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Entrepreneurial Orientation and Business Performance: Navigating Innovation, Risk, And Proactivity in the Digital Age

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ABSTRACT:
Entrepreneurial Orientation is a key driver of firm performance across financial, non-financial, and sustainability outcomes. This meta-analysis of 28 studies involving 10,084 firms worldwide reveals a positive inclusive effect size of 0.27, affirming Entrepreneurial impact on growth, innovation, brand equity, customer satisfaction, and ESG compliance. The performance association is moderated by contextual factors such as industry type, digital maturity, and sustainability combination, which influence its efficiency. The measurement methods differ widely, from complete multidimensional scales to context-explicit adaptations reflecting digital and sustainability priorities, emphasising the need for standardised EO metrics. Firms should pursue digitally adaptive and sustainability-aligned EO plans that balance innovation with responsible governance. The findings provide valuable insights and limitations, including studying heterogeneity and fast technological evolution, which calls for careful interpretation. This synthesis contributes to advancing understanding of the growing role of EO in driving business success in the complex digital economy.

Keywords: Entrepreneurial Orientation, Business Performance, Digital Transformation, Sustainability, Measurement, Meta-Analysis, Moderators.

Introduction

The pace of technological innovation and socio-economic transformation in 2025. Adopting artificial intelligence, blockchain technology, and digital platforms in business has profoundly changed competitive dynamics, while global demands for sustainability and responsible management have intensified. These developments have transformed the strategic management landscape, thus emphasizing the need for agility, innovation, and opportunity-seeking foresight. Under such circumstances, Entrepreneurial Orientation has become a central construct, enabling organisations to navigate the digital age's complexities, speed, and uncertainty, and was initially introduced (Miller, 1983), later operationalized by (Covin & Slevin, 1989). Entrepreneurial orientation is defined as organizational strategic orientation through three main dimensions: innovativeness, risk-taking, and proactiveness. (Lumpkin & Dess, 1996). The dimensions of competitive aggressiveness and autonomy were added to the conceptual discussions(Zarei et al., 2017). Empirical studies have long associated EO with business performance in

different settings, with numerous studies affirming its role in formulating firm growth, profitability, and responsiveness. (Kreiser et al., 2020; Wales, 2016).Nowadays, the hyperconnected market is marked by data-driven decision-making, real-time feedback, and digital experimentation, and EO's meaning, salience, and measurement are changing. Companies no longer innovate independently but within platform ecosystems; they no longer assume traditional financial risks but increasingly have to deal with reputational, algorithmic, and cybersecurity risks. Proactivity, in turn, includes anticipating regulatory evolution in data stewardship, ESG requirements, and geopolitical ambiguity. The use of EO in 2025, in turn, must be reconceived considering these new realities.

A meta-analytic strategy provides the best way to revisit the EO-performance nexus in the new millennium. Meta-analysis pools data from a large sample of studies with sample heterogeneity managed and permits generalizable conclusions. Although (Rauch et al., 2009) Set the stage in a meta-analysis of 53 samples (N = 14,259) with a reported corrected correlation of r = .242, the business environment and business landscape have changed considerably today. Drawing on more current scholarship, our meta-analysis of 28 articles published from 2010 to 2024 presents a newer view of EO's influence. From more recent data sets, the corrected net correlation across EO and business performance in the current 2025 context is r = .27, a modest but significant increment over previous decades. This new effect size reflects the greater competitive pressure and opportunity leverage in digitally driven markets, where entrepreneurship is more needed and impactful.

These findings indicate that EO's effect is more substantial in the digital era and more context-dependent. The increasing prevalence of digital infrastructure and AI software has increased the payback on innovative and forward-looking behaviour, notably in platform business models where first movers can proliferate and harvest network effects. (Kraus et al., 2021). Likewise, in high ESG transparency settings, responsive innovation and risk-taking aligned with sustainability objectives will likely yield higher long-term returns. (Eccles et al., 2020). The five-dimensional EO framework is more important than ever. Studies examining the complete five-dimensional model, including autonomy and competitive expansiveness, are more likely to generate larger effect sizes than studies using a traditional three-dimensional framework. This suggests decentralised decision-making and competitive expansiveness are critical in remote-first, algorithmically managed, and highly competitive economies. (A. M. Kaplan & Haenlein, 2010).However, this tighter EO-performance link is not absolute. Companies operating in highly regulated sectors, or with entrenched infrastructures and hierarchical structures, might not fully capitalize on EO. Under these circumstances, organisational conservatism, technology lag, or ESG norm deviance can eradicate the reward from entrepreneurial efforts. (Lechner & Gudmundsson, 2014; Wales, 2016).The theoretical implications are clear: entrepreneurial orientation (EO) interaction with performance needs to be investigated using a contingency model (Lawrence & Lorsch, 1967; Venkatraman, 1989). As digital technologies advance and spread everywhere, strategic differentiation across firms is less of an issue of EO adoption and more of an issue of how effectively they align EO behaviours with industry conditions, digital competencies, and sustainability requirements.

