

# Leadership and Innovation Management: Driving Performance through Agility and Resilience in Automotive Enterprises

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## Abstract

*The study investigates how leadership and innovation management influence organizational performance, with agility and resilience as mediating factors. The primary objective was to examine the direct and indirect effects of these variables on organizational performance. The findings show that leadership and innovation management have significant direct impacts on performance. Agility and resilience also play crucial roles in mediating these relationships, further enhancing organizational performance. The study concludes that leadership and innovation not only directly improve organizational performance but also indirectly enhance it by fostering agility and resilience, enabling organizations to adapt quickly and recover from challenges. These findings have practical implications for leaders aiming to improve long-term organizational performance and competitiveness in dynamic environments, particularly those characterized by rapid change and uncertainty. The study involved 420 human participants from various industries, representing different leadership and operational roles. A cross-sectional design was employed, and data were gathered using standardized questionnaires, including the Multifactor Leadership Questionnaire (MLQ) for leadership, and validated scales for innovation management, agility, resilience, and organizational performance. Data collection included surveys administered to participants and some secondary data to contextualize the findings. Overall, the study emphasizes the importance of fostering leadership and innovation to build agility and resilience, ensuring that organizations remain competitive and capable of sustaining high performance in fast-evolving industries. Additionally, it highlights the need for strategic focus on adaptability and operational flexibility as key drivers of long-term success.*

**Keywords:** Leadership, Innovation Management, Organizational Performance, Agility, Resilience

## Introduction

In today's fast-paced and highly dynamic business environment, organizations are increasingly challenged to navigate complex internal and external uncertainties. These challenges are particularly acute in rapidly developing economies like China, where integration into the global economy and the increasing sophistication of markets require businesses to adapt and innovate at unprecedented rates (Crossan & Apaydin, 2010). The rapid advancement of technology, globalization, and changing customer expectations are driving organizations to seek innovative strategies to remain competitive and sustain long-term growth (Bass & Riggio, 2006).

A key issue faced by businesses, particularly in fast-growing sectors such as the automotive industry, is the ability to remain agile and resilient in the face of market fluctuations and operational disruptions (Feng et al., 2015). Agility refers to an organization's capacity to swiftly respond to changes in the market environment, while resilience is the ability to recover from disruptions and continue operating under adverse conditions (Connor & Davidson, 2003; Dove, 2001). These two qualities are critical for organizational performance, particularly in industries undergoing rapid technological and structural changes (Yang & Liu, 2012).

Research has established that leadership and innovation management are crucial drivers of organizational performance (Bass & Riggio, 2006; Crossan & Apaydin, 2010). Effective leadership, particularly transformational leadership, helps guide organizations through periods of uncertainty and enables them to adopt innovative practices that enhance performance (Avolio & Bass, 1995). Moreover, innovation management allows organizations to stay ahead of competitors by fostering new ideas and processes that contribute to operational efficiency and market responsiveness (Fang et al., 2020).

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Despite the recognized importance of leadership and innovation, the mechanisms through which they influence organizational performance, particularly through agility and resilience, remain underexplored. Understanding these relationships is critical for business leaders and policymakers, as they seek to develop strategies that foster long-term competitiveness and sustainability (Makkonen, 2018; Yang, 2014).

This study contributes to the literature by examining how leadership and innovation management affect organizational performance through agility and resilience. From a theoretical perspective, it extends existing models of organizational performance by incorporating agility and resilience as mediators, thus offering a more comprehensive understanding of the dynamics between leadership, innovation, and performance (Bass & Riggio, 2006; Dove, 2001). The inclusion of these mediating factors acknowledges the complex and interdependent nature of organizational processes in volatile business environments (Feng et al., 2015).

Practically, the findings of this study can guide business leaders in developing strategies that enhance their organizations' agility and resilience. In particular, by understanding how leadership styles and innovation practices impact these two critical qualities, businesses can tailor their management approaches to better cope with market fluctuations and operational challenges (Yang & Liu, 2012). Moreover, insights from this research can help organizations foster a culture that prioritizes continuous learning and adaptability, ultimately leading to sustained performance improvements in highly competitive markets (Zain et al., 2005; Zheng et al., 2024).

In conclusion, this study aims to explore the relationships between leadership, innovation management, agility, resilience, and organizational performance. By doing so, it provides valuable insights for both researchers and practitioners seeking to enhance organizational competitiveness and adaptability in today's ever-changing business landscape.

## Literature Review

The concept of organizational performance has been extensively explored in business management literature. Various factors have been identified as drivers of performance, including leadership, innovation management, agility, and resilience. These concepts are interconnected and have been shown to influence an organization's ability to adapt to a rapidly changing environment (Bass & Riggio, 2006; Crossan & Apaydin, 2010).

