



# Eco-innovation practices, green organizational culture, and organizational performance

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**Abstract.** The study examines the complex relationships among eco-innovation practices, organizational performance, green organizational culture, and government support in Vietnam's public sector, drawing on the literature on resource-based view theory. Analyzing data from 200 individuals at public organizations, the study employs a partial least squares-structural equation model (PLS-SEM) to reveal significant positive associations between eco-innovation, green organizational culture, and government support on organizational performance. The study highlights the pivotal role of eco-innovation in the improvement of organizational performance. Additionally, green organizational culture and government support act as contributors to organizational performance through their positive impacts on eco-innovation practices. This study contributes new insights to the literature by explaining the importance of green organizational culture in cultivating organizational performance. Moreover, it offers practical implications for enhancing eco-innovation, green organizational culture, and government support, in order to help foster a culture of green innovation in Vietnam's public sector.

**Keywords:** Eco-process innovation, eco-organizational innovation, green organizational culture, government support, organizational performance

## 1 Introduction

Public awareness of eco-innovation is increasing, compelling organizations to incorporate sustainability into their strategies and actions due to heightened public sensitivity, stricter environmental regulations, and growing shareholder demands (Ikram et al., 2019; Wang, 2019). It is no longer sufficient for firms to merely pursue profits; they must also take responsibility for their environmental impact. This shift in expectations encourages firms to adopt eco-friendly processes, consider customer needs, and embrace corporate social responsibility (Woo et al., 2014). Pollution, seen as inefficient resource use, negatively impacts profits (Chen, 2008), further pressuring companies to adopt sustainable practices to enhance their economic viability. The degradation of ecosystems has refined business models, and while some businesses have successfully adapted to sustainability challenges, many still struggle (Pieroni et al., 2019; Franca et al., 2017). The financial benefits of green innovation take time and depend on various factors (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013), highlighting the need for eco-innovation in achieving sustainability. Eco-innovation practices, from a resource-based view, develop unique capabilities and improve environmental performance through eco-process, eco-product, and eco-organizational innovations (Cheng & Shiu, 2012; Cheng et al., 2014). These practices enhance competitiveness, reduce costs, and improve social, economic, and environmental outcomes (Liao, 2018; Tsai & Liao, 2017). Pioneering green innovation strategies can sustain competitive advantages (Albort-Morant et al., 2016). Many firms are now implementing environmentally beneficial strategies, with research showing green

innovations as performance predictors (Chan et al., 2016; Cheng et al., 2014). Given the risk of innovation failure, especially in heavily polluting industries, it is crucial to investigate factors affecting financial returns from green strategies (Dai & Zhang, 2017). Therefore, eco-innovation is essential for a firm's organizations to sustainably.

Adopting a green organizational culture (GOC) can enhance organizational performance (OP) by integrating environmental values into corporate goals, potentially leading to a competitive edge in profitability (El-Kassar & Singh, 2019). Organizational resources, including GOC, play a crucial role in developing successful environmental strategies and supporting competitive advantages (Hart, 1995; Banerjee, 2002). GOC can be fostered by management through internalizing values across the organization, often codified in mission statements (Gao, 2017; Stone et al., 2004). Despite its prominence, there is limited research on the effectiveness of GOC strategies (Baker & Sinkula, 2005; De Ruyter et al., 2009; Grinstein & Nisan, 2009). Researchers have emphasized the importance of GOC, which significantly influences eco-innovation (Yang et al., 2017). GOC encourages employees to embrace green innovation, increasing their involvement in environmental issues, which enhances corporate performance.

Vietnam faces a pressing need for innovation, particularly in heavily polluting manufacturing industries such as the airline sector, which must take responsibility for environmental protection. Like other economic sectors, civil aviation activities generate characteristic environmental pollution, including air pollution, noise, wastewater, and waste. According to the Aviation Environmental Management Report from the Civil Aviation Authority of Vietnam, the primary sources of pollution are concentrated at airports with high flight frequencies and numerous ancillary services, notably Tan Son Nhat International Airport in the South. The Vietnamese civil aviation sector has continuously developed over the years, expanding both its large-scale infrastructure and modern technology, as well as increasing the number of commercial aircraft with modern models capable of meeting the demands of integration and opening up. However, this growth has resulted in higher flight frequencies, more passengers and cargo passing through airports, and a greater number of workers serving at the airports, all of which lead to increasing environmental pollution risks (Tran Tiem, 2010). Therefore, there is still room for developing eco-innovation to achieve better environmental performance simultaneously keeping the economic performance of commercial airline companies in Vietnam.