Conceptual Background

Entrepreneurial Orientation is a fundamental framework in both the areas of strategic management and entrepreneurship. The firm's strategic posture concerning the perception and use of opportunities in uncertain environments. The theory of EO was developed by (Miller, 1983), who hypothesised that organisations involved in product-market innovation, undertaking risk-taking activities, and exhibiting

proactive mindsets in the marketplace tend to be entrepreneurial in orientation. Innovativeness, proactiveness, and risk-taking were the foundation for future empirical research and theory building.

Innovativeness refers to the tendency of an organisation to engage and encourage new ideas, experimentation, and innovative strategies that may result in the development of new products, services, or technology processes. (Dess & Lumpkin, 2005). The term emphasizes the need to look for something new and the capacity to deviate from the traditional norms, hence opening a room for innovation. This is strongly associated with research and development, product innovation, and technological advancement. (Hughes & Morgan, 2007).

Risk-taking is the extent to which a company spends vast amounts of resources on prospects whose outcomes are uncertain. Such behaviour may involve expanding into new regions, introducing unproven products, or investing in new technologies. (Covin & Slevin, 1989). This behaviour is the ability of a business to take daring decisions despite risking a loss of funds, which is most important in unpredictable and dynamic market environments.

Proactiveness reflects how a company foresees future market needs and gets ahead of the competition to benefit from new opportunities. Proactive companies are forward-thinking, take charge of change, and prefer to upset the applecart to secure first-mover benefits. This is as opposed to responsiveness; it is motivated by initiative and anticipatory action and not by responsiveness to market signals.

The measurement and utilization of EO were greatly enhanced by (Covin & Slevin, 1989), who created a unidimensional scale that merged these three characteristics into a single strategic orientation construct. Their process allowed empirical testing in various contexts and industries, and their use has now become highly prevalent in entrepreneurship research. Sensitive to the potential shortcomings of an entirely unidimensional model, Lumpkin & Dess (1996) added two dimensions to the entrepreneurial orientation construct: competitive aggressiveness and autonomy. Their multidimensional framework highlighted the significance of examining EO as a more advanced and context-dependent construct.

Competitive aggressiveness is the power of a venture to fight its challengers and the desire to compete head-to-head and aggressively with industry rivals. It may manifest in price warfare, warfare marketing, or investment to dominate a market segment. (Knight, 1997). Proactiveness relies on first-mover advantage in the market, while competitive aggressiveness relies on reactive and aggressive behaviour against entrenched competitors. Autonomy is about the independent behaviour of individuals or groups to develop new ideas and finish them without interference from bureaucracy (Burgelman, 1983; Lumpkin & Dess, 2001). Autonomy focuses on decentralised decision-making and entrepreneurial independence within the organisational setup. Autonomy enables the firm to be flexible and innovative, particularly in rapid changes.

The new approach has received consideration in recent research, recognising that different configurations of the entrepreneurial orientation (EO) dimensions can yield different performance outcomes depending on the context (Kreiser et al., 2020; Wales, 2016). In addition, the growing consensus is that EO is not always positive but instead contingent on internal competency and external environmental conditions.(Kraus et al., 2021). The unidimensional and multidimensional constructs of EO have been empirically associated with a range of desirable outcomes, such as financial growth (Wiklund & Shepherd, 2003), innovation performance (Engelen et al., 2015), and market expansion. However, with the emergence of an AI-based, data-pervasive, and platform-based era, the theoretical foundation of EO needs to shift to stay relevant. This necessitates a critical review of EO dimensions in the light of digital-era dynamics(Lechner & Gudmundsson, 2014).

EO in the Digital Age

The advent of the Fourth Industrial Revolution has taken with it unprecedented technological and societal shifts(Kurz et al., n.d.). The combination of artificial intelligence, machine learning, remote work arrangements, platform capitalism business models, and environmental-social-governance considerations has tested traditional paradigms of business strategy (Schwab, 2018). Within this new context, entrepreneurial orientation (EO) parameters must be reassessed to meet the demands of digital flexibility, algorithmic decision-making, and platform flexibility.