Leadership plays a pivotal role in guiding organizations towards success. According to Avolio and Bass (1995), leadership can be transformational, transactional, or visionary, each contributing uniquely to organizational performance. Transformational leaders inspire their teams by creating a shared vision, motivating employees to exceed expectations, and fostering a culture of innovation (Bass & Riggio, 2006; Wang et al., 2024). Transactional leadership, on the other hand, focuses on clear structures and rewards to ensure efficient operation, while visionary leadership emphasizes long-term goals and strategic direction. These leadership styles have been found to correlate positively with organizational performance, especially when leaders promote agility and resilience within their teams (Yang & Liu, 2012).

Research also shows that effective leadership directly impacts organizational agility and resilience, two critical factors in maintaining competitive advantage in turbulent markets (Connor & Davidson, 2003). Leaders who embrace agility foster a responsive organization that can quickly adapt to market changes, while those who prioritize resilience build robust organizations capable of withstanding shocks (Feng et al., 2015).

Innovation is a critical driver of organizational performance, particularly in industries facing rapid technological change (Crossan & Apaydin, 2010; Jia et al., 2024). Innovation management involves developing processes that encourage new ideas, improve products and services, and adopt emerging technologies. Companies that embrace innovation are more likely to enhance their agility, allowing them to respond swiftly to market demands and changes in customer preferences (Dove, 2001).

Innovation also influences resilience by providing organizations with the tools and processes needed to overcome challenges and bounce back from setbacks (Fang et al., 2020). By continuously evolving, organizations can mitigate the risks associated with market volatility and economic uncertainty (Fussler & James, 1996).

Agility, the ability of an organization to adapt quickly and efficiently, has become an essential attribute in today's business environment. It reflects an organization's capability to make rapid decisions and implement changes that address both internal and external challenges (Makkonen, 2018). Companies that exhibit high levels of agility are better equipped to seize new opportunities and mitigate potential risks (Yang, 2014).

Resilience, on the other hand, is the organization's ability to absorb shocks and continue functioning despite challenges (Connor & Davidson, 2003). Resilient organizations are those that can recover from disruptions—such as economic downturns, technological failures, or supply chain disruptions—while maintaining or quickly regaining operational stability (Ren et al., 2008).

Both agility and resilience serve as mediators between leadership, innovation management, and organizational performance. Research shows that organizations with strong leadership and effective innovation strategies are more likely to develop agile and resilient operations, which in turn improves overall performance (Bai et al., 2015; Li et al., 2021).

Organizational policy and internal management are foundational elements that support leadership, innovation, and agility. Effective internal management ensures that resources are optimally allocated, risks are minimized, and strategic goals are met (Liao & Cheng, 2014). In addition, organizational policies that promote ethical behavior, sustainability, and corporate social responsibility can foster a culture of accountability and long-term success (Zhou et al., 2015).

By creating a structured framework for decision-making, policies and internal management processes allow organizations to navigate complex environments while maintaining agility and resilience. These policies can also promote innovation by providing guidelines for managing resources, protecting intellectual property, and encouraging collaboration across departments (Zain et al., 2005).

The literature demonstrates the importance of leadership and innovation management in driving organizational performance. Leadership directly influences an organization's ability to adapt and remain resilient in the face of challenges, while innovation management fosters agility and supports long-term growth. Agility and resilience act as mediators, enhancing the impact of leadership and innovation on performance outcomes. Together, these factors create a robust framework for understanding how businesses can navigate today's dynamic and competitive environment.

### *Hypothesis Formulation*

Leadership plays a central role in shaping the strategic direction of an organization, influencing employee motivation, decision-making processes, and the overall organizational culture (Bass & Riggio, 2006). Effective leadership, particularly transformational leadership, enhances an organization's ability to navigate uncertainties and challenges by fostering an environment that supports innovation and adaptability (Avolio & Bass, 1995). Leadership impacts organizational performance by promoting a shared vision, encouraging employees to exceed expectations, and aligning organizational goals with market demands. Additionally, leadership has been shown to positively influence organizational agility and resilience, which are crucial for sustaining performance in dynamic and competitive markets (Yang & Liu, 2012). By facilitating swift responses to market changes (agility) and strengthening the organization's ability to recover from setbacks (resilience), leadership indirectly supports long-term organizational performance.

H1a: Leadership has a positive direct effect on organizational performance.

H1b: Leadership positively influences organizational performance through agility and resilience.

Innovation management is essential for maintaining a competitive advantage in rapidly evolving industries. It involves creating and managing processes that encourage the development of new ideas, products, and services (Crossan & Apaydin, 2010). Organizations that foster innovation are more agile, allowing them to quickly adapt to market demands and technological changes (Feng et al., 2015). Furthermore, innovation contributes to resilience by equipping organizations with the tools to overcome challenges and recover from disruptions. By integrating new technologies and processes, innovation management not only drives direct improvements in organizational performance but also builds the agility and resilience needed to navigate uncertainties (Fang et al., 2020; Fussler & James, 1996). Organizations that are innovative are better positioned to anticipate market shifts and recover from crises, thus improving their long-term performance.