Green innovation is essential for addressing environmental issues (Kong, Feng, & Ye, 2016). Sustaining and developing the technology industry in Vietnam relies heavily on eco-innovation and infrastructure. Government support plays a crucial role in fostering innovation, as evidenced by the establishment of various organizations dedicated to this cause. On a global scale, Vietnam's investment in technology and innovation has been recognized, with the country ranking 44th in the Asia Pacific region in the Global Innovation Index in 2021 (GII, 2021).

The study aims to advance the literature on the public sector in Ho Chi Minh City, Vietnam, by examining the impact of eco-innovation on sustainable organizational performance, with the addition of a green organizational culture (GOC). It seeks to provide new evidence to reduce skepticism about the practical use of eco-innovation. Despite limited empirical studies in this context, the study hypothesizes that eco-innovation positively impacts sustainable organizational performance and that GOC supports both organizational performance and eco-innovation. The key research questions are: Does eco-innovation positively impact sustainable organizational performance? Does GOC positively support organizational performance and eco-innovation? Does government support play a positive role in developing eco-innovation practices and improving organizational performance?

Theoretically, this study aims to advance the literature by exploring the interaction between eco-innovation and organizational performance within the context of the public sector in Ho Chi Minh City, Vietnam. It investigates the implementation of eco-innovation and its theoretical underpinnings. Empirically, the study enhances understanding of the statistical linkage between eco-innovation and organizational performance in HCM airline companies. It introduces the concept of green organizational culture (GOC), providing new evidence within an existing framework. The research offers a comprehensive interpretation of eco-innovation dimensions commonly used in the public sector and examines the role of GOC in sustainability and performance. Furthermore, the study also shows the relationships between government support and eco-innovation practices and organizational performance. Practically, the study serves as a valuable reference for industry practitioners aiming for sustainability, helping executives use resources wisely for innovation. It also provides insights for government and policymakers to support eco-innovation development.

## **2 Literature Review**

### **2.1 Eco-innovation**

Eco-innovation is crucial for advancing global sustainable development (Dogaru, 2020). Defined by the OECD (2009) as developing products, processes, and strategies to reduce environmental impacts, eco-innovation extends beyond technology to include new business models and services (Bossle et al., 2016; Hall et al., 2013). Cheng and Shiu (2012) identify three dimensions of eco-innovation: eco-process, eco-product, and eco-organizational innovation, all requiring resources such as eco-administration and eco-technologies. Green innovation in energy-efficient design and processes is a strategic tool for sustainability in manufacturing, providing competitive advantages and profitability (Fernando & Wah, 2017; Albort-Morant et al., 2016; Chan et al., 2016). Eco-innovations

enhance social and economic performance, influencing business outcomes directly and indirectly (Sanni, 2018; Cheng et al., 2014; Chen et al., 2016). Green process innovation, such as reducing emissions and improving efficiency, contributes to business performance (Salvado et al., 2012; Kivimaa & Kautto, 2010; Rennings, 2000; Xie et al., 2016; Li et al., 2017). Adoption drivers include regulatory pressures, market demand, and internal strategies, though challenges like high costs and uncertainty hinder widespread adoption (Bossle et al., 2016; Redman, 2018; Garcia et al., 2019; Hanelt et al., 2017).

## **2.2 Green Organizational Culture**

According to Porter, Gallagher, and Lawong (2016), a green organizational culture (GOC) comprises the assumptions, ideas, symbols, and artifacts that reflect an organization's commitment to environmentally sustainable operations. It is characterized by the integration of environmental concerns into the organization's cultural values (Pham et al., 2018). GOC represents the values, principles, and beliefs guiding an organization's behavior in addressing environmental challenges, emphasizing a steadfast commitment to environmental issues despite difficulties. Terms like pro-environmental culture, sustainability culture, green consciousness, and eco-friendly culture are often used interchangeably with GOC. Employees embody a green culture when they prioritize minimizing the environmental impact of operations over purely economic considerations (Roscoe et al., 2019). Organizations lacking a green culture may divert resources away from environmental strategies to other priorities. GOC is a crucial, yet under-researched, area in sustainability studies. It can shift organizational thinking, with members acting as key agents of change (Rao and Holt, 2005). Manufacturing firms with strong green cultures feel pressure to adhere to environmental principles, influencing employees to align with the organization's environmental goals (Chang & Lin, 2015). When employees go beyond profit-seeking to reduce the negative environmental impact of operations, an organization's culture is deemed "green" (Roscoe et al., 2019). Managers who value and prioritize environmental protection are more likely to adopt a green culture strategy (Fergusson and Langford, 2006; Klassen and Vachon, 2003; Yung et al., 2011).

