firm Performance

Dynamic Capabilities enhance firm performance by enabling firms to rapidly sense market signals, seize emerging opportunities, and reconfigure internal resources to maintain competitiveness (Teece et al., 1997). By cultivating these adaptive processes, organizations can navigate volatile business contexts, respond to shifting consumer preferences, and iterate their product or service offerings more effectively (Bleady et al., 2018). For example, Nguyen et al. (2021) found that SMEs with higher DC demonstrated stronger performance in Vietnam's dynamic market, underscoring the importance of quick resource realignment. Likewise, Hikmah et al. (2023) observed that DC facilitates agile innovation by incorporating real-time customer feedback into product development.

Empirical research suggests that DC directly fosters technological adaptability and operational efficiency, both of which are crucial to sustaining long-term growth (Ferreira & Coelho, 2020; Rashid et al., 2015). Antônio and Tondolo (2014) emphasize that DC enhances customer satisfaction by continuously refining business processes and service quality, thus leading to improved financial outcomes. Similarly, Vo Thai et al. (2024) highlight that firms with robust DC are more adept at managing disruptions such as supply chain bottlenecks or sudden policy changes. Overall, this evidence underscores DC's role in bolstering strategic advantage, enabling SMEs and larger firms alike to capitalize on evolving market conditions and outperform less dynamic competitors. Thus, we hypothesize:

H4: *Dynamic Capabilities positively influence Firm Performance.*

Strategic Capabilities and Firm Performance

SC enhances firm performance by aligning organizational resources with market demands, enabling competitive differentiation and growth (Barney, 1991). These capabilities encompass competencies such as innovative business models, market orientation, and operational efficiency, which collectively drive sustained success (Foss & Saebi, 2018) Cuevas-Vargas et al. (2019). SC ensures that firms effectively respond to market opportunities while maintaining strategic coherence. Empirical evidence underscores SC's critical role in performance. Cuevas-Vargas et al. (2019) found that customer care strategies mediate Entrepreneurial Orientation's (EO) impact on financial and operational outcomes. Alnawas & Abu Farha (2020) and Quansah et al. (2022b) emphasized SC's importance in fostering strategic alignment and achieving measurable results. Alnawas & Abu Farha (2020) highlighted the strategic orientations' role in sustaining firm performance through innovation-oriented strategies. Thus, we hypothesize:

H5: Strategic Capabilities positively influence Firm Performance.

Dynamic Capabilities as a Mediator

Dynamic Capabilities mediate the relationship between EO and firm performance by translating entrepreneurial initiatives into continuous adaptation, innovation, and market responsiveness (Teece et al., 1997; Zahra & George, 2002). Firms with high EO often experiment with novel products or processes, yet without DC, these efforts may remain fragmented or misaligned with rapid market shifts (Singh et al., 2022). By contrast, Alenazi and Alanazi (2023) show that EO augments DC through ongoing learning and agile resource reconfiguration, particularly in SMEs that face acute resource limitations.

Recent evidence also highlights DC's role in advancing technological adoption and customer-centric development. Hikmah et al. (2023) report that DC amplifies EO's effect on innovation, enabling firms to iterate swiftly in response to feedback loops. This iterative process is especially relevant for emerging-market SMEs operating under volatile conditions (Taleb et al., 2023). Additionally, Cuevas-Vargas et al. (2019) note that EO-driven DC helps firms align internal operations such as production or customer service with evolving customer preferences, thereby improving both financial and non-financial outcomes.

Taken as a whole, these findings suggest that DC serves as a critical conduit by which EO's proactive and risk-taking behaviors are converted into tangible performance gains. Thus, we hypothesize:

H6: Dynamic Capabilities mediate the relationship between Entrepreneurial Orientation and Firm Performance.

Strategic Capabilities as a Mediator

Strategic Capabilities mediate the link between EO and firm performance by forging a structured bridge between entrepreneurial insights and long-term market positioning (Barney, 1991; Foss & Saebi, 2018). EO-endowed firms often uncover novel opportunities or innovative solutions; however, without SC, these insights may not be fully integrated into cohesive strategic plans (Fang et al., 2022). Waibe and NADIAH Rosli (2018a) illustrate that SC refines EO's influence through structured resource allocation, thereby enhancing innovation-based strategies.

Additionally, SC helps firms translate entrepreneurial ambitions into clearly defined operational objectives. For instance, Morgan et al. (2019) found that organizations combining EO with SC frameworks like market orientation or competitive intelligence achieved higher customer retention and financial returns. In a similar vein, Quansah et al. (2022) contend that SC safeguards innovation-driven pursuits from resource misalignment by ensuring that R&D investments or marketing campaigns are systematically planned. Moreover, SC fosters collaboration across departments, enabling businesses to capitalize on EO's potential while maintaining cost efficiency and operational coherence. For example, an SME pursuing sustainability-driven innovation (e.g., eco-

friendly textiles) can use SC through market research, supply-chain optimization, and risk assessment to anchor EO-based ideas within a competitive strategy. Thus we hypothesize that:

H7: *Strategic Capabilities mediate the relationship between Entrepreneurial Orientation and Firm Performance.*

Temporal Moderation of Entrepreneurial Orientation

The influence of EO on FP has intensified over recent decades due to escalating market complexity, digitalization, and rapid globalization (Aftab et al., 2022; Arabeche et al., 2022). Early studies on EO often found moderate associations with performance, but contemporary research suggests that firms employing strong EO are better poised to navigate turbulent conditions, such as financial crises or pandemic-related disruptions (Wang et al., 2024). For instance, Anim et al. (2024) reported that EO-driven Ghanaian SMEs saw rapid pivots toward online sales channels during COVID-19, illustrating EO's capacity to leverage technology and resource reallocation in real time.

Additionally, as global markets move toward interconnectivity and hyper-competitiveness, firms with a heightened entrepreneurial mindset can exploit new ventures faster and scale innovations more effectively. Hikmah et al. (2023) note that continuous entrepreneurial enhancement manifesting as greater risk-taking and sustained proactiveness allows businesses to manage uncertainty and seize fleeting opportunities. Over time, this adaptability becomes an embedded organizational practice, compounding the effect of EO on performance (Zahoor & Lew, 2023). In short, the rise of e-commerce, advanced analytics, and international collaborations has magnified EO's importance across industries and regions. Therefore, we hypothesize:

H8: *The direct effect of EO on Firm Performance has strengthened over time.*

Geographical Moderation of Entrepreneurial Orientation

Geographical context shapes the EO-performance relationship by influencing resource availability, cultural attitudes, and institutional frameworks (Zahra & George, 2002). In advanced economies, EO benefits from robust infrastructure, supportive policies, and accessible financing, allowing firms to pursue innovation and risk-taking with relative ease (Arabeche et al., 2022). Conversely, in emerging economies such as parts of Sub-Saharan Africa firms face institutional voids, weaker capital markets, and a scarcity of skilled labor (Anim et al., 2024). Here, EO becomes pivotal for bypassing these constraints via creative problem-solving and guerrilla marketing strategies.

Moreover, cultural norms regarding risk tolerance or hierarchy can moderate EO's effectiveness. Lyon et al. (2000) argue that collectivist cultures might favor collaborative entrepreneurship, whereas individualistic cultures encourage aggressive proactiveness. Regional differences in education systems or government incentives also play a role in shaping a firm's capacity to act on entrepreneurial impulses (Pomegbe et al., 2022). For instance, a firm in Western Asia might benefit from state-sponsored innovation grants, whereas a similar venture in Northern Africa may rely more on social networks for funding or local partnerships. Taken together, these contextual variations suggest that the same level of EO could yield disparate outcomes depending on local conditions. Thus, we hypothesize:

H9: *The relationship between EO and Firm Performance is moderated by geographical context.*

Firm Age and Firm Performance

Firm age exerts a nuanced influence on performance FP, shaped by experience-based advantages as well as potential inertia in established routines. Older firms often benefit from extensive networks, brand recognition, and historical learning curves, enhancing their ability to weather market turbulence (Karami & Tang, 2019). However, these advantages can be offset by rigid managerial structures that slow adaptation to new technologies or consumer trends, especially in rapidly evolving sectors (Khedhaouria et al., 2020).

