

THE IMPACT OF ENTREPRENEURIAL ORIENTATION ON INNOVATION PERFORMANCE THROUGH STRATEGIC FLEXIBILITY IN MODERN PROJECT MANAGEMENT

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ABSTRACT: This research investigates the impact of Entrepreneurial Orientation (EO) on Innovation Performance (IP), emphasizing the mediating effect of Strategic Flexibility (SF) within modern project management contexts. The study aims to elucidate how EO, characterized by attributes such as innovativeness, proactiveness, and risk-taking, impacts IP, particularly when moderated by SF, which allows organizations to adapt and reallocate resources efficiently. Utilizing a quantitative approach, data were gathered from 250 project management professionals via structured questionnaires. The findings reveal significant positive associations between EO, SF, and IP, with SF partially mediating the relationship between EO and IP. The analysis, including descriptive statistics, reliability and validity assessments, correlation, and mediation analyses, confirms that teams with high EO and SF tend to achieve superior innovation outcomes. The practical implications highlight the necessity for organizations to foster an entrepreneurial culture and enhance strategic flexibility to boost innovation performance. The study's limitations include potential biases inherent in self-reported data and its cross-sectional design. Future research should investigate additional mediators and moderators in varied contexts and employ longitudinal methodologies to establish causal relationships. This research advances both theoretical and practical insights into optimizing EO and SF to drive sustained innovation in dynamic project environments.

Keywords: Entrepreneurial Orientation, Innovation Performance, Strategic Flexibility, Project Management, Dynamic Capabilities.

1. Introduction

The theoretical construct of EO has garnered significant attention in business research, particularly regarding its effects on innovation and organizational performance. Brathwaite (2018) highlights that EO, encompassing attributes such as innovativeness, proactivity, and risk-taking, enables organizations to embrace an entrepreneurial mindset and effectively address opportunities or challenges. In the context of modern project management, the impact of EO on IP is notably mediated by SF. Garcia et al. (2021) argue that SF acts as a crucial mediator, facilitating the relationship between EO and superior innovation performance by allowing organizations to reallocate resources effectively in new contexts. The adoption of an entrepreneurial culture fosters innovation by enhancing awareness of change and uncertainty. Furthermore, Wales, Covin and Monsen (2020) find that organizations with high EO are more inclined to experiment with and implement innovations. This capability is particularly valuable in the dynamic and challenging environment of contemporary project management, where risks and uncertainties are increasingly prevalent.

It is important to note that possessing an entrepreneurial orientation alone is insufficient to drive advancements in innovation performance. Alvarez-Torres, Lopez-Torres

and Schiuma (2019) found that the effectiveness of an entrepreneurial mindset in achieving innovative outcomes largely hinges on the implementation of a contingency strategy. Strategic flexibility is defined as an organization's ability to proactively and effectively respond to environmental changes. This includes the capacity to adjust resource allocation, modify strategic plans, and adapt project implementations to address new opportunities or threats. Jelenc and Pisapia (2016) argue that strategic flexibility serves as a crucial link, translating the entrepreneur's aspirations into actionable and viable innovation strategies. It is a key moderator through which EO influences innovation performance by facilitating learning processes. Additionally, Wied et al. (2020) demonstrate that strategic flexibility provides a competitive advantage by enabling organizations to learn from both successes and failures and to adapt their strategies accordingly. This form of learning is essential for innovation, as it allows project teams to continuously refine and enhance their ideas and strategies. For instance, agile project management frameworks, which emphasize iterative development and feedback, align with the principles of strategic flexibility, thereby supporting teams in adapting to changes and improving their innovations.

Strategic flexibility is crucial for mitigating the risks

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inherent in innovation processes. While risk-taking is a core component of EO, effective risk management is essential to avoid being either overly cautious or recklessly ambitious (Corrêa et al., 2022). Strategic flexibility provides a balanced approach, allowing organizations to experiment with new ideas while maintaining control to manage potential failures. This dynamic risk management supports innovation and strengthens organizational culture (Lumpkin & Pidduck, 2021). In modern project management, flexibility is vital due to the unpredictable nature of many projects. It ensures that innovation efforts align with strategic goals and do not waste resources on peripheral initiatives (Too & Weaver, 2014). Strategic flexibility also fosters dynamic capabilities, helping organizations manage resources and create new value through an entrepreneurial perspective (Ferreira, Coelho, & Moutinho, 2020; Randhawa, Wilden, & Gudergan, 2021). Leadership plays a key role in fostering an entrepreneurial culture and maintaining strategic agility, influencing the organization's capacity for innovation and competitive advantages.