## **2.3 Organizational Performance**

Evaluating the effectiveness of an organization's strategic initiatives involves assessing its performance in terms of efficiency and effectiveness, as suggested by Szilagyi (1981). Organizational performance (OP) reflects the gap between objectives and actual outcomes (Chan, He, Chan, & Wang, 2012) and includes both financial and non-financial metrics. Long-term viability requires addressing sustainability issues, such as fostering a green corporate culture (Cherchem, 2017). Effective OP evaluation considers financial success, customer satisfaction, production and service performance, professional staff competency, product and service quality, and resource utilization.

### 3 Theoretical Framework

#### 3.1 Resource-based theory and eco-innovation

Resource-based theory (RBT), introduced by Penrose in 1959, emphasizes the importance of an organization's resources and capabilities in determining its competitiveness and success. Contemporary RBT, further developed by Barney et al. in 2011, explains how companies can achieve and maintain a competitive advantage through resources and capabilities that are valuable, rare, inimitable, and non-substitutable (VRIN). Scholars, including Chen et al. (2006), Cheng et al. (2014), and Fernando et al. (2019), recognize eco-innovation practices as crucial strategic tools for sustainable business performance, aligning with the VRIN characteristics essential for competitive advantage as outlined by RBT.

#### 3.2 Hypothesis development

Eco-process innovation, defined as the efficient use of resources to minimize environmental damage, involves innovative updates to operations or equipment to prevent pollution, comply with environmental laws, and reduce carbon emissions (Qi et al., 2010; Cheng et al., 2014). This approach enhances manufacturing processes and environmentally friendly technologies to produce goods and services with minimal environmental impact (Tang et al., 2018). Green process innovation is influenced by internal and external demands, affecting competitive advantage through a firm's environmental culture, values, and various intrinsic and extrinsic factors (Li et al., 2018; Wang, 2019). By maximizing material productivity, improving energy efficiency, creating value from waste, and adopting renewable processes, firms can achieve better environmental performance while also boosting economic and social outcomes, such as cost reduction, increased profit, service efficiency, and reputation (Chen et al., 2006; Cheng et al., 2014; Liao, 2018; Negny et al., 2012). Therefore, it is posited that

**H1: Eco-process innovation positively impacts organizational performance.**

Eco-organizational innovation (EO) encompasses a corporate culture and management system that actively engages in ecological initiatives, continuously monitoring and managing environmental impact across the organization (Cheng et al., 2014; He et al., 2018; Liao, 2018). Integrating green management and innovation into the organization's mission supports sustainable development (Chams & Garcia-Blandon, 2019). The growing market demand for environmentally friendly products also motivates firms to adopt green innovations (Gupta & Barua, 2018). Organizations must comprehend the strategic and operational impacts of this demand to improve performance (Chan et al., 2012; Lin et al., 2013). Eco-organizational innovation involves changes in management infrastructure, such as eco-audit tools, and service systems, like power demand or waste management (Pacheco et al., 2017). A shift in organizational culture is vital for

developing a competitive advantage that aligns with innovation strategies (Gaziulusoy, 2015). EO positively impacts performance not only financially (Liao, 2018) but also in social and environmental achievements (Cheng et al., 2014). Therefore, it is posited that

**H2: Eco-organizational innovation positively affects organizational performance.**

Researchers often use the terms eco-innovation (Berlin et al., 2011; Hojnik and Ruzzier, 2016), green innovation (Chen, 2008; Roper and Tapinos, 2016), and environmental innovation (Brunnermeier and Cohen, 2003; De Marchi, 2012) interchangeably. The Eco-innovation Observatory (2012) defines green innovation as introducing any new or significantly improved product, process, organizational change, or marketing solution that reduces natural resource use and decreases harmful substance emissions throughout the life cycle. O'Regan and Ghobadian (2005) suggest that innovation is driven by a company's culture, leadership, and strategic planning, noting that firms with well-defined cultures exhibit higher levels of innovation. Similarly, Porter and Van der Linde (1995a) argue that clear environmental policies can facilitate green innovation. Organizational Green Culture (OGC), which includes a firm's environmental behaviors and norms, influences managers' attitudes toward green innovation (Özsomer et al., 1997). Managers aligned with environmental preservation are more likely to implement policies that enhance green innovation, driven by OGC's commitment to a shared vision (Miles et al., 2000). Gürlek and Tuna (2017) and Küçükoğlu (2018) affirm that a green organizational culture is crucial for successful green innovation, with the latter concluding that such a culture significantly and positively impacts green innovation. Consequently, firms can differentiate their green innovation capabilities by aligning their culture with environmental standards. Thus, it is hypothesized that

