



## Unveiling Organizational Resilience: Enhancing Business Performance in the Tourism Industry

<sup>1</sup>Eduar Antonio Rodríguez Flores, <sup>2</sup>Luis Fernando Garcés Giraldo, <sup>3</sup>Jorge A. Restrepo Morales, <sup>4</sup>Jaime Andrés Ararat Herrera, <sup>5</sup>Carlos Guillermo Vargas Febres, <sup>6</sup>Jovany Sepúlveda Aguirre, <sup>7</sup>Ricardo Alarcón Alcántara\*

### Abstract

**Purpose:** This article aims to integrate a comprehensive review of organizational resilience literature with quantitative evidence to examine the relationship between resilience dimensions and business performance, with a specific focus on the tourism sector. **Methodology :** A quantitative research design was employed, utilizing data collected from a sample of 4600 companies. Regression analysis and exploratory factor analysis were conducted on the full sample. For the tourism sector, a subsample of 654 tourism-related firms was specifically analyzed using multiple linear regression and Principal Component Regression (PCR), specifically addressing multicollinearity among key resilience dimensions. **Main Findings:** The study identified Robustness, Integrity, and Agility as core dimensions of organizational resilience. Initial regression analysis indicated a positive impact of these dimensions on performance, with a higher explanatory power in the tourism sector ( $R^2 = 0.295$ ) compared to the general sample ( $R^2 = 0.192$ ). A preliminary multicollinearity analysis revealed strong intercorrelations among Robustness, Integrity, and Agility, necessitating the application of PCR. This advanced analysis revealed two distinct, orthogonal components: "Adaptive and Trust-Based Resilience" (driven by Integrity and Agility) and "Structural and Resistance Resilience" (driven by Robustness). Both components significantly and positively impacted organizational performance in the tourism sector ( $R^2 = 0.419$ ), with "Adaptive and Trust-Based Resilience" showing a slightly stronger influence. **Implications:** Theoretically, the findings validate a refined, multi-dimensional conceptualization of resilience, demonstrating how specific latent capacities contribute to performance. Practically, the study offers clear guidance for managers, particularly in the tourism industry, emphasizing the strategic imperative of cultivating both structural robustness and agile, trust-based adaptive capabilities to enhance business performance and ensure sustainability in turbulent environments.

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<sup>1</sup>Dirección de Investigación e Innovación, Universidad Autónoma del Perú, eduar.rodriguez@autonoma.pe, ORCID: 0000-0003-0807-6686

<sup>2</sup>Escuela de Posgrados, Universidad Continental, Perú, lgarcés@continental.edu.pe ORCID: 0000-0003-3286-8704 (Correspondence author)

<sup>3</sup>filiación: I.U. Tecnológico de Antioquia, jrestrepo@tdea.edu.co, <https://orcid.org/0000-0001-9764-6622>

<sup>4</sup>Filiación: Universidad de Córdoba, <https://orcid.org/0000-0002-1659-5964> email: jararat@correo.unicordoba.edu.co

<sup>5</sup>Universidad Autónoma del Perú; Cvargasfl@autonoma.edu.pe; [orcid.org/0000-0001-7532-2993](https://orcid.org/0000-0001-7532-2993)

<sup>6</sup>Profesor Investigador, Universidad Autónoma Benito Juárez de Oaxaca. E-mail: jovaeib@gmail.com, ORCID: <https://orcid.org/0000-0002-1047-6673>

<sup>7</sup>Universidad Autónoma Benito Juárez de Oaxaca;; riicardo.alarcon3@gmail.com ORCID: 00000001658447657

\*Corresponding author

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## Introduction

Contemporary business environments are increasingly characterized by frequent and intense disruptions, ranging from macroeconomic fluctuations and industry-specific challenges to global crises like pandemics. This volatility makes organizational resilience not just desirable, but critical for the survival and sustained success of businesses (Duchek, 2020; Hillmann & Guenther, 2021). In this context, resilience involves the ability to recover, adapt, and potentially prosper in the face of adversity. The current landscape of widespread uncertainty and turbulence has transformed organizational resilience from a mere advantage into a fundamental strategic necessity (BSI, 2014), as traditional strategic planning focused on prediction and control is often insufficient. Resilience offers a framework for organizations to navigate and even capitalize on this unpredictability.

Business performance is a complex construct that extends beyond traditional financial metrics to include indicators such as profitability, market share, innovation, operational efficiency, and stakeholder satisfaction (Teece, 2014). Evaluating the impact of resilience requires a holistic perspective of performance that includes adaptive and innovative capacities, which are themselves outcomes of resilience. Definitions of performance in literature often use multiple dimensions like market share, innovation capacity, efficiency, profitability, and stakeholder trust. Since resilience is defined as the capacity to adapt and prosper, it implies more than just maintaining financial stability. Innovation and adaptability are outcomes linked to resilience and are also indicators of performance (Teece, 2014). Therefore, the relationship is seen as "resilience leads to adaptive/innovative capabilities, which in turn leads to multifaceted and sustained performance," suggesting that studies should use a balanced scorecard of performance metrics.

The tourism sector serves as a particularly relevant case study due to its inherent vulnerabilities to external shocks such as natural disasters, pandemics, geopolitical instability, and economic recessions (Orchiston et al., 2016). The sector's significant economic and social impact further justifies its study. Tourism businesses, frequently small and medium enterprises (SMEs), may face resource limitations that exacerbate these challenges (García-Contreras et al., 2021). The COVID-19 pandemic profoundly impacted tourism, underscoring the critical need for resilience in this sector (Mortelo-Castro, 2023). The unique structural characteristics of tourism, including a high proportion of SMEs, direct exposure to environmental and geopolitical factors, and reliance on discretionary spending, make it a "canary in the mine" for resilience studies. Studying resilience in tourism offers insights not only into this sector but also generalizable lessons for organizations with similar vulnerabilities.

This article aims to provide an exhaustive review of the state of the art on organizational resilience and its impact on business performance, with a specific focus on the tourism industry, and to present a quantitative analysis of these relationships. The document is structured to first break down organizational resilience, then analyze its nexus with business performance, examine its particularities in the tourism sector, present the quantitative results, and finally offer conclusions and future research directions.