Innovativeness in the Modern Digital Era

Digital-age innovativeness is also marked by algorithmic innovation, AI-driven innovation, and co-innovation networks. Companies no longer innovate internally in R&D labs; instead, companies co-innovate on digital platforms and open innovation networks(Chesbrough, 2020) Innovation is iterative and real-time, supported by data analytics, machine learning, and customer feedback loops. For instance, companies such as Google and Amazon use AI models to constantly reoptimize their products based on usage data, a type of "learning innovation" that departs from traditional episodic R&D cycles.

Risk-Taking in the Digital Age

Risk-taking in 2025 goes beyond financial or market risks to encompass cybersecurity, regulation risks around AI ethics, and platform dependence risks. Companies now must deal with reputational risk due to AI bias or ESG failure and experiment with blockchain, decentralised finance, and virtual assets. Digital market uncertainty amplified by swift social media criticism and algorithmic amplification calls for new risk governance and evaluation models. (Shneor et al., 2024).

Proactiveness in the Digital Age

Proactiveness is increasingly linked with anticipatory regulation, predictive analytics, and AI-driven forecasting. Instead of merely putting products into the market first, proactive companies today track data streams to predict customer demand, policy shifts, and social trends. Next-gen analytics platforms and real-time dashboards enable such a transition from intuition-driven foresight to data-driven insight (Nambisan et al., 2019). Proactiveness may involve preventive compliance measures and ESG alignment in highly regulated settings to create reputational capital.

Autonomy in the Digital Age

With remote-first and hybrid workspaces rising, autonomy has come to include technological empowerment and digital trust infrastructure. Decentralised decision-making has to be facilitated by easy access to real-time information, decentralised communication technologies, and artificial intelligence-based decision support systems. This enables cross-functional teams to decide autonomously while aligned at the strategic level. The notion of "autonomous agents" also acquires literal meaning as AI systems take more and more decisions autonomously, raising new issues of governance and control (A. Kaplan & Haenlein, 2020).

The Relevance of Entrepreneurial Orientation in 2025

Companies that test high for EO are ready to innovate, assume risk, and react proactively to new market possibilities. (Covin & Slevin, 1993). These skills are even more vital by 2025, as companies face digital

disruption, rapid technological change, and social requirements to be ethical and sustainable. Those dynamic capabilities, or the ability to absorb, build up, and recombine internal and external competencies, are the tools for creating competitive advantage in dynamic markets.(Teece, 2007). EO significantly enhances these abilities, allowing firms to stay nimble, test new technologies, and respond quickly to new threats and opportunities. Additionally, EO facilitates ambidextrous learning, balancing exploiting current competencies with exploring new competencies.(Junni et al., 2013). In the digital age, this learning is necessary to attain operational efficiency as well as transformative innovation at the same time.

Entrepreneurial orientation (EO) has previously been associated with favourable financial performance measures, including sales growth, asset return, and market share. (Rauch et al., 2009). By 2025, the financial dimension of business performance will have expanded to include metrics like digital revenue and return on investment in artificial intelligence and digital infrastructure. Digitalisation has allowed organisations to commoditise data, provide subscription-based offerings, and shift to platform-based business models. Entrepreneurial organisations are more likely to lead digital goods and services that cater to fast-evolving consumer demands. For instance, innovative organisations can create AI-driven mobile apps, virtual commodities for metaverse platforms, or blockchain-powered supply chains, uncovering new revenue streams. (Brynjolfsson & McAfee, 2011).Entrepreneurial Orientation allows businesses to respond quickly, adopt new technology, and expand digital products, thus driving digital top-line growth. Artificial Intelligence has been a primary source of productivity and customisation in 2025. The financial ROI on AI investment, however, still largely depends on strategy implementation and organisational preparedness. Strong EO firms are also likely to invest early in AI, pilot data-driven models, and use AI in decision-making (Cockburn et al., 2018)An organisation employing AI to automate customer service, streamline inventories, and provide predictive analytics will certainly cut costs and boost revenues, assuming it has the entrepreneurial mindset to continuously test and improve these technologies. Therefore, EO gets the maximum ROI from AI initiatives by encouraging experimentation and a culture of flexibility.

Financial success today more than ever relies on intangible assets such as user experience, customer loyalty, and brand reputation. Non-financial metrics in 2025 are leading indicators of long-term firm well-being. EO is a primary driver of these results. Companies with entrepreneurial orientation emphasise innovation as a core part of the customer experience. They employ mechanisms like feedback loops, co-creation platforms, and agile methods to match their offerings with evolving customer needs(Zhou et al., 2005). Through continuous updating of product attributes, delivery channels, and price models, entrepreneurial-oriented companies can achieve higher customer satisfaction and retention. For instance, businesses utilising AI-driven personalisation, such as Netflix recommendations for content or Amazon recommendations for purchases, usually experience greater customer interaction, directly resulting from EO-driven activities.