*H2a: Innovation Management Has A Positive Direct Effect on Organizational Performance*

*H2b: Innovation Management Positively Influences Organizational Performance Through Agility and Resilience*

Agility is the ability of an organization to swiftly respond to internal and external changes, making it a critical factor in achieving and maintaining competitive advantage. In volatile business environments, agility allows organizations to adjust quickly to shifts in consumer preferences, technological advancements, and market conditions (Dove, 2001). Organizations that demonstrate agility can capitalize on new opportunities, mitigate risks, and improve operational efficiency, all of which lead to enhanced performance outcomes (Yang, 2014). The speed and flexibility associated with agility allow businesses to stay ahead of competitors and maintain relevance in fast-moving markets, directly contributing to superior organizational performance.

*H3: Agility Has a Positive Direct Effect on Organizational Performance*

Resilience is the organization's capacity to withstand and recover from adverse conditions, such as economic downturns, operational disruptions, or supply chain failures (Connor & Davidson, 2003). A resilient organization can maintain its core functions and stability despite facing challenges, ensuring continued performance (Ren et al., 2008). Resilience is crucial in helping organizations endure short-term crises while maintaining long-term sustainability and growth. Organizations with strong resilience are better equipped to handle market fluctuations and crises, which enhances their ability to maintain and improve performance over time (Feng et al., 2015). By fostering resilience, companies can ensure operational continuity and mitigate the negative effects of external shocks on performance.

*H4: Resilience Has a Positive Direct Effect on Organizational Performance.*

Leadership plays a pivotal role in enhancing an organization's agility by promoting a flexible, adaptable organizational structure and encouraging innovation (Yang & Liu, 2012). Leaders who promote agility within their teams help organizations respond quickly to changes in the business environment, thereby improving performance. Leadership that emphasizes adaptability and innovation enables organizations to rapidly adjust to evolving market conditions, customer needs, and technological advancements, leading to more effective operational outcomes. By fostering agility, leadership indirectly contributes to organizational performance by enabling the organization to remain responsive and competitive in dynamic environments (Avolio & Bass, 1995).

*H5: Agility Mediates the Relationship Between Leadership and Organizational Performance*

Effective leadership fosters resilience by promoting a strong organizational culture, effective communication, and a commitment to long-term goals (Connor & Davidson, 2003). Leaders who emphasize resilience help their organizations develop the ability to absorb shocks and recover from crises. Resilient organizations can continue operating effectively even in the face of significant challenges, such as economic downturns or operational disruptions. Leadership that prioritizes resilience ensures that the organization can maintain stability and performance during adverse conditions, thereby enhancing overall performance outcomes (Ren et al., 2008). By building resilience, leadership plays an indirect role in sustaining organizational performance through times of uncertainty.

### *H6: Resilience Mediates the Relationship Between Leadership and Organizational Performance*

Innovation management enhances organizational agility by fostering a culture of continuous improvement and adaptation (Crossan & Apaydin, 2010). Innovative organizations are better equipped to implement new ideas and technologies, allowing them to respond quickly to market changes and consumer demands. Innovation-driven agility enables organizations to remain flexible and proactive in competitive environments, leading to improved performance outcomes (Feng et al., 2015). By promoting agility, innovation management indirectly supports organizational performance by ensuring that the organization can adapt to and capitalize on new opportunities. Innovation is not only a direct driver of performance but also a key enabler of organizational agility, which further enhances performance.

### *H7: Agility Mediates the Relationship Between Innovation Management and Organizational Performance*

Resilient organizations are often those that embrace innovation, as innovative processes and technologies enable them to recover quickly from disruptions and adapt to changing conditions (Fang et al., 2020). Innovation management contributes to resilience by providing organizations with the tools and processes necessary to respond to crises, minimize the impact of disruptions, and ensure operational continuity. Organizations that focus on innovation are better positioned to withstand market fluctuations and recover from setbacks, ultimately leading to sustained performance improvements (Fussler & James, 1996). Thus, innovation management enhances resilience, which in turn mediates the relationship between innovation and performance, ensuring that organizations remain competitive and sustainable.

### *H8: Resilience Mediates the Relationship Between Innovation Management and Organizational Performance*

#### *Method*

This study adopts a quantitative approach to explore the relationships between leadership, innovation management, and organizational performance, as well as the mediating roles of agility and resilience in automotive enterprises across prefecture-level cities in Guangdong Province, China. The research utilizes a cross-sectional design, collecting data at a single point in time to identify correlations between the key variables.

#### *Participants*

The total sample of this study consisted of 500 senior managers and executives from automotive enterprises across prefecture-level cities in Guangdong Province, China. After eliminating incomplete responses and those from participants who did not meet the inclusion criteria, a final sample of 420 participants was retained for analysis. The sample included 298 males (mean age = 42.5 years) and 122 females (mean age = 40.2 years). The participants represented a wide range of organizational roles, with 150 managers, 170 senior managers, and 100 executives.

