Journal of Entrepreneurship, Management and Innovation (2025)
Volume 21 Issue 4: 5-29

DOI: https://doi.org/10.7341/20252141
JEL Codes: O32, L83, M21, Q56, Z32

Innovation, digitalization, and sustainability as drivers of performance in tourism MSMEs: A multigroup evidence from the Pacific Alliance

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Abstract

PURPOSE: *Based on the resource and capability (RBV), the natural resource-based view (NRBV), and institutional theory, this study analyzes the relationship between innovation and performance and the mediating effects of sustainability and digitalization in tourism micro, small, and medium-sized enterprises (MSMEs) in Pacific Alliance (PA) (Chile, Colombia, Mexico, and Perú).* **METHODOLOGY:** *This study applies a quantitative approach using survey data from 1,388 tourism MSME entrepreneurs in the Pacific Alliance. Structural equation modeling and multigroup analysis were used to examine key relationships and differences between groups (PA countries).* **FINDINGS:** *The findings confirm the positive and significant relationship between innovation and performance and the mediating effect of sustainability and digitalization in Pacific Alliance tourist MSMEs. Through MICOM and multigroup analyses, significant differences were identified among Chile, Mexico, and Colombia, with the first two countries demonstrating greater competitiveness in tourism development.* **IMPLICATIONS:** *The findings offer relevant implications for business management and public policymaking, promoting innovation strategies mediated by digitalization and sustainability. In a competitive tourism environment, digitalization and sustainability are key factors that drive innovation in MSMEs. These strategies strengthen their capacity for adaptation, differentiation, and sustainable growth.* **ORIGINALITY AND VALUE:** *Unlike most research focused on developed countries, this study contextualizes the phenomenon within tourism MSMEs in emerging economies such as those in the Pacific Alliance, highlighting the influence of the institutional environment on business adaptation. This research contributes to the existing literature by providing the first empirical evidence in the context of the Pacific Alliance on the mediating role of sustainability and digitalization in improving performance through MSME innovation.*

Keywords: *innovation, digitalization, sustainability, performance, tourism, MSMEs, Pacific Alliance, emerging economies, resource-based view, institutional theory, competitiveness, multigroup analysis*

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Received 9 April 2025; Revised 28 July 2025; Accepted 11 September 2025.

INTRODUCTION

Innovation is a key element in enhancing business performance (Beltramino et al., 2020; Santarsiero et al., 2024), enabling firms to gain competitive advantages in the market (Bielińska & Hamerska, 2021). The literature generally supports the notion that innovation leads to improved performance, although some studies have reported negative or non-significant relationships (Rosenbusch et al., 2011; Rubio-Andrés et al., 2024). For this reason, numerous researchers have focused on exploring how to operationalize innovation more effectively. In this regard, digitalization and sustainability have emerged as two critical factors for enhancing innovation efficiency (Bilal et al., 2025). Digitalization enables firms to respond more swiftly to environmental demands, innovate, and improve business outcomes (Cucari et al., 2022), while sustainable development practices contribute to the social, economic, and environmental progress of firms, maintaining harmony with their surroundings (Alvarado et al., 2017) and simultaneously boosting performance indicators.

In a highly competitive and dynamic environment, tourism enterprises face the challenge of adapting to new market demands and increasingly discerning customer profiles (Setyawati et al., 2024; Konu & Tyrväinen, 2025). The mediating roles of digitalization and sustainability enhance innovation in tourism SMEs, strengthening their capacity for adaptation, differentiation, and sustainable growth (Kumar et al., 2024; Medrano-Sánchez & Fuster, 2024; Wahyudiono et al., 2024). These strategic factors are essential for competing in a globalized, customer-oriented, responsible, and enduring market. The literature addressing how sustainability through innovation fosters competitiveness in tourism MSMEs has approached the topic from various perspectives, contributing to a better understanding of how this process enhances their competitiveness (Agyabeng-Mensah et al., 2023; Dueñas-Ocampo et al., 2021; Vávrová et al., 2024). Additionally, efforts have been made to analyze this issue within the context of the Pacific Alliance (Zuñiga-Collazos et al., 2025). On the other hand, the relationship between innovation, digitalization, and performance has been widely explored in the literature, yielding diverse results (Zahoor et al., 2023; Coronado et al., 2023; Valdez-Juárez et al., 2024; Espina-Romero et al., 2024).

Despite the existing body of literature, significant research gaps remain, and there is a pressing need to expand studies that support the competitiveness of tourism MSMEs. From a research gap perspective, studies linking innovation and its determinants to performance have primarily focused on developed countries. However, there is limited empirical evidence concerning MSMEs in emerging economies (Al Nuaimi et al., 2024). MSMEs operating in emerging markets are often characterized by weaker institutional environments, which exacerbate the challenges they face (Zahoor et al., 2024). In this context, there is a lack of studies supporting the digitalization process of MSMEs (Skare et al., 2023), as well as a research gap regarding the sustainable behavior of MSMEs and the need to adapt their business models to sustainable development (Cantele & Zardini, 2020; Purnomo & Purwandari, 2025). From a public policy perspective, tourism MSMEs are crucial for regional and economic development, yet there is a shortage of rigorous quantitative studies measuring their impact, particularly in emerging countries, so that they can compete in the international market or seek to increase participation from international customers coming from Latin America or from wealthier economies (Romero-Sánchez et al., 2024; Fernández-Bedoya et al., 2025). Furthermore, there is a need to investigate the main drivers of MSME competitiveness within the framework of the 2030 Agenda for Sustainable Development (UN). Moreover, to date, few applied studies have incorporated RBV and NRBV approaches in research on the tourism industry. For these reasons, this research focuses on the mediating effects of sustainability and digitalization on innovation to improve MSME performance.

Following the previous reasoning and to fill this research gap, the study develops the following research questions (RQs):

RQ1: Does innovation have a positive and significant relationship on performance in tourism MSMEs in PA countries?
RQ2: Does sustainability have a mediating effect on the relationship between innovation and performance in tourism MSMEs in PA countries?
RQ3: Does digitalization have a mediating effect on the relationship between innovation and performance in tourism MSMEs in PA countries?
RQ4: Are there significant differences among PA countries concerning the relationship between innovation and performance in tourism MSMEs?

To answer these questions, we implement an empirical research design with a dataset of 1,388 MSMEs belonging to the PA. The sample is made up of companies operating in the tourism industry. The research method performed is structural equation modeling (SEM) based on estimations through partial-least squares (PLS-SEM). We also conduct MICOM and multigroup analyses to research differences by country in the PA context.

The context of tourism SMEs within the Pacific Alliance (PA) is particularly relevant for several reasons. First, an analysis of the factors that promote the competitiveness of tourism MSMEs in the PA context is justified by the essential contribution of these enterprises to employment and GDP in Latin America. The countries that comprise the PA—Peru, Chile, Mexico, and Colombia—are considered emerging markets or, in some contexts, developing economies. These are nations undergoing rapid economic growth and transition, yet they have not reached the development levels of more advanced economies. The Pacific Alliance is an economic integration and cooperation initiative formalized in 2011 among Chile, Colombia, Mexico, and Peru, aimed at increasing reciprocal trade and investment, and enhancing competitiveness and productivity (Cuestas & Thoene, 2020; González-Galarza, 2022; Julio-Rospigliosi et al., 2024). The PA has significantly boosted tourism in the region (Prado Lallande & Rouvinski, 2023; Maldonado & Fernández, 2025), fostering economic and social development (Meng et al., 2023; Xiong & Tang, 2023) and generating employment (Albaladejo et al., 2023). Second, basic economic indicators underscore the importance of the tourism industry. Tourism accounts for a significant share of GDP in PA countries: Colombia (2.1%) (MinCIT, 2022), Chile (9.2%) (INEI, 2023), Mexico (8.6%) (INEGI, 2023), and Peru (6.5%) (WTTC, 2023). MSMEs dominate the tourism sector in all these countries, with participation rates ranging from 90% to 98.9% (ANIF, 2022; SERNATUR, 2023; COMEXPERÚ, 2022). Collectively, the PA region has a population of 233 million, a GDP of 2.3 trillion USD, and tourism contributes 6.6% to regional GDP, with 93.48% of tourism enterprises being MSMEs.

Our study contributes to the literature in several ways. From a theoretical perspective, it integrates the Resource-Based View (RBV), Natural Resource-Based View (NRBV), and Institutional Theory to analyze how innovation, digitalization, and sustainability drive the competitiveness of tourism MSMEs in emerging economies. Most existing literature has focused on innovation processes in developed countries, with very limited studies in emerging economies (Al Nuaimi et al., 2024), and even fewer in Latin America. The importance of context and environment in the innovation process is crucial for understanding the success of innovation strategies, particularly in emerging markets (Malik et al., 2024). Institutional theory helps explain how norms, regulations, and social values influence MSME behavior (Jain et al., 2024). In emerging economies, where institutional environments are often unstable or informal, this theory provides a framework to analyze how firms adapt (or fail to adapt) to environmental pressures in order to survive, innovate, and grow (Balzano et al., 2024; Eitrem & Modell, 2024; Galleli & Amaral, 2025). In this regard, our study contributes to contextualizing the literature within the tourism sector in emerging countries. Using a MICOM and multi-group analysis, the results reveal significant differences among Chile, Mexico, and Colombia, indicating that tourism MSMEs in Chile and Mexico are more competitive in tourism development compared to other emerging PA economies.