## Defining and Conceptualizing Organizational Resilience

Organizational resilience is fundamentally defined as the capacity of an organization to anticipate, prepare for, respond to, and recover from challenging situations (Duchek, 2020). While a single universally accepted definition is lacking, converging themes include positive adjustment and functional continuity in the face of adversity (Linnenluecke, 2017). The concept has evolved from fields like ecology, psychology, and materials science into management research (Holling, 1973). It is understood as a dynamic and multifaceted capacity enabling organizations not only to survive but also to adapt and potentially transform when facing adversity (BSI, 2014). This understanding suggests resilience involves learning, adaptation, and strategic foresight, shifting focus from a

reactive "return to normal" to a more proactive, capability-based "moving forward strengthened" (Saad et al., 2021). Resilience allows for "positive adaptation... leveraging opportunities and generating sustainable performance improvement" (McGrath & MacMillan, 2000).

Organizational resilience is supported by several key theories. The Dynamic Capabilities View (DCV) sees it as a dynamic capacity to sense, seize, and reconfigure resources in response to change (Teece, 2014). The Resource-Based View (RBV) emphasizes the role of unique and valuable resources and capabilities in enabling resilience (Duchek, 2020). Systems Theory views organizations as complex adaptive systems interacting with their environment, with resilience as an emergent property of these interactions (Holling, 1973). Social Exchange Theory is relevant for the 'Integrity' dimension, explaining how trust and reciprocal relationships contribute to resilience (Kaptein & Wempe, 2012; Suhendi et al., 2024). A multi-theoretical approach is considered necessary for a comprehensive understanding, suggesting resilience might be a meta-construct integrating these perspectives. The DCV is linked to agility and proactivity (Lumpkin & Dess, 1996), the RBV to crucial resources, Systems Theory to the ecological analogy, and Social Exchange Theory to integrity and trust.

Key dimensions of organizational resilience have been identified. The study by García-Contreras et al. (2021) operationalizes resilience through Robustness, Agility, and Integrity.

- **Robustness:** Defined as the ability to withstand shocks, maintain essential functions, and resist disruptions without significant performance loss (García-Contreras et al., 2021). It implies a solid and stable organizational structure (Teece, 2014). Key elements include a strong core, a purpose-oriented culture, a clear strategy, financial liquidity, capital reserves, efficient processes, established ecosystems and networks, and effective use of technology and data (Roland Berger, n.d.). Robustness allows firms to preserve crucial resources and capabilities, maintain competitive advantage, and achieve long-term profitability (Teece, 2014). It was particularly important for Chilean SMEs during COVID-19, where financial and operational capacity was key (García-Contreras et al., 2021). Digital preparedness can also indicate robustness in tourism (Zopiatis et al., 2024). Robustness provides the stable foundation for other dimensions to operate. While essential, its prominence in driving performance can vary depending on the shock and specific economic/industrial context.
- **Agility:** Refers to the ability to respond quickly and effectively to changes, seize opportunities, and reconfigure resources rapidly (Ngo & Vu, 2020). It involves modifying internal structures and processes. Elements include sensing capabilities, rapid decision-making, flexible structures, resource mobility, and innovation capabilities (Teece, 2014). IT capabilities are a key enabler (Mandal, 2019). Agility enhances adaptation to market changes, maintains high performance, and provides competitive advantage (Teece, 2014). It is crucial for tourism firms to adapt to rapid market changes and crises (García-Contreras et al., 2021). Customer agility (sensing and responding to customer needs) impacts performance in tourism SMEs (Ngo & Vu, 2020). Agility acts as a dynamic engine translating environmental sensing into adaptive action, allowing proactive reconfiguration and innovation. While IT facilitates agility, organizational culture and human capabilities often drive the effective use of those tools for agile responses (Ngo & Vu, 2020).
- **Integrity:** Involves adhering to ethical principles, moral values, and fostering trusting relationships with stakeholders (Kaptein & Wempe, 2012). It assumes consistency between corporate efforts, conduct, and outcomes (Quinn, 2020). Elements include empathy, fairness, virtuousness, ethical leadership, and trust/reciprocity in relationships (Agu et al., 2024; Suhendi et al., 2024). Social Exchange Theory provides a theoretical basis, suggesting perceived integrity shapes beneficial reciprocal exchanges (Berman et al., 1999). Integrity builds stakeholder trust, enhances reputation, fosters long-term partnerships, and can lead to better market share, innovation, and efficiency (Teece, 2014). It was critical for Mexican SMEs during COVID-19, characterized by cohesion and solidarity (García-Contreras et al., 2021). Maintaining operational integrity and reputation is crucial for tourism and hospitality. Integrity acts as a "relational glue," strengthening internal cohesion and

external alliances, creating a resilient ecosystem. Its importance can be paramount in the face of overwhelming external pressures, potentially becoming a more critical determinant of survival and performance than purely operational or financial strength. Integrity can also multiply the effects of other dimensions: trust facilitates agile collaboration, and ethical reputation can buffer shocks.