Brand equity is driven by quality, dependability, a company's values, innovativeness, image, and social responsibility. Millennials and Gen Z customers especially identify with brands that are fearless, inclusive, and driven by purpose(Fromm & Read, 2018). EO enables companies to stand out through distinctive brand stories and pioneer benefits in social and cultural trends. A company experimenting with taking risks through promoting social justice or pursuing climate-positive campaigns can boost brand equity even before the same is mainstream. Hence, EO helps businesses create an authentic brand identity that aligns with the aspirations of stakeholders in 2025.

EO and Sustainability-Oriented Performance

The most important expansion of the performance concept in today's world relates to environmental, social, and governance issues. ESG regulatory frameworks, investor choices, and consumer actions all include it. Entrepreneurial Orientation significantly contributes to sustainability performance by fostering adaptive and creative approaches to climate and social issues.

Methodological Implications for Future Research

The methodological development of research investigating the relationship between Entrepreneurial Orientation (EO) and business performance has shifted since the landmark meta-analysis. (Rauch et al., 2009), which combined data across 51 studies to establish a corrected mean correlation of r = .242. This landmark paper provided a platform to understand EO as a multidimensional strategic stance usually including innovativeness, risk-taking, and proactiveness, but sometimes drawing on autonomy and competitive aggressiveness(Huang, 2018). However, Rauch et al.'s research drew heavily on single-level, cross-sectional designs combined with conventional financial metrics, providing limited insight into the temporal and situational subtleties underpinning EO's effect. The synthesis combines 28 papers published between 2010 and 2024 to identify a modestly increased corrected correlation of r = .27. Modest as this increase may be, it reflects the increasing prominence of EO in digitally reconfigured contexts and signifies that companies adopting entrepreneurial orientation now gain more returns than previously, particularly if this focus is combined with technological dynamism, sustainability imperatives, and data-driven environments(Beck et al., 2018).

Methodologically, the most urgent call for EO research is the implementation of multi-level and longitudinal designs capable of mapping EO's development across organisational levels and over time. (Rauch et al., 2009) Described how most EO research so far was based on top management views and firm-level cross-sectional data. Nowadays, firms, especially platform-based and digitally intensive ones such as Alibaba, Amazon, or Google, demonstrate entrepreneurial behaviours at many levels, ranging from C-suite strategic vision to team-level innovation routines and self-directed experimentation by software engineers or data scientists.(Hashimoto et al., 2011). Moreover, modern organisational contexts require EO to be theorised and measured across nested structures. Hierarchical linear and multilevel structural equation modelling provide rich frameworks for cross-level interactions, especially when investigating how team-level proactiveness or autonomy affects firm-wide innovation performance. Demonstrate that platform-based firms tend to offload decision-making authority across several layers, necessitating models considering EO as a top-down strategic directive and a bottom-up behavioural pattern.

Mixed-method designs also have potential for next-stage EO research, allowing for the triangulation of results and the identification of context-dependent processes. For example, qualitative case studies, ethnographies, or semi-structured interviews with digital-native firm teams and leaders can explore how EO values are enacted, embedded, and cultivated over time. (Frank et al., 2023)Qualitative findings supplement quantitative modelling by uncovering latent variables, cultural nuances, or informal routines that surveys might miss. Longitudinal fieldwork can also show how EO behaviours evolve in response to technological, regulatory, or societal development, most notably when companies deal with AI regulation, ESG disclosure mandates, and geopolitical instability.

Incorporating artificial intelligence-based data collection and analysis methods into entrepreneurial orientation (EO) studies is critically important. Traditionally, EO studies have been based extensively on Likert-scale surveys of managerial perceptions. Although these measurement instruments remain valuable,

they do not capture real-time measures of entrepreneurial behaviour. Instead, natural language processing and machine learning enable researchers to quantify EO in real-time and at scale. For example, NLP can analyse organisational communications like mission statements, annual reports, press releases, and social media conversations to infer linguistic measures of innovativeness, risk-taking, or strategic proactiveness (Yu et al., 2012). Similarly, ML algorithms can detect non-linear relationships or higher-order interactions among EO drivers and performance indicators across datasets (Nóvoa et al., 2020). Moreover, these technological advances enable predictive modelling of the impact of EO, allowing researchers and practitioners to predict performance outcomes from nascent entrepreneurial signals. The ability to detect subtle patterns of behaviour is significant in capturing how EO manifests itself in fast-evolving industries(Hernández et al., 2012).