Although EO is widely recognized as a crucial driver of innovation performance, many organizations struggle to consistently translate EO into tangible innovation outcomes. This challenge is exacerbated by the dynamic and complex nature of modern project environments, which demand both flexibility in management and effective resource allocation. The role of SF as a moderating factor in this context has not been thoroughly examined, leading to gaps in understanding how EO can be sustained to foster ongoing innovation. This research aims to address these gaps by investigating the mediating role of SF in the relationship between EO and innovation

performance. The goal is to ensure that innovation initiatives remain sustainable and aligned with organizational goals and objectives. The following outlines the research objectives of this study:

- To investigate the impact of EO on IP within project management contexts.
- To evaluate the mediating effect of SF on the relationship between EO and IP.
- To assess the joint impact of EO and SF on the overall innovation performance of project teams.

The implications of this research are significant as it establishes the role of SF in translating EO into sustained innovation performance within modern project management. The study's findings address existing gaps in the literature and provide practical insights for organizations seeking to enhance the EO-IP link through SF. Understanding this interaction aids in developing effective strategies for improving adaptability, risk management, and continuous learning. These insights will be valuable to managers, leaders, and policymakers by highlighting how EO and SF can help organizations achieve competitive advantages and promote sustainable growth in dynamic and uncertain environments.

2. Literature Review
2.1. Entrepreneurial Orientation's Effect on Innovation in Project Management

EO is a crucial and widely studied variable in the literature on firm performance and innovation. In project management, EO, with its dimensions of innovativeness, proactiveness, and risk-taking, significantly impacts IP. EO shapes project teams' culture and approach to innovation, enabling the development of radical solutions (see Figure 1).

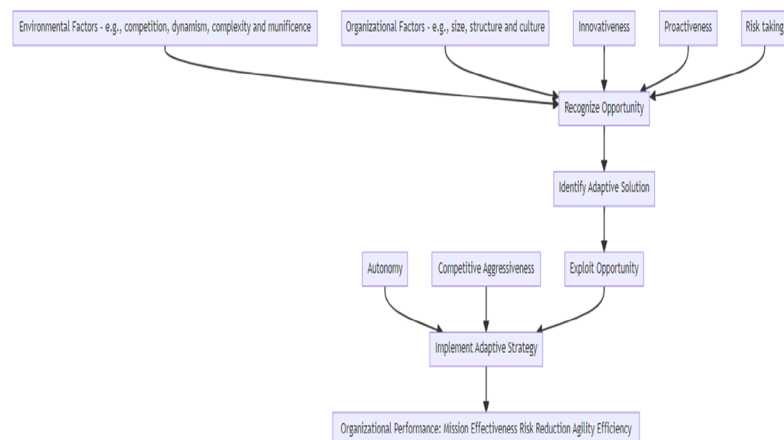


Figure 1: Theoretical Model of Entrepreneurial Orientation. Source: Author

This is particularly pertinent in project management, where projects are often unique and complex, necessitating unconventional solutions. Teams exhibiting high levels of innovativeness are more likely to experiment with new methodologies, tools, and techniques, thereby enhancing their ability to generate innovative outputs (Xiaofei et al., 2023; Yang & Yu, 2022). For example, in software development projects, a team with a strong EO may adopt new programming languages or frameworks that offer improved features for the final product or user interface. Another critical dimension of EO is proactiveness, which involves anticipating future requirements and environmental shifts to take appropriate actions (Dai et al., 2014). In project management, proactive teams can better anticipate and address potential risks or opportunities, enabling early identification of market trends and technologies. This strategic foresight enhances their competitive edge and innovation outcomes (Busroh & Khairo, 2023; Kock & Gemünden, 2021). This anticipatory behaviour ensures that projects can continue to deliver value even amidst rapidly changing market conditions.

2.2. Risk-Taking and EO in Project Management Innovation

Risk-taking, defined as the willingness to invest resources in projects with uncertain returns, is a key component of EO. According to Guo and Jiang (2020), in project management contexts, embracing calculated risks can lead to substantial gains. While risk-averse teams typically solve problems using conventional, safe approaches, an EO-driven team is encouraged to explore new opportunities, potentially resulting in significant innovations. For instance, a project team in the pharmaceutical industry developing a new drug with uncertain effects might discover that the drug revolutionizes treatment, thereby enhancing innovation performance. Additionally, Covin et al. (2020) assert that EO fosters an entrepreneurial culture within project teams. It promotes contributions to concepts, idea generation, and knowledge enhancement—all crucial elements of innovation. Teams with high EO are more likely to pursue transformative changes and advance innovative solutions.