Secondly, the findings have important implications for the management of tourism enterprises and for policymakers promoting tourism industry development. They can assist managers and business owners in fostering innovation through the mediating roles of digitalization and sustainable practices to gain competitive advantage. Moreover, the results are valuable for guiding more effective public policies and support programs that leverage innovation to enhance the natural, social, and cultural resources of the PA context.

The paper is structured in the following way. First, the respective theoretical and empirical foundations are presented, and then the research methodology is explained. The results are presented and discussed, and finally, the conclusions, limitations, and future opportunities of the research are offered.

THEORETICAL FRAMEWORK AND HYPOTHESES

The theoretical framework of our study is primarily grounded in resource-oriented theories, such as the Resource-Based View (RBV) and the Natural Resource-Based View (NRBV), as well as in context-focused theories, notably institutional theory. In the 1990s, Barney (1991) proposed that businesses must utilize valuable, rare, inimitable, and non-substitutable resources to remain competitive, achieve their proposed objectives, and enhance performance. Thus, the Resource-Based View (RBV) is related to strategic business management (Andrews, 1971; Civelek et al., 2023). Resources can be tangible or intangible. The former are physical in nature, such as buildings, property, plants, equipment, etc. Intangibles are not material and include brand value, organizational culture, policies, and intellectual capital, among others (Grant, 1996). Authors have applied the RBV to explain resource management, performance, and sustained business competitive advantage (Barney, 2018). Barney et al. (2021) considered that to obtain economic value, MSMEs must make co-specialized investments by combining homogeneous resources and capabilities. If these are rare, iterative, and complex, they can be a source of sustained competitive advantage. Capabilities are defined as management's ability to make decisions, manage

resources, and satisfy customers' needs, facilitating heterogeneity, longevity, and the evolution of companies (Teece, 2019). They are divided into ordinary, which refers to those that are easy to imitate, and dynamic, which are essential for facing volatile environments and improving the proposed results (Winter, 2003).

Since the RBV only explains economic aspects and does not consider companies' environmental actions (Lockett et al., 2009), Hart (1995) proposed a Natural Resource-Based View (NRBV) that takes into account the protection of the natural environment and its relationship with sustainable development (Andersen et al., 2020; Zopf & Guenther, 2015). Thus, the NRBV helps implement environmental strategies, allowing MSMEs to obtain competitive results (Mishra & Yadav, 2021; Agyabeng-Mensah et al., 2023; Lichtenthaler, 2021). According to the NRBV, developing and maintaining unique and valuable environmental capabilities is a central axis that permits companies to obtain financial benefits (Albertini, 2019; Agyabeng-Mensah et al., 2023). Therefore, to ensure that environmental management positively affects the company's performance, managers and employees must have adequate skills to incorporate habits into processes and include sustainable routines in the organizational culture (Dubois & Dubois, 2012).

Institutional theory has been key in several areas of knowledge, especially in social sciences (Scott, 1987) and organizational management (DiMaggio & Powell, 1983). This current proposes that organizations do not act in isolation, but rather respond actively to the social, cultural and normative contexts that surround them (Balzano et al., 2024; Eitrem & Modell, 2024; Galleli & Amaral, 2025). Thanks to its multiple approaches, this perspective allows us to understand in greater depth phenomena such as tourism development (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). It is also effective for analyzing the particular behavior of MSMEs in emerging economies, which may be closely linked to their communities (Falaster & Guerrazzi, 2017; Rachmiatie et al., 2024; de Curtò et al., 2025). They are especially sensitive to institutional pressures, such as public policies that impact their operations and regulations that seek to balance local traditions with the demands of the global market (Soares et al., 2021; Bhatty Singh, 2025; Hagsten & Falk, 2024).

The context of the Pacific Alliance

According to the Travel and Tourism Development Index, developed by the World Economic Forum to assess factors that enable the sustainability and resilience of the sector, the Pacific Alliance (PA) countries occupy a mid-range position globally. Chile ranks highest (34), followed by Mexico (40), Colombia (58), and Peru (65).

Tourism in Colombia contributes 2.1% to the national GDP (Ministry of Commerce, Industry, and Tourism, 2022), with micro, small, and medium-sized enterprises (MSMEs) accounting for 90% of the tourism sector (ANIF, 2022). Colombia's strongest pillar is price competitiveness, followed by its natural resources. However, land, port, and air infrastructure, as well as economic conditions, received low ratings. Investment in science, technology, and innovation is recommended to promote sustainable resource use and enhance productivity (Martínez & Poveda, 2021). Digitalization has also facilitated innovation among tourism MSMEs (Rabetino et al., 2023).

In Chile, tourism represents 9.2% of GDP (National Institute of Statistics [INEI], 2023; Ministry of Economy, Development, and Tourism, 2023), and MSMEs constitute 95% of the tourism sector (National Tourism Service, 2023). Chile stands out for its technological preparedness in tourism and price competitiveness. Innovation has been a key driver of MSME competitiveness (Román & Font, 2014); however, challenges persist, including a lack of skilled labor and market information (Canales & Álvarez, 2017; Martínez, 2019). During the pandemic, these businesses mitigated revenue losses through online sales and digital promotion, strengthening their structure and economic performance (Acevedo et al., 2023). This has fostered digital innovation and contributed to the country's economic and social development.

In Mexico, tourism contributes 8.6% to GDP (National Institute of Statistics and Geography [INEGI], 2023; Ministry of Tourism, 2023), and MSMEs represent 98.9% of the tourism sector (Ministry of Tourism, 2023a). Mexico is distinguished by its cultural, gastronomic, and heritage richness, which drives tourism flows and MSME performance (Correia et al., 2013; Rojas et al., 2020). The sector's competitiveness is based on strong air infrastructure and rich natural and cultural resources, though improvements are needed in security, sustainability, and the business environment. Studies in Guanajuato show that information technologies facilitate innovation and enhance business performance (Cuevas-Vargas et al., 2023).

Finally, in Peru, tourism contributes 6.5% to GDP (World Travel and Tourism Council, 2023), and MSMEs account for 90% of the tourism sector (Foreign Trade Society of Peru, 2022). Peru's tourism industry, heavily reliant on its natural and cultural resources, needs improvement in infrastructure, enabling environments, and sustainability. Innovation has generally led to increased sales and productivity, although its impact varies depending on the type of technology, firm size, and the gender of the manager (Seclén et al., 2022). The pandemic accelerated digitalization, but rural community-

based tourism has not progressed at the same pace, affecting destination promotion, employment, and the local market (Maquera et al., 2022).

After establishing the main theoretical framework of our study and offering a brief description of the tourism business environment in the Pacific Alliance, we now present the research model along with the proposed hypotheses, which are detailed below (Figure 1).