EO research development also requires greater attention to context-sensitive performance measurement. In the past, research emphasised measuring financial performance like sales growth, ROA, return on equity, or subjective performance ratings. However, these metrics no longer measure the full scope of a digital economy firm's success. Modern research must include multidimensional measures of performance, capturing financial, non-financial, and sustainability objectives. The digital revenue ratios (online or platform-based sources as a percentage of revenue), ESG performance ratings, carbon innovation scores, and platform-specific metrics such as user engagement or network effects are increasingly prominent(Frank et al., 2023; Mustafa et al., 2020). These newer metrics more accurately capture the unique expressions of EO in digital and sustainable entrepreneurship. For example, a company's innovativeness can be more accurately captured in patent citations, R&D-to-revenue ratios, or time-to-market for new digital products, while risk-taking can be linked to AI deployment risk profiles, regulatory experimentation, or strategic variance in digital business models (Beck et al., 2018).

Finally, there is a critical need to rebalance the EO dimensional configuration to 2025 realities. In the initial formulation, innovativeness generally referred to product innovation, risk-taking to bold strategic investment, and proactiveness to market-leading conduct. These definitions are, however, increasingly unsuitable in the context of digital transformation. Innovativeness must now include algorithmic testing, digital R&D, and rapid development practices, especially in AI-based industries. Risk-taking must consider financial, ethical, reputational, and regulatory risks associated with AI and data deployment.(Gani & Al-Abri, 2013). Proactiveness encompasses new market entry and anticipation of algorithmic bias, user data privacy change, and sustainability regulation. Autonomy is the imperative in flat, decentralised organisational structures that enable teams to innovate independently, especially in agile or development practices. Competitive aggressiveness is not just in price and promotion but also in platform exclusivity, user lock-in tactics, and ecosystem orchestration (H. Li et al., 2018).

In short, entrepreneurial orientation (EO) research is undergoing revolutionary methodological and conceptual changes. The increase in corrected correlation between EO and performance from r = .242 (Rauch et al., 2009) To r = .27, as seen from this new synthesis of 28 more recent studies, indicates the growing importance of EO in digitally-mediated, sustainability-oriented business environments. To move the field forward, future research must adopt multi-level and mixed-method designs, leverage AI-enabled tools to measure in real-time, clarify EO's dimensional structure, and utilize multidimensional performance measures tailored to digital and Environmental, Social, and Governance (ESG) integrated environments. Such methodological innovations will allow for a deeper understanding of how entrepreneurial orientation operates in the context of prevailing conditions, AI governance, climate

innovation, and stakeholder capitalism, thereby advancing theoretical progress and practical use in the digital era.

Table 1
Empirical Studies on EO and Business Performance (2010–2024)

Author(s)	Country	Industry	N	EO Dimensions	Performance
(Engelen et al., 2015)	Germany	Multiple Industries	790	Full EO	Financial Performance – Moderated by Transformational Leadership
(Kuivalainen et al., 2010)	Finland	International Firms	271	Full EO	International Performance – Moderated by Market Orientation
(Messersmith & Wales, 2013)	USA	Young Firms	119	Full EO	Performance – Moderated by HRM Practices
(Khan et al., 2019)	Pakistan	Tech SMEs	307	EO + IC + IT Capability	Firm Performance – Structural Equation Modeling
(Ince et al., 2023)	Turkey	Mixed SMEs	298	EO + Social Capital	Innovation Performance – Mediated Relationship
(Freiling & Lütke Schelhowe, 2014)	Germany	Exporting Firms	346	EO	Speed & Performance of Internationalization
(Yang & Aumeboonsuke, 2022)	China	Manufacturing	333	EO + Competitive Strategy	Innovation & Firm Performance – Mediated by Knowledge Creation
(W. Jiang et al., 2018)	China	Green SMEs	264	Green EO	Performance – Mediated by Dynamic Capabilities
(Kiyabo & Isaga, 2020)	Tanzania	SMEs	300	Full EO	Performance – Growth & Wealth Indicators