In contrast, younger firms typically excel in entrepreneurial dynamism, experimenting with novel business models and agile strategies that capitalize on emerging market gaps (Anggadwita et al., 2023). Yet, they may lack resources, credibility, or robust distribution channels, factors that can limit performance growth in the short term (Freixanet et al., 2020). The interplay of these opposing forces underscores the importance of context: in environments with strong institutional support and advanced capital markets, older firms can leverage accumulated knowledge to maintain stability. Meanwhile, in less structured contexts, younger firms can thrive through adaptive approaches and risk-taking behaviors (Ngo, 2023).

Given these mixed effects, researchers have reported divergent findings across regions such as Australia–New Zealand, South-Eastern Asia, and Northern Africa (Karami & Tang, 2019; Khedhaouria et al., 2020). Consequently, we hypothesize:

H10: *Firm age significantly affects Firm Performance.*

Figure 1 illustrates the conceptual framework that examines the relationship between EO and FP through the mediating roles of DC and SC. The model integrates contextual moderators, such as Firm Age, Year of Study, and Geographical Publication, to provide a nuanced understanding of the EO-FP link.

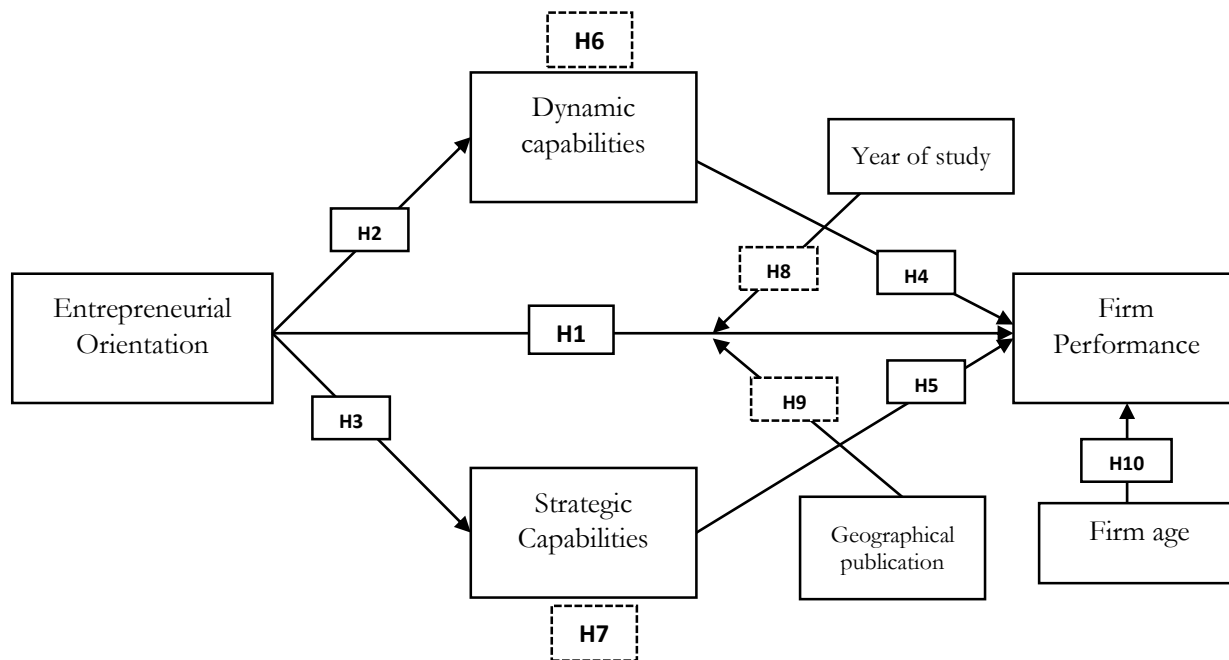


Figure 1: Meta-analytic framework: Source Authors' elaboration

Methodology

Article Search Process

This meta-analysis adopted a systematic and comprehensive approach to identify relevant studies examining the relationship between Entrepreneurial Orientation (EO), firm performance, and the roles of dynamic and strategic capabilities. The search process followed the PRISMA 2020 statement (Page et al., 2021) and well-established meta-analytic protocols (Borenstein et al., 2011; Paul & Barari, 2022). In designing this workflow,

we also drew on methodological exemplars from the management literature, including recent meta-analyses by Bindeeba, Tukamushaba, and Bakashaba (2025a, 2025b, 2025c) and Oduro (2024).

To obtain relevant literature, a systematic search was conducted in major academic databases, including EBSCO, Google Scholar, JSTOR, Emerald, Wiley Online Library, Taylor & Francis, and Dimensions. These databases were selected due to their extensive coverage of peer-reviewed journals, books, and reports in business, management, and entrepreneurship. In addition to database searches, manual searches were conducted in leading entrepreneurship and strategic management journals, including the *Journal of Business Venturing*, *Entrepreneurship Theory and Practice*, *Strategic Management Journal*, and *Small Business Economics*, to capture high-impact and field-specific studies.

The search was limited to studies published between 2010 and December 2024. This time frame was chosen to ensure that the meta-analysis captured contemporary empirical developments in Entrepreneurial Orientation research, while maintaining sufficient historical coverage for trend analysis. The last search was conducted in December 2024 to ensure the most recent studies were included in the review.

Boolean operators ("AND" and "OR") were employed to construct search queries using relevant keywords related to EO ("entrepreneurial orientation" "innovativeness" "proactiveness" "risk-taking"), firm performance ("profitability" "market performance" "financial outcomes"), and SME-specific contexts ("small businesses" "small and medium enterprises"). These search terms were applied to each database's title, abstract, and keyword fields to maximize the search's relevance and scope. Filters were used to restrict searches to peer-reviewed journal articles only, and studies published in English to ensure methodological rigor and accessibility. Chapter books, conference proceedings, dissertations, and other forms of grey literature were deliberately excluded to enhance the reliability and comparability of the included studies.

Inclusion and Exclusion Criteria

A well-defined inclusion and exclusion criterion was developed to ensure methodological consistency and study relevance. Studies were included if they were peer-reviewed journal articles, published in English, and employed a quantitative methodology examining at least one EO dimension (innovativeness, proactiveness, or risk-taking) and its relationship to firm performance outcomes such as profitability, market share, and customer satisfaction. A critical inclusion requirement was the availability of standardized beta values or sufficient statistical data (e.g., t-values, regression coefficients, confidence intervals, or standard errors) to facilitate effect size computation.

Only empirical studies published between 2010 and 2024 were included in the final analysis. This time window was selected to align with the recent evolution of EO literature and provide a balanced assessment of temporal trends in EO–performance relationships. Studies were excluded if they were qualitative, lacked statistical data, or did not directly investigate the EO–performance relationship. Chapter books, conference proceedings, policy reports, and unpublished manuscripts (e.g., dissertations or working papers) were excluded to ensure the inclusion of high-quality, peer-reviewed research only. Duplicate studies and those with incomplete or irretrievable data were also excluded.

The study selection process followed a structured approach: an initial search identified 2,780 articles, from which 534 duplicates were removed. After title and abstract screening, 1,125 articles were excluded. A full-text review was conducted on 164 articles, and 95 peer-reviewed journal studies were retained for the final meta-analysis as they met the statistical criteria required for effect size computation. The final dataset consisted of 19,555 observations and 383 effect sizes, ensuring a robust and methodologically sound analysis. Figure 2 and the PRISMA checklist illustrate the PRISMA flow diagram and checklist for the study selection and conduct process. To assess the methodological quality and reliability of the included studies, we adopted a multi-step

quality appraisal process, which is further elaborated in Section 3.8 (Risk of Bias Assessment). This process considered statistical reporting clarity, effect size reliability, sampling methods, and publication type.