Rank and Strenge (2018) noted that an environment characterized by high EO not only motivates team members but also fosters creativity in devising solutions to achieve project objectives. Entrepreneurial Orientation influences innovation performance in project management settings by enhancing dimensions such as innovativeness, proactivity, and risk-taking. Similarly, Makhloufi et al. (2021) found that these EO

dimensions facilitate the generation and implementation of ideas within project teams, as well as the adoption of risks that lead to social innovation. Consequently, organizations with high levels of EO within their project teams are better positioned to achieve superior innovation performance and gain a competitive advantage in their respective industries.

2.3. SF in Enhancing EO and Innovation

SF is defined as an organization's capacity to adapt its strategic decisions and resource allocation in response to external changes. According to Al-Hakimi, Borade and Saleh (2022), SF plays a crucial moderating role in the relationship between EO and IP, enabling organizations to better leverage their entrepreneurial capabilities for improved innovation outcomes. Mrabet and Barka (2023) highlight that while high EO traits—such as innovativeness, proactiveness, and risk-taking—are valuable, their effectiveness in generating innovations depends on the presence of strategic flexibility. SF allows organizations to adjust their strategies, goals, and objectives to capitalize on new opportunities and address emerging threats. For instance, Cannavale, Zohoorian Nadali and Esemplio (2020) found that a technology firm with high EO can use SF to adapt its product development efforts in response to market or technological shifts.

SF enables a firm to sustain innovation and achieve superior IP by reallocating resources to address new markets or integrating disruptive technologies into its products. SF enhances the implementation of ideas generated through EO by facilitating strategic and process adjustments to overcome problems and constraints in project management. It allows project teams to adapt as needed, ensuring that creativity is fully realized. Dynamic capability is crucial in environments characterized by high uncertainty, where resistance to change can impede innovation (Chin et al., 2016; Mazhair et al., 2023). SF fosters a learning orientation that supports the development of an innovative culture, leading to increased experimentation and iterative learning. This iterative approach aligns with the entrepreneurial process, where teams refine their projects through feedback and failure, thereby enhancing EO's proactive impact on IP (Nobakht et al., 2021; Wang et al., 2022). Additionally, SF ensures that EO is effectively aligned with organizational resources, which is vital for the successful execution of innovation projects. For instance, a firm with high EO might identify a lucrative opportunity but may struggle to capitalize

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on it without adequate SF to align and mobilize the necessary resources efficiently (Irfan & Kusumastuti, 2023; Singh & Kakkar, 2022). Thus, SF enables optimal resource utilization to seize opportunities and enhance overall innovation performance.

2.4. Enhancing Innovation through EO and SF

The interaction between EO and SF significantly impacts the overall IP of project teams. Yang and Yan (2019) found that high levels of EO and SF enable project teams to effectively address challenges and risks in innovation projects, thereby enhancing innovation outcomes. EO fosters a culture of innovation, initiative, and calculated risk-taking, while SF provides the flexibility and resources necessary to implement entrepreneurial ventures. Scaliza et al. (2022) highlighted that high EO teams are more likely to challenge norms, experiment with new ideas, and take calculated risks, but without SF, they might be constrained by limited resources and conservative approaches. SF supports EO by facilitating method adjustments, resource reallocation, and adaptability within project management contexts (Hwangbo, Shin, & Kim, 2022). Therefore, the synergy between EO and SF not only promotes the development of novel ideas but also ensures their practical implementation, creating a sustained environment for continuous innovation.

2.5. Integrating EO and SF for Innovation

The integration of EO with SF fosters change, innovation, and learning among project teams. High EO teams are inherently inclined towards experimentation and learning from failures. SF complements this by allowing teams to adapt their plans rapidly based on feedback and new information, thus enabling continuous enhancement of innovations and improving IP (You & Brahmana, 2023). Additionally, the combination of EO and SF enhances project teams' capabilities in managing risk and uncertainty. While EO provides the entrepreneurial mindset needed to address challenges, SF offers the flexibility to navigate and resolve them effectively. This resilience ensures that resources remain dynamic and innovative, particularly in response to improvements (Hamzah & Saleem, 2023; Jin & Tu, 2024; Thornton & Sandberg, 2022). Consequently, teams with high EO and SF demonstrate superior innovation performance across various industries. For instance, in the technology sector, such teams are able to design and launch new products quickly, while in the healthcare sector, they can develop new strategies and treatment methods to address emerging health challenges (Quintela, 2022; Sindarov et al., 2023).