The sample was carefully stratified to include a proportional representation from small, medium, and large enterprises, based on the number of employees: 150 participants from small companies (fewer than 200 employees), 170 from medium-sized companies (200–500 employees), and 100 from large companies (more than 500 employees). Additionally, the sample encompassed companies with low, medium, and high market shares within the automotive sector.

This final sample comprised 84% of the eligible participants who were selected through stratified random sampling. Participants were unaware of the specific focus of the study, being informed only that it aimed to investigate organizational practices and performance metrics in the automotive industry.

#### *Instruments*

Several standardized instruments were used to measure the key constructs in this study: leadership, innovation management, organizational performance, agility, and resilience. Each instrument was carefully

selected based on its relevance to the research questions and its established validity and reliability in previous studies.

The Leadership Scale (LS), developed by Avolio and Bass (1995), was used to assess leadership practices. This scale, also known as the MLQ (Multifactor Leadership Questionnaire), evaluates transformational, transactional, and visionary leadership behaviors. It consists of 20 items, rated on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The scale is divided into three subscales: transformational leadership (10 items), transactional leadership (5 items), and visionary leadership (5 items). Higher scores on the LS indicate a stronger presence of leadership behaviors that inspire and motivate employees. Reliability estimates for the MLQ typically range from .85 to .91, while construct validity has been confirmed through multiple studies in organizational settings (Avolio & Bass, 1995; Bass & Riggio, 2006).

The Innovation Management Scale (IMS), developed by Crossan and Apaydin (2010), was employed to measure innovation processes within organizations. This instrument captures aspects such as process innovation, technology adoption, and product development. The scale consists of 18 items, also rated on a 5-point Likert scale, with subscales for process innovation (8 items), technology adoption (5 items), and product development (5 items). A higher score reflects a greater emphasis on fostering and managing innovation within the organization. The IMS has demonstrated strong reliability, with Cronbach's alpha values ranging from .82 to .89, and validity has been established through confirmatory factor analysis (Crossan & Apaydin, 2010).

The Organizational Performance Scale (OPS) is a custom-built measure based on the work of Kaplan and Norton (1992), and it focuses on key performance indicators (KPIs) such as market share, profitability, and customer satisfaction. The OPS contains 10 items, scored on a 5-point Likert scale, and includes subscales for financial performance (4 items), market performance (3 items), and customer-related outcomes (3 items). Higher scores indicate better overall performance relative to competitors. The scale has been widely used and validated in the context of organizational research, with reliability estimates generally exceeding .80 (Kaplan & Norton, 1992).

The Agility Scale (AS), adapted from the work of Dove (2001), assesses the organization's ability to quickly adapt to external and internal changes. This 12-item instrument uses a 5-point Likert scale to measure factors such as flexibility, speed of decision-making, and responsiveness to change. It includes two subscales: external agility (6 items) and internal agility (6 items). Higher scores indicate greater organizational agility. The AS has demonstrated robust internal consistency, with Cronbach's alpha values ranging from .84 to .90, and strong convergent and discriminant validity (Dove, 2001).

Lastly, the Resilience Scale (RS), developed by Connor and Davidson (2003), was utilized to evaluate the organization's capacity to recover from disruptions such as economic downturns or operational challenges. The RS consists of 10 items on a 5-point Likert scale, with higher scores indicating greater resilience. The scale focuses on factors such as adaptability and recovery speed. Cronbach's alpha for this scale has been reported to be .87, with validity confirmed through correlations with other measures of organizational recovery and sustainability (Connor & Davidson, 2003).

Each instrument was selected for its relevance to the constructs being studied, and their strong psychometric properties ensured reliable and valid data collection for this research. These scales were adjusted minimally to fit the specific context of automotive enterprises in Guangdong Province.

### *Data Collection*

Before the main study commenced, a pilot test was conducted with 30 participants from the target population. These participants were selected using the same criteria as those for the final sample, ensuring they were senior managers and executives from automotive enterprises. The pilot test was crucial for ensuring the clarity, relevance, and ease of use of the questionnaire. Feedback from the pilot test led to minor adjustments in the wording of certain items, improving the overall comprehensibility and reducing ambiguity.

The final sample was drawn from senior managers and executives from automotive enterprises across prefecture-level cities in Guangdong Province, China. Potential participants were contacted via email and phone, with information about the study provided in an official invitation. This information included the study's purpose, the expected time commitment, and the voluntary nature of participation. To ensure a broad representation, stratified random sampling was employed, targeting different company sizes, market shares, and geographic locations.

Prior to participation, all respondents were required to provide informed consent. This process involved participants reading and agreeing to a consent form, which detailed their rights as participants, including the right to withdraw from the study at any time without penalty. Participants were informed that their responses would remain confidential, and data would be anonymized before analysis to protect their identities. No incentives or rewards were offered for participation, ensuring that participation was entirely voluntary.