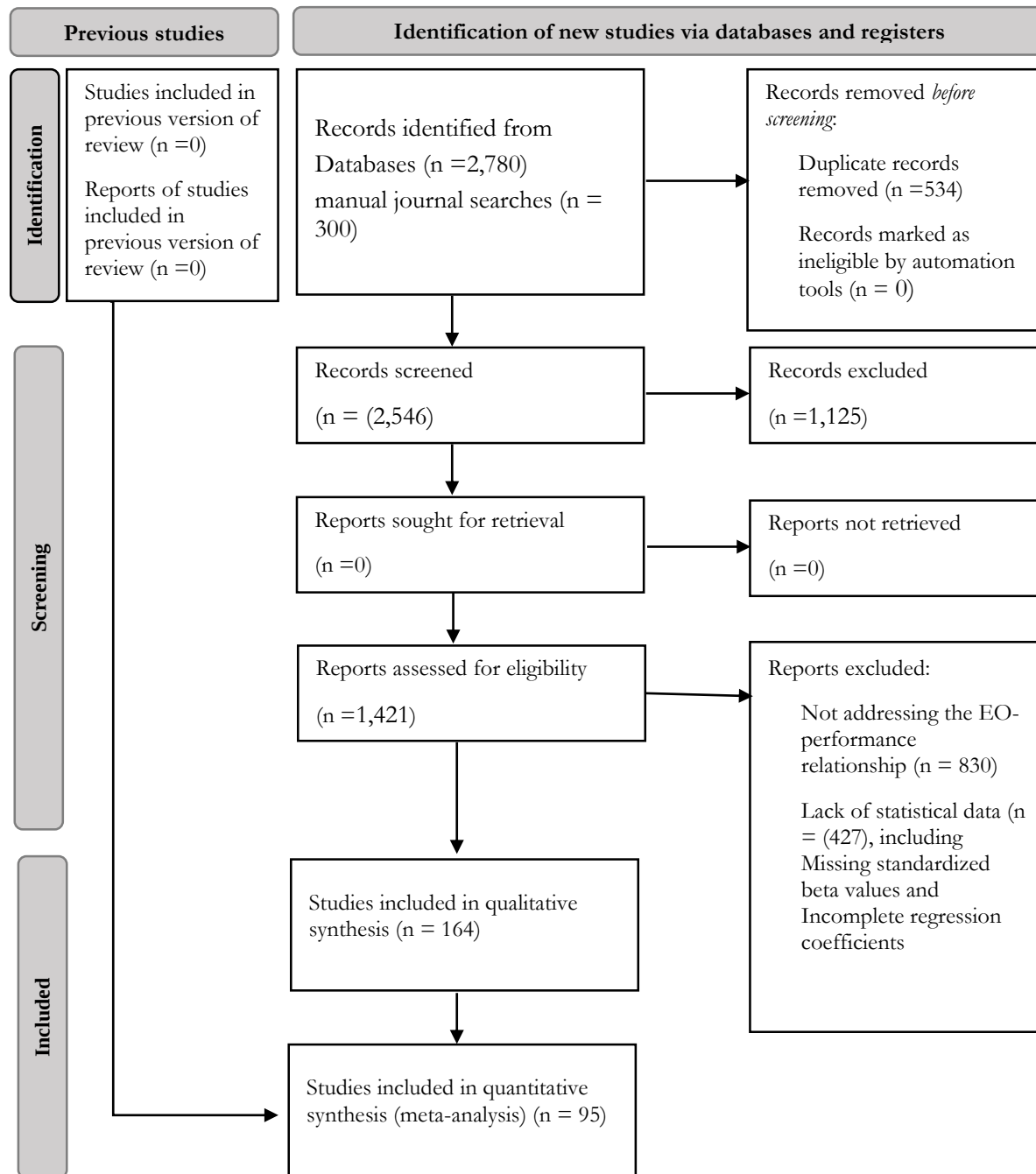


Figure 2: PRISMA Flow Diagram for Study Selection Process

Study Selection and Data Collection Process

The selection process involved multiple independent reviewers who screened each record and full-text article for eligibility. Two independent researchers conducted the initial screening of titles and abstracts, followed by

a detailed full-text review. Disagreements were resolved through discussion, with a third reviewer consulted when necessary. The automation tool Mendeley was used for reference management and duplicate removal, ensuring a streamlined and transparent selection process.

For data collection, the study extracted relevant information, including authors, publication year, sample size, industry focus, geographical region, effect sizes (standardized beta values), and confidence intervals. To maintain consistency in effect size computation, missing standard errors (SEs) were calculated using the formula $SE = \beta/t$ (Cohen et al., 2003). Studies that lacked beta values or SEs were excluded to ensure methodological rigor.

Outcome Variables and Data Sought

The meta-analysis focused on firm performance as its primary outcome, capturing both financial measures (profitability, revenue growth, return on assets, and market share) and non-financial indicators (customer satisfaction and competitive advantage). Studies were further classified by whether they reported short-term or long-term performance outcomes. To examine the antecedents of performance, we extracted data on entrepreneurial orientation dimensions, innovativeness, proactiveness, and risk-taking, as well as potential mediators such as dynamic and strategic capabilities. Contextual moderators (e.g., firm size, industry sector, publication period) were also recorded to assess boundary conditions.

To ensure the integrity of our statistical models and mitigate multicollinearity, we included conceptually distinct and only independent effects, thereby avoiding variance inflation. Where studies reported missing or ambiguous data points, we applied standard imputation techniques (mean substitution or regression-based methods) or, where necessary, excluded studies that lacked essential information. This rigorous approach balanced comprehensiveness with methodological rigor to produce robust, generalizable insights into how entrepreneurial orientation and related capabilities drive firm performance.

Categorization of Constructs: Dynamic and Strategic Capabilities

The categorization of constructs into Dynamic and Strategic Capabilities as shown in table 1, followed a systematic methodology grounded in strategic management and entrepreneurship research. The process involved 3 key steps:

Step 1: Literature Review and Theoretical Foundations: An extensive review of seminal and contemporary literature established the theoretical foundation. Dynamic Capabilities were defined as a firm's ability to sense, seize, and reconfigure resources in response to environmental changes (Collis & Anand, 2019; Kump et al., 2019; Teece et al., 1997). Strategic Capabilities, on the other hand, were conceptualized as the deliberate leveraging of resources for long-term competitive advantage in stable environments (Barney, 1991; Porter, 1985). Recent studies ensured alignment with evolving frameworks (Bleady et al., 2018; Kump et al., 2019; Pricop, 2012; Tan & Ding, 2015).

Step 2: Identification and Classification of Constructs: Constructs were identified and grouped based on their alignment with dynamic or strategic capabilities: *Dynamic Capabilities:* Absorptive capacity, innovation capability, and organizational learning reflect adaptability in volatile environments. *Strategic Capabilities:* Competitive advantage, market orientation, and business model innovation emphasize long-term resource optimization and positioning. Constructs with overlapping characteristics were analyzed within their dominant context for accurate classification.

Step 3: Validation of Categorization: The categorization was validated through rigorous cross-referencing with recent research e.g., Morgan et al. (2019) and iterative refinement processes. Expert feedback was sought

to ensure that the classification aligned with theoretical consistency and maintained robustness, offering a reliable framework for understanding the complementary roles of these capabilities.

Table 1: Categories, Sample Constructs, Contributing Authors, and Countries

Category	Sample Constructs	Sample Contributing Authors	Country
Strategic Capabilities	Competitive Advantage, Marketing Capabilities, Market Orientation, Differentiation Advantages	Amin et al. (2016), Shehu & Mahmood (2014), Abdulrab et al. (2021), Aftab et al. (2022), Al Mamun et al. (2022), Cuevas-Vargas et al. (2019)	Malaysia, Nigeria, Saudi Arabia, Pakistan, Mexico, UAE, Indonesia, Vietnam, Ghana, Thailand
Dynamic Capabilities	Absorptive Capacity, Innovation Capability, Organizational Learning, Organizational Resilience, Technological Innovation Capabilities	Aftab et al. (2022), Al-Hakimi et al. (2021), Anim et al. (2024), Gupta et al. (2019), Al Mamun et al. (2022), Sawaeen & Ali (2020), Yang & Aumeboonsuke (2022), Iqbal & Malik (2019)	Pakistan, Yemen, Ghana, United States, Malaysia, Kuwait, China, Indonesia, Spain, India, UAE

Meta-Analysis Metrics

The meta-analysis employed standardized beta values, SEs, p-values, and sample sizes as primary metrics. Standardized beta values were selected due to their ability to capture both direct and indirect effects, offering a nuanced understanding of the EO-performance relationship. This approach was particularly useful for evaluating mediating mechanisms (e.g., dynamic and strategic capabilities) and contextual moderators.