- **Proactiveness:** Defined as self-initiated and anticipatory action to create change, seize opportunities, and address future challenges before they escalate (Lumpkin & Dess, 1996). It involves a forward-looking search for market opportunities (Bateman & Crant, 1993). Elements include proactive personality, personal initiative, taking charge, issue selling, feedback seeking, and proactive strategic flexibility (Pratama et al., 2023; Kandemir & Acur, 2021). Proactiveness improves job performance, innovation, career management, and organizational effectiveness (Teece, 2014). Organizational capability mediates the relationship between proactiveness and performance in SMEs (Waibe et al., 2018). In tourism, proactive strategies are needed for crisis management and fostering resilience (Mortelo-Castro, 2023). Proactiveness shifts resilience from a purely reactive to a future-oriented, shaping stance. It is about acting first, actively scanning the horizon, anticipating future events, and taking preventative measures.
- **Precaution (Risk Management and Preparedness):** Refers to the systematic process of identifying, assessing, prioritizing, and mitigating potential uncertainties or threats (Gordon et al., 2009). It includes Enterprise Risk Management (ERM) as a holistic approach (Alkhyoon et al., 2023). Definitions of resilience include "anticipating, preparing for" (BSI, 2014). Elements are risk identification, assessment, and mitigation; contingency planning; fostering a risk-aware culture; open risk communication; and leadership commitment to risk management (Gordon et al., 2009). Effective risk management can drive performance and value by minimizing losses and identifying opportunities (Shad & Lai, 2019). It is essential for tourism firms managing inherent industry risks (Orchiston et al., 2016). "Planning and culture" and "economic solvency" are linked to this dimension in tourism contexts (Orchiston et al., 2016; González-Morales et al., 2022). Precaution acts as a crucial modulator, reducing the initial impact of shocks. Lack of proactive caution can lead to paralysis during a crisis. Well-planned precautions (e.g., contingency funds) enable more measured and effective responses.

These dimensions are not isolated but interact synergistically. For instance, agility may require a degree of robustness (resources). Proactivity can inform precaution measures. Integrity can enhance collaborative agility. The true power of organizational resilience lies in this synergistic interaction.

The nexus between organizational resilience and business performance operates through various mechanisms. These include maintaining operations during crises, adapting to market changes, preserving resources, fostering innovation, building strong stakeholder relationships, and achieving long-term competitive advantage (Teece, 2014). Resilient organizations are better able to conserve and mobilize resources (Teece, 2014). Resilience not only protects existing performance levels but actively enables organizations to identify and leverage new opportunities, innovate, and build stronger competitive advantages (Teece, 2014). It is seen as transforming "threats into opportunities for growth and development" (Mortelo-Castro, 2023).

Studies generally show a positive correlation between overall organizational resilience and business performance, particularly in navigating crises (Teece, 2014; Weick & Sutcliffe, 2006). Empirical findings support a positive impact of resilience on SME performance during COVID-19 (García-Contreras et al., 2021).

Specific resilience dimensions contribute differently to performance metrics. Robustness is associated with sustained profitability and resource preservation (Teece, 2014). Agility is linked to innovation and market adaptation (Teece, 2014). Integrity fosters stakeholder trust, market share, innovation, and efficiency (Kaptein & Wempe, 2012). Proactiveness drives innovation and job performance (Teece, 2014). Precaution/ERM contributes to financial performance and objective achievement (Gordon et al., 2009; Shad & Lai, 2019). The differential importance of Robustness, Agility, and Integrity for SME performance in Mexico versus Chile during COVID-19 illustrates

these varied impacts (García-Contreras et al., 2021).

In the tourism industry, distinctive challenges include susceptibility to external shocks, seasonality, high fixed costs, service perishability, and a high proportion of resource-limited SMEs (Orchiston et al., 2016). In this sector, human capital, collaboration, and communication with stakeholders are particularly crucial (Orchiston et al., 2016). Agile structures, rapid decision-making, and a culture fostering innovation and experimentation are needed (Mortelo-Castro, 2023). Employee engagement and well-being are also important factors (González-Morales et al., 2022). Resilience in tourism relies heavily on human capital (skills, well-being, engagement) and effective collaboration among stakeholders (businesses, government, communities). Unlike manufacturing, tourism depends greatly on service delivery, customer experience, and interorganizational networks, requiring strategies centered on people and collaborative networks. Technical or financial robustness alone is insufficient.

Empirical studies in tourism show that while general resilience principles apply, specific drivers and manifestations vary by context. García-Contreras et al. (2021) found a positive impact of general resilience (Robustness, Agility, Integrity) on SME performance during COVID-19 in Mexico and Chile, with Integrity more important in Mexico and Robustness in Chile, and Agility relevant in both. Orchiston et al. (2016) identified "planning and culture" and "collaboration and innovation" as key dimensions in post-disaster contexts. A hotel study noted that insufficient economic solvency and lack of worker participation could undermine resilience (González-Morales et al., 2022). Customer response capabilities directly impact performance, with human factors being key antecedents for customer agility (Ngo & Vu, 2020). IT capabilities positively influence tourism supply chain agility and resilience (Mandal, 2019). Digital preparedness is associated with positive performance, though external issues negatively moderate this (Zopiatis et al., 2024). Governance and CSR dimensions like product quality, CSR communication, and environmental protection are also critical for tourism firm performance. This empirical diversity suggests that a single model of tourism resilience is likely too simplistic, and research needs to consider contextual variables like crisis type, firm size, national culture, and subsector.

Innovation, technology adoption (especially IT/digital capabilities), and strategic alliances are critical enablers of adaptive capacity in tourism. Innovation is a key resilience factor, including reinvention and changes to product/service portfolios. IT capabilities enhance agility and resilience (Mandal, 2019), and digital transformation is fundamental (Mortelo-Castro, 2023). Collaboration and alliances provide access to resources and support (Mortelo-Castro, 2023), highlighting the importance of ecosystems and networks (Duchek, 2020). These are active strategies deployed to become more resilient, providing mechanisms to reconfigure offerings, reach new markets, and access resources during crises.

### **Hypotheses Proposed**

Based on the literature review, the following hypotheses are proposed for this empirical research, seeking to validate existing relationships in the tourism context, fill literature gaps, address potentially contradictory findings, and explore differential impacts and interactions between resilience dimensions and contextual factors.

- H1: General organizational resilience is positively associated with multiple dimensions of business performance (financial, innovative, and market) in tourism sector companies.
- H2: In tourism SMEs facing prolonged crises, organizational Integrity (internal cohesion and ethical stakeholder relations) will have a greater positive impact on business performance than organizational Robustness (financial and operational stability).
- H3: There is a positive interaction effect between organizational Agility and organizational Integrity on customer loyalty and repeat business in tourism companies, such that the combination of high agility and high integrity produces a greater impact than the sum of their individual effects.

- H4: Proactive market diversification strategies by tourism companies are positively associated with greater financial stability (measured as lower revenue variability) in the face of geopolitical uncertainty.