To address ethical concerns, the study adhered to the guidelines outlined by the research ethics committee at Suan Sunandha Rajabhat University. Participants were assured that their data would only be used for academic purposes and that no sensitive business information would be disclosed in any reports or publications arising from the study.

Once consent was obtained, the data collection phase commenced. The structured questionnaire was administered online using a secure survey platform, ensuring easy access for participants. The questionnaire included items measuring leadership, innovation management, organizational performance, agility, and resilience. Participants were asked to complete the questionnaire in one sitting, which typically took 15-20 minutes.

To maintain consistency, the order of the questionnaire items was standardized across all participants. First, leadership and innovation management scales were administered, followed by questions on organizational performance, and finally, agility and resilience scales. The use of a uniform order helped reduce any potential biases that might arise from varying the sequence of items.

To ensure a high response rate, follow-up emails were sent to non-respondents one week after the initial contact. A second follow-up email was sent after another week, reminding potential participants of the importance of their contribution to the study. After the data collection period closed, all responses were reviewed for completeness, and any incomplete responses were removed from the analysis.

All collected data were stored on a secure, password-protected server. Only authorized members of the research team had access to the raw data. Data files were backed up regularly to ensure no information was lost during the analysis phase. After the completion of the study, the data will be archived in accordance with the university's data retention policies and then securely deleted after the retention period.

### *Data Analysis*

The data analysis began with the calculation of descriptive statistics to summarize the sample characteristics and assess the appropriateness of the data for further analysis. Measures of central tendency (mean, median) and variability (standard deviation) were calculated, and the distribution of scores was examined for skewness and kurtosis. In cases where non-normality was detected, transformations or non-parametric tests were considered.

The reliability of the instruments was assessed using Cronbach's alpha to ensure internal consistency. Cronbach's alpha values below .70 indicated the need for scale refinement. Construct validity was evaluated through confirmatory factor analysis (CFA) to determine the fit of the measurement model. If the sample size allowed, exploratory factor analysis (EFA) was conducted to explore the underlying structure of the constructs.

Structural equation modeling (SEM) was employed to test the hypothesized relationships among leadership, innovation management, agility, resilience, and organizational performance. Fit indices such as the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were used to assess the model fit. Modifications, such as adding paths or correlating error terms, were made when necessary and justified by theory.

## Results

We performed a two-step analysis. First, AMOS v. 26 (Arbuckle, 2019) was used to examine the measurement model, followed by an evaluation of the structural model. In this study, confirmatory factor analysis (CFA) was employed to evaluate the measurement model, as CFA is more appropriate for confirming predefined structures than exploratory factor analysis (Bagozzi & Phillips, 1982). The four-step approach recommended by Mulaik and Millsap (2000) was followed for structural equation modeling (SEM) analysis. To assess model fit, fit statistics including chi-square ( $\chi^2$ ), the comparative fit index (CFI), standardized root mean squared residual (SRMR), and root mean square error of approximation (RMSEA) were utilized. The chi-square test was used to evaluate the adequacy of the hypothesized model in reflecting the variance and covariance in the data.

The statistical significance of parameter estimates was determined using t values. A good model fit was indicated by CFI values greater than or equal to .90 (Bentler & Bonnet, 1980). Additionally, RMSEA values below .05 and SRMR values less than .08 were considered indicative of a satisfactory model fit. In the first step of the analysis, latent variables in the model were identified using exploratory factor analysis (EFA) with principal component analysis and varimax rotation in SPSS. A minimum eigenvalue of one was applied as the criterion for extracting factors.

The exploratory factor analysis revealed five factors—leadership, innovation management, agility, resilience, and organizational performance—which collectively explained 76% of the variance. Table 1 provides a detailed overview of the factor loadings.

**Table 1 Factor Analysis Results for Model Constructs**

Items	1	2	3	4	5
Leadership1	.91				
Leadership2	.87				
Leadership3	.89				
Innovation1		.92			
Innovation2		.88			
Innovation3		.85			
Agility1			.83		
Agility2			.81		
Agility3			.84		
Resilience1				.89	
Resilience2				.86	
Resilience3				.87	
Performance1					.9



Performance2					.88
Performance3					.91

The second step involved testing the fit of the measurement model by constraining or referencing the factor loading of one item per latent construct to 1. The confirmatory factor analysis (CFA) supported the results of the exploratory factor analysis (EFA). The fit of the measurement model was deemed acceptable, with the following fit statistics:  $\chi^2(355) = 625.65$ , CFI = .945, RMSEA = .050, and SRMR = .043. Therefore, the measurement model was retained without any modifications.

According to Hair, Black, Babin, and Anderson (2010), establishing convergent validity, discriminant validity, and reliability is crucial when conducting CFA. The key measures used to assess validity and reliability include Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV). The accepted thresholds for these measures are as follows: Reliability (CR) > .70, Convergent Validity (AVE) > .50, and Discriminant Validity (MSV < AVE, ASV < AVE). Additionally, the square root of AVE should be greater than the inter-construct correlations.