For studies reporting beta values without SEs, the missing SEs were calculated using the formula $SE = \beta / t$, a standard approach in regression analysis (Cohen et al., 2003). Studies without sufficient statistical data for calculating beta values or SEs were excluded to ensure methodological rigor. This process allowed for consistent cross-study comparisons, enhancing the reliability and validity of the meta-analysis.

Meta-Analysis Model

A random-effects model was employed to account for heterogeneity across studies, acknowledging variations in study designs, sample characteristics, and methodologies (Borenstein et al., 2011). Subgroup analyses were conducted for categorical moderators (e.g., firm age, industry type, geographical region), while meta-regression analyses assessed continuous variables (e.g., environmental dynamism, institutional development). The random-effects model allowed for the generalization of findings beyond the sampled studies by accounting for between-study variability.

Risk of Bias Assessment

The risk of bias was assessed using the Cochrane Collaboration's Risk of Bias Tool and the Trim and Fill Method (Duval & Tweedie, 2000) to detect potential publication bias. Two independent reviewers evaluated each study based on sampling techniques, statistical reporting, and funding sources. Studies with high risk of selection bias (e.g., non-random sampling) were noted, and sensitivity analyses were conducted to assess their impact on overall findings.

Effect Measures and Data Synthesis

The primary effect measure used in this meta-analysis was the standardized beta coefficient (β), which captures the strength and direction of the EO-performance relationship. Additional effect size measures, including Cohen's d and correlation coefficients, were computed where necessary. To ensure methodological consistency, missing summary statistics were handled as follows: *Handling missing summary statistics* – If a study provided regression coefficients but no standard errors, missing SEs were calculated using the formula $SE = \beta/t$.

Synthesis of Results and Heterogeneity Analysis

A random-effects model was employed to account for between-study variability, recognizing differences in sample characteristics, geographical focus, and methodological approaches. Subgroup analyses were conducted for categorical moderators (e.g., industry type, firm age, geographical region). Heterogeneity was assessed using the Q statistic and I^2 index to determine the extent of variability across studies. Where significant heterogeneity was observed, additional sensitivity analyses were conducted, with outliers examined to assess their influence on overall results.

Sensitivity Analyses and Robustness Checks

To test the robustness of findings, multiple sensitivity analyses were conducted. Publication bias was assessed using Egger's test and a funnel plot, while unpublished studies (e.g., dissertations, conference proceedings) were included to mitigate file-drawer bias. Outlier analyses were also performed to identify and remove extreme values that could distort results. The final dataset was analyzed using Comprehensive Meta-Analysis (CMA) software, which computed weighted mean effect sizes, confidence intervals, and statistical significance levels. Subgroup analyses explored variations in the EO-performance relationship across regions, firm sizes, and institutional settings, offering deeper contextual insights.

Statistical Analysis and Reporting

The Comprehensive Meta-Analysis (CMA) software was utilized to compute weighted mean effect sizes, confidence intervals, and statistical significance levels. CMA was selected due to its advanced capacity to handle diverse effect size metrics, accommodate study heterogeneity through random-effects modeling, and ensure statistical rigor in meta-analytic procedures. This allowed for precise quantification of the relationships between EO, organizational capabilities, and firm performance. The findings were presented through descriptive analyses, subgroup analyses, and meta-regression results, providing a nuanced understanding of the EO-performance relationship and the roles of mediating and moderating variables.

Subgroup analyses were conducted to examine the potential effects of publication year and geographical context by country. For the publication year, studies were categorized into time periods (2015–2020, post-2020) to assess whether the strength and direction of the EO-performance relationship have evolved over time, potentially reflecting changes in business environments, economic conditions, or advancements in entrepreneurship practices. For geographical context, studies were grouped based on the country of origin to explore regional variations. This analysis highlighted the impact of institutional environments, cultural differences, and market dynamics on the EO-performance link, distinguishing between developed economies (e.g., USA, UK) and emerging markets (e.g., China, India, Nigeria).

These subgroup analyses provided additional layers of insight, offering evidence of temporal and regional contingencies in the EO-performance relationship. By incorporating these dimensions, the study ensured that the findings were both comprehensive and contextually relevant, enhancing their utility for researchers, practitioners, and policymakers.

Results

Trend of Publications

The trend in figure 3 shows a steady increase in publications from 2014 to 2024, with notable peaks in 2019 and 2024. The slight dip in 2020 could be linked to external disruptions, such as the COVID-19 pandemic. Despite this, the overall growth underscores rising academic interest and the increasing relevance of the research area. The sustained high publication numbers in recent years highlight a strong and growing focus on this field in scholarly work.

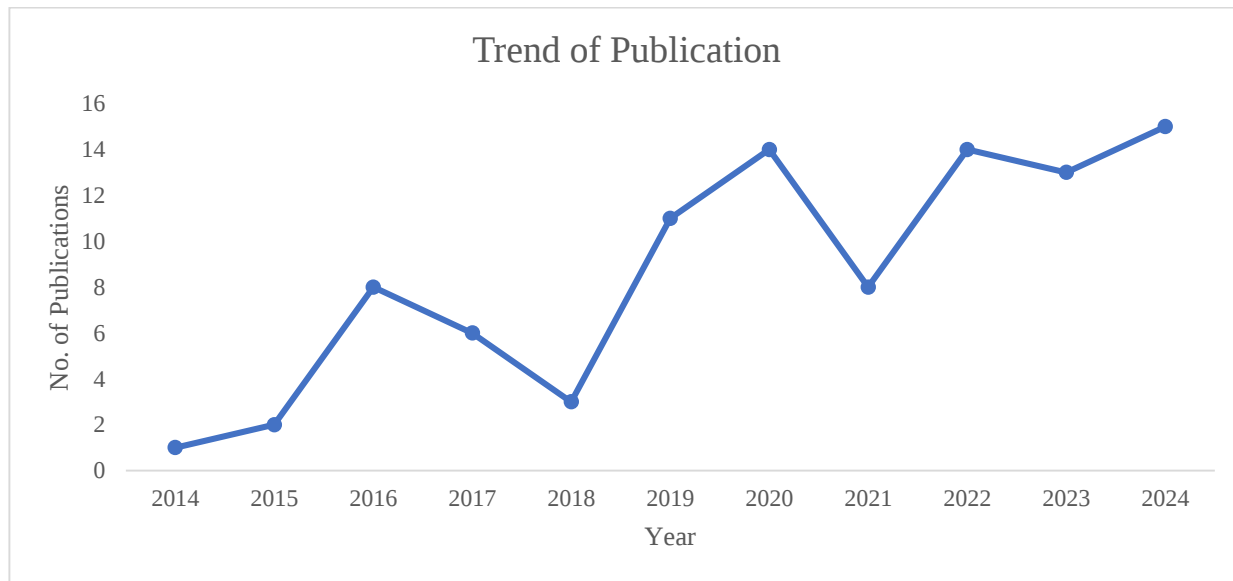


Figure 3: Trend of Publications

Robustness Analysis

The robustness of the meta-analytic findings was assessed using Egger's regression test, Begg and Mazumdar's rank correlation, Classic Fail-Safe N, and Orwin's Fail-Safe N, complemented by a funnel plot. The funnel plot in Figure 4 revealed asymmetry among low-precision studies, indicating potential underrepresentation of smaller or non-significant studies. Egger's regression test confirmed publication bias with a significant intercept of 4.06584 and a 95% confidence interval between 3.32521 and 4.80648 that excluded zero. These results suggest that smaller studies might report larger effect sizes, contributing to the observed asymmetry.

Despite this, fail-safe N analyses confirmed the robustness of the findings. The Classic Fail-Safe N indicated that 7,717 null-effect studies would be required to render the results non-significant, a highly improbable scenario. Orwin's Fail-Safe N demonstrated that the observed point estimate of 0.01304 remained above the threshold for a trivial effect of 0.00000, even when accounting for potential missing studies. Although publication bias may exist, the findings are robust and underscore the significant role of entrepreneurial orientation, dynamic capabilities, and strategic capabilities in driving firm performance.