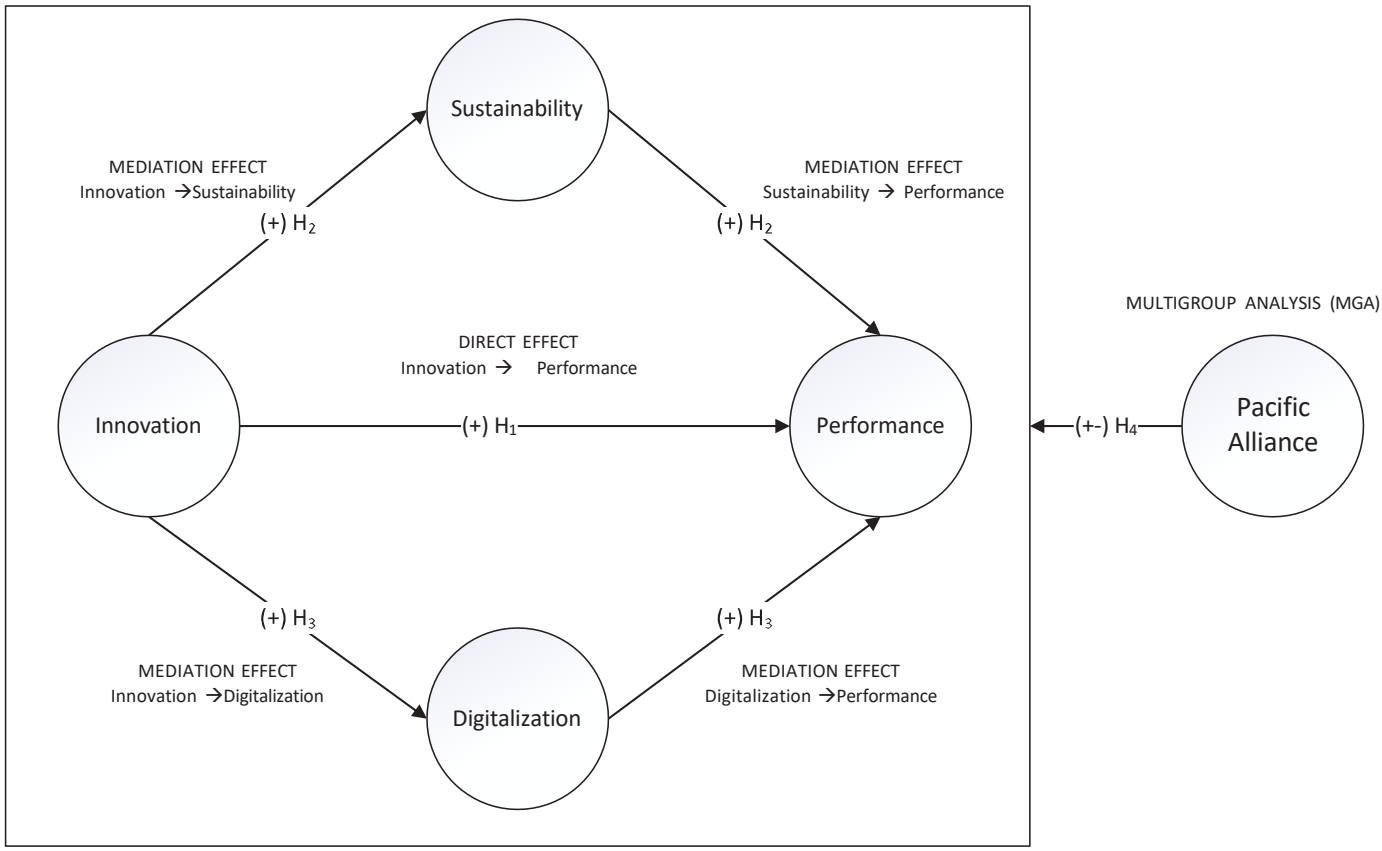

Figure 1. Proposed model. Hypotheses

Innovation and performance

Innovation creates value through novel actions that lead to improved performance (Domi et al., 2019; Valdez-Juárez & Castillo-Vergara, 2021; Verreynne et al., 2019; Sharma et al., 2021; Carrasco et al., 2023; Ferreira et al., 2020). It involves the generation of intangible resources—such as new ideas, policies, and beliefs—that enhance business outcomes (Grissemann et al., 2013; Mattsson & Orfila-Sintes, 2014; Domi et al., 2019). From the perspective of the Resource-Based View (RBV), innovation systems can serve as a source of unique resources and specific capabilities that drive MSME competitiveness and significantly improve their performance (Teece, 2019; Hilman & Kaliappen, 2015).

Previous studies support the positive relationship between MSME innovation and performance (Beltramino et al., 2020; Ferreras-Méndez et al., 2021; Vera-Jaramillo et al., 2024). However, some research has shown that innovation does not always yield the expected results and is influenced by factors such as efficiency, organizational capabilities, and revenue growth. This suggests that, for business model innovation to be effective, firms must strengthen their internal capabilities and align their strategies with clear growth objectives (Latifi et al., 2021).

Innovation has become a key driver in transforming traditional tourism enterprises into regional leaders (Santarsiero et al., 2024). In a market saturated with options, MSMEs that focus on delivering unique experiences—supported by cutting-edge technologies and personalized service—achieve significant differentiation (Wang et al., 2025). This innovative approach not only enhances the customer experience but also values and retains employees as essential contributors to organizational performance (Wang et al., 2025; Santarsiero et al., 2024; Luongo et al., 2023; Azmi et al., 2023). Moreover,

organizational flexibility and support for innovation management significantly influence the performance of tourism enterprises (Zirena-Bejarano et al., 2023; De la Gala-Velásquez et al., 2023). Additionally, the literature has found that tourism MSMEs primarily innovate in response to customer needs; however, they often fall short in R&D investment, which may negatively impact their outcomes (Maldonado-Guzmán et al., 2017; Armstrong & Brown, 2019).

Innovative activity in the tourism sector manifests in various forms. For instance, integrating visitors into local daily life represents product and experience innovation; the implementation of biometric recognition systems for bookings and transactions streamlines the tourist experience and constitutes a significant technological advancement; and the commitment to sustainability—by both service providers and travelers—demonstrates environmental innovation. These and other strategies contribute to improving operational efficiency, increasing revenue, adapting to changing environments, and attracting new markets, thereby strengthening business performance (Alos-Simo et al., 2024; Arici et al., 2024; Hernández-Barahona et al., 2023; Luongo et al., 2023; Wszendybył-Skulska et al., 2024).

In this context, it becomes relevant to focus on the following hypothesis:

H1: Innovation has a positive and significant effect on performance in tourism MSMEs in PA countries.

Mediating effect of sustainability on the relationship between innovation and performance

According to the Natural Resource-Based View (NRBV), promoting the conservation of strategic resources entails implementing business models oriented toward their reuse and protection. Simultaneously, it emphasizes the importance of establishing cross-sector collaborations and fostering the creation of hybrid enterprises committed to cooperation and the development of collective well-being within the communities in which they operate. Such practices encourage the efficient use of resources, promote socially responsible investments, and strengthen financial risk management. The growing need to address environmental, economic, and social impacts drives companies to develop innovations in their products, services, and processes (Agyabeng-Mensah et al., 2023; Dueñas-Ocampo et al., 2021).

In this regard, various studies focused on tourism MSMEs have highlighted that sustainability acts as a driver of organizational performance by attracting a segment of conscious tourists willing to pay premium prices for responsible experiences. Moreover, adopting sustainable practices enables these businesses to access green financing, establish public-private partnerships, and gain international recognition (Chang & Cheng, 2019; Arsawan et al., 2022; Vávrová et al., 2024). Innovation driven by environmental sustainability practices facilitates market expansion and enhances business performance (García-Lopera et al., 2022). For example, innovation through sustainability practices can reduce the negative environmental impact of tourism activities in natural destinations, respect cultural diversity and frameworks, and increase stakeholder outcomes (De et al., 2020; Tajeddini & Mueller, 2018).

In the context of the Pacific Alliance countries, significant progress and limitations have been identified regarding sustainability in the tourism sector. In Chile, there is growing interest in the development of the tourism industry, ranging from eco-efficient accommodations to digital platforms for measuring carbon footprints. This suggests that sustainability stimulates innovative solutions (Sourvinou & Filimonau, 2018; Lenzen et al., 2018), with business practices guided by public policies such as the preservation of protected areas (Rivas-Ortega & Rojas-Gutiérrez, 2020). However, the effective adoption of these practices is often constrained by the perception of short-term economic benefits, which limits innovation and its impact on performance (Aldeanueva-Fernández & Cervantes-Rosas, 2019).

In Mexico, although there are governmental efforts to promote sustainability in tourist destinations and foster innovation through it, some MSMEs still lack concrete strategies to mitigate the environmental impact of their operations (López-Argota et al., 2023).

In Colombia, particularly in rural areas, tourism enterprises have progressively integrated sustainability as a competitive development strategy, promoting alternative forms of tourism such as ecotourism, agritourism, and adventure tourism. Community-based tourism has also been encouraged, involving local communities to generate shared value, foster economic resilience, and contribute to ecosystem protection (Serrano-Amado et al., 2018; Zuñiga-Collazos et al., 2025).

In Peru, sustainability concerns are primarily concentrated in urban areas, with actions focused on the responsible consumption of natural resources. Although eco-efficient practices aligned with innovative policies have been promoted, their adoption by tourism MSMEs remains partial, partly due to a limited perception of their competitive impact, which reduces the willingness to implement them (Huamán, 2022).

Based on the above considerations, the following hypothesis is proposed:

H2: Sustainability has a mediating effect on the relationship between innovation and the performance of tourism MSMEs in PA countries.

Mediating effect of digitalization on the relationship between innovation and performance

In a competitive and constantly evolving environment, innovation has become a key driver for MSMEs to create competitive advantages (Varadarajan et al., 2022; Melović et al., 2020). However, previous studies confirm that innovation alone is not always sufficient and requires the integration of new technologies to be more effective (Latifi et al., 2021; Paunovic et al., 2022; Valdez-Juárez et al., 2024; Florek-Paszkowska & Ujwary-Gil, 2025). For companies to innovate through the use of emerging technologies—such as artificial intelligence (AI), machine learning, big data, or blockchain—it is essential that both organizational leaders and their teams possess the technological skills necessary to understand and strategically apply these tools (Varadarajan et al., 2022; Melović et al., 2020; Civelek et al., 2023).

In this regard, prior research has demonstrated that digital orientation enhances both innovation processes and financial and non-financial outcomes (Zahoor et al., 2023). Other studies also emphasize that integrating digitalization into a proactive and flexible organizational strategy is particularly relevant in disruptive scenarios, such as the COVID-19 pandemic, where its adoption was crucial for the recovery of tourism businesses, especially small and medium-sized restaurants and hotels (Cruz-Cárdenas et al., 2021; Kanaan et al., 2023).