2.6. Theoretical Framework

The theoretical framework includes the Resource-Based View (RBV) and Dynamic Capabilities Theory. These theories are detailed as follows:

2.7. Resource-Based View (RBV)

The RBV posits that an organization's resources and capabilities are key to its competitive advantage and performance, as shown in Figure 2.

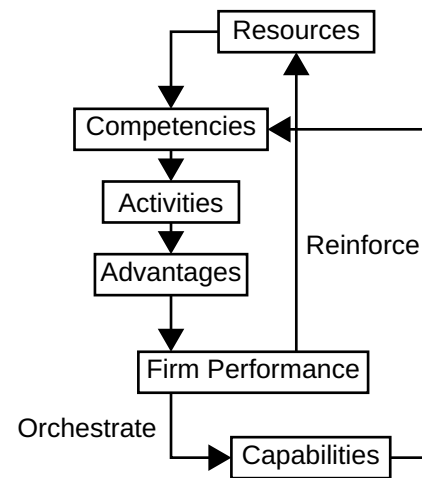


Figure 2: Resource-Based View.

In the theoretical framework of this study, the RBV elucidates the relationship between EO, SF, and IP in project management. EO is considered a valuable organizational resource that fosters a positive attitude towards innovation, characterized by innovativeness, proactiveness, and risk-taking (Diáñez-González, Camelo-Ordaz, & Fernández-Alles, 2021). However, to leverage these resources effectively, they must be systematically and dynamically managed, which is where SF plays a crucial role. SF, as a dynamic capability, enables the reallocation of resources, adjustment of strategies, and modification of projects, allowing an organization to respond swiftly to opportunities and threats. This flexibility is essential for translating entrepreneurial attitudes into tangible innovation outcomes (Siddiqui et al., 2024). By integrating EO with SF, organizations can better navigate the complexities of project management, ensuring that innovations are both introduced and sustained in alignment with strategic objectives. Thus, according to the RBV perspective, the interplay between EO and SF enhances innovation performance and provides organizations with a sustainable competitive advantage.

2.8. Dynamic Capabilities Theory

Dynamic Capability Theory builds upon the RBV by

emphasizing an organization's ability to integrate, develop, and reconfigure both internal and external resources and skills to adapt to changing environmental contexts. This theory is particularly useful in explaining the role of SF as a mediator between EO and IP. EO ensures that project teams engage in entrepreneurial behaviours conducive to creating opportunities for innovative solutions (Nasution et al., 2021). However, these behaviours alone do not guarantee successful innovation without the dynamic capabilities needed for adaptation. SF encompasses the organizational ability to adapt to uncertainty and change through specific actions, processes, and project management strategies aimed at identifying

and seizing opportunities, managing threats, and altering operations (Nasution et al., 2021). In project management, this means that strategies and project plans can be adjusted in response to feedback and emerging trends. Such continual adjustments help ensure that entrepreneurial initiatives remain dynamic and aligned with environmental changes. By fostering a culture of learning and adaptability, SF enhances the effectiveness of EO, leading to continuous improvement in innovation performance.

2.9. Hypothesis

The hypotheses for this research are outlined in Table 1.

Table 1: Hypothesis.

Hypothesis Number	Hypothesis	Null Hypothesis
H1	Entrepreneurial Orientation (EO) has a positive influence on Innovation Performance (IP) in project management settings.	H0: Entrepreneurial Orientation (EO) does not have a positive influence on Innovation Performance (IP) in project management settings.
H2	Strategic Flexibility (SF) mediates the relationship between Entrepreneurial Orientation (EO) and Innovation Performance (IP).	H0: Strategic Flexibility (SF) does not mediate the relationship between Entrepreneurial Orientation (EO) and Innovation Performance (IP).
H3	The combined effect of Entrepreneurial Orientation (EO) and Strategic Flexibility (SF) enhances the overall innovation performance (IP) of project teams.	H0: The combined effect of Entrepreneurial Orientation (EO) and Strategic Flexibility (SF) does not enhance the overall innovation performance (IP) of project teams.