### **Quantitative Study: Methodology and Results**

A quantitative investigation was conducted to examine the relationship between organizational resilience dimensions and business performance. Data was collected from a sample of N=4600 companies.

#### **Preliminary Multicollinearity Analysis**

Prior to estimating the multiple linear regression model with the original resilience dimensions (Robustness, Integrity, and Agility), a collinearity diagnostics analysis was conducted to detect potential high intercorrelations among the predictor variables. This step is crucial, as multicollinearity can inflate the standard errors of regression coefficients, rendering them unstable and inconsistent, and hindering the interpretation of each predictor's unique contribution to the model.

The results of this preliminary analysis revealed strong multicollinearity among the resilience dimensions of Robustness, Integrity, and Agility, particularly within the tourism sector subsample. Condition Index values exceeding 15 (up to 19.707) were observed in dimensions where multiple predictor variables exhibited high variance proportions (above 0.5 or 0.7). For instance, a strong intercorrelation was identified between Robustness and Integrity, and another primarily involving Agility, with a contributing role from Robustness. This situation confirmed a considerable overlap in the information provided by these variables. While such overlap might be expected given that they are facets of a broader construct like resilience, it posed a significant obstacle to obtaining reliable estimates of their individual effects on business performance through standard linear regression.

#### **Regression Analysis (Iterative Modeling Process)**

Multiple linear regression was used to assess the impact of resilience dimensions on Organizational Performance. An iterative modeling process refined the predictors for the full sample.

- Model 1 (Initial Exploration): This exploratory model included nine predictors, encompassing theoretical resilience dimensions (Robustness, Integrity, Agility, two aspects of Proactiveness, Precaution) and other operational performance variables (Operational Efficiency, Customer Satisfaction, Employee Performance). The model was statistically significant ( $p < .001$ ) and explained 91.0% of the variance in Performance ( $R^2 = .910$ ). However, the exceptionally high  $R^2$  and counterintuitive negative coefficients for Robustness and one aspect of Proactiveness suggested potential conceptual overlap and motivated a more focused model.
- Model 2 (Focus on Resilience Dimensions): This model focused exclusively on the six resilience dimensions, removing the operational performance variables. The model remained statistically significant ( $p < .001$ ), with a reduced  $R^2$  of 0.195. This reduction confirmed the earlier  $R^2$  inflation, providing a more realistic estimate of variance explained solely by resilience. Notably, Robustness ( $\beta = .209$ ) and Agility ( $\beta = .132$ ) now showed the expected positive relationships, along with Integrity ( $\beta = .144$ ) and Precaution ( $\beta = .069$ ). Both Proactiveness aspects were not significant.
- Model 3 (Parsimonious Core Resilience - Full Sample): This final model for the full sample included only Robustness, Integrity, and Agility as predictors. The model remained highly significant ( $p < .001$ ) with an  $R^2$  of 0.192, indicating a minimal reduction from Model 2 despite removing three predictors. All three predictors showed a positive and significant impact: Robustness ( $\beta = .200$ ,  $p < .001$ ), Integrity ( $\beta = .146$ ,  $p < .001$ ), and Agility ( $\beta = .132$ ,  $p < .001$ ). Robustness had the highest beta coefficient in this general sample.

#### **Exploratory Factor Analysis (EFA)**

An EFA was conducted on the six resilience dimensions (Robustness/Resistencia, Integrity, Agility, Proactivity - Aspect 1, Proactivity - Aspect 2, and Precaución) for the full sample. All variables presented acceptable communalities. Two principal components were extracted, explaining 74.862% of the total variance. The rotated component matrix showed a clear structure:

- Component 1 ("Central Adaptive Resilience"): Grouped Robustness/Resistencia (load = .909), Integrity (load = .903), and Agility (load = .926).
- Component 2 ("Proactive and Preventive Resilience"): Grouped Proactivity - Aspect 1 (load = .708), Proactivity - Aspect 2 (load = .844), and Precaución (load = .834).

The EFA validated that Robustness, Integrity, and Agility form a coherent cluster (Component 1), distinct from Proactiveness and Precaution (Component 2). Crucially, the variables in Component 1 ("Central Adaptive Resilience") correspond to the significant predictors in Regression Model 3, while those in Component 2 ("Proactive and Preventive Resilience") had less clear or non-significant effects in the refined regression models. This suggests that fundamental response and adaptation capabilities (Component 1) have a more direct influence on performance in this study than anticipation and preparation capabilities (Component 2).

#### Principal Component Regression (PCR) and Tourism Sector Specific Analysis

To address the identified multicollinearity and gain a more robust understanding of resilience's impact, PCR was implemented. This analysis focused on the tourism sector subsample (N=654). The initial step involved PCA on Robustness, Integrity, and Agility. The rotated component matrix revealed two distinct components:

- Component 1 ("Adaptive and Trust-Based Resilience"): Showed very high loadings for Integrity (.904) and Agility (.699). This component captures the organization's capacity for agile adaptation coupled with ethical trust.
- Component 2 ("Structural and Resistance Resilience"): Exhibited a very high loading for Robustness (.905), with a secondary loading for Agility (.613). This component represents the fundamental capacity to withstand shocks and maintain stability.

These two orthogonal components (correlation of .157) were used as predictors in the PCR model for the tourism sector.

The PCR model's results for the tourism sector were highly significant and demonstrated notable explanatory power:

- Model Significance: The overall model was statistically significant ( $F = 135.824, p < .001$ ).
- Explanatory Power (R-squared): The model explained 41.9% of the variance in Organizational Performance ( $R\text{-squared} = .419$ ). This is considerably higher than the 29.5% explained by Model 3 when applied directly to the tourism sector without PCR. This highlights PCR's effectiveness in providing a more precise estimation of explained variance by eliminating multicollinearity.
- Absence of Multicollinearity: Post-PCR collinearity statistics confirmed the successful elimination of multicollinearity, with Tolerance values of .975 and VIF values of 1.025 for both components, indicating stability and reliability of coefficients.