In the Pacific Alliance region, certain MSMEs have successfully configured their VRIN (Valuable, Rare, Inimitable, and Non-substitutable) resources through digital technologies to implement innovations in new markets (Guo et al., 2020; Coronado et al., 2023). Nevertheless, structural and perceptual barriers persist. For instance, in Chile, tourism MSMEs perceive digitalization as costly, which limits their capacity to innovate (Oyarzún et al., 2020). In Mexico, although internet access and websites are common, a lack of understanding of the strategic benefits of digitalization reduces its impact (Yañez & López, 2022). In Colombia, imitative strategies prevail, driven by technological deficiencies (Donawa-Torres & Morales-Martínez, 2019; López-Rodríguez & López-Rodríguez, 2018), while in Peru, rural MSMEs face limitations due to a lack of connectivity and digital training (Espina-Romero et al., 2024; Maquera et al., 2022).

Based on the literature review, the following hypothesis is proposed:

H3: Digitalization has a mediating effect on the relationship between innovation and performance in tourism MSMEs in PA countries.

Multigroup analysis considering innovation and performance

Within the context of the Pacific Alliance (PA), tourism MSMEs operate in diverse environments that reflect structural, institutional, and technological differences, which directly influence their innovation capabilities and business performance (Rachmiatie et al., 2024; de Curtò et al., 2025). From an explanatory perspective, institutional theory suggests that regulations and norms in each country shape the environment in which MSMEs operate (Zucker, 1987).

Given that the availability and use of strategic resources vary across PA countries, it is reasonable to expect differences in how tourism MSMEs manage their operations. These variations can be attributed both to the structural conditions of each country's institutional framework and to the specific capabilities of individual firms (de Curtò et al., 2025). For example, Chile stands out for its high level of digitalization and institutional coordination, which has enabled the integration of digital tools that enhance innovation and performance among tourism MSMEs. This has boosted their competitiveness and economic dynamism through the strategic involvement of the state, the business sector, academia, and civil society (Farías & Cancino, 2021; Castillo-Vergara et al., 2025; Ibarra & González, 2023).

In contrast, Mexico continues to face significant challenges in digitalization. Although technological adoption has advanced and supports innovation, its implementation remains limited due to a lack of resources for technological infrastructure, low levels of digital training among entrepreneurs, and limited progress in peripheral areas. These factors hinder the ability of firms to strengthen their digital and innovation processes (Cuevas-Vargas et al., 2023; Braunerhielm & Hoppstadius, 2025).

In Colombia, digitalization has progressed significantly in recent years (Martínez & Poveda, 2021; Rabetino et al., 2023; Vera et al., 2022; Bowen, 2021). However, challenges remain, such as limited internet access in rural areas and cultural resistance to technological change among some local populations (Aïdi & Fabry, 2024; Zuñiga-Collazos et al., 2025; Kochuma et al., 2024). In Peru, tourism MSMEs face digitalization challenges. Recent studies indicate that only about

30% of small and medium-sized enterprises have adopted digital technologies, due to obstacles such as limited financial resources and connectivity issues. Additionally, many of these businesses continue to operate with manual processes, restricting their capacity for innovation and competitiveness (Paiva et al., 2024; Maquera et al., 2022; Gutiérrez et al., 2025).

In terms of sustainability, a similarly diverse landscape is observed. In Chile, structural challenges persist. For instance, although approximately 40% of the country's electricity comes from renewable sources, there remains a significant dependence on fossil fuels, limiting its contribution to sustainable development (Gaete-Morales et al., 2018; Gallego-Schmid et al., 2025). Regarding social sustainability, there is limited incorporation of traditional knowledge, reflecting a lack of recognition of local communities. Moreover, several studies have identified socio-spatial inequalities in Santiago, particularly in the distribution of social, economic, and environmental services, which affect business innovation and organizational outcomes (Livert & Gainza, 2014; Nikolakis et al., 2022).

In Mexico, sustainability is gaining prominence in the business sphere, acting as a key component that directly influences the performance of tourism MSMEs (León-Gómez et al., 2025; Akdemir & Erkasap, 2025). Despite progress, these businesses still face significant barriers such as technical knowledge gaps, difficulties accessing financing for sustainable initiatives, and pronounced territorial inequality, with rural communities at a disadvantage due to limited institutional support (Espinoza-Rodríguez et al., 2025; Villavicencio et al., 2025).

Colombia faces similar issues. Tourism MSMEs struggle with low levels of technical knowledge in sustainable practices, limited operational capacity, and territorial inequality that restricts access to resources in rural areas. Additionally, the lack of tourism planning has led to negative environmental impacts, such as water pollution and excessive solid waste (Flórez et al., 2022; Higuera, 2023; Pineda, 2023). A different scenario is observed in Peru, where the government has promoted initiatives focused on rural tourism, environmental protection, and cultural appreciation as pillars of tourism development. However, various studies warn that the reach of these policies remains limited in regions where Indigenous communities prevail, reducing their effectiveness in promoting sustainable practices (Polas et al., 2022; Bunclark & Barcellos, 2021; Esparza-Huamanchumo et al., 2024; Esenarro et al., 2024).

Therefore, when considering the differences among PA countries, these can be explained by structural factors, consumer preferences, and strategic decisions in tourism management, which affect dimensions such as technological capacity, sustainability, innovation, and performance efficiency (Al-Romeedy & Alharethi, 2025; Yin et al., 2024). It is also important to consider other determining factors such as macroeconomic conditions, regulatory frameworks, access to financing, and the level of international integration, all of which can directly influence business performance in each country (Julio-Rospigliosi et al., 2024; Reyes & Useche, 2018; Deaza & Vivas, 2016).

Moreover, regional integration with more developed economies may represent a strategic advantage by facilitating access to new markets, skilled talent, and institutional support. A useful example is the European Union, where previous research has shown that SMEs have benefited from common policies and integrated regulatory frameworks in the tourism sector, which could serve as a reference for PA countries. However, in emerging economies, challenges such as corruption and economic and political instability persist (Estol et al., 2018; Martey, 2025).

Based on the review of the literature for each PA country, the following hypothesis is proposed:

H4: Tourism MSMEs in Pacific Alliance countries exhibit significant differences in the mediating role of sustainability and digitalization between innovation and performance.

METHODOLOGY

Sample method

The study uses the Ibero-American Mipyme Observatory Database, the original source for the "Mipyme Report 2022: Digitalization and Sustainable Development of MSMEs in Ibero-America." This is an FAEDPYME Network initiative. The FAEDPYME Network is a non-profit organization composed of a large number of researchers from universities throughout Latin America and Spain. The sample used in this study consists of 1,388 tourism MSMEs with between 5 and 250 employees.

The addresses and telephone numbers of the firms were obtained from official directories: in Peru, from the Directory of Tourism Service Companies (PROMPERÚ); in Chile, from the Federation of Tourism Companies of Chile (FEDETUR); in Mexico, from the National Tourism Business Council (CNET); and in Colombia, from the Statistical Business Directory

(DEE), compiled by DANE. Based on these directories, a simple random sampling method was applied to select the sample for each country analyzed. Data collection took place between February and May 2022. The questionnaires were administered to managers and/or business owners, as they are typically responsible for making key decisions in MSMEs (Van Gils, 2005) and directly influence the strategic behavior of their organizations (O'Regan & Sims, 2008).

Personalized phone calls were organized according to the needs of each participant. During these conversations, the purpose of the study was explained in detail, and any additional information requested by participants was provided (Rosique-Blasco et al., 2018). This strategy aimed to minimize potential biases and increase the response rate (Carter et al., 2014). Respondents were assured of the confidentiality of their answers (Kariv et al., 2009), and controls were implemented to prevent data entry errors. Participants who declined to complete the questionnaire were randomly replaced by firms of similar size within each country. Approximately 19% of the contacted MSMEs refused to participate in the survey.

The characteristics of the sample are presented in Table 1. The study focuses exclusively on Pacific Alliance countries (Chile, Colombia, Mexico, and Peru) and on firms operating within the tourism industry. Specifically, the total sample comprises 1,388 firms, distributed as follows: 55 from Chile, 654 from Colombia, 574 from Mexico, and 105 from Peru. All firms are engaged in various tourism-related activities. By size, the sample includes 706 micro, 412 small, and 245 medium-sized enterprises. Additionally, the firms have an average age of 11 years, with ages ranging from 1 to 155 years. The data analysis was conducted using a structural equation modeling technique, complemented by a multigroup comparative analysis.

Table 1. Statistics of the sample

Variables	N	%
Number of firms	1.388	100
Chile	55	4
Colombia	654	47.1
Mexico	574	41.4
Peru	105	7.6
Size of firms		
Micro	706	51.8
Small	412	30.2
Medium	245	18

Note: Descriptive data.

