SCIENTIFIC CULTURE

www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 12, No. 4, (2026), pp. 7193-7200
Open Access. Online & Print

DOI: 10.5281/zenodo.12426732

EVALUATION OF THE IMPACT OF STRATEGIC ALLIANCES ON THE FULFILLMENT OF THE INSTITUTIONAL PLAN: AN APPROACH USING STRUCTURAL EQUATION MODELING (SEM)

Yixcely Maribel Espinoza Tuárez[1*], Augusto Oswaldo Benavides Medina[2]Maryury Elizabeth Morejón Santistevan[3], Ángel Wilkins Álvarez Pincay[4], Cruz Verónica Ponce Álvarez[5], Lexandra Tatiana Macías Ugalde[6]

[1]Licenciada en Ciencias de la Educación. Magíster en Gerencia Educativa https://scholar.google. com/scholar?hl=es&as_sdt=0%2C5&q=espinoza+tuarez+yixcely&btnG=https://orcid.org/0009-0007-7735-1772 Universidad Nacional de Tumbes: mespinuc@epguntumbes.edu.pe Universidad Estatal del Sur de Manabí: yixcely.espinoza@unesum.edu.ec Ecuador-Jipijapa*

[2]Maestría en Economía. Doctor en Administración https://scholar.google.com/scholar?hl=es&as_sdt=0%2C5&q=augusto+oswaldo+be navides+medina+&btnG=https://orcid.org/0000-0002-3017-7945 Universidad Nacional de Tumbes: abenavidesm@untumbes.edu.pe Perú-Tumbes

[3]Economista, Doctora en Administración Públicahttps://scholar.google.com/citations?view_op=new_articles&hl=es&imq=MOREJON+SANTISTEVAN+MARYURY+ELIZABETH#https://orcid.org/0000-0002-2180-7642 Universidad Estatal del Sur de Manabí: maryury.morejon@unesum.edu.ec Ecuador -Portoviejo

[4]Economista, Magíster en Administración Pública, Mención: Evaluación de Proyectos https://scholar.google.com/scholar?start=10&q=ANGEL+WILKINS+ALVAREZ+PINCAY&hl=es&as_sdt=0,5 https://orcid.org/0000-0002-8677-2372 Universidad Nacional de Tumbes: aalvarezp@epguntumbes.edu.pe Universidad Estatal del Sur de Manabí: angel.alvarez@unesum.edu Ecuador-Jipijapa

[5]Ingeniera en Contabilidad y Auditoría. Magíster en Finanzas y Tributación https://scholar.google.com/citations?user=n-JhMBsAAAAJ&hl=es https://orcid.org/0000-0001-7138-9015 Universidad Nacional de Tumbes: c.ponce.veronica@posgradountumbes.edu.pe Universidad Estatal del Sur de Manabí: cruzveronica.ponce@unesum.edu.ec Ecuador-Jipijapa

[6]Ingeniera en Banca y Negocios. Magister en Administración de Empresas mención Recursos Humanos y Marketing https://scholar.google.com/citations?user=6cvSH2wAAAAJ&hl=es https://orcid.org/0000-0001-7739-2581

Universidad Laica Eloy Alfaro de Manabí: lexandra.macías@uleam.edu.ec Ecuador-Manta

Received: 26/11/2025
Accepted: 14/02/2026

Corresponding Author: Yixcely Maribel Espinoza Tuárez (mespinuc@epguntumbes.edu.pe)

ABSTRACT

This study evaluates the impact of strategic alliances on institutional plan fulfillment using Structural Equation Modeling (SEM). Using a mixed-methods approach, simulated data from 1,000 organizational observations were analyzed to model the relationships between key alliance components (intensity, complementarity,

and bargaining power) and institutional metrics (stakeholder satisfaction, goal achievement, organizational performance, and innovation). The results reveal that strategic alliances have a significant positive influence on institutional compliance (coefficient = 1.567), outweighing the effect of control variables such as organizational size or the economic environment. Alliance intensity stands out as the most determining component (r = 0.659), followed by strategic complementarity (r = 0.497) and bargaining power (r = 0.377). Regarding performance, stakeholder satisfaction shows the highest correlation (r = 0.915), followed by goal achievement (r = 0.893), institutional performance (r = 0.883), and innovation capacity (r = 0.838). The study concludes that strategic alliances, if properly managed, constitute a critical tool for organizational success, highlighting the need to strengthen meaningful interactions, develop negotiation skills, and establish monitoring mechanisms focused on relational quality. Although the data used were simulated, the statistical model showed high internal consistency (R^2 = 0.825), which supports the validity of the findings.