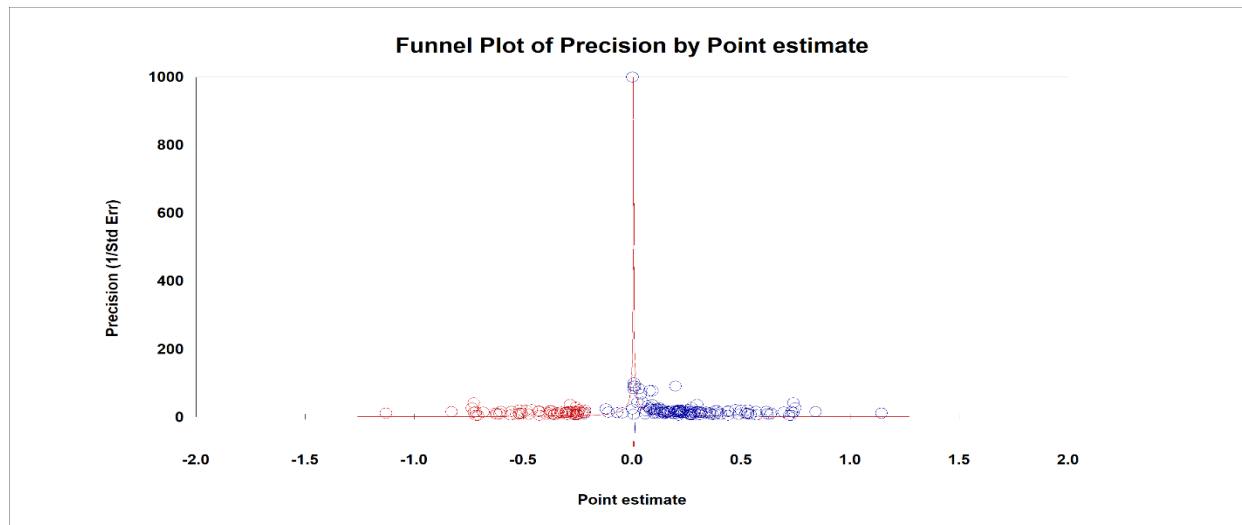


Figure 4: Funnel plot of precision by point estimate

Empirical Results: Impact of Entrepreneurial Orientation on Firm Performance

The analysis, based on 95 studies, 19,555 observations, and 383 effect sizes, ensures methodological rigor and reliability. Figure 5 reveals an average effect size of 0.24, indicating a small to moderate positive impact of EO on FP. The 95% confidence interval (0.21 to 0.26) demonstrates precision, while the wider prediction interval (-0.05 to 0.53) highlights variability, suggesting that the effect of EO on FP can range from negligible to strongly positive depending on the context. This emphasizes the critical importance of context-specific dynamics, particularly for SMEs or resource-limited settings, in shaping outco

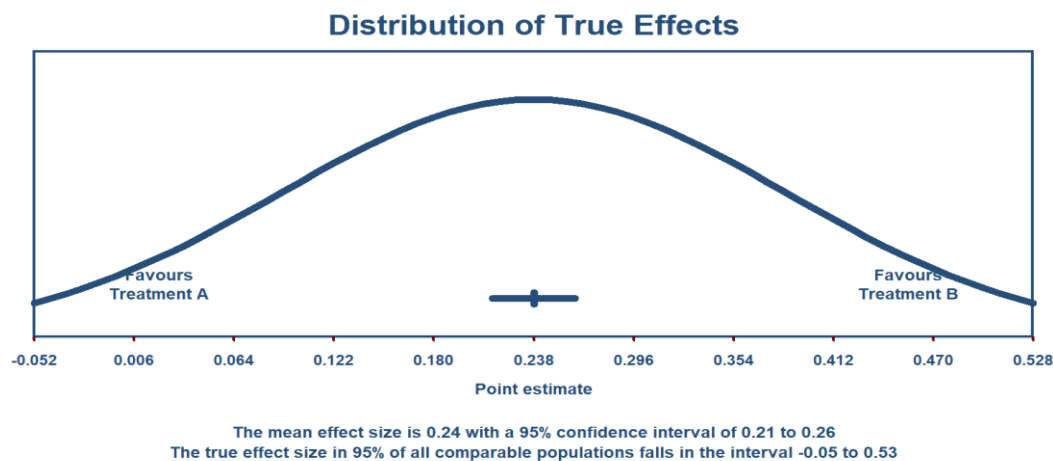


Figure 5: Distribution of True effects

Empirical results

The findings of this meta-analytic review offer a nuanced understanding of how EO drives FP, with DC and SC playing mediating roles and contextual factors serving as moderators. As shown in Table 2, the relationships between EO, DC, SC, and FP are supported by significant mean effect sizes across the hypothesized paths,

highlighting both direct and mediated effects and temporal variations. Additionally, Table 3 provides detailed insights into regional, emphasizing the importance of context in shaping these relationships.

Entrepreneurial Orientation and Firm Performance (H1)

The meta-analysis confirmed a positive relationship between EO and FP, supporting H1 (Table 2). The overall mean effect size (MES) was significant ($\beta = 0.279$, $SE = 0.021$, 95% CI [0.238, 0.321], $Z = 13.09$, $p < 0.001$). The prediction interval (-0.068, 0.628) indicated variability across contexts due to differences in organizational environments, geographic regions, and market dynamics. Moderate heterogeneity ($\tau = 0.176$, $\tau^2 = 0.031$) highlighted the variation in how EO translates into performance outcomes. The results align with the RBV, emphasizing EO as a critical resource for competitive advantage. EO directly drives FP through innovation, proactiveness, and risk-taking, with studies in emerging markets reporting larger effect sizes. This finding suggests that entrepreneurial behaviors are particularly impactful where institutional frameworks necessitate proactive market responses. The stronger direct impact of EO ($\beta = 0.24$) than the mediated effects through DC and SC emphasizes its immediate and tangible influence on FP.

Entrepreneurial Orientation and Dynamic Capabilities (H2)

Hypothesis H2 (Table 2), which posits a relationship between EO and DC, is supported. The analysis revealed a strong positive effect ($\beta = 0.424$, $SE = 0.040$, 95% CI [0.346, 0.501], $Z = 10.71$, $p < 0.001$), with moderate heterogeneity ($\tau = 0.176$, $\tau^2 = 0.031$), indicating variability across contexts. While EO fosters DC by enabling firms to sense, seize, and reconfigure resources, the strength of this relationship varies across contexts. This is particularly evident in volatile environments like emerging markets, where adaptability is crucial for competitive advantage.

Despite the significant link, DC's incremental contribution to FP remains secondary to EO's direct effect. DC often requires time, investment, and experience to fully manifest its impact, aligning with Dynamic Capabilities Theory, which highlights adaptability as a key to sustained performance. Ultimately, DC serves as a complementary pathway, enhancing EO's long-term benefits rather than driving immediate outcomes.

Entrepreneurial Orientation and Strategic Capabilities (H3)

The relationship between EO and SC showed a stronger positive effect ($\beta = 0.498$, $SE = 0.039$, 95% CI [0.422, 0.574], $Z = 12.92$, $p < 0.001$) compared to EO and DC. SC, encompassing constructs like market orientation and competitive advantage, aligns entrepreneurial efforts with long-term strategic goals and supports H3 as shown in Table 2. Supported by Strategic Management Theory, SC translates EO-driven behaviors into structured frameworks, enabling proactive decision-making and sustained growth.

Unlike DC, SC's stronger connection to EO reflects its immediacy and deliberate nature, allowing firms to directly leverage EO for performance outcomes. This is particularly evident in stable environments where resources and institutional support facilitate strategic alignment. SC thus functions as both a direct enhancer of FP and a critical pathway for maximizing EO's benefits.