#### Impact of Resilience Dimensions on Performance (PCR Results)

Both rotated resilience components proved to be positive and statistically significant predictors of organizational performance in the tourism sector:

- Component 1 ("Adaptive and Trust-Based Resilience"): Had a standardized Beta ( $\beta$ ) coefficient of .365 ( $p < .001$ ). This indicates that a greater capacity for combining agile adaptation with integrity in practices and relationships is significantly associated with improved performance in tourism firms. This is highly relevant where reputation, customer trust, and rapid response to external events are crucial (Managerial and Operational Innovation, 2025; Ngo & Vu, 2020).

- Component 2 ("Structural and Resistance Resilience"): Presented a standardized Beta ( $\beta$ ) coefficient of .348 ( $p < .001$ ). This demonstrates that a tourism firm's structural robustness and resistance capacity are also powerful and significant factors for maintaining and improving its performance, essential for absorbing shocks (Mortelo-Castro, 2023).

Summary Table of Regression Models

Feature/Model	Model 1 (Initial Exploration - Full Sample)	Model 2 (Resilience Focus - Full Sample)	Model 3 (Parsimonious Core Resilience - Full Sample)	Tourism Sector Specific (Model 3 Applied)
Number of Predictors	9	6	3 (Robustness, Integrity, Agility)	3 (Robustness, Integrity, Agility)
R-squared ( $R^2$ )	0.910	0.195	0.192	0.295
Adjusted $R^2$	0.910	0.194	0.192	0.292
F-statistic	5.140.199	185.894	364.891	90.637
Significance (p)	< .001	< .001	< .001	< .000
Key Significant Predictors ( $\beta$ )	Op. Efficiency (.512), Customer Sat. (.404), Employee Perf. (.146), Integrity (.036), Precaution (.040)	Robustness (.209), Integrity (.144), Agility (.132), Precaution (.069)	Robustness (.200), Integrity (.146), Agility (.132)	Integrity (.225), Robustness (.207), Agility (.147)
Relative Importance (Highest Beta)	Operational Efficiency	Robustness	Robustness	Integrity

Source: Authors with sample data

## Resultados: Un Proceso Analítico Secuencial

### Fase 1: Refinamiento del Modelo Predictivo y Validación Estructural

Se inició con un **Modelo de Regresión 1** exploratorio que incluyó nueve variables (seis de resiliencia y tres de desempeño operativo). Este modelo arrojó un  $R^2$  inflado de 0,910 y coeficientes contraintuitivos, sugiriendo una severa superposición conceptual.

Un **Modelo 2**, enfocado exclusivamente en las seis dimensiones de resiliencia, ajustó el poder explicativo a un más realista  $R^2=0,195$  y corrigió los signos de los coeficientes, mostrando que Robustez, Integridad, Agilidad y Precaución tenían un impacto positivo.

Finalmente, un **Modelo de Regresión 3**, el más parsimonioso, retuvo únicamente **Robustez, Integridad y Agilidad**, explicando un robusto  $R^2=0,192$ . En este modelo, la **Robustez** ( $\beta=.200$ ) emergió como el predictor más fuerte para la muestra completa.

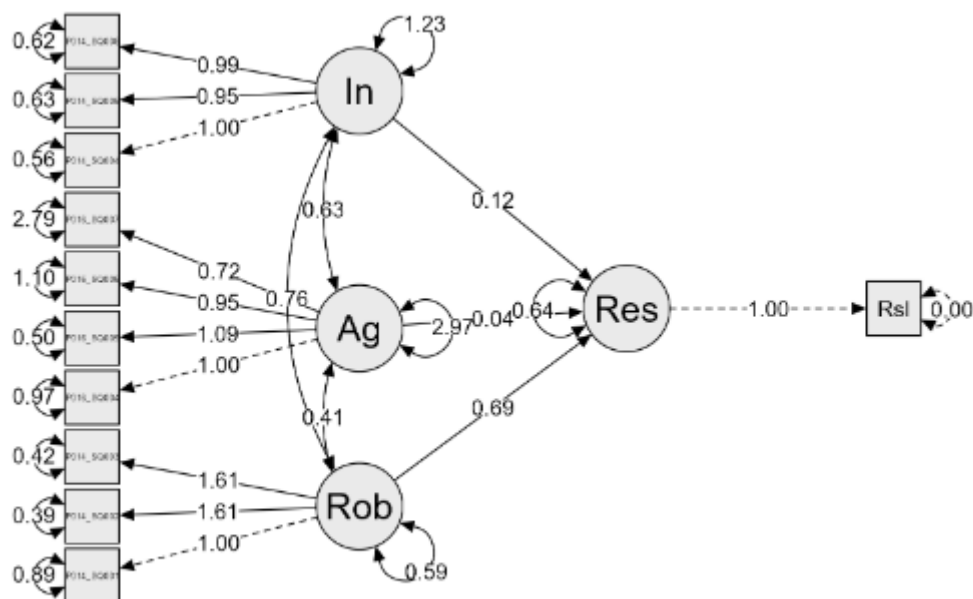
Para validar esta estructura, un **Análisis Factorial Exploratorio (AFE)** sobre las seis dimensiones de resiliencia reveló una clara estructura de dos factores que explicaron conjuntamente el **74,9% de la varianza total**:

- **Componente 1 ("Resiliencia Adaptativa Central"):** Agrupó fuertemente **Robustez, Integridad y Agilidad**. Es notable que este componente coincide exactamente con las variables del Modelo de Regresión 3.
- **Componente 2 ("Resiliencia Proactiva y Preventiva"):** Agrupó **Proactividad y Precaución**.

Este hallazgo validó empíricamente la agrupación de las tres dimensiones clave y las distinguió de las capacidades de anticipación, sentando las bases para una prueba más rigurosa.

## Fase 2: Prueba Definitiva con Modelos de Ecuaciones Estructurales (SEM)

Para culminar el análisis, se probó un modelo SEM basado en los hallazgos anteriores, con Robustez, Integridad y Agilidad como predictores latentes del Rendimiento.