To assess the quality of the questionnaire data, both non-response bias and common method variance bias were examined. In line with the approach proposed by Vitell and Nwachukwu (1997), late respondents were used as a proxy to test for non-response bias. Specifically, responses from the first wave (75%) were compared with those from the later wave (25%). The results of t-tests and chi-square tests indicated no statistically significant differences between the two groups (Vitell and Nwachukwu, 1997). Given that data for both dependent and independent variables were collected from the same source, there is a potential risk of common method bias (Achidi-Ndofor & Priem, 2011), which may artificially inflate the observed relationships (Zhang et al., 2022). To address this concern, Harman's single-factor test was conducted (Podsakoff & Organ, 1986). This technique evaluates whether a single factor accounts for the majority of the variance in the data, which would suggest the presence of bias. The analysis yielded a Kaiser-Meyer-Olkin (KMO) value of 0.917 and a significant Bartlett's test of sphericity ($p < 0.000$), confirming the adequacy of the data for factor analysis. The total variance explained was 58.17%, with the first factor accounting for only 29.324%, indicating that common method variance is not a major concern in this study.

Research model and variables

The research method is based on structural equation modeling (SEM) through partial-least squares estimations (PLS-SEM). This is a robust and extended methodology for researching social sciences with datasets that are not normally distributed. SEM (Structural Equation Modeling) is usually applied to explain multiple statistical relationships simultaneously through

visualization and model validation. Complex models can be discussed simply through this technique. It is an extension of traditional linear modeling techniques.

A questionnaire was administered to the managers of tourism MSMEs in the PA context to gather information. The design of the study was developed through a literature review and the Ibero-American MSMEs Observatory 2022. The questionnaire was designed with items measured using a Likert scale from 1 to 5, where 1 is total disagreement or unimportant, and 5 is total agreement or very important. To understand how the innovation, performance, sustainability, and digitalization variables were measured, it is essential to describe how the items below were formed.

Innovation

To assess the importance of innovation, tourism MSME entrepreneurs were asked about the following activities: changes or improvements in existing products/services, market launches of new products/services, changes or improvements in production processes, acquisition of new capital goods, new changes or improvements in organization and/or management, new changes or improvements in purchases and/or supplies, and new changes or improvements in marketing and/or sales. The measurement of this variable has been taken from the Oslo Manual (OECD, 2005) and has been used in previous studies (Arsawan et al., 2022; Beltramino et al., 2020; Ferreras-Méndez et al., 2021; Latifi et al., 2021).

Sustainability

To examine sustainability in tourism SMEs, we asked about the degree of agreement or disagreement regarding environmental criteria in the selection of suppliers; environmental criteria in the management of plastic packaging and derivatives; environmental criteria in process design; environmental criteria for energy management; environmental criteria in water management; environmental criteria in waste management; and environmental certifications (e.g., ISO14001/EMAS) (Agyabeng-Mensah et al., 2023; Cantele & Cassia, 2020; Aina & Atan, 2020; Denicolai et al.,2021).

Digitalization

To calculate the level of digitalization in tourism MSMEs, entrepreneurs were approached with topics related to the possibilities and advantages of digitalization, such as the investment required for digitalization, the training that managers and employees need to incorporate digitalization, and training for digital transformation. The eight items have been previously studied by Bhimani et al. (2019), Zahoor et al., (2023), Madrid-Guijarro et al. (2023) and Avelar et al. (2024).

Performance

To evaluate the performance of tourism MSMEs, it was necessary to check internal results, such as the quality of a company's products and the efficiency of its production processes, external results, such as customer satisfaction and rapid adaptation to change, and the results referring to rationality and human talent by measuring profitability, employee satisfaction, and work absenteeism. This scale was developed in depth by Quinn and Rohrbaugh (1983) and used by Beltramino et al. (2020), Latifi et al. (2021), and Prado et al. (2022).

RESULTS AND DISCUSSION

Measurement model (outer)

To assess the reliability and validity of the measurement model (see Figure 2), the results of Cronbach's Alpha and composite reliability were evaluated. They were above the minimum threshold, which confirms the internal consistency of the constructs. The Convergent validity effects (AVE) are also satisfactory (Hair et al., 2019). Regarding the variance inflation factor (VIF), the values are close to 3 or less; that is, the variables do not have multicollinearity problems (Hair et al., 2014). The results of the predictive power indicator (Q^2) are greater than 0 and represent the good predictive capacity of the model (Hair et al., 2019) (Table 2).

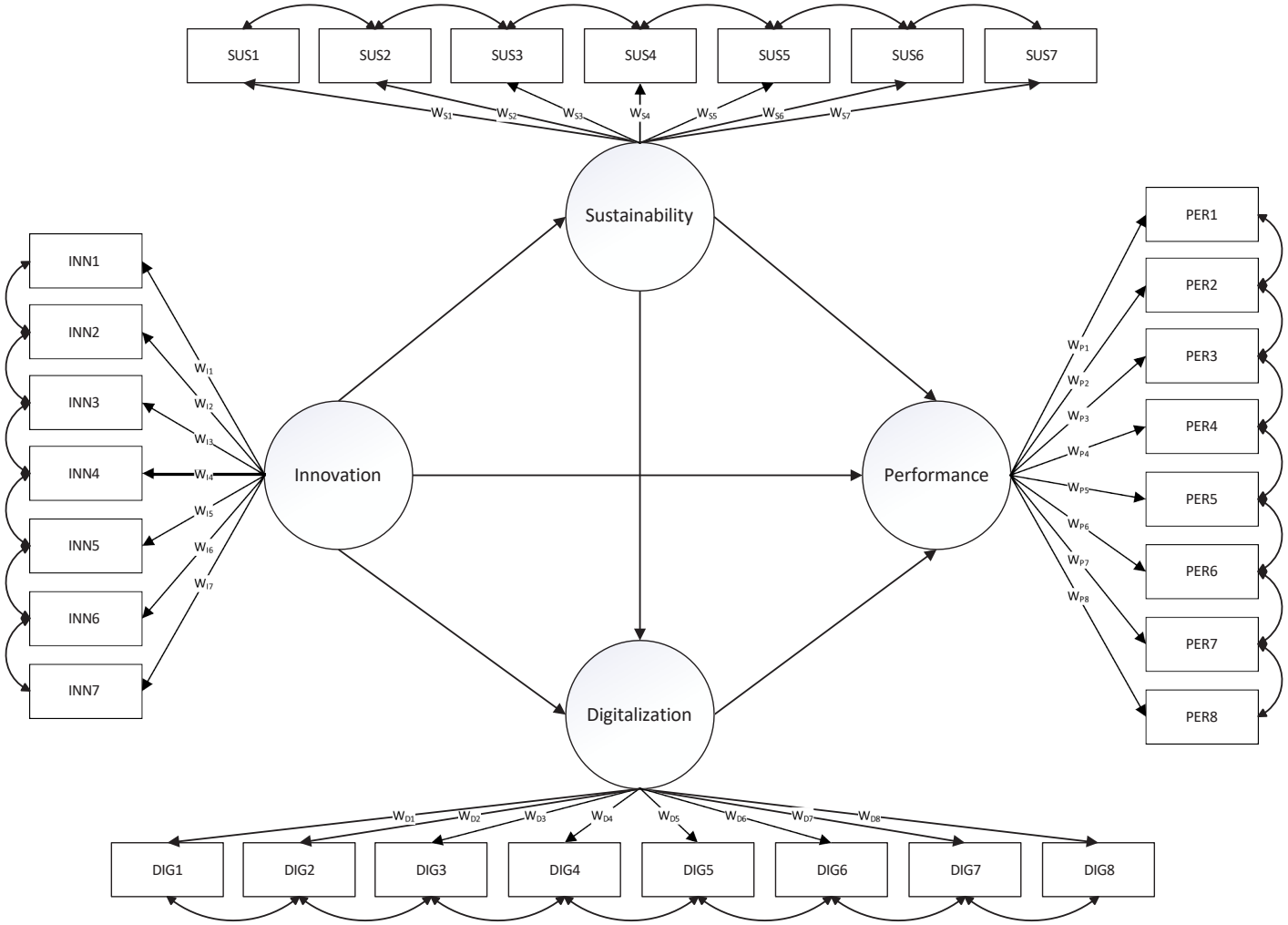

Figure 2. Measurement model

Table 2. Measurement model assessment

Constructs/Indicators	Loadings	VIF	Q^2
Innovation activity			
Changes or improvements to existing products/services	0.747	1.899	
Launching new products/services on the market	0.742	1.985	
Changes or improvements in production processes	0.828	2.511	
Acquisition of new capital goods	0.740	1.801	
New changes or improvements in organization and/or management	0.834	2.673	
New changes or improvements in purchases and/or supplies	0.799	2.268	
New changes or improvements in commercial and/or sales	0.819	2.26	
AVE: 0.621, Cronbach's Alpha: 0.898, CR: 0.920, rho A: 0.900.			
Sustainability			
Environmental criteria in the selection of suppliers	0.786	2.128	0.157
Environmental criteria in the management of plastic packaging and derivatives	0.841	2.674	0.137
Environmental criteria in process design	0.878	3.206	0.160
Environmental criteria for energy management	0.865	3.224	0.122
Environmental criteria in water management	0.868	4.091	0.102

Constructs/Indicators	Loadings	VIF	Q^2
Digitalization			
Environmental criteria in waste management	0.842	3.218	0.102
Environmental certifications (e.g., ISO14001/EMAS)	0.649	1.439	0.046
AVE: 0.675, Cronbach's Alpha: 0.918, CR: 0.935, rho A: 0.921.			
Digitalization			
We know the possibilities and advantages of digitalization well	0.628	1.553	0.066
We allocate important resources to digitalize the business	0.830	2.921	0.108
The business model is evaluated and updated in terms of digitalization	0.837	2.917	0.099
Our employees are prepared for the digital development of the company	0.817	2.54	0.074
Our managers are well-trained in digitalization	0.789	2.263	0.087
The degree of process automation is high	0.829	2.832	0.094
We use digitalization in the organizational management of the company	0.852	3.401	0.101
In our company, training for digital transformation is regularly organized	0.829	2.916	0.091
AVE: 0.647, Cronbach's Alpha: 0.921, CR: 0.936, rho_A: 0.924			
Performance			
Product quality	0.729	1.99	0.143
Efficiency of production processes	0.756	1.919	0.122
Customer satisfaction	0.763	2.196	0.149
Speed of adaptation to changes in the market	0.781	1.972	0.174
Sales growth rate	0.775	2.198	0.170
Cost-effectiveness	0.761	2.079	0.155
Employee satisfaction	0.743	1.793	0.145
Degree of absenteeism from work	0.563	1.326	0.050
AVE: 0.543, Cronbach's Alpha: 0.878, CR: 0.904, rho_A: 0.885.			