Dynamic Capabilities and Firm Performance (H4)

The impact of DC on FP was analyzed across 37 effect sizes, revealing a significant positive relationship ($\beta = 0.366$, $SE = 0.032$, 95% CI [0.302, 0.429], $Z = 11.29$, $p < 0.001$), with a prediction interval (0.014, 0.717) and moderate heterogeneity ($\tau = 0.176$, $\tau^2 = 0.031$) and supporting H4 Table 2). DC enables firms to adapt, innovate, and reconfigure resources in response to dynamic environments, confirming its importance in sustaining performance. While EO demonstrated a stronger effect on SC ($\beta = 0.498$) compared to DC ($\beta = 0.424$), DC exhibited a stronger impact on FP ($\beta = 0.366$) than SC ($\beta = 0.284$). This highlights DC's critical role in driving adaptability and competitiveness, particularly in volatile markets. DC's flexibility allows firms to sense and seize

opportunities, making it indispensable in environments requiring rapid adjustments. However, DC's evolving nature means its contribution often complements rather than surpasses EO's direct influence on FP, aligning with the Resource-Based View (RBV).

Strategic Capabilities and Firm Performance (H5)

The hypothesis (H5) that SC positively influence FP is supported. Based on 109 effect sizes, the analysis revealed a significant positive relationship ($\beta = 0.284$, $SE = 0.018$, 95% CI [0.248, 0.320], $Z = 15.40$, $p < 0.001$) (Table 2). The prediction interval (-0.064, 0.631) and moderate heterogeneity ($\tau = 0.176$, $\tau^2 = 0.031$) reflect some variability across studies but affirm the robustness of the association. SC aligns resources with strategic goals, ensuring entrepreneurial efforts translate into sustained performance. Although its direct impact on FP ($\beta = 0.284$) is weaker than DC's ($\beta = 0.366$), SC's structured nature provides stability, particularly in competitive industries. Supporting Strategic Management Theory, SC's role in deliberate resource alignment highlights its importance for long-term advantage. Together, DC and SC offer complementary pathways, emphasizing their synergistic contributions to firm success and confirming H5.

Mediating Role of Dynamic Capabilities (H6)

Dynamic Capabilities play an important role in connecting EO to Firm Performance (FP). Based on 43 effect sizes, the analysis confirmed a significant mediated effect ($\beta = 0.197$, $SE = 0.029$, 95% CI [0.141, 0.253], $Z = 6.85$, $p < 0.001$), though the strength of this effect varies across different contexts, as shown by the prediction interval (-0.153, 0.547) and moderate heterogeneity ($\tau = 0.176$, $\tau^2 = 0.031$) in Table 2. DC helps firms adapt entrepreneurial efforts to changing environments by enabling innovation, resource reconfiguration, and responsiveness to market shifts. While DC's direct contribution to FP is strong ($\beta = 0.366$), its mediating effect in the EO-FP relationship is slightly weaker ($\beta = 0.197$). This reflects the fact that DC takes time and investment to fully develop, making it a complementary rather than primary pathway for improving performance. For small and medium enterprises (SMEs) in resource-constrained settings, EO drives immediate market advantages, while DC evolves to support adaptability and long-term success. These insights align with Dynamic Capabilities Theory, which emphasizes adaptability as a cornerstone of sustained performance and supporting H6.

Mediating Role of Strategic Capabilities (H7)

Hypothesis H7, proposing that SC mediates the relationship between Entrepreneurial Orientation EO and FP, is supported as shown in Table 2. SC offers a more structured pathway for translating EO into FP. Drawing on 54 effect sizes, the analysis revealed a stronger mediated effect for SC ($\beta = 0.215$, $SE = 0.026$, 95% CI [0.164, 0.266], $Z = 8.30$, $p < 0.001$) compared to DC. This result is particularly noteworthy given SC's weaker direct effect on FP ($\beta = 0.284$) compared to DC's ($\beta = 0.366$).

SC helps firms turn entrepreneurial efforts into deliberate, goal-oriented strategies, making it especially effective in competitive and stable environments. Unlike DC, which evolves over time, SC's structured nature allows firms to quickly align resources with strategic objectives, ensuring both immediate and sustained performance gains. These findings align with Strategic Management Theory, which highlights the importance of strategic alignment in achieving long-term success. SC's stronger mediating role underscores its value as a critical tool for maximizing the benefits of EO.

Total Effect of Entrepreneurial Orientation on Firm Performance

The total effect of EO on Firm Performance (FP) ($\beta = 0.691$) captures its wide-ranging influence through direct and mediated pathways. The direct effect ($\beta = 0.24$) highlights EO's immediate contribution to FP through entrepreneurial behaviors like innovation and proactiveness, which allow firms to respond swiftly to opportunities, especially in dynamic or resource-limited contexts. The mediated effects through DC ($\beta = 0.18$) and SC ($\beta = 0.215$) emphasize EO's role in driving long-term competitive advantages. SC's stronger mediating

role reflects its alignment with Strategic Management Theory, where deliberate strategic actions translate entrepreneurial initiatives into sustained performance. While DC supports adaptability, SC provides a structured framework to optimize resources and align efforts with strategic goals. Together, these findings affirm EO's dual role in enabling immediate success and fostering capability development for sustained growth.

Firm Age and Firm Performance (H10)

Hypothesis H10, which proposed a relationship between Firm Age and Firm Performance (FP), was not supported. The analysis of 7 effect sizes found no significant relationship ($\beta = 0.087$, $SE = 0.068$, 95% CI [-0.047, 0.221], $Z = 1.27$, $p = 0.205$), with variability reflected in the prediction interval (-0.284, 0.457). The results suggest that firm age alone does not consistently impact performance. Instead, factors like entrepreneurial orientation, dynamic capabilities, and strategic capabilities are more crucial in driving success. This highlights that adaptability, innovation, and strategic alignment outweigh the influence of age in achieving sustained competitive advantage.

Table 2: Meta-Analytic Results for Hypothesized Relationships and Contextual Moderators

Path	N	MES	SE	95% CI	PI	Z-Value	P-Value	Tau	Tau ²
H1: EO → FP	82	0.279	0.021	(0.238, 0.321)	(-0.068, 0.628)	13.09	<0.001	0.176	0.031
H2: EO → DC	24	0.424	0.040	(0.346, 0.501)	(0.069, 0.778)	10.71	<0.001	0.176	0.031
H3: EO → SC	26	0.498	0.039	(0.422, 0.574)	(0.144, 0.852)	12.92	<0.001	0.176	0.031
H4: DC → FP	37	0.366	0.032	(0.302, 0.429)	(0.014, 0.717)	11.29	<0.001	0.176	0.031
H5: SC → FP	109	0.284	0.018	(0.248, 0.320)	(-0.064, 0.631)	15.40	<0.001	0.176	0.031
H6: EO → DC → P	43	0.197	0.029	(0.141, 0.253)	(-0.153, 0.547)	6.85	<0.001	0.176	0.031
H7: EO → SC → P	54	0.215	0.026	(0.164, 0.266)	(-0.134, 0.564)	8.30	<0.001	0.176	0.031
H10: Firm Age → P	7	0.087	0.068	(-0.047, 0.221)	(-0.284, 0.457)	1.27	0.205	0.176	0.031
EO → P (Total Effect)	NA	0.691	NA	NA	NA	NA	NA	NA	NA
2015-2019	48	0.23874	0.02587	(0.188, 0.289)	(-0.076, 0.554)	9.23	<0.001	0.1576	0.02485
2020-2024	131	0.23766	0.01508	(0.208, 0.267)	(-0.074, 0.550)	15.76	<0.001	0.1576	0.02485
H8: Overall	179	0.23794	0.01303	(0.212, 0.263)	(0.050, 0.526)	18.26	<0.001	0.1456	0.02121

Notes:

- N = number of effect sizes included in the meta-analysis.
- MES = mean effect size; SE = standard error.
- $95\% CI$ = 95% confidence interval of the mean effect size.
- *Prediction Interval (PI)* indicates expected variability in future studies.
- Tau and Tau^2 represent estimates of between-study heterogeneity.