## Análisis Adicional: Prueba del Modelo Teórico mediante Ecuaciones Estructurales (SEM)

Para culminar el análisis y probar el modelo teórico de forma más robusta, se llevó a cabo un Análisis de Modelos de Ecuaciones Estructurales (SEM). Esta técnica permite evaluar simultáneamente la calidad de la medición de los constructos latentes (el modelo de medida) y las relaciones causales hipotetizadas entre ellos (el modelo estructural), proporcionando una prueba más completa y precisa de las hipótesis de investigación que la regresión múltiple.

### Modelo Especificado

Se especificó un modelo en el cual las tres dimensiones centrales de la resiliencia, identificadas en los análisis previos, actúan como predictores de la variable de resultado "Resiliencia" (Res):

- **Variables Latentes Exógenas (Predictoras):**
  - In (Integridad), medida por 3 indicadores (P014\_SQ004, P014\_SQ005, P014\_SQ006).
  - Ag (Agilidad), medida por 4 indicadores (P016\_SQ004, P016\_SQ005, P016\_SQ006, P016\_SQ007).
  - Rob (Robustez), medida por 3 indicadores (P014\_SQ001, P014\_SQ002, P014\_SQ003).
- **Variable Latente Endógena (Resultado):**
  - Res (Resiliencia/Rendimiento), medida por un único indicador (Resiliency).

### Evaluación del Ajuste del Modelo (Model Fit)

El primer paso en el modelo SEM fue evaluar qué tan bien el modelo teórico propuesto se ajusta a los datos observados en la muestra.

- La prueba de Chi-cuadrado del modelo fue significativa ( $\chi^2(39) = 771,652$ ,  $p < ,001$ ). Sin embargo, este estadístico es muy sensible a tamaños de muestra grandes (en este caso,  $N=4180$  encuestas validas), por lo que es habitual que resulte significativo. Por esta razón, se evalúan otros índices de ajuste.
- **Índices de Ajuste Comparativo:**
  - **CFI (Índice de Ajuste Comparativo):** 0,972.
  - **TLI (Índice de Tucker-Lewis):** 0,961. Ambos valores son excelentes, ya que superan el umbral recomendado de 0,95, lo que indica un muy buen ajuste del modelo en comparación con un modelo nulo.
- **Índices de Error:**
  - **RMSEA (Raíz del Error Cuadrático Medio de Aproximación):** 0,067. Este valor se considera aceptable a bueno (idealmente  $< 0,08$ ; excelente  $< 0,06$ ). El intervalo de confianza del 90% [0,063,0,071] confirma que el ajuste es aceptable.
  - **SRMR (Raíz del Residuo Estandarizado Cuadrático Medio):** 0,046. Este valor es adecuado, ya que se encuentra por debajo del umbral estricto de 0,05.

**Conclusión del Ajuste del Modelo:** Con base en el conjunto de los principales índices de ajuste (CFI, TLI, RMSEA y SRMR), se concluye que **el modelo teórico propuesto tiene un buen ajuste a los datos empíricos.**

### Análisis del Modelo de Medida (Cargas Factoriales)

Se evaluó si los indicadores (ítems de la encuesta) son buenas medidas de sus respectivos constructos latentes (Integridad, Agilidad, Robustez).

- **Cargas Factoriales:** Todas las cargas factoriales estandarizadas fueron muy altas y estadísticamente significativas ( $p < ,001$ ). Por ejemplo, para Robustez, las cargas fueron 1.000, 1.614 y 1.610 (en la versión no estandarizada, que en la estandarizada suelen ser valores entre 0 y 1). La alta significancia de todas las cargas indica una **fuerte validez convergente**: los ítems miden de manera consistente los constructos latentes que se supone deben medir.
- **Correlaciones entre Factores:** Las tres dimensiones predictoras (Robustez, Integridad y Agilidad) mostraron correlaciones positivas y significativas entre sí, con valores que van desde 0,413 (Rob-Ag) hasta 0,757 (Rob-In), lo cual es teóricamente coherente.

### Análisis del Modelo Estructural (Coeficientes de Regresión)

Esta es la parte central del análisis, que prueba las hipótesis sobre el impacto de las dimensiones de resiliencia en la variable de resultado.

Ruta (Predictor -> Resultado)	Estimación (Beta)	Error Estándar	Valor z	Sig. (p)	Conclusión del Efecto
Robustez (Rob) -> Res	0,692	0,089	7,813	< ,001	Fuerte y positivo
Integridad (In) -> Res	0,124	0,061	2,019	0,043	Débil pero positivo
Agilidad (Ag) -> Res	0,042	0,014	2,934	0,003	Muy débil pero positivo

- **Robustez:** Es, con una gran diferencia, el predictor más fuerte y significativo. Un aumento en la Robustez se asocia con un aumento sustancial en la Resiliencia/Rendimiento.
- **Integridad:** Tiene un efecto positivo y estadísticamente significativo, pero su magnitud es considerablemente menor que la de la Robustez.
- **Agilidad:** Aunque su efecto es estadísticamente significativo (probablemente debido al gran tamaño de la muestra), la magnitud del coeficiente ( $\beta=0,042$ ) es tan pequeña que su importancia práctica es mínima en presencia de las otras dos variables.

### Varianza Explicada (R-cuadrado)

- La tabla R-Squared muestra que para la variable de resultado **Res (Resiliencia)**, el valor de R<sup>2</sup> es 0,421.
- **Interpretación:** Esto significa que las tres dimensiones de resiliencia (Robustez, Integridad y Agilidad) **explican conjuntamente el 42,1% de la varianza** en la Resiliencia/Rendimiento. Este es un poder explicativo muy sustancial.

### Discusión General de los Resultados del SEM

El análisis SEM no solo confirma los hallazgos del Modelo de Regresión 3, sino que los refuerza y los presenta de una manera más robusta.