Note: AVE >0.50; rho A >0.80; Cronbach's alpha (α) >0.70; *VIF (X < 5) and Q^2 > 0.* (Hair et al., 2019).

Structural model (inner)

The structural model, expressed in the theoretical framework, provides the values that explain the relationships of the hypotheses (Henseler et al., 2014). A total of 5,000 permutations were applied to assess the statistical significance of the path coefficients (Hair et al., 2019). From this evaluation, discriminant validity was identified, and the conditions of the Fornell and Larcker (1981) test and the Heterotrait-Monotrait (HTMT) test of Henseler and Dijkstra (2015) were displayed (Table 3). The relationship between the square root of the AVE and the other constructs (see Table 3) meets the Fornell and Larcker (1981) criterion. Likewise, the discriminant validity of the HTMT relationship is below the maximum level of acceptance (0.90) (Franke and Sarstedt, 2019), which indicates that the items in the model are unidimensional.

Table 3. Discriminant validity Fornell & Larcker and HTMT ratio

	Fornell & Larcker				HTMT			
	1	2	3	4	1	2	3	4
Digitization	0.804							
Innovation	0.376	0.788			0.412			
Performance	0.406	0.510	0.737		0.451	0.571		
Sustainability	0.370	0.422	0.354	0.822	0.401	0.461	0.396	

Note: Based on the criteria of Fornell and Larcker (1981) and the Heterotrait-Monotrait HTMT) test. Fornell & Larcker and HTMT < 0.90 (Henseler and Dijkstra, 2015).

It was necessary to analyze the estimated values to evaluate the global fit of the model. The results show that SRMRs (0.051) are below the desired threshold (0.08), suggesting a good approximation between the observed and estimated matrices. Additionally, the dULS (1.226) and dG (0.418) values are within the 95% and 99% percentile ranges (1.489 and

0.444, respectively), indicating that the distances between the involved matrices do not show significant deviations (Hair et al., 2017). Collectively, these indicators support the validity of the proposed model and confirm that the theoretical structure aligns well with the empirical data (Henseler et al., 2016), see Table 4.

Table 4. Global adjustment of the model

			Limit	
	Estimated model	**Saturated model**	**95%**	**99%**
SRMR	0.051	0.058	0.032	0.097
dULS	1.226	1.288	0.467	1.489
dG	0.418	0.428	0.138	0.444

Note: SRMR: standardized root mean square = SRMR<0.08; d_ULS unweighted least squares discrepancy; d_G geodesic discrepancy with bootstrap-based 95% percentiles and 99% percentile.

In the case of R^2 as a coefficient of determination, the results show that the value of the endogenous variable (Performance $R^2 = 0.323$) is between 0 and 1 (Shmueli & Koppius, 2011), which allows us to affirm that the predictive power between the variations of the dependent and independent variables is moderate (Hair et al., 2014) (see Table 5).

Table 5. Structural research model results

Research hypotheses (Paths)	**β (t-value)**	**95% confidence interval**	**p-value**	**F^2**	**Results**
H1: Innovation-> Performance	0.380 -11.213	[0.324 – 0.435]	0.000***	0.163	Supported
H2: Innovation ->Sustainability -> Performance	0.047 -3.738	[0.027 – 0.068]	0.000***		Supported
H3: Innovation ->Digitalization -> Performance	0.060 -6.383	[0.045 – 0.075]	0.000***		Supported
Endogenous variable	***R^2***	***Adjusted R^2***			
Performance	0.323	0.322			

Notes: Path coefficients and t-Student distribution (in parentheses) value, p-value (significance) and confidence intervals are shown in the table. The F^2 value indicates the relative size of each incremental effect added to the structural mode. R^2 is an individual measure that determines the predictive power and relevance of the structural model and represents the amount of variance of the endogenous constructs that are expressed by the exogenous constructs. Additionally, we present an adjusted R^2 that controls the fictitious increase of the predictive power of the model when extra explanatory variables are added. Significance: *p < 0.10. **p < 0.05.***p < 0.01.

Results of the structural models are shown in Figure 3 and Table 5. The findings suggest that the relationship between innovation and performance ($\beta = 0.380$, $p < 0.01$) ($F^2 = 0.163$, the strength of the effect is above average (Cohen, 1988), has a significant and positive impact on the tourism MSMEs studied, which is in line with other research indicating that having new ideas or modifying them allows companies to develop knowledge, acquire information, and improve the context of organizational culture to increase performance (Beltramino et al., 2020). Results confirm a significant and positive effect of innovation on sustainability ($\beta = 0.422$, $p < 0.01$) ($F^2 = 0.217$, the strength of the effect is above average) and digitalization ($\beta = 0.268$, $p < 0.01$) ($F^2 = 0.073$, the strength of the effect is weak) for tourism MSMEs in the context of the PA. Additionally, we found positive and significant direct effects of sustainability on performance ($\beta = 0.111$, $p < 0.01$) ($F^2 = 0.014$, the strength of the effect is weak) and digitalization on performance ($\beta = 0.222$, $p < 0.01$) ($F^2 = 0.059$, the strength of the effect is weak).

Further analysis reveals that sustainability has a positive significant mediating effect on the relationship between innovation and performance ($\beta = 0.047$, $p < 0.01$) for tourism MSMEs. This result agrees with studies carried out in sectors like manufacturing, where it was demonstrated that innovation through environmental care and social management promotes favorable results benefiting the economic sustainability of all business stakeholders (Chang & Cheng, 2019; Aina & Atan, 2020; Denicolai et al., 2021). We also find a positive significant mediating effect of digitalization on the relationship between innovation and performance ($\beta = 0.060$, $p < 0.01$) for tourism MSMEs. The previous literature supports the idea that digitalization has mediating effects on this relationship, with studies affirming that talented employees and executive management are required to define technological strategies that benefit innovation and business performance (Varadarajan et al., 2022; Melović et al., 2020).

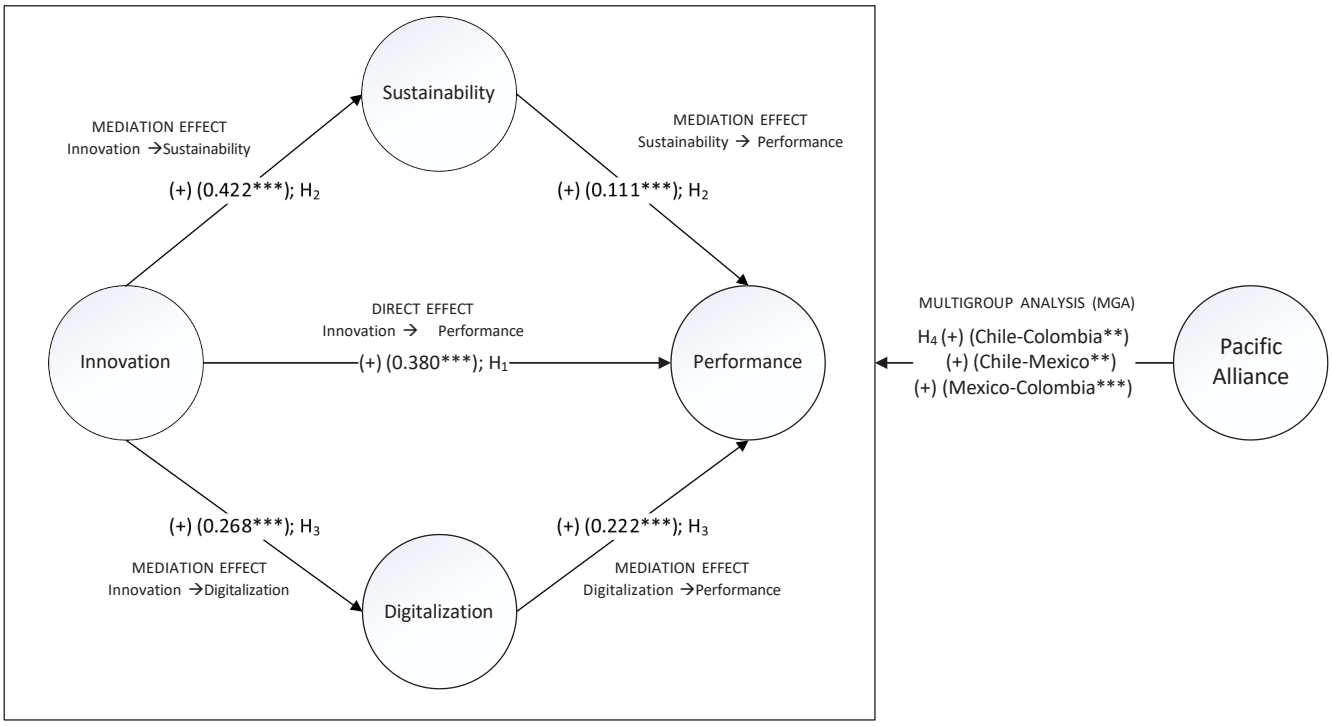

Figure 3. Results of the structural model (variables and mediators)