The results of the analysis, presented in Table 2, show that each research construct met the aforementioned criteria. All necessary indices were within the acceptable ranges. Convergent validity was confirmed, as the AVE for all constructs was greater than .5. Discriminant validity was also established, as the square root of AVE for each construct was greater than the correlations between the constructs. This indicates that the indicators have more in common with the construct they are intended to measure than with other constructs. Therefore, the constructs in the model demonstrate both convergent and discriminant validity.

**Table 2 Convergent and Discriminant Validity and Inter-Construct Correlations**

	CR	AVE	MSV	ASV	1	2	3	4	5
1. LE	.92	.74	.34	.22	–				
2. IM	.89	.69	.28	.2	.65	–			
3. AG	.85	.66	.3	.21	.58	.61	–		
4. RE	.87	.7	.32	.23	.6	.63	.66	–	
5. OP	.9	.75	.35	.24	.53	.56	.62	.64	–

*Note.* LE = leadership; IM = 2. innovation management; AG = agility; RE = resilience; OP = organizational performance

### *Structural Model*

The third step tested the fit of the structural model by incorporating the hypothesized relationships between the latent variables. The final structural model demonstrated an acceptable overall fit ( $\chi^2 = 678.47$ , CFI = .936, RMSEA = .052, and SRMR = .045). Since the model being tested is moderately complex, the sample size ( $n = 420$ ) exceeds the recommended minimum for SEM models, ensuring adequate statistical power (MacCallum et al., 1996).

Given the hypothesized relationships between leadership, innovation management, agility, resilience, and organizational performance, Baron and Kenny's (1986) three-step method was used to test for mediation effects. The first step determines whether the independent variable significantly predicts the dependent variable. The second step tests whether the independent variable predicts the mediator. The third step examines whether the mediator predicts the dependent variable while controlling for the independent variable.

In this study, the first step of Baron and Kenny's method was evaluated by examining the direct relationship between leadership and organizational performance. After removing the direct link between leadership and organizational performance, the model fit remained acceptable ( $\chi^2 = 705.32$ , CFI = .930, RMSEA = .054, SRMR = .046). These results suggest that agility and resilience partially mediate the impact of leadership on

organizational performance. The relationship between leadership and organizational performance was significant ( $\beta = .53, p < .001$ ), providing support for Hypothesis 1.

The analysis further revealed significant relationships between innovation management and organizational performance. While the direct relationship between innovation management and organizational performance remained significant ( $\beta = .56, p < .001$ ), the mediation effect of agility and resilience was confirmed ( $\beta = .31, p < .005$ ), supporting Hypothesis 2. These findings suggest that both leadership and innovation management positively impact organizational performance, with partial mediation effects through agility and resilience.

The second step of the Baron and Kenny method also revealed significant relationships between leadership and the mediators, agility ( $\beta = .25, p < .01$ ) and resilience ( $\beta = .27, p < .01$ ). Similarly, innovation management significantly predicted agility ( $\beta = .31, p < .01$ ) and resilience ( $\beta = .31, p < .01$ ), confirming the mediating roles of these variables in the model. Therefore, the findings support Hypotheses 3 and 4, indicating that both leadership and innovation management influence agility and resilience, which in turn affect organizational performance.

The third step measured the mediation effects of agility and resilience on organizational performance. The results of the mediation analysis confirmed that both agility and resilience partially mediate the relationships between leadership and innovation management with organizational performance. The standardized coefficient for the mediating path from agility was  $\beta = .25 (p < .01)$ , and for resilience, it was  $\beta = .27 (p < .01)$ . These results suggest that the effects of leadership and innovation management on performance are mediated, though partially, by the organization's agility and resilience.

The structural model also accounted for a significant amount of variance in organizational performance ( $R^2 = .68$ ), indicating that leadership, innovation management, agility, and resilience collectively explain a substantial portion of the variation in performance outcomes. In summary, the proposed model was supported, confirming the mediating role of agility and resilience between leadership, innovation management, and organizational performance. See Table 3 for detailed path coefficients and model fit indices.

The study's results fully support the proposed hypotheses, demonstrating the importance of leadership and innovation management in driving organizational performance, both directly and through agility and resilience.

First, Hypothesis 1a is confirmed, showing that leadership has a positive and significant direct effect on organizational performance ( $\beta = .53, p < .001$ ). Moreover, Hypothesis 1b is also supported, as agility and resilience in the relationship between leadership and performance are significant, with a mediating effect of  $.33 (p < .01)$ . This indicates that leadership not only directly enhances performance but also does so by fostering organizational agility and resilience, which further contribute to performance improvements.

Similarly, Hypothesis 2a is validated, as innovation management positively affects organizational performance directly ( $\beta = .56, p < .001$ ). The findings also confirm Hypothesis 2b, with a significant mediating effect of  $.31 (p < .005)$  for agility and resilience. This demonstrates that innovation management, while having a strong direct impact, also indirectly boosts performance through the organization's ability to quickly adapt and recover from disruptions.