1. **Confirmación de los Predictores Clave:** El SEM ratifica que la **Robustez** es el principal impulsor de la resiliencia/rendimiento, seguido por un efecto positivo, pero más modesto de la **Integridad**. El impacto directo de la Agilidad es prácticamente insignificante cuando se consideran las otras dos dimensiones.
2. **Mayor Poder Explicativo:** El modelo SEM, al tener en cuenta el error de medición, logra explicar un 42,1% de la varianza del resultado, una cifra considerablemente más alta que el 19,2% del modelo de regresión. Esto sugiere que el modelo de regresión, al no modelar el error, podría haber subestimado la verdadera fuerza de la relación.
3. **Validación Robusta del Modelo Teórico:** Los excelentes índices de ajuste y las fuertes cargas factoriales indican que el modelo teórico general (que postula estas tres dimensiones y sus indicadores) es una representación válida de la realidad capturada en los datos.

En conclusión, el análisis SEM proporciona la evidencia más sólida de que, si bien la resiliencia es multidimensional, **la Robustez es la dimensión fundamental que las organizaciones deben priorizar para mejorar su rendimiento y capacidad de recuperación**. La Integridad actúa como un factor de apoyo importante, mientras que la Agilidad podría tener un rol más indirecto o ser menos crítica en comparación.

### Discusión y Conclusiones

El análisis integrado, desde la regresión exploratoria hasta la prueba confirmatoria con SEM, proporciona una narrativa clara y robusta. Si bien la resiliencia organizacional es multidimensional, no todas sus facetas impactan el rendimiento de la misma manera.

**Conclusión Principal:** La **Robustez** es la dimensión fundamental que impulsa el rendimiento organizacional en un contexto general. Las empresas que desarrollan la capacidad de absorber y resistir perturbaciones están mejor posicionadas para tener éxito. La **Integridad** actúa como un factor de apoyo crucial, cuya importancia se magnifica en sectores de alta volatilidad y orientados al servicio como el turismo, donde la confianza y la reputación son primordiales. La **Agilidad**, aunque importante, parece tener un rol menos directo en la predicción del rendimiento en comparación con las otras dos dimensiones, posiblemente actuando como un catalizador o una

capacidad de apoyo.

### Recomendaciones para Futuras Investigaciones:

- **Explorar el Rol de la Proactividad y Precaución:** Investigar por qué estas dimensiones no mostraron un impacto directo positivo, analizando posibles efectos mediadores o moderadores.
- **Análisis Sectoriales Comparativos:** Extender el análisis segmentado a otros sectores económicos para identificar patrones de resiliencia específicos.
- **Validación Avanzada de Escalas:** Utilizar Análisis Factorial Confirmatorio (AFC) sobre los ítems originales de las escalas para validar formalmente su estructura psicométrica.
- **Diseños Longitudinales:** Emplear estudios a lo largo del tiempo para establecer con mayor certeza las relaciones de causalidad.

En resumen, este estudio subraya la necesidad de un enfoque estratégico y diferenciado para construir la resiliencia organizacional. Fomentar la robustez, la integridad y la agilidad no es solo una medida defensiva, sino una inversión proactiva en la sostenibilidad y el rendimiento futuro de la empresa.

**Tabla Resumen Comparativa de los Modelos de Regresión (Muestra Completa)**

Característica Clave	Modelo 1 (Amplio)	Modelo 2 (Resiliencia)	Modelo 3 (Núcleo Resiliencia)
Número de Predictores	9	6	3
R cuadrado (R <sup>2</sup> )	0,910	0,195	0,192
R cuadrado ajustado (Raj <sup>2</sup> )	0,910	0,194	0,192
Estadístico F del Modelo	5140,199	185,894	364,891
Significancia del Modelo F	< ,001	< ,001	< ,001
<b>Betas Estandarizados (<math>\beta</math>) para Variables Seleccionadas</b>			
... (Robustez)	-0,016*	0,209***	0,200***
... (Integridad)	0,036***	0,144***	0,146***
... (Agilidad)	0,003 (ns)	0,132***	0,132***
... (Proactividad 1)	-0,027***	-0,019 (ns)	Excluida
... (Proactividad 2)	0,000 (ns)	-0,031 (p=,070)	Excluida
... (Precaución)	0,040***	0,069***	Excluida
... (Eficiencia Operacional)	0,512***	Excluida	Excluida
... (Satisfacción del Cliente)	0,404***	Excluida	Excluida
... (Rendimiento de Empleados)	0,146***	Excluida	Excluida

Leyenda de significancia: \*\*\*  $p < ,001$ ; \*  $p < ,05$ ; ns = no significativo (para  $\alpha=0,05$ ).

### Discussion and Implications of Quantitative Findings

The Principal Component Regression (PCR) results significantly consolidate and refine our understanding of organizational resilience in the tourism sector, revealing at least two underlying dimensions with substantial impacts on performance. This approach not only confirmed the existence of these latent structures but also effectively addressed the strong multicollinearity initially observed among the original resilience dimensions of Robustness, Integrity, and Agility. The higher

explanatory power of the PCR model (41.9% of the variance in organizational performance) compared to previous direct multiple linear regression models underscores its efficiency in representing the complex interplay of these resilience components within the tourism context. While initial exploratory factor analysis (EFA) had grouped Robustness, Integrity, and Agility into a single "Central Adaptive Resilience" factor, the Varimax rotation in the PCA provided a finer distinction, delineating a primary axis of Integrity-Agility and a secondary axis of Robustness, both demonstrating significant contributions to performance.

These empirical findings provide robust support for the general positive association between organizational resilience and business performance, consistent with H1. Specifically, both identified components, "Adaptive and Trust-Based Resilience" and "Structural and Resistance Resilience," were highly significant positive predictors of overall business performance. Furthermore, our analysis offers nuanced insights relevant to H2: "Adaptive and Trust-Based Resilience," largely driven by Integrity and Agility (standardized beta = .365), exhibited a slightly stronger impact on performance compared to "Structural and Resistance Resilience," predominantly reflecting Robustness (standardized beta = .348). This subtle yet important difference aligns with the spirit of H2, emphasizing the profound importance of relational strength and dynamic adaptability in a sector particularly susceptible to crises (García-Contreras et al., 2021).