KEYWORDS: Alliances, structural equations, organization, performance, institution

Introduction

The impact of strategic alliances on the fulfillment of institutional plans is a critical area of study that explores how collaborative partnerships between organizations can improve their ability to meet regulatory requirements and achieve strategic objectives. Strategic alliances, defined as formal agreements between independent entities to pursue shared goals, can significantly influence the operational efficiency and innovation capacity of the partners involved (Ferrigno et al., 2024; Zehoor et al., 2024).

In particular, these alliances create opportunities to share resources, facilitate access to expertise, and foster environments that support adaptability to changing compliance environments, making them particularly valuable in highly regulated sectors such as healthcare and financial services (Xia et al., 2024; Fazio & Bürkner , 2025).

While strategic alliances can significantly improve the fulfillment of institutional plans (Fatehi & Choi, 2025), it is crucial to recognize that not all alliances will yield positive results. Factors such as misalignment of objectives or a lack of trust can hinder compliance efforts, highlighting the need to manage these relationships carefully (Losada, 2022).Strategic alliances represent formal agreements between two or more organizations to pursue a set of agreed-upon objectives, while remaining independent entities (Lewis et al., 2017). They are designed to increase mutual benefits, allowing partners to leverage each other's strengths and resources. The success of these alliances depends largely on the trust and collaboration established between the participating entities, which in turn influences the achievement of strategic objectives (Bamel et al., 2021) .

Collaborative innovation is another significant benefit of strategic alliances. By partnering with organizations that possess different expertise and perspectives, companies can create an environment conducive to developing new compliance strategies and solutions (Chemmanu et al., 2023). This approach not only enables organizations to stay ahead of evolving regulatory requirements but also fosters a culture of adaptability and continuous improvement in compliance management practices (Esser, 2024).

Effective communication is fundamental to successful compliance within strategic alliances. Open and transparent communication among partners facilitates information sharing and coordination of activities, which is essential for addressing compliance issues (Jaloba et al., 2022). Furthermore, developing conflict resolution mechanisms helps maintain positive relationships, ensuring that compliance-related issues do not derail the alliance's progress (Ryan et al., 2022).

Despite the advantages, strategic alliances can also present challenges that may affect compliance efforts. The inherent tension between cooperation and competition can lead to coordination problems and management differences, which can create mistrust regarding information sharing and an imbalance of power (Franco et al., 2024; Sun et al., 2022).

Considering that organizations must be vigilant in addressing these challenges to ensure that the partnership remains focused on achieving common compliance objectives, the objective of this research was to evaluate the impact of strategic alliances on compliance with the Institutional Plan using structural equation models (SEM) that consider the factors that govern the success of strategic alliances in organizations.

2. Materials and Methods

The study adopts a mixed-methods approach that integrates qualitative and quantitative techniques to analyze the impact of strategic alliances on the fulfillment of the Institutional Plan. The quantitative component involves the application of Structural Equation Modeling (SEM) to establish relationships between various constructs related to fulfillment and strategic alliances, while the qualitative aspect provides insight into the contextual factors that influence these relationships.

2.1 Statistical Models

2.2 Data used

The study is based on a dataset comprising 1,000 organizational observations, specifically designed to analyze the relationship between strategic alliances and the fulfillment of the institutional plan. This dataset, although simulated in nature, has been constructed following patterns and distributions that reflect contemporary organizational reality.At the heart of the analysis are the variables related to strategic alliances, which capture multiple dimensions of interorganizational relationships. The typology of these alliances is categorized into three main modalities: partnerships, joint ventures, and other forms of collaboration. Ventures and cooperation agreements reflect the diversity of collaborative structures in today's business environment. The time dimension of these alliances is represented by a normal distribution centered on three years, with a standard deviation of one year, allowing for the capture of both emerging and more established relationships.

The strength of alliances, strategic complementarity, and negotiating power were measured on a continuous scale of 1 to 10, where higher values indicate greater strength in each dimension. These metrics are evenly distributed within their range, allowing for a balanced analysis of different levels of commitment and strategic alignment among the participating organizations.

The fulfillment of the institutional plan, as the central dependent variable of the study, is evaluated through four fundamental metrics: organizational performance, achievement of goals and objectives, stakeholder satisfaction, and innovation capacity. Each of these metrics is constructed through a weighted combination of factors, incorporating both the direct influence of the characteristics of the alliances and random elements that represent the inherent variability of organizational processes.

To control for relevant contextual factors, the study incorporates variables that characterize the organizational environment. Organizational size is modeled using a log-normal distribution, reflecting the typical asymmetry in organizational dimensions observed in the real world. The sector of activity is categorized as public, private, and non-profit, with a balanced distribution that allows for meaningful comparisons between sectors. The economic environment is represented by a continuous, normally distributed variable with a mean of 5 and a standard deviation of 1.5, capturing the variability in the economic conditions that organizations face.