Measurement model invariance assessment MICOM by country

The measurement invariance of the composite models (MICOM) was estimated to ensure the quality of the multigroup analysis by evaluating the configural and compositional invariance, and the equality of composite mean values and variances was calculated (Henseler & Dijkstra, 2015). The assessment of configural invariance was above 5%, which indicated that the distribution scores, data treatment, and algorithm criteria of all the groups were identical. Likewise, to test the compositional variance, a test of 5,000 permutations was applied. The results confirm that the composition of the constructs is identical for all the groups because the compositional invariance data exceed 5% (Hair et al., 2018). Regarding the evaluation of model invariance, the results of the equality of the composite means and the variances were not equal among some PA countries. However, a multigroup analysis (MGA) was feasible since the configural and compositional invariance had been evaluated, which allowed partial measurement invariance to be assumed (see Table 6).

Table 6. MICOM analysis by country

Measurement Model	Configural invariance	**Compositional invariance assessment**			**Full measurement model invariance assessment**					
		Original correlation	0.05	Compositional invariance (Partial measurement invariance)	Mean difference	Confidence interval	Equality means	Variance difference	Confidence interval	Equality of variances
Panel A: Chile_Colombia										
Digitalization	Verified	0.994	0.993	Verified	-0.305	(-0.237; 0.234)	Yes	-0.291	(-0.307; 0.235)	Yes
Innovation	Verified	0.999	0.994	Verified	0.061	(-0.236; -0.225)	No	-0.100	(-0.500; 0.349)	Yes
Performance	Verified	0.989	0.989	Verified	-0.006	(-0.239; 0.225)	No	-0.262	(-0.446; 0.371)	Yes
Sustainability	Verified	0.996	0.992	Verified	-0.442	(-0.229; 0.231)	Yes	-0.023	(-0.352; 0.240)	Yes
Panel B: Chile_Mexico										
Digitalization	Verified	0.992	0.988	Verified	-0.500	(-0.230; 0.230)	No	-0.112	(-0.352; 0.253)	Yes
Innovation	Verified	0.999	0.992	Verified	-0.026	(-0.239; 0.224)	Yes	0.162	(-0.513; 0.363)	Yes

Measurement Model	Configural invariance	Compositional invariance assessment			Full measurement model invariance assessment					
		Original correlation	0.05	Compositional invariance (Partial measurement invariance)	Mean difference	Confidence interval	Equality means	Variance difference	Confidence interval	Equality of variances
Panel B: Chile_Mexico										
Performance	Verified	0.982	0.983	Verified	-0.134	(-0.239; 0.228)	Yes	-0.116	(-0.435; 0.360)	Yes
Sustainability	Verified	0.994	0.992	Verified	-0.407	(-0.236; 0.225)	No	0.032	(-0.342; 0.241)	Yes
Panel C: Chile_Peru										
Digitalization	Verified	0.993	0.993	Verified	-0.393	(-0.270; 0.266)	No	-0.080	(-0.370; 0.316)	Yes
Innovation	Verified	1.000	0.996	Verified	0.056	(-0.276; 0.271)	Yes	-0.027	(-0.569; 0.505)	Yes
Performance	Verified	0.986	0.982	Verified	0.003	(-0.279; 0.278)	Yes	-0.228	(-0.452; 0.400)	Yes
Sustainability	Verified	0.995	0.985	Verified	-0.540	(-0.274; 0.264)	No	0.331	(-0.394; 0.356)	Yes
Panel D: Mexico_ Colombia										
Digitalization	Verified	1.000	0.999	Verified	0.162	(-0.093; 0.095)	No	-0.178	(-0.116; 0.114)	Yes
Innovation	Verified	1.000	0.999	Verified	0.094	(-0.094; 0.092)	No	-0.272	(-0.168; 0.165)	Yes
Performance	Verified	1.000	0.999	Verified	0.124	(-0.097; 0.094)	No	-0.142	(-0.169; 0.168)	Yes
Sustainability	Verified	1.000	0.999	Verified	-0.047	(-0.096; 0.091)	Yes	-0.048	(-0.118; 0.115)	Yes
Panel E: Mexico_Peru										
Digitalization	Verified	1.000	0.996	Verified	0.123	(-0.176; 0.173)	Yes	0.031	(-0.204; 0.245)	Yes
Innovation	Verified	1.000	0.997	Verified	0.085	(-0.166; 0.175)	Yes	-0.188	(-0.286; 0.340)	Yes
Performance	Verified	0.997	0.994	Verified	0.161	(-0.170; 0.177)	Yes	-0.122	(-0.287; 0.312)	Yes
Sustainability	Verified	0.998	0.997	Verified	-0.133	(-0.179; 0.183)	Yes	0.283	(-0.208; 0.254)	No
Panel F: Colombia_Peru										
Digitalization	Verified	1.000	0.997	Verified	-0.046	(-0.174; 0.171)	Yes	0.211	(-0.179; 0.225)	Yes
Innovation	Verified	1.000	0.998	Verified	-0.014	(-0.170; 0.176)	Yes	0.085	(-0.269; 0.341)	Yes
Performance	Verified	0.998	0.996	Verified	0.029	(-0.175; 0.177)	Yes	0.014	(-0.275; 0.334)	Yes
Sustainability	Verified	0.998	0.997	Verified	-0.078	(-0.175; 0.175)	Yes	0.334	(-0.205; 0.249)	No

Note: Results are computed on a one-tailed permutation test at 5% confidence level.

Table 7. Multigroup analysis by country

Paths	Panel A: Chile_Colombia				Panel B: Chile_Mexico				Panel C: Chile_Peru			
	Path difference	PLS-MGA p-value	parametric test p-value	Welch-Satterthwait Test p-value	Path difference	PLS-MGA p-value	Parametric test p-value	Welch-Satterthwait Test p-value	Path difference	PLS-MGA p-value	Parametric test p-value	Welch-Satterthwait Test p-value
Digitalization -> Performance	0.074	0.267	0.291	0.548	0.212	0.056	0.065	1.554	0.072	0.340	0.360	0.395
Innovation -> Digitalization	0.200	0.037	0.097	1.864	0.199	0.037	0.080	1.864	0.189	0.108	0.148	1.220
Innovation -> Performance	-0.064	0.576	0.370	0.290	-0.160	0.751	0.154	0.735	-0.043	0.543	0.430	0.170
Innovation -> Sustainability	-0.054	0.667	0.348	0.440	0.046	0.319	0.372	0.374	-0.055	0.637	0.366	0.359
Sustainability -> Digitalization	-0.063	0.693	0.345	0.509	-0.140	0.878	0.159	1.144	-0.218	0.920	0.099	1.393
Sustainability -> Performance	-0.097	0.715	0.277	0.522	-0.194	0.870	0.095	1.045	-0.110	0.695	0.316	0.485

Note: p-value < 0.05 (Henseler et al., 2016).

Continued Multigroup analysis by country

	Multigroup analysis by country											
	Panel D: Mexico_Colombia				Panel E: Mexico_Peru				Panel F: Colombia_Peru			
Paths	Path difference	PLS-MGA p-value	Parametric test p-value	Welch-Satterthwait Test p-value	Path difference	PLS-MGA p-value	Paramettest p-value	Welch-Satterthwait Test p-value	Path difference	PLS-MGA p-value	Parametric test p-value	Welch-Satterthwait Test p-value
Digitalization -> Performance	0.138	0.007	0.007	2.467	-0.139	0.844	0.106	1.028	-0.002	0.516	0.494	0.013
Innovation -> Digitalization	-0.001	0.505	0.495	0.011	-0.010	0.554	0.464	0.079	-0.011	0.556	0.464	0.084
Innovation -> Performance	-0.096	0.920	0.084	1.401	0.117	0.204	0.159	0.839	0.021	0.455	0.441	0.147
Innovation -> Sustainability	0.100	0.041	0.040	1.747	-0.101	0.825	0.174	0.949	-0.001	0.510	0.498	0.006
Sustainability -> Digitalization	-0.077	0.897	0.105	1.262	-0.077	0.753	0.237	0.682	-0.155	0.913	0.097	1.351
Sustainability ->Performance	-0.097	0.941	0.060	1.566	0.084	0.275	0.231	0.591	-0.013	0.543	0.460	0.087

Note: p-value < 0.05 (Henseler et al., 2016).