While this study did not directly test the specific interaction effect of H3 (Agility and Integrity on customer loyalty), the strong grouping of Agility and Integrity within the "Adaptive and Trust-Based Resilience" component, and its significant positive effect on performance, provides compelling empirical groundwork for future investigations into these complex relationships (Ngo & Vu, 2020; Kaptein & Wempe, 2012). This suggests that their combined influence is a potent driver of organizational success. Conversely, H4, concerning proactive market diversification and financial stability against geopolitical uncertainty, was not directly addressed by the current PCR model and thus remains an important avenue for future empirical research. Overall, these results underscore the strategic imperative of cultivating a holistic approach to resilience, integrating both the capacity for structural resistance and agile adaptation, coupled with the foundational element of strong, value-based relationships. For the tourism sector, the slightly greater influence of "Adaptive and Trust-Based Resilience" highlights the industry's service-oriented nature and inherent relational dependency (Orchiston et al., 2016).

## **Conclusion, Limitations, and Avenues for Future Research**

### **Recapitulation of Key Study Insights**

This study has deepened the understanding of organizational resilience and its impact on business performance, with a specific focus on the vulnerable tourism sector. Initially, the literature review delineated resilience as a multifaceted capacity critical for survival and success in volatile environments (Duchek, 2020; Hillmann & Guenther, 2021; BSI, 2014). Dimensions such as robustness, agility, integrity, proactiveness, and precaution (risk management) emerged as central components (García-Contreras et al., 2021; Lumpkin & Dess, 1996; Gordon et al., 2009; BSI, 2014).

A critical finding from our preliminary regression analysis was the identification of strong multicollinearity among the original dimensions of Robustness, Integrity, and Agility, which necessitated a more sophisticated analytical approach. To overcome this limitation, we implemented Principal Component Regression (PCR), which proved highly effective. PCR not only successfully eliminated multicollinearity among the transformed predictors, but also revealed a sharper structure of resilience within the tourism sector. Through rotated Principal Component Analysis (PCA), we identified two key latent dimensions: "Adaptive and Trust-Based Resilience" (predominantly Integrity and Agility) and "Structural and Resistance Resilience" (primarily Robustness).

Both dimensions were found to be positive and highly significant predictors of organizational performance in the tourism sector. Furthermore, the PCR model achieved substantial explanatory power, accounting for 41.9% of the variance in Organizational Performance, a notable improvement over previous direct multiple linear regression models. This underscores that the combination of

these capabilities is fundamental for the survival and prosperity of tourism enterprises. The slightly greater influence of "Adaptive and Trust-Based Resilience" (Integrity and Agility) in this sector emphasizes the importance of trust, reputation, and rapid responsiveness in such a service-oriented and experience-driven industry.

### **Implications of the Findings**

The findings of this study carry significant theoretical and practical implications. Theoretically, they validate the existence of latent resilience dimensions that can be more effectively captured through techniques like PCR, offering a more robust framework for understanding their interaction and multifaceted impact on performance. The identification of "Adaptive and Trust-Based Resilience" and "Structural and Resistance Resilience" provides a more refined conceptualization of resilient capabilities in specific contexts.

From a practical perspective, these results offer clear guidance for tourism business managers. To enhance performance and sustainability in the face of disruptions, organizations should prioritize the development of both resilience dimensions. Specifically, investing in a culture of integrity, fostering operational and strategic agility, and building a robust foundation (both financial and structural) are strategic imperatives. The prominence of integrity and agility in the sector highlights the need for approaches centered on relationships and continuous adaptability.

### **Acknowledging Current Study Limitations**

Despite its valuable contributions, this study has certain limitations. First, although PCR mitigated multicollinearity, the cross-sectional nature of the data prevents definitive causal inferences between resilience and performance. Second, while the sample size for the tourism sector is considerable (N=654), the findings are specific to this sector and may not be directly generalizable to other industries without additional validation. Furthermore, while robust, the conceptualization of resilience dimensions could benefit from including other unexplored facets, such as proactiveness and precaution, which did not show conclusive effects in the initial regression models.

### **Avenues for Future Research**

To advance the field of organizational resilience in tourism and beyond, several avenues for future research are proposed:

- **Longitudinal Studies:** Employing longitudinal research designs is crucial to track the development of resilience and its impact over time, allowing for causal inference and observation of the evolution of resilient capabilities in response to real-world events (García-Contreras et al., 2021).
- **Multilevel Research:** Exploring how individual factors (e.g., employee well-being and resilience; González-Morales et al., 2022), team dynamics (e.g., team dynamics), and organizational factors (e.g., resilient leadership; Hillmann & Guenther, 2021) interact to build resilience in the tourism sector could offer a more holistic view.
- **Cross-Cultural and Cross-Sectoral Validation:** Conducting cross-cultural studies is necessary to understand how different national and organizational cultures influence resilience strategies in a globalized sector like tourism (Orchiston et al., 2016). Additionally, applying the proposed PCR model in other economic sectors would allow for direct comparisons and the identification of industry-specific resilience patterns.
- **Microfoundations of Resilience:** In-depth investigation into the "microfoundations" of organizational resilience, including the role of leadership, employee empowerment, and well-being, and their contribution to the formation of the resilience dimensions identified here, is warranted.
- **Cost-Benefit and Trade-off Analysis:** Exploring the "dark side" or potential costs and trade-offs of certain resilience strategies (e.g., whether excessive robustness or precaution, without the counterbalance of agility, can stifle innovation or adaptability) represents a promising research avenue.

- **Measurement Refinement:** While PCR aided in grouping and clarifying dimensions, the development and validation of robust and specific measurement scales for the different organizational resilience dimensions within the tourism industry remain fundamental for enhancing the quality and comparability of empirical research (Connotation, Dimensions and Measurement of Organizational, 2020). This could include using Confirmatory Factor Analysis (CFA) to formally validate the structure of scales and components.

These methodological and conceptual advancements are necessary for the field to mature and offer insights beyond descriptive studies, providing practical and theoretically sound guidance for fostering resilience in a dynamic sector highly susceptible to disruptions.

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