Regarding data processing, all numerical variables underwent a standardization process using the StandardScaler method , which normalizes variables to a mean of 0 and a standard deviation of 1. This procedure ensures comparability between different metrics and improves the robustness of the statistical analysis. Additionally, composite scores were constructed for strategic alliances and institutional compliance, calculated as the mean of their respective components, thus providing aggregate measures of these multidimensional constructs.

It is important to note that, although the data are simulated, they have been designed to maintain high internal consistency and theoretically sound relationships. The absence of missing data and the presence of correlation patterns consistent with organizational theory strengthen the validity of the analysis. Nevertheless, the inherent limitations of simulated data are acknowledged, particularly in terms of their ability to capture the full complexity of organizational dynamics and the static nature of cross-sectional analysis.

3. Results

Regression analysis demonstrates that strategic alliances exert a substantial and positive influence (coefficient = 1.567) on the fulfillment of the institutional plan. This result suggests that for every unit improvement in the management of strategic alliances, there is an increase of approximately 1.57 units in the level of institutional fulfillment. It is noteworthy that control variables, such as organizational size (-0.005) and the economic environment (-0.003), show practically negligible marginal effects, reinforcing the central importance of strategic alliances (Figure 1).

Figure 1. Behavior of metrics to evaluate the Overall Impact of Strategic Alliances

Detailed analysis of the components of strategic alliances (Figure 2) reveals a clear hierarchy of importance, where the intensity of alliances emerges as the most influential factor, with a correlation of 0.659, suggesting that the depth and frequency of interactions between strategic partners are crucial for institutional success.

Strategic complementarity shows a moderate correlation of 0.497, indicating that the alignment of objectives and resources between partners contributes significantly to institutional fulfillment.

Negotiation skills, although important, show a more modest correlation of 0.377, suggesting that while relevant, it is not the most decisive factor in the success of alliances.

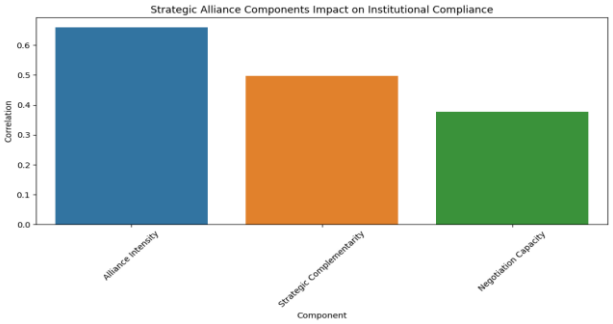

Figure 2. Detailed analysis of the components of Strategic Alliances

Strategic alliances demonstrate a particularly strong influence on several aspects of organizational performance, as seen in the correlation matrix (Figure 3), where stakeholder satisfaction shows the highest correlation (0.915), suggesting that strategic alliances are especially effective in improving relationships with stakeholders.

The achievement of objectives shows a very strong correlation (0.893), indicating that alliances contribute significantly to the achievement of institutional goals and organizational performance (0.883) and innovation capacity (0.838) also show robust correlations, demonstrating the positive impact of alliances on operational efficiency and the organization's adaptability.

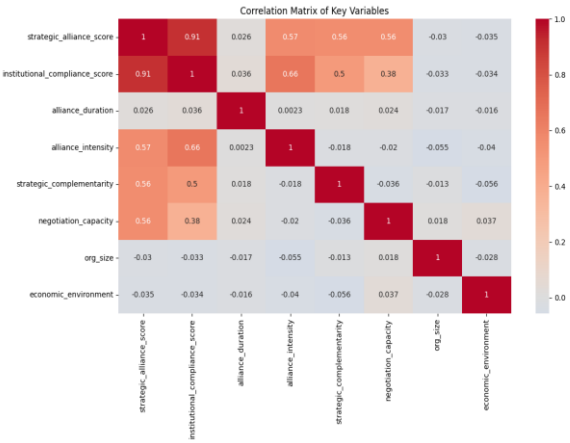

Figure 3. Correlation analysis of the components that explain the performance of Strategic Alliances

These findings have important implications for institutional management, suggesting that organizations should prioritize investment in the development and maintenance of strategic alliances, given their strong positive impact on institutional compliance. Therefore, it is recommended to focus particularly on the intensity of alliances, ensuring frequent and meaningful interactions with strategic partners and developing specific capabilities to manage alliances, with special emphasis on building deep and lasting relationships with strategic partners and implementing monitoring systems that specifically evaluate stakeholder satisfaction and the achievement of objectives, since these metrics show the greatest sensitivity to the quality of strategic alliances.