Comparative Insights Across Regions and Periods

Temporal Analysis (H8): Hypothesis H8 is supported, as studies from 2015–2019 and 2020–2024 demonstrated stable effect sizes for the EO-FP relationship, as shown in Table 3. This consistency underscores EO's enduring relevance in driving performance, regardless of evolving market conditions or global trends. The findings confirm EO as a robust determinant of firm success over time. Regional Analysis (H9): Hypothesis H9 is supported, with significant variations observed in EO-FP relationships across regions. Sub-Saharan Africa displayed strong effect sizes ($\beta = 0.294$), while Northern Africa reported the highest effect sizes ($\beta = 0.418$). These differences reflect regional disparities in institutional environments, resource availability, and cultural dynamics. In regions with institutional voids or resource constraints, EO's impact is amplified as firms depend on entrepreneurial behaviors like innovation and risk-taking to navigate challenges and seize opportunities.

Table 3: Regional Analysis of the Effect of Entrepreneurial Orientation (EO) on Firm Performance (FP)

Region	N	MES	SE	95% CI	P CI	Z-Value	P-Value	Tau	Tau ²
Australia and New Zealand	3	0.273	0.091	(0.095, 0.451)	(-0.055, 0.600)	3.000	0.003	0.139	0.019
Eastern Asia	4	0.191	0.094	(0.006, 0.376)	(-0.140, 0.522)	2.030	0.043	0.139	0.019
Europe	7	0.185	0.063	(0.061, 0.308)	(-0.116, 0.486)	2.940	0.003	0.139	0.019
North America	9	0.268	0.054	(0.163, 0.374)	(-0.026, 0.563)	4.970	<0.001	0.139	0.019
Northern Africa	5	0.418	0.072	(0.277, 0.560)	(0.109, 0.728)	5.780	<0.001	0.139	0.019
South-Eastern Asia	57	0.185	0.020	(0.145, 0.225)	(-0.092, 0.462)	9.080	<0.001	0.139	0.019
Southern Asia	34	0.278	0.027	(0.226, 0.330)	(-0.001, 0.557)	10.460	<0.001	0.139	0.019
Sub-Saharan Africa	32	0.294	0.028	(0.240, 0.348)	(0.015, 0.574)	10.710	<0.001	0.139	0.019
Western Asia	28	0.193	0.030	(0.134, 0.253)	(-0.087, 0.474)	6.420	<0.001	0.139	0.019
Overall (H9)	179	0.249	0.026	(0.197, 0.301)	(-0.052, 0.524)	9.440	<0.001	0.146	0.021

Notes:

- N = number of effect sizes from studies within each region.
- MES = mean effect size; SE = standard error.
- $95\% CI$ = 95% confidence interval of the mean effect size.
- $Prediction Interval (PI)$ = estimated range of true effects for future studies in similar regions.
- Tau and Tau^2 indicate between-study heterogeneity.

Discussion and Conclusion

Entrepreneurial Orientation continues to serve as a pivotal construct in understanding how businesses attain and sustain superior performance. Through its dimensions; innovativeness, proactiveness, and risk-taking EO enables firms to pursue opportunities, mitigate uncertainties, and strategically position themselves in competitive markets. This meta-analytic review extends the existing body of knowledge by examining not only the direct relationship between EO and Firm Performance but also the mediating roles of Dynamic Capabilities and Strategic Capabilities. Furthermore, we explore how contextual elements such as geographical location and temporal dynamics shape and moderate this EO–FP relationship, offering a more comprehensive framework.

Our findings reaffirm what prior empirical studies have consistently demonstrated: EO is a significant and positive predictor of FP (Aftab et al., 2022; Gupta & Batra, 2016; Imran & Aldaas, 2020; Omar et al., 2016; Pulka et al., 2021). Firms that demonstrate high EO are better positioned to identify emerging market trends, swiftly adjust to disruptions, and sustain competitive advantage. These results align with the Resource-Based View (RBV), which emphasizes the importance of leveraging firm-specific, valuable, and inimitable resources for long-term performance (Barney, 1991; Zahra & George, 2002). More importantly, this study expands the theoretical foundation by confirming EO's robust performance-enhancing effects across diverse organizational and economic contexts, thus reinforcing its universal strategic value.

Beyond affirming EO's direct benefits, our meta-analysis uncovers important nuances in how EO operates more effectively in dynamic, resource-constrained environments, such as those prevalent in emerging markets. In such settings, SMEs leverage EO to overcome institutional voids, circumvent infrastructural limitations, and exploit untapped market niches (Fang et al., 2022; Ngo, 2023; Soares & Perin, 2020). These findings highlight EO's role as a powerful catalyst for agility and rapid growth, especially where formal mechanisms are weak. Consequently, EO emerges not merely as a strategic preference but as a critical survival and growth tool in volatile environments, demonstrating context-sensitive performance implications.

However, the performance outcomes of EO are not automatic or uniform across firms. Our analysis reveals that internal organizational capabilities play a critical mediating role in translating EO into tangible outcomes.

By distinguishing between Dynamic Capabilities which enable firms to adapt and innovate and Strategic Capabilities which focus on structured, goal-driven resource deployment we address a longstanding gap in the EO literature. Prior research has often treated EO in isolation, ignoring the internal organizational architecture that enables or constrains EO's translation into results. Our findings contribute a more integrated and nuanced theoretical model that captures the interplay between EO and internal capability development.

Dynamic Capabilities enable firms to sense emerging opportunities, seize them effectively, and continuously reconfigure resources in response to changing environments (Teece et al., 1997; Quansah et al., 2022; Easterby-Smith et al., 2009). Our meta-analysis shows that EO strongly enhances DC by driving innovation, learning, and responsiveness. For instance, agile firms can quickly adapt product designs or internal processes based on real-time market feedback (Kump et al., 2019; Singh et al., 2021). However, while DC contributes significantly, our findings indicate its mediating effect on FP is weaker compared to SC. This may be attributed to the cumulative and time-intensive nature of DC development, which demands continuous learning cycles, iterative experimentation, and resource reallocation (Hernández-Linares et al., 2021; Taleb et al., 2023).

In contrast, Strategic Capabilities offer a more deliberate pathway to performance by integrating EO-driven actions into coherent, long-term strategic plans. SC encompasses competencies such as competitive positioning, market orientation, and structured resource use (Porter, 1985; Morgan et al., 2019). Our results show that SC exerts a stronger mediating effect on EO–FP linkages than DC, highlighting its practical utility in aligning entrepreneurial initiatives with broader business goals. For example, SMEs in green or renewable energy sectors can use SC to convert EO-driven market intelligence into partnerships, supply chain efficiencies, or diversification strategies. This finding underscores the importance of balancing exploration (via EO and DC) with exploitation (via SC) to maximize firm performance.

The impact of EO is also moderated by contextual variables, particularly geography and time. In emerging economies, EO acts as a compensatory mechanism, helping firms navigate weak institutions and infrastructure gaps (Arabeche et al., 2022; Pomegbe et al., 2022). In contrast, SC gains more importance in advanced economies, where mature institutions and established markets provide a conducive environment for strategic planning (Anwar et al., 2022). Moreover, temporal effects underscore the enduring nature of EO: our analysis indicates that EO's benefits are not short-lived but accumulate over time, as firms internalize entrepreneurial learning and refine their capability base (Aftab et al., 2022; Arabeche et al., 2022). This temporal dimension enriches theoretical conversations about the sustainability and longevity of EO impacts.

To advance academic discourse, this study offers four distinct contributions. First, we reinforce EO's universal value across diverse economic and institutional contexts, validating its theoretical utility. Second, we introduce a dual-pathway model of mediation, distinguishing between the adaptive agility of DC and the structured planning of SC. Third, we elucidate contextual moderators geographical and temporal, that shape the effectiveness of EO, addressing long-standing calls for a more embedded, context-aware entrepreneurship theory. Finally, we offer a theoretical integration that links RBV, Dynamic Capabilities Theory, and Strategic Management into a cohesive framework that captures the complexity of entrepreneurial strategy execution.

From a practical standpoint, the study yields valuable insights for managers and policymakers. Entrepreneurs operating in turbulent environments should prioritize DC development, focusing on innovation, organizational learning, and agility. In contrast, firms in more structured settings should strengthen SC through strategic planning, branding, and market intelligence systems. Policymakers should adopt a dual focus: not only promoting entrepreneurial behavior but also supporting internal capability development through tailored training programs, resource facilitation, and innovation hubs. This ensures that EO is institutionalized and translated into sustained performance outcomes, rather than remaining a surface-level orientation.