2.10. Literature Gap

While previous research has examined the impact of EO on IP, the mediating role of SF in this relationship remains underexplored in modern project management contexts. Most studies have focused solely on the direct link between EO and innovation, overlooking how SF mediates the conversion of entrepreneurial resources into successful innovation outcomes. Furthermore, despite increasing interest in EO and SF as key determinants of organizational performance, there is limited understanding of their combined effect on project teams' innovation performance and how these factors can be effectively managed and aligned to achieve sustained innovation in complex project environments.

3. Methodology

3.1. Research Method

This research employed a quantitative approach to examine the relationship between EO and IP, with SF serving as a mediating variable, within contemporary project management contexts. The choice of a quantitative method is justified by its ability to generate and analyse numerical data, which is crucial for identifying patterns, interactions, and effects among the variables under investigation.

Quantitative research is crucial for generating valid and reliable findings through systematic analysis. Disman, Ali and Barliana (2017) highlight that this approach is preferred for its focus on numerical data, which facilitates pattern identification, hypothesis testing, and forecasting. Structured tools such as surveys and questionnaires enhance objectivity and replicability, thereby improving result validity. Plonsky and Gass (2011) argue that quantitative research is particularly valuable in fields like medicine, social sciences, and business, as it provides a measurable means to identify correlations, causations, and effects between variables. This approach enables the collection of extensive data, with findings from samples being generalizable to the larger population. Its robust framework ensures that conclusions are based on empirical evidence, making it essential for developing concepts and policies.

3.2. Research Design

The research design predominantly focused on the collection of primary data, which offers specificity and relevance to the research questions addressed in this study. By obtaining first-hand data from participants actively engaged in project management, the study provides novel insights into the dynamics of EO, SF, and IP. This approach ensures that the

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data is directly applicable and pertinent to the objectives of the research. Primary research was essential for this study as it involved collecting data directly from the source, which ensured that the information was current, relevant, and precise attributes that secondary sources may not always provide (Schutt, 2019). Structured questionnaires, surveys, interviews, and observational methods were employed to address specific research questions and gather detailed insights into the study topic. The significance of primary research lies in its provision of original, first-hand data that has not been previously utilized, thereby offering a factual basis for developing new knowledge, testing hypotheses, and making informed decisions across various disciplines (Schutt, 2019).

3.3. Data Collection

This study utilized structured questionnaires as the primary data collection method, targeting project management professionals. These questionnaires were designed to capture detailed information on EO, SF, and IP within project settings. The questionnaire was organized into distinct sections, each addressing specific dimensions of EO, SF, and IP. The EO section included items on innovativeness, proactiveness, and risk-taking, consistent with established scales in the literature. The SF section focused on organizational flexibility in reallocating resources and adapting to environmental changes. The IP section evaluated the outcomes of innovative activities within projects. The study gathered data from enterprises in Jiangsu and Zhejiang Provinces in China, resulting in 250 valid responses.

3.4. Sampling Technique and Size

The study employed a stratified random sampling technique to ensure a representative sample of project management professionals across various industries and environments. Initially, participants were categorized based on industry, organization size, and project type. Subsequently, individuals were randomly selected from each category or stratum to ensure comprehensive representation of all relevant subgroups within the target population. According to Zaman and Bulut (2023), stratified random sampling involves dividing the population into distinct strata and drawing samples proportionally from each, which minimizes sample bias and enhances the accuracy of comparative data. A statistical power analysis was conducted to determine the required sample size, indicating that a target of 250 participants was

sufficient to achieve adequate power for the multiple regression analyses and to detect medium to large effects. This sample size was deemed appropriate for mediation analysis, as it provides the necessary number of cases to ensure accurate and stable coefficient estimates.

3.5. Data Analysis

Data were analysed in SPSS using various statistical tests. Frequency analysis provided demographic information and verified sample representativeness. Reliability and validity were assessed using Cronbach's alpha, composite reliability, and AVE, with values above 0.7 for alpha and 0.5 for AVE confirming acceptable reliability and convergent validity. Correlation analysis was performed using Pearson correlation coefficients to examine the relationships between EO, SF, and IP, determining the strength and direction of these relationships. Significant correlations provided preliminary evidence of SF's potential mediating role between EO and IP. A regression-based mediation analysis was conducted using the PROCESS macro for SPSS to explore the mediation effect. This analysis estimated models to test the direct and indirect effects of EO on IP through SF. Bootstrapping methods were employed to assess the significance of the indirect effect, with confidence intervals calculated. The analysis of total, direct, and indirect effects helped to isolate EO's impact on IP, controlling for SF, and to quantify SF's mediation role.