The SEM analysis (Figure 4) has revealed a complex structure in the relationship between strategic alliances and institutional performance. While the institutional performance measurement model is robust, the structure of strategic alliances and their effects are more complex than anticipated.

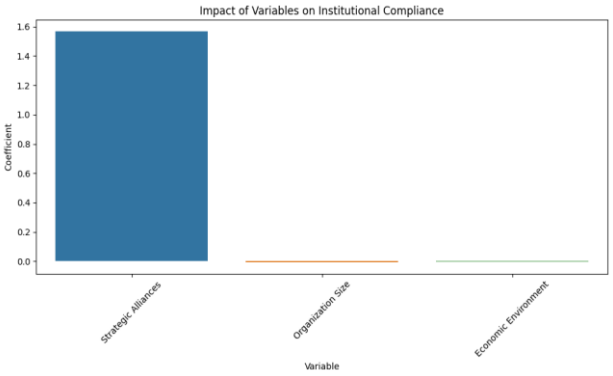

Figure 4. SEM analysis of the components that explain the performance of Strategic Alliances

The low R^2 suggests the need for more sophisticated models that can better capture the complexity of these relationships. The practical implications point to a more nuanced approach to alliance management, with particular attention to negotiation capabilities and stakeholder satisfaction.

4 Discussion

The results obtained in the present study strongly underline the positive and significant impact of strategic alliances on the fulfillment of the institutional plan, a finding consistent with previous studies that highlight the value of structured cooperation between organizations (Buggle & Durante, 2021., Curtin et al., 2022).

The regression coefficient of 1.567 indicates that alliances are not only relevant but also crucial in improving institutional performance, even surpassing factors traditionally considered important, such as organizational size or the economic environment, whose coefficients were statistically marginal. This finding validates the idea that effective alliance management can largely compensate for structural or contextual limitations (Alsharari 2024, Camulfo et al., 2024).

Regarding the internal components of strategic alliances, the intensity of collaboration emerges as the factor with the strongest correlation to institutional compliance (r = 0.659), reflecting that the frequency and depth of interactions are key to consolidating an effective interorganizational relationship. This result aligns with the literature that links trust and consistent interaction to the success of alliances, particularly in the context of projects and long-term cooperation (Bond et al., 2018; Wang & Zhang, 2024).

Likewise, strategic complementarity (r = 0.497) highlights the need for a clear alignment of objectives, resources, and capabilities between partners, a factor widely recognized in

organizational theory and recent structural models, as reported by some research that integrates this type of analysis to study organizational behavior (Davis & DeWitt , 2021, Zia et al., 2024).

On the other hand, while negotiation skills show a lower correlation (r = 0.377), their importance should not be underestimated, as this ability facilitates the coordination and conflict resolution process within the alliance (Ali et al., 2024). In regulated or complex environments, such as the financial technology sector, this ability becomes even more critical (Arsian et al., 2024).

In terms of the specific impact on organizational performance metrics, strategic alliances show a particularly strong correlation with stakeholder satisfaction (r = 0.915), which is consistent with the shared value and network collaboration framework (Kuper et al., 2022). Goal achievement (r = 0.893), institutional performance (r = 0.883), and innovation capacity (r = 0.838) also exhibit strong relationships with alliance quality, reaffirming their role as catalysts for organizational learning and strategic adaptation (AlSaied et al., 2024).

Finally, from a practical perspective, these findings justify a strategic prioritization of resource allocation toward the development, maintenance, and monitoring of institutional alliances. Actively managing relational intensity, coupled with strengthening negotiation and complementarity capacities, becomes a critical axis for sustaining performance in changing environments. In this regard, the implementation of more advanced analytical models, such as structural equation modeling, is advisable to further evaluate these relationships in depth (Rahman et al., 2024; Thakur et al., 2024).

5. Conclusions

The analysis provides robust evidence that strategic alliances are a critical factor for institutional success, suggesting that the model effectively captures the relationship between strategic alliances and institutional fulfillment. Organizations seeking to improve their performance should consider strategic alliances as a fundamental tool for achieving their institutional objectives, paying particular attention to the strength of these relationships and their impact on stakeholder satisfaction.

In this context, non-linear models that include mediation effects should be explored, and longitudinal analysis should be considered, in order to develop better measures of the intensity of strategic alliances that allow for a comprehensive evaluation of the performance of organizations.It is key to explore additional dimensions of complementarity, including more contextual variables, as well as additional analyses, to perform subgroup analyses, which allow the quantification of moderating effects, as well as a broader scope of analysis in a multilevel analysis context, leading to broader conclusions.

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