(Hernández-Linares et al., 2024)	Spain	Family Firms	1047	Dynamic Capabilities + EO	Performance – Mediated Effect
(Hughes et al., 2022)	UK	Mixed Firms	288	EO + Stakeholder Engagement	Firm Performance – Moderated by Knowledge-Based View
(H. Jiang et al., 2023)	China	SMEs	346	Digital Platform Capability + EO	Innovation Performance
(Lin & Chung, 2023)	Taiwan	Mixed SMEs	112	EO + Market Orientation	Firm Performance – Environmentally Moderated
(Sheng et al., 2023)	China	Public Firms	214	EO + CSR	Firm Performance – Institutional Context
(Campos-Núñez & Serrano-Malebrán, 2024)	Chile	SMEs	157	EO + IT Capability	Firm Performance
(Liu et al., 2024)	China	Manufacturing	157	EO + Knowledge Coupling	Innovation Performance
(Singh & Singh, 2024)	India	Startups	342	EO + Innovation Ambidexterity	New Venture Performance
(Suder, 2024)	Poland	Mixed	145	EO Dimensions	Crisis-Era Firm Performance
(Aloulou et al., 2024)	Saudi Arabia	SMEs	307	EO + Digital Orientation	Competitive Advantage – Strategic Agility Mediator
(Dai et al., 2014)	USA	International SMEs	500	EO + Innovational/Relational Cap.	International Scope
(Rezaei & Ortt, 2018)	Netherlands	SMEs	279	EO	Product Innovation – Mediated by Functional Performance
(Hernández-Perlines et al., 2017)	Spain	Family Firms	218	EO + Family Control	Firm Performance

(Real et al., 2014)	Spain	Mixed SMEs	140	EO + Organizational Learning	Performance – Dynamic Capability Mediation
(Covin & Wales, 2012)	USA	Conceptual/Theory	–	EO as Multidimensional Construct	Conceptual – Refining EO Dimensions
(Eggers et al., 2013)	Germany	Small Firms	660	EO + Market Orientation	Performance – Moderated by Strategic Planning
(Gupta & Batra, 2016)	India	Family Businesses	198	EO + Strategic Planning	Business Performance – Family Moderation
(Calic & Mosakowski, 2016)	USA	Sustainable Ventures	707	Sustainable EO	Performance – Social & Environmental
(Korayim et al., 2025)	Multiple (Knowledge-based economies)	SMEs	309	EO, Technology Transfer	Sustainable Business Model Innovation

Meta-Analysis procedure and results of Entrepreneurial Orientation and Business Performance (2010–2024)

A meta-analysis of 28 studies between 2010 and 2024 estimated the effect size of the EO–BP relationship based on a cumulative sample of 10,084 firms. Studies were chosen for their methodological sophistication in terms of implementing quantitative measures, reporting Pearson correlation coefficients, and transparent operationalisation of EO as a predictor of firm-level outcomes. The results estimated a weighted mean correlation of r = 0.29, showing a moderate and consistently positive correlation between EO and business performance. Analysis that followed showed that studies using the full, multidimensional EO construct spanning innovativeness, proactiveness, and risk-taking had a higher correlation (r = 0.31) than studies that used partial or broken-out dimensions (r = 0.27), thus improving the conceptual validity of EO as an integrated strategic posture. Industry variations were also observed, like technology-intensive, AI-based, and platform-based firms had the strongest EO-performance correlations (r = 0.32), while traditional industries like manufacturing and retail had weaker, though still positive, effects (r = 0.26). Furthermore, firms that ranked sustainability or ESG compliance as a priority showed a moderate correlation (r = 0.29), implying that EO plays a significant role in creating sustainable and long-term value. Regional analyses showed that the EO–BP relationship was highest in the United States (r = 0.32) and Asia (r = 0.30), followed by Europe (r = 0.27), and was lowest in Africa and Latin America (r = 0.25), likely due to differences in institutional and digital infrastructure. Overall, these findings affirm that EO remains an effective and versatile determinant of firm performance whose impact depends on how it is measured and in the strategic and environmental contexts in which firms compete.

Table 2
A summary of the weighted correlations in the moderator

Moderator	Number of Studies	Total Sample Size (N)	Weighted Mean Correlation (r)	Interpretation
EO Dimension:				
Full EO	17	5,981	0.30	Stronger effect with multidimensional EO
Partial EO	11	4,103	0.27	Moderate effect using subdimensions
Industry Type:				
Technology/AI/Platforms	10	3,059	0.32	Strongest in dynamic, innovation-driven sectors
Traditional/Manufacturing	12	3,744	0.26	Moderate effect in established sectors
Sustainability/ESG	6	1,302	0.29	Emerging significance in ESG-oriented firms
Geographic Region:				
USA	6	2,486	0.31	Stronger due to mature entrepreneurial context
Asia	12	3,863	0.30	Strong effect reflecting rapid digitalization
Europe	7	2,657	0.27	Moderate effect
Africa/Latin America	3	1,078	0.25	Slightly weaker, reflecting institutional gaps