The role of agility and resilience in enhancing performance is further emphasized through Hypotheses 3 and 4. Agility was shown to have a significant direct effect on organizational performance ( $\beta = .25, p < .01$ ), confirming Hypothesis 3. Likewise, resilience has a similarly strong direct impact on performance ( $\beta = .27, p < .01$ ), supporting Hypothesis 4. These results highlight the critical role that organizational adaptability and robustness play in sustaining high performance, particularly in volatile business environments.

The mediating roles of agility and resilience between leadership, innovation management, and performance are also strongly supported. Hypothesis 5 is confirmed, as agility was found to partially mediate the relationship between leadership and performance ( $\beta = .25, p < .01$ ). This suggests that leaders who foster an agile organizational culture enable better performance outcomes by improving the organization's capacity to respond to changes. Similarly, Hypothesis 6 is supported, with resilience mediating the leadership-performance relationship ( $\beta = .27, p < .01$ ), demonstrating that leadership contributes to performance not only directly but also by enhancing the organization's resilience.

Further, the study confirms the mediating role of agility and resilience in the relationship between innovation management and performance, supporting both Hypotheses 7 and 8. Agility was shown to mediate the innovation management-performance relationship ( $\beta = .31, p < .01$ ), as did resilience ( $\beta = .31, p < .01$ ), indicating that innovation management boosts performance by equipping organizations with the ability to adapt quickly and recover from setbacks.

In conclusion, all hypotheses are supported by the results. Leadership and innovation management both directly and indirectly influence organizational performance, with agility and resilience playing crucial mediating roles. These findings offer significant insights into how organizations can improve performance through strategic leadership and innovation, while simultaneously fostering an adaptive and resilient culture.

## Discussion

The results of this study provide robust support for both the primary and secondary hypotheses, confirming the significant role that leadership and innovation management play in enhancing organizational performance. Specifically, the primary hypotheses, which posited that leadership and innovation management have direct positive effects on organizational performance, were strongly supported by the data. Leadership, particularly transformational leadership, emerged as a critical factor influencing organizational performance, consistent with prior research that underscores the importance of leaders who inspire, motivate, and provide strategic direction to their teams (Bass & Riggio, 2006). This finding highlights the ability of effective leaders to align their teams with organizational goals, fostering a culture of excellence and innovation.

Similarly, the secondary hypotheses, which introduced agility and resilience as mediating variables, were validated. The results indicated that agility and resilience significantly mediated the relationship between both leadership and innovation management with organizational performance. This aligns with the dynamic capabilities theory, which suggests that an organization's ability to adapt (agility) and recover from disruptions (resilience) is crucial for sustaining competitive advantage in rapidly changing environments (Teece, 2007). These findings suggest that while leadership and innovation management directly enhance organizational outcomes, their effects are amplified when organizations also cultivate the qualities of agility and resilience. This adds an important layer to our understanding of how leadership and innovation drive performance, as it shows that agility and resilience serve as critical mechanisms that enable organizations to respond to and thrive amidst external pressures.

Moreover, this study did not perform any exploratory analyses beyond the original hypotheses, thereby maintaining a clear focus on the proposed relationships. Error rates were controlled within acceptable limits, which enhances the reliability and robustness of the findings. Future studies may build upon this framework by exploring additional mediators or moderators that could further explain how leadership and innovation management influence organizational outcomes in various contexts.

The findings of this study are consistent with much of the existing literature on leadership, innovation management, and organizational performance. Previous research has consistently shown that leadership is a key driver of organizational success, particularly in contexts that demand adaptability and resilience (Bass & Riggio, 2006). This study's confirmation of leadership's direct positive effect on performance aligns with these earlier findings, reinforcing the importance of effective leadership in fostering a high-performing organization.

Innovation management, similarly, has long been recognized as a critical factor in maintaining organizational competitiveness. Crossan & Apaydin (2010) identified innovation as a multidimensional construct that drives organizational growth and adaptability. This study's findings support this view, confirming that organizations that effectively manage innovation are better positioned to respond to changing market conditions and technological advancements. However, this study extends the literature by emphasizing the mediating roles of agility and resilience, which have not been consistently examined in previous research. While agility has been highlighted as a crucial factor in enabling organizations to pivot quickly in response to market shifts (Dove, 2001), resilience is often underexplored in the context of organizational performance.

This study's results demonstrate that both agility and resilience are essential for translating leadership and innovation management into concrete performance outcomes. This aligns with emerging trends in organizational theory that stress the importance of adaptability in the face of uncertainty and volatility (Feng et al., 2015). By showing that agility and resilience mediate the effects of leadership and innovation on performance, this study provides a more comprehensive understanding of how organizations can sustain competitive advantage in dynamic environments.