3.6. Ethical Considerations

Ethical considerations were paramount, following institutional guidelines. Informed consent was obtained from all participants, who were briefed on the study and their rights. Participation was voluntary, with the option to withdraw at any time. Confidentiality was maintained by anonymizing participant information and not collecting personal identifiers. Data security was maintained by restricting access to authorized personnel only, thereby safeguarding the integrity and privacy of the data collected.

4. Results

4.1. Overview

This chapter covers the study's findings, analysis, and discussion, including descriptive statistics, reliability, validity, correlation, and mediation analysis. The aim is to examine the relationships between EO, SF, and IP within the sample population.

4.2. Descriptive Statistics

4.2.1. Gender

Table 2: Gender.

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	166	66.4	66.4	66.4
	Female	84	33.6	33.6	100.0
	Total	250	100.0	100.0	

The gender distribution of the sample shows that, out of 250 respondents, 166 are male, representing 66.4% of the total, while 84 are female, accounting for 33.6%. The valid and cumulative percentages are consistent with the frequency percentages, confirming that the

gender distribution is representative and complete. This distribution indicates a predominantly male sample, and the cumulative percentage of 100% signifies that there are no missing data.

4.2.2. Age

Table 3: Age.

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-30 Years	48	19.2	19.2	19.2
	30-35 Years	70	28.0	28.0	47.2
	35-40 Years	82	32.8	32.8	80.0
	Above 40 Years	50	20.0	20.0	100.0
	Total	250	100.0	100.0	

The age distribution of respondents is fairly balanced. The largest group comprises individuals aged 35-40 years, representing 32% of the sample (82 respondents). This is followed by those aged 30-35 years at 28% (70 respondents), 25-30 years at 19.2% (48 respondents), and those over 40 years at 20%

(50 respondents). The cumulative percentage for age groups totals 100%, indicating complete coverage across all age brackets. This distribution is generally even, with a slight predominance of middle-aged respondents.

4.3. Reliability and Validity

Table 4: Reliability and Validity.

	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Entrepreneurial Orientation	0.843	0.843	0.888	0.614
Innovation Performance	0.826	0.827	0.878	0.590
Strategic Flexibility	0.816	0.817	0.872	0.577

Table 4 shows that Cronbach's alpha values for EO, IP, and SF exceed 0.70, indicating satisfactory internal reliability. Specifically, EO has an alpha of 0.843, IP is 0.826, and SF is 0.816, indicating that the items within each construct are valid and reliable indicators of their respective underlying concepts. Composite reliability (rho_a and rho_c) further supports these findings, with all values exceeding the threshold of 0.70, indicating a

high level of reliability. Specifically, EO scores 0.843 (rho_a) and 0.888 (rho_c), Innovation Performance (IP) scores 0.827 (rho_a) and 0.878 (rho_c), and Strategic Flexibility (SF) scores 0.817 (rho_a) and 0.872 (rho_c). Validity is assessed through the AVE, which measures the proportion of variance in the constructs that is captured by their respective items, relative to measurement error. All constructs exceed the 0.50

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AVE threshold, with EO at 0.614, IP at 0.590, and SF at 0.577, indicating good convergent validity. This shows that the constructs are measured accurately and consistently, reflecting high reliability and validity.

4.3.1. Correlation

Table 5: Correlations.

		Correlations		
		Entrepreneurial Orientation (EO)	Strategic Flexibility (SF)	Innovation Performance (IP)
Entrepreneurial Orientation (EO)	Pearson Correlation	1	.809**	.826**
	Sig. (2-Tailed)		.000	.000
	N	250	250	250
Strategic Flexibility (SF)	Pearson Correlation	.809**	1	.841**
	Sig. (2-Tailed)	.000		.000
	N	250	250	250
Innovation Performance (IP)	Pearson Correlation	.826**	.841**	1
	Sig. (2-Tailed)	.000	.000	
	N	250	250	250

** Correlation is significant at the 0.01 level (2-tailed).

Table 5 shows the Pearson correlation coefficients between EO, SF, and IP, ranging from -1 to +1. A coefficient close to +1 indicates a strong positive relationship. The correlation between EO and SF is particularly high at 0.809, significant at the 0.01 level. This suggests that higher entrepreneurial orientation is strongly associated with increased strategic flexibility. The hypothesis test confirms this relationship is statistically significant with a p-value of 0.000. The correlation analysis shows a strong relationship between EO and IP (Pearson coefficient of 0.826), indicating that higher EO levels are linked to better innovation

performance. The relationship between SF and IP is even stronger, with a Pearson coefficient of 0.841, meaning greater strategic flexibility is associated with improved innovation performance. Both correlations are statistically significant, with p-values of 0.000. Overall, the results demonstrate moderate to high positive correlations between all variable pairs. These findings suggest that increased levels of both entrepreneurial orientation and strategic flexibility are likely to positively influence innovation performance. The consistent statistical significance at the 0.01 level further supports the reliability and robustness of these relationships.