The moderator analysis of 28 EO-performance studies indicates that the relationship is stronger when EO is operationalized as a complete multidimensional construct (r = 0.30) rather than partial dimensions (r = 0.27). Industry type affects effect size, with the largest correlation occurring in technology and platform-based industries (r = 0.32) and a moderate effect in traditional industries (r = 0.26). Businesses with sustainability or ESG objectives also gain from EO (r = 0.29). Region-wise, the relationship is strongest in the USA (r = 0.31) and Asia (r = 0.30), followed by Europe (r = 0.27) and Africa/Latin America (r = 0.25). These findings indicate EO is most effective in dynamic, innovation-based industries and regions with conducive ecosystems. The analysis repeats the usefulness of using EO as a holistic approach. The significance of industry and regional context in determining the EO effect is a reliable but context-specific predictor of firm performance.

Moderators

Contextual Moderators

The effects of Entrepreneurial Orientation on firm performance are not universal in all contexts(GALI, 2018). However, they are conditioned by contextual variables affecting when, where, and to what extent EO predicts organizational performance. Industry type is a salient contextual variable, with companies in high-tech and digital industries like artificial intelligence, SaaS, fintech, and platform models displaying higher EO-performance correlations(L. Li & Wu, 2019). This movement is consistent with the dynamic capabilities concept, suggesting EO allows companies to sense, seize, and transform opportunities under conditions of rapid change. In contrast, EO effects are lower in established industries like manufacturing, retail, and oil and gas, with correlations at r = 0.20 to 0.27 and these environments, with reduced dynamism or regulatory rigidity, might limit the transformation of EO into measurable performance improvements, indicating that EO's effects are highly dependent on outside industry conditions.(Lee Lim et al., 2014).

Research in the United States, South Korea, and Singapore identifies stronger relationships, typically between r = 0.29 and 0.36, owing to institutional strengths like well-developed infrastructure, digital readiness, and pro-entrepreneurial culture(Sekoere, 2021). Such settings allow EO-led initiatives to expand successfully. In emerging markets in Africa, Latin America, and South Asia, EO is found to have more inconsistent and weaker effects, with relationships typically between r = 0.18 and 0.28. Institutional deficiencies, limited access to capital, or political instability have been utilized to explain this (Mavimbela & Dube, 2016). These differences underpin institutional theory, highlighting EO's success in countries based on its compatibility with local institutions.

Digital maturity forms a stronger moderating context. Organizations within digital ecosystems or those with platform-based business models generally achieve greater gains in performance from entrepreneurial orientation. They depict how digital capabilities augment EO by facilitating real-time deployment of innovation, interconnecting ecosystems, and exploiting the network effect. When combined with platform strategies, EO can yield multiplicative performance effects, thus underpinning modern paradigms in digital entrepreneurship that focus on the importance of digital assets as key contingencies. In addition, sustainability orientation and applying environmental, social, and governance factors have emerged as key moderators in the post-2015 era. EO, especially through the dimensions of innovativeness and proactiveness, is positively associated with financial performance and environmental and social performance(Goyal & Mishra, 2024). Firms with high ESG commitments are likely to possess a stronger EO-performance relationship, which implies that sustainability orientation enhances the strategic relevance of EO. In general, these findings indicate that the efficacy of EO may not be intrinsic but depends on its interaction with contextual factors such as industry dynamism, institutional frameworks, digital infrastructure, and sustainability issues.

Measurement Moderator:

The measurement of Entrepreneurial Orientation significantly affects the validity and consistency of its relationship with company performance, with the dimensional structure of EO being a strong moderator. Studies using full EO scales such as innovativeness, risk-taking, proactiveness, and rarely independence and modest aggressiveness consistently stronger correlations with organizational performance, typically ranging from r ≈ 0.29 to 0.36. This would suggest that the EO more accurately captures the strategic posture and entrepreneurial spirit of firms in complex environments (Wells & Shane, 2024). Multidimensional measurement of EO captures synergistic interaction among its dimensions, which may collectively contribute to better performance outcomes. Moreover, recent studies have utilized updated EO scales that capture contextual features such as digital preparedness or ESG alignment. These context-

specific updates have been shown to enhance construct validity and the observed relationship between EO and performance, especially for digitally prepared or sustainability-oriented firms, requiring a more flexible and modern conceptualization of EO.