In Table 7, the comparison of the results for PA tourism MSMEs reveals significant differences in certain relationships among countries. These findings support H4 of our research. The results of the multigroup analysis test the existence of significant differences among the tourism MSMEs of the countries that comprise the Pacific Alliance: Chile, Colombia, Mexico, and Peru, according to the country of origin. Specifically, differences depending on the country of analysis were studied when the results were compared two by two. Thus, a statistically significant difference is observed in the influence of innovation on the digitalization process of tourism MSMEs, according to their origin, in the cases of Chile and Colombia. The results show that the effect of innovation on the digitalization process of MSMEs in the tourism sector is greater in Chilean companies than in Colombian ones (β (Path difference Chile-Colombia) = 0.200; p = 0.037). This result aligns with Acevedo et al. (2023), who found that businesses in Chile have gained advantages by innovating in digital exploration. Furthermore, this result can be explained in accordance with Institutional Theory, as the development and quality of the institutional environment are critical to shaping economic activity and firm behavior (Gelbuda et al., 2008). Thus, the finding reveals that public policies and private initiatives are more prominent in Chile to foster innovation and digital transformation among Chilean tourist companies.

In the multigroup analysis of tourism MSMEs comparing Chile's and Mexico's innovation and digitalization processes and their effect on performance (β (Path difference Chile-Mexico) = 0.212; p = 0.056), (β (Path difference Chile-Mexico) = 0.199; p = 0.037), the results show significant differences. These differences may be consistent with studies such as those by Acevedo et al. (2023), who affirm that Chilean MSMEs have high levels of innovation through digital technologies, which allows them to achieve better business results. Chilean MSMEs may be more competitive in these terms than their Mexican counterparts, as confirmed by Casalet (2023), who describes the internal and external challenges faced by Mexican manufacturing companies during the digital transition process. Again, findings reveal that according to Institutional Theory, a more established and developed institutional context of Chile provides reductions in transaction and production costs, which are conducive to the efficient operations of a firm (Gelbuda et al., 2008) and provide Chilean companies with a better environment to develop innovation through digital technologies than the case of analog touristic companies in Mexico. These findings confirm cross-national differences according to Institutional Theory (Henisz, 2000).

There are significant differences in digitalization and its effects on performance between Mexican and Colombian tourism MSMEs (β (Path difference Mexico-Colombia) = 0.138; p = 0.007). The results align with studies by Van Klyton et al. (2021) and López-Rodríguez and López-Rodríguez (2018), who have affirmed that Colombian firms are in a maturation process in concepts such as mobile banking and digital money, especially in rural communities. Previous studies revealed that digitalization creates benefits that contribute to business results in the Colombian context (Cuevas-Vargas et al., 2023). Additionally, the innovation of tourism MSMEs and the mediating effect of sustainability in Mexico are significantly different than in Colombian tourism companies (β (Path difference Mexico-Colombia) = 0.100; p = 0.041), coinciding with the Standard & Poor's Global (S&P) Sustainability Yearbook (2023), which states that Colombia is making better progress in promoting the protection of natural resources and is more interested in social well-being through innovatively developing tourist destinations than Mexico. These differences in results confirm that a more developed set of protection rules for natural resources in Colombia is a consequence of an institutional context that is more established in Colombia

compared to Mexico, according to Institutional Theory. Finally, the tourism MSMEs of Peru do not differ significantly from those of other PA countries in terms of innovation, performance, and the mediating effects of digitalization and sustainability. Previous literature has identified that the success or failure of new industrial policies in Latin American experiences depends on both institutional and political economy factors (Ricz et al., 2024).

CONCLUSION

In the context of the tourism industry, the main interest of this study is to investigate the significant differences in the influence of innovation on performance and the mediating effect of sustainability and digitalization. With this aim, 1,388 tourism MSMEs from PA countries were analyzed. The findings demonstrate significant differences in innovation, sustainability, digitalization, and performance among tourism MSMEs in Chile, Mexico, and Colombia but not in businesses in Peru. These results show that Chile and Mexico are more competitive in tourism development than the other emerging economies of the PA. The tourism industry in Chile has advanced in digital infrastructures that enhance its connectivity in the digital era. Tourism MSMEs in Mexico have taken advantage of natural, social, and cultural resources to innovate and develop favorable environments that facilitate their growth. In the case of Colombia, the tourism industry is experiencing a period of advancement and recovery. This destination has made progress in prioritizing environmental issues and is trying to innovate by installing the internet in common tourist spaces. Peru has worked to innovate through the cultural, historical, and natural diversity of the destination by improving the conditions under which Peruvian tourism companies offer their services. However, although their services are similar to those of the other PA countries, these efforts are still not reflected in Peruvian SME performance.

This research has implications for entrepreneurs of tourism MSMEs (Micro, Small, and Medium Enterprises) in the Pacific Alliance (PA) countries, as it highlights the importance of incorporating sustainability aspects such as environmental protection particularly responsible management of water, organic and plastic waste, and the use of renewable energy in business operations (Molina-Sánchez et al., 2024); supporting the communities where their businesses operate; and promoting economic balance by hiring local labor and suppliers (Vávrová et al., 2024; Agyabeng-Mensah et al., 2023). It also underscores the need to implement digital transformation strategies to generate competitive advantages, for which increasing investment in research and development is essential, as well as training both managers and employees in the use of digital tools (Cucari et al., 2022), including those based on artificial intelligence (Maldonado-Cueva and Fernández-Bedoya, 2025).

The results can also be helpful for public policymakers in promoting the competitiveness of tourism MSMEs, in accordance with each country's specific characteristics (de Curtò et al., 2025; Rachmiatie et al., 2024; Molina-Sánchez et al., 2024). In this way, PA governments can seek mechanisms to coordinate and integrate political, economic, and cooperation efforts, and take advantage of the opportunities offered by the regional bloc. Among these opportunities is the strengthening of tourism mobility promotion through the free movement of tourists among PA member countries, which could reduce costs and increase tourism flows (Fairlie & Collantes, 2022). Likewise, knowledge transfer in best practices could be fostered—for example, Chile could share innovations in digitalization and institutional coordination with Colombia and Mexico (Castillo-Vergara et al., 2025; González-Martínez et al., 2023; Acevedo et al., 2023; Farías & Cancino, 2021), and in turn receive contributions from Mexico in environmental sustainability (Gallego-Schmid et al., 2025) based on initiatives emerging in that country's tourism sector (León-Gómez et al., 2025; Akdemir & Erkasap, 2025). Colombian tourism MSMEs could also contribute successful sustainability experiences to their Mexican counterparts (Cuevas-Vargas et al., 2023). In this regard, it is evident that the cooperation structure established by the PA is an excellent enabler for the implementation of organizational strengthening strategies by both governments and entrepreneurs, and it serves as a catalyst for improving outcomes not only nationally but throughout the region (Giacalone, 2023).

This study has certain limitations that may represent opportunities for future research. The study is cross-sectional in nature, which may limit the ability to infer causality from the results. While cross-sectional studies are widely used in the literature and can identify patterns and associations, they do not allow for strong causal conclusions. Therefore, future studies based on longitudinal data could provide greater robustness to the findings obtained. Furthermore, the research explored the relationship between innovation, performance, and sustainability across the nations of PA. Replicating this study in other countries with diverse intercultural realities could yield valuable insights for regional development, particularly in emerging economies (Abdul-Hamid et al., 2022; David et al., 2025).

From a management perspective, promising future research lines also emerge. The current analysis focused on how digitalization mediates the relationship between innovation and performance. However, to deepen understanding of the interactions among these variables, it is crucial to examine the specific role of emerging technologies such as artificial intelligence, big data, and the Internet of Things within the context of PA countries (Zhang et al., 2025; Castillo-Vergara et al., 2025). This approach would help broaden the study's scope and strengthen the validity of the proposed research model. Additionally, studying the adoption of sustainable practices, whether social, environmental, or economic, through the lens of organizational culture may offer key insights into how innovation and performance can be enhanced in MSMEs operating within the PA framework (Assoratgoon & Kantabutra, 2023; Cuevas-Pichardo et al., 2024).

Acknowledgment

This research did not receive any specific grant from funding agencies in the public, commercial, or non-profit sectors.

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Conflicts of interest

The authors declare no conflicts of interest.

Citation (APA Style)

Duréndez Gómez Guillamón, A.L., García-Pérez-de-Lema, D., Gálvez-Albarracín, E.J., & Vera-Jaramillo, F. (2025). Innovation, digitalization, and sustainability as drivers of performance in tourism MSMEs: A multigroup evidence from the Pacific Alliance. *Journal of Entrepreneurship, Management and Innovation, 21*(4), 5-29. https://doi.org/10.7341/20252141