4.4. Mediation Analysis (Regression)

Table 6: Mediation Analysis.

Outcome Variable	Predictor	Coeff	SE	t	p	LLCI	ULCI	R	R-sq	MSE	F	df1	df2	Model p
SF	Constant	0.6778	0.1175	5.7669	0.0000	0.4463	0.9093	0.8092	0.6549	0.3668	470.5298	1	248	0.0000
	EO	0.7741	0.0357	21.6917	0.0000	0.7038	0.8444							
IP	Constant	0.3002	0.1044	2.8741	0.0044	0.0945	0.5059	0.8765	0.7683	0.2554	409.5564	2	247	0.0000
	EO	0.4094	0.0507	8.0760	0.0000	0.3095	0.5092							
	SF	0.5084	0.0530	9.5955	0.0000	0.4041	0.6128							

Table 7.

Direct Effect of X on Y	Effect	SE	t	p	LLCI	ULCI
	0.4094	0.0507	8.0760	0.0000	0.3095	0.5092

Table 8:

Indirect Effect of X on Y through M	Effect	BootSE	BootLLCI	BootULCI
	0.3936	0.0495	0.2956	0.4900

In the mediation analysis, regression models were employed to examine the relationships between EO, SF, and IP. The first regression model investigated the effect of EO on SF. The results show a significant positive impact of EO on SF (Coefficient = 0.7741, Standard Error = 0.0357, t-value = 21.6917, p < 0.0001). The second regression model assessed the effects of both EO and SF on IP. It was found that EO directly influences IP (Coefficient = 0.4094, Standard Error = 0.0507, t-value = 8.0760, p < 0.0001). Additionally, SF has a significant positive effect on IP (Coefficient = 0.5084, Standard Error = 0.0530, t-value = 9.5955, p < 0.0001). This model has an R-squared value of 0.7683, indicating that EO and SF together account for approximately 76.83% of the variance in IP. The analysis shows that approximately 83% of the variability in IP can be explained. The direct effect of EO on IP is significant (Effect = 0.4094, SE = 0.0507, t = 8.0760, p < 0.0001), indicating EO's independent influence on IP. Additionally, the indirect effect of EO on IP through Strategic Flexibility (SF) is substantial (Effect = 0.3936, BootSE = 0.0495, BootLLCI = 0.2956, BootULCI = 0.4900), highlighting SF's role as a mediator. In summary, the analysis demonstrates that EO has both a direct and mediating effect on the relationship between SF and IP. The high R-squared values and low p-values support the robustness and consistency of these findings, underscoring the crucial role of strategic flexibility in enhancing innovation performance.

5. Discussion

Previous research highlights the influence of gender diversity on organizational innovation and performance. For example, González-Moreno, Díaz-García and Sáez-Martínez (2018) found that gender-diverse teams enhance creativity and innovation due to varied problem-solving approaches. Additionally, Hemmert, Cho and Lee (2024) observed a positive correlation between gender diversity in executive roles and improved firm performance and decision-making. The age distribution of participants, predominantly in the 35-40 age group, suggests a pre-peak work experience demographic. Brooks et al. (2018) suggests that variations in risk attitudes and innovation strategies between younger and older business owners may arise from differing evaluations of opportunities and resource availability.

This research validates the reliability and validity of EO, SF, and IP, as evidenced by high Cronbach alpha coefficients. These findings align with prior research, such as Muchiri and McMurray (2015), who assert that EO fosters an innovative culture within firms, and

Ahmadi (2017), who argues that strategic flexibility enhances organizational responsiveness to changing environments. The robust reliability and validity of the constructs confirm their effectiveness in measuring key organizational attributes, thereby reinforcing the credibility of the study. These results not only align with existing literature but also provide a solid foundation for future research on these variables in diverse organizational contexts.