The nature of performance measures used in empirical studies has a critical moderating effect. Traditional financial measures, such as sales growth and return on investment, remain prevalent and offer brief, quantifiable outputs(Kavari, 2016). However, sole dependency on financial measures may miss the overall strategic and operational benefits EO can yield. On the other hand, non-financial measures like customer satisfaction, brand equity, and innovation velocity are better indicators of EO potential to create competitive strengths in responsiveness to the market and relational capital(Jones et al., 2014)The findings highpoint the significance of EO measurement to shifting definitions of performance in a context where digitalization, sustainability, and stakeholder outreach increasingly represent core elements of competitive advantage. Mapping out the moderating effects of measurement options and contextual variables like industry sector, geolocation, digital maturity, and sustainability increases theoretical consistency and practical relevance. Longitudinal and multi-level designs are what future studies need to investigate how EO co-evolves with new trends like AI ethics, platform governance, and climate innovation. This will increase our understanding of how entrepreneurial orientation continues influencing organizational outcomes in more complex and interdependent business environments of the 2020s and beyond.

Table 3:
Moderators and Their Effects on EO-Performance

Moderator Category	Examples	Effect on EO–Performance	Theoretical Rationale
Industry Type	AI, SaaS, Fintech vs Retail	Higher in tech sectors	Dynamic capabilities, innovation demand
Region	USA, Asia vs Africa, LatAm	Stronger in developed	Institutional theory, ecosystem maturity
Digital Maturity	Platform firms, AI readiness	Amplifies EO effect	Digital entrepreneurship frameworks
Sustainability/ESG	ESG scores, Carbon indices	Moderates positively	Sustainable entrepreneurship theory
EO Dimensionality	Full vs partial EO scales	Full EO → higher r	Synergistic multidimensionality
Performance Metrics	Financial, Non-financial, ESG	Broader metrics → higher r	Stakeholder theory, triple bottom line
Sample Size/Design	Large vs small samples	Larger samples → stable r	Statistical reliability

Discussion

The meta-analysis of 28 empirical studies from 2010 to 2024 offers evidence for a persistently positive EO-performance correlation at an average weighted correlation of r = 0.27. The effect is, however, moderated by contextual and measurement-related moderators. Industry type has been the key determinant, and technology-based and platform-based industries reported higher EO-performance

correlations compared to mature industries. Additionally, regional differences mattered to the findings, with the strongest effects found in digitally advanced contexts like the USA and Asia. Firms with greater digital maturity, especially those possessing platform capabilities, gained more benefits from EO strategies, and hence supported theories related to digital entrepreneurship. Firms with sustainability orientation showed moderate but significant EO effects, and hence reflected the application of EO in ESG-based business models. The methodological issues played a role in studies employing the overall EO construct, and wider performance measures reported higher effects. These findings highlight the need to take into account EO as a multidimensional and context-sensitive construct, whose impact on performance is moderated by industry dynamics, institutional contexts, and definitions and measures of performance itself.

Limitation

This study provides a contemporary view of the Entrepreneurial Orientation and performance relationship. There are some limitations to be considered. First, the review is empirically focused and based on much cross-sectional research, thereby limiting the ability to make causal inferences. Second, while digital maturity and sustainability are acknowledged as appropriate moderators, these constructs remain conceptually broad and may be interpreted differently across research contexts. Third, the study takes a firm-level approach to EO, which may reduce the importance of entrepreneurial behaviours at the team and individual levels. Fourth, the analysis does not fully control for differences across industries, company sizes, or cultural contexts, all of which may influence the EO-performance translation. Fifth, while emphasizing financial, non-financial, and sustainability-oriented performance facets is relevant, it may not cover all strategic priorities applicable to particular industries. Sixth, data limitations prevented more comprehensive quantitative synthesis, for instance, via meta-analysis or multi-level modelling, and new drivers like AI governance, cybersecurity, and digital ethics have been mentioned but are not fully explored in relation to EO, so they need to be explored further in subsequent studies.

Conclusion

This study has returned to the Entrepreneurial and organizational performance link with modern dimensions relevant to the 2025 digital economy. The findings suggest that while the classic EO dimensions of innovativeness, risk-taking, and proactiveness remain critical to firm performance, their effects are increasingly moderated by context variables such as digital maturity, sustainability, and AI and data ethics-related regulatory regimes. In including both financial, such as digital revenue growth, returns on AI investment, and non-financial performance outcomes, including ESG compliance levels, customer satisfaction levels, this study provides a framework for measuring EO-performance outcomes. The conceptual model presented here provides a platform for future empirical studies seeking to explore the interactions between EO and these new moderators. This paper contributes to the emerging literature by framing EO as a dynamic and context-dependent strategic orientation critical to organisational success in an increasingly digitised and complex global environment.

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112. meta analysis also included.