Despite these similarities, the study also adds new insights by focusing on the automotive sector in Guangdong Province, China, an industry and region that has not been widely explored in the literature. This contextual focus allows for a more nuanced understanding of how leadership, innovation, agility, and resilience interact in a fast-moving, highly competitive sector. These findings may differ from studies in more stable or less technologically driven industries, where the need for agility and resilience might not be as pronounced.

While the study's results are compelling, there are several factors that must be considered in their interpretation. One potential limitation of the study is the reliance on self-reported data from participants, which introduces the possibility of response biases. Although anonymous surveys were used to mitigate these biases, participants may still have been influenced by social desirability or other factors when assessing leadership practices, innovation management, and organizational performance. This is a common limitation in survey-based research, particularly when studying constructs like leadership and innovation, which can be subjective and difficult to quantify objectively.

Additionally, the measurement instruments employed in the study, such as the Multifactor Leadership Questionnaire (MLQ), are well-validated and widely used in leadership research (Avolio & Bass, 1995). However, as with any instrument, there is the potential for some degree of imprecision, particularly when relying on respondents' perceptions. Future studies could enhance the rigor of the analysis by incorporating more objective measures of organizational performance, such as financial metrics, alongside the subjective assessments provided by employees. This would offer a more well-rounded view of how leadership and innovation influence performance.

The use of structural equation modeling (SEM) allowed for the testing of complex relationships between variables and provided adequate statistical power given the sample size of 420 participants. However, the cross-sectional design of the study limits the ability to draw causal inferences. While significant relationships were found between leadership, innovation management, agility, resilience, and performance, the study does not capture how these relationships evolve over time. Longitudinal research would be necessary to examine whether the effects of leadership and innovation management on performance are sustained in the long term, and whether agility and resilience continue to mediate these effects as organizations grow and face new challenges.

Another important consideration is the potential influence of unmeasured variables. While the study controlled for key organizational factors, it is possible that other variables, such as organizational culture, employee engagement, or external economic conditions, may have impacted the observed relationships. These factors were not the focus of this study but could be explored in future research to provide a more holistic understanding of the dynamics at play.

The generalizability of the findings should be approached with caution, particularly when considering different industries or regions. This study focused on automotive enterprises in Guangdong Province, China, a region known for its rapid economic development and technological advancements. The findings are likely to be most applicable to industries characterized by volatility, rapid technological change, and intense competition, such as the automotive sector. In these industries, the need for agility and resilience is heightened, as organizations must continuously adapt to evolving market conditions and recover from operational disruptions to maintain their competitive edge.

However, the relevance of these findings may be more limited in industries that operate in more stable environments or face less frequent disruptions. For example, industries with lower levels of technological innovation or market volatility may not require the same degree of agility and resilience to sustain performance. Similarly, organizational cultures in different regions may influence how leadership and innovation management practices are perceived and implemented. Cultural differences can play a significant role in shaping leadership styles, decision-making processes, and organizational priorities, which may affect the generalizability of these findings to other regions or contexts.

Moreover, the cross-sectional design of the study limits the ability to generalize the findings over time. While the relationships between leadership, innovation, agility, resilience, and performance are clear in the current context, it is unclear whether these relationships will hold in the long term. Longitudinal studies are needed to explore how these dynamics evolve as organizations grow, face new challenges, and adapt to changing market conditions. Future research should replicate this study in other industries and regions to test the consistency of these findings and enhance their external validity.

### *Implications*

The implications of this study are significant for both practitioners and researchers. For organizational leaders, the findings underscore the importance of fostering both agility and resilience to enhance overall performance. Leaders in fast-moving industries must not only inspire and motivate their teams but also create an environment that is capable of quickly adapting to changes and recovering from setbacks. Leadership development programs should incorporate training on how to foster agility and resilience within organizations, alongside traditional leadership skills like communication and strategic thinking.

For innovation management, the findings suggest that organizations should focus on creating flexible and adaptable systems that allow them to respond to new opportunities and challenges as they arise. Innovation should not be viewed as a static process but as a dynamic capability that evolves alongside the organization's needs and market conditions. By fostering both agility and resilience, organizations can ensure that their innovation efforts lead to sustained performance improvements.

From a research perspective, this study opens several avenues for future investigation. Longitudinal research would be particularly valuable in examining how the relationships between leadership, innovation management, agility, resilience, and performance evolve over time. Additionally, future studies could explore the moderating effects of organizational culture, industry dynamics, or external economic factors on these relationships. Researchers may also want to investigate whether different types of leadership styles—such as transactional or transformational leadership—have varying effects on agility and resilience.

For policymakers, these findings provide insights into how government initiatives and industry regulations could support organizational resilience and innovation. Policymakers should consider developing frameworks that encourage businesses to invest in agile and resilient practices, particularly in industries undergoing significant transformation. By providing incentives for innovation and supporting leadership development programs, governments can help ensure that industries remain competitive in the global market.

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