The mediation analysis reveals that SF partially mediates the relationship between EO and IP. EO affects IP both directly and indirectly through SF. This supports prior research suggesting SF enhances the impact of EO on innovation. For instance, Miroshnychenko et al. (2021) and Bamel and Bamel (2018) highlight that high strategic flexibility enables better entrepreneurial initiatives and aligns resources with market needs, thereby improving innovation performance. This study underscores SF's crucial role in converting entrepreneurial efforts into effective innovation and offers practical insights for managers seeking to boost organizational innovation. The mediation model aligns with the Baron and Kenny (1986) framework used in organizational research to explore variable relationships.

The results allow for a comprehensive evaluation of the initial hypotheses. Hypothesis H1, which proposes that EO positively impacts IP in project management environments, is supported by the findings, as EO demonstrates a direct and significant effect on IP with a path coefficient of 0.4094 (p < 0.0001). Hypothesis H2, suggesting that SF fully mediates the relationship between EO and IP, is also confirmed, as the mediation analysis reveals a significant indirect effect of EO on IP through SF (Effect = 0.3936, p < 0.0001). Finally, Hypothesis H3 posits that both EO and SF have main and moderating impacts on innovation performance. This hypothesis is validated by the data showing that EO and SF significantly and strongly relate to IP, with the combined regression model explaining 76.83% of the variance in IP. Therefore, H3 is validated. Accepting all the hypotheses, the research results underscore the critical role of EO and SF in enhancing innovation performance within the context of project management.

6. Conclusion

This research confirms that EO has a significant and positive impact on IP within project management settings. The dimensions of EO—innovative thinking, proactiveness, and risk-taking—collectively create an environment conducive to innovation. This finding

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aligns with existing literature that highlights EO's pivotal role in fostering an innovative organizational culture. EO facilitates the generation and execution of novel ideas, which is crucial in dynamic and complex project management contexts. Additionally, the study demonstrates that SF fully mediates the relationship between EO and IP. This mediation underscores SF's importance in enabling organizations to adapt their strategic plans and resource management, thereby enhancing the effectiveness of EO in driving innovation. These results are consistent with prior research that emphasizes SF's central role in translating entrepreneurial activities into successful innovation outcomes. Moreover, the study shows that the combined effect of EO and SF positively influences innovation performance. Teams that leverage both high EO and high SF are better equipped to handle the risks and uncertainties inherent in innovation projects, thereby improving their innovation performance. This finding supports the RBV and Dynamic Capabilities Theory, which stress the value of integrating entrepreneurial and strategic capabilities to build competitive advantage.

6.1. Implications of Study

This research contributes significantly to both the RBV and Dynamic Capabilities Theory by elucidating the role of SF as a moderator in the relationship between EO and IP. It supports the notion that dynamic capabilities, such as SF, facilitate the effective deployment of entrepreneurial resources within organizations, thereby enhancing innovation performance. The study provides a nuanced understanding of how EO and SF interplay to drive innovation, offering a comprehensive framework for examining the interactions between entrepreneurial and strategic capabilities. This framework can serve as a valuable basis for future research exploring these dynamics across various organizational contexts.

6.2. Practical Implications

This research offers several practical implications for managers, leaders, and policymakers. It highlights that to enhance innovation performance, organizations must cultivate an entrepreneurial culture that emphasizes innovativeness, proactivity, and risk-taking within their projects. Additionally, developing strategic flexibility is crucial for adapting to market changes and effectively managing resource allocation. Managers should focus on fostering a culture of learning and adaptability, which will increase the likelihood of successful risk management and innovation project outcomes. Leaders are also encouraged to commit to building an entrepreneurial culture and ensuring strategic flexibility within the

organization. This involves supporting innovation initiatives, empowering employees to drive change, and implementing training programs that enhance the strategic flexibility of project teams. By improving their ability to reallocate resources and adapt to new conditions, organizations can better leverage entrepreneurial orientation to optimize innovation performance.

6.3. Limitations

However, this research has several limitations. Firstly, the reliance on self-reported questionnaires from project management professionals may introduce bias. Future research could address this by incorporating multiple data sources to validate the findings. Moreover, the sample is confined to project management professionals within specific industries, which may affect the external validity of the results.

6.4. Future Research Directions

Future research should examine additional mediators and moderators, such as organizational culture, leadership, and external factors, that might influence the EO-IP relationship. Exploring how EO and SF interact with other strategic resources and capabilities could provide a broader understanding of enhancing innovation performance. Additionally, studying the long-term effects of EO and SF on organizational performance, including both successful and failed innovation projects, would be valuable. Comparative studies across different countries and cultures could further enrich the theoretical and practical understanding of these constructs.

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