In conclusion, this meta-analysis significantly enriches the theoretical understanding of EO by uncovering how it interacts with organizational capabilities and contextual conditions to shape firm performance. It challenges oversimplified notions of EO as universally beneficial and instead emphasizes the nuanced, capability-driven, and context-sensitive channels through which EO manifests its effects. By clarifying the mediating roles of DC and SC, and by highlighting how geographical and temporal factors moderate EO's influence, we provide a robust framework for both researchers and practitioners to build upon. Ultimately, the study offers a fine-grained, multi-level perspective that deepens the entrepreneurship strategy nexus and paves the way for more contextualized and capability-aware explorations of firm success.

Implications Strengths, Limitations, and Future Research

Theoretical Implications

This study makes several important contributions to existing theoretical frameworks. By integrating the Resource-Based View, Dynamic Capabilities Theory, and Strategic Management Theory, the research provides a more holistic understanding of how EO influences FP. It extends RBV by highlighting EO as a valuable and rare resource that not only directly impacts performance but also interacts with DC and SC to enhance competitive advantage. This integration bridges gaps between resource-based and dynamic strategic perspectives, offering a nuanced view of how firms leverage their entrepreneurial traits alongside their capabilities to achieve sustained success.

Moreover, the findings emphasize the contingent nature of the EO-FP relationship, underscoring the importance of contextual factors. By demonstrating that geographical and temporal contexts significantly moderate this relationship, the study advances contingency theory within strategic management. It shows that the effectiveness of EO is not uniform but varies based on external institutional environments and internal strategic alignments.

Additionally, the study refines the understanding of DC and SC as mediators. It reveals that while both capabilities are essential, SC plays a more immediate and stronger mediating role compared to DC. This distinction enhances the theoretical discourse by suggesting that strategic alignment and resource optimization are critical for translating entrepreneurial initiatives into tangible performance outcomes. Consequently, the research encourages a more differentiated approach to studying organizational capabilities, recognizing that adaptability and strategic planning serve complementary but distinct functions in driving firm performance.

Practical Implications

For managers and entrepreneurs, this study offers practical advice on using EO to boost firm performance. By embracing EO's key elements, innovativeness, proactiveness, and risk-taking, businesses can quickly identify and seize new opportunities, giving them a competitive edge. However, the study also highlights the importance of developing DC and SC to support these efforts. Managers should focus on building DC to enhance adaptability and responsiveness, which involves fostering a culture of continuous learning, encouraging experimentation, and implementing flexible processes that allow for quick strategy adjustments in changing markets.

At the same time, strengthening SC is crucial for aligning entrepreneurial initiatives with long-term goals. This means focusing on strategic resource allocation, market orientation, and competitive positioning to ensure that entrepreneurial activities are integrated into the overall business strategy. Such alignment not only maximizes EO's immediate benefits but also ensures sustained growth and resilience. For example, SMEs can form strategic partnerships, optimize supply chains, and implement robust planning processes to turn innovative ideas into sustainable business models.

Importantly, the implications differ for firms in developed and emerging markets. In emerging markets, where institutional voids, resource constraints, and weak infrastructure are common, EO can help firms exploit niche opportunities, bridge market inefficiencies, and build adaptive resilience. Here, managers should prioritize developing dynamic capabilities that allow rapid responses to uncertainty and institutional gaps. In contrast, firms in developed economies can leverage stable institutions, mature markets, and advanced infrastructure to deepen their strategic capabilities. In such contexts, EO should be complemented with sophisticated planning systems, technology integration, and structured innovation processes that enhance long-term competitiveness. Additionally, managers should tailor their strategies to their specific regional and temporal contexts. By explicitly recognizing these differences between developed and emerging markets, firms can adopt context-sensitive approaches that maximize EO's effectiveness while ensuring performance outcomes are both sustainable and scalable.

Policy Implications

For policymakers and economic development agencies, this study offers a clear roadmap to enhance Entrepreneurial Orientation and the necessary capabilities within firms. Creating supportive ecosystems is crucial, which involves reducing institutional barriers and providing resources for innovation and risk-taking. Key initiatives include improving access to finance, offering entrepreneurial education and training programs, and establishing regulatory frameworks that encourage entrepreneurial activities. Additionally, policies should focus on building both dynamic and strategic capabilities by funding research and development, providing incentives for strategic planning, and supporting organizational learning and innovation. Strengthening these capabilities enables firms to leverage EO for sustained performance and competitive advantage.

Cultural factors also play a significant role in the effectiveness of EO. Policymakers should promote attitudes that support entrepreneurship, such as risk tolerance and acceptance of innovation, through public awareness campaigns, celebrating entrepreneurial successes, and integrating entrepreneurial values into education systems. Furthermore, policies must remain adaptable to address changing market conditions and technological advancements. By staying flexible and responsive, policymakers can ensure that firms are well-equipped to navigate ongoing market evolutions and maintain their competitive edge. This holistic approach not only fosters a thriving entrepreneurial environment but also ensures that EO can effectively drive firm performance in a dynamic global landscape.

Strengths, Limitations, and Future Research

This meta-analytic review offers several strengths that significantly advance the fields of strategic management and entrepreneurship. By synthesizing data from a diverse range of studies across various regions and industries, the review provides a comprehensive and nuanced understanding of how Entrepreneurial Orientation Influences Firm Performance (FP). This broad scope enhances the generalizability of the findings and enables the identification of patterns and variations that might be missed in individual studies. The rigorous methodological approach, which includes a systematic literature search and robust statistical analyses, ensures the reliability and validity of the results. Importantly, the study employed a random-effects model to account for heterogeneity and extracted multiple effect sizes from eligible studies using standardized beta values and calculated standard errors where necessary (Cohen et al., 2003), as recommended in contemporary meta-analytic practices. This approach has been successfully applied in recent meta-analyses (e.g., Oduro, 2024), confirming its relevance and validity for synthesizing diverse empirical evidence.

Additionally, by distinguishing between Dynamic Capabilities and Strategic Capabilities as mediators, the study offers a detailed exploration of the pathways through which EO affects FP, thereby advancing theoretical frameworks and providing actionable insights for practitioners. While dynamic capabilities are inherently strategic in nature, we distinguished DCs as externally oriented, adaptive mechanisms that facilitate short-term

responsiveness, and SCs as deliberate, internally integrated mechanisms that enable long-term alignment with organizational goals (Teece et al., 1997; Foss & Saebi, 2018).

The inclusion of contextual moderators such as geographical regions and temporal dynamics further adds depth to the analysis, highlighting the importance of situational factors in shaping the EO-FP relationship. However, despite these strengths, the study has certain limitations. One significant limitation is the reliance on published studies, which may introduce publication bias, as studies with non-significant findings are less likely to be published. Furthermore, the meta-analysis did not encompass all possible databases, potentially missing relevant papers despite the extensive search strategy. The heterogeneity of the included studies, spanning different industries and regions, may limit the ability to draw specific conclusions applicable to particular sectors or cultural contexts. Additionally, the variability in how key constructs like EO, DC, and SC are measured across studies could affect the consistency and comparability of the findings. The focus on the SME sector limits the generalizability of the results to larger firms, suggesting that future research should explore these relationships in diverse firm sizes.

Looking ahead, future research should consider the adoption of Meta-Structural Equation Modeling (Meta-SEM), which would allow for simultaneous modeling of interrelated pathways, incorporation of multiple effect sizes from the same study, and control for both inter- and intra-study variance (Cheung, 2015). This would address the concerns around shared variance and offer more robust model estimations. There is also a need for more standardized measures of EO, DC, and SC to enhance comparability and reduce measurement bias across studies. Future studies could delve deeper into industry-specific analyses to uncover unique patterns and strategies that drive performance in different sectors. Expanding geographic scope to underrepresented regions and including moderator variables such as firm size and business model types (e.g., B2B vs. B2C) would enrich contextual relevance. Additionally, given that our results did not find a consistent effect of firm age on FP, future studies should further investigate this variable using disaggregated age categories and longitudinal data. Parsing outcomes into financial and non-financial performance metrics could also provide a more granular understanding of how EO contributes to sustainable business success.

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