**H3: Eco-innovation positively affects green organizational culture.**

**H3a: Eco-process innovation has a positive effect on green organizational culture.**

**H3b: Eco-organizational innovation has a positive effect on green organizational culture.**

Research indicates that a Green Organizational Culture (OGC) can shift organizational thinking, with members acting as key change agents (Rao and Holt, 2005). Supporting green innovation enhances corporate image and can create new markets (Michaelis et al., 2018). Firms with a well-designed OGC can boost green innovation, reduce waste and pollution, and strengthen their green reputation, improving performance amid consumer environmentalism and regulatory pressures (Berry and Rondinelli, 1998; Chen et al., 2006). From a resource-based perspective, a shared environmental vision is a valuable resource that fosters eco-innovation, particularly when managers value environmental protection (Weller, 2006). Organizational performance, which reflects interactions with the environment and regulatory compliance, is positively influenced by green organizational culture (Trumpp & Guenther, 2017; Wijethilake et al., 2018). Previous studies highlight the role of OGC in shaping environmental perceptions and actions (Hysing & Olsson, 2018; Roscoe et al., 2019). Strong management principles and

environmental concerns make adopting a green culture approach more likely (Leonidou et al., 2015). An OGC grounded in environmental principles facilitates integrated eco-friendly activities (Qu et al., 2022; Wang, 2019) and helps firms translate green goals into performance (Pham et al., 2018). Without OGC, firms may lack resources for environmental strategies, necessitating a green culture for sustained innovation and efficiency (Masri & Jaaron, 2017). Promoting OGC involves setting objectives, identifying characteristics, and showcasing artifacts that symbolize sustainable operations (Tahir et al., 2019). Building a green culture and participating in green innovation projects are essential for competitive advantage and environmental preservation (Scholz and Voracek, 2016). Thus, it is hypothesized that

**H4: Green Organizational Culture significantly positively impacts organizational performance.**

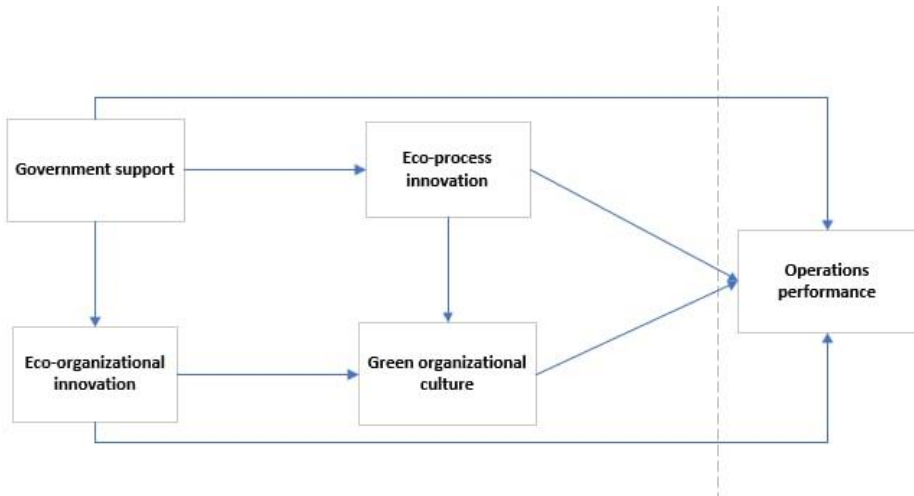
Government support can significantly impact green innovation in businesses by proposing adaptable systems to meet environmental pollution regulations. These policies influence the business ecosystem, prompting firms to participate actively (Greco et al., 2017). Government support and investment generally contribute to entrepreneurship and drive innovation. Mazzucato (2014) highlighted the positive impact of government sponsorship on technology development through investment-supporting policies. Such support creates a conducive environment for technology development by investing in physical and human infrastructure (Jugend et al., 2018). Traditionally, government support promotes corporate innovation by enhancing R&D activities (Cano-Kollmann et al., 2017; Holl and Rama, 2012). The long-term goal of these incentives is to foster a collaborative business ecosystem that leads to environmental change. Both financial and non-financial government support can increase the openness of innovative activities (Cano-Kollmann et al., 2017). Since green technology innovation is related to the public good, government policies positively impact this area (Norberg-Bohm, 1999). For instance, R&D subsidies from the Chinese government significantly improve green innovation performance in energy-intensive companies (Bai et al., 2019). Companies that adopt environmentally friendly technologies can enhance the eco-friendliness of their products (Anex, 2000). Government support impacts all phases of green innovation, from development to commercialization, helping address financial challenges in long-term investments (Owen et al., 2018). Government institutional pressure and supervision positively affect green innovation by enforcing standards for hazardous substance emissions (Huang et al., 2016; Bai et al., 2019). For example, Garcia et al. (2019) studied the Danish marine industry, emphasizing the importance of cooperative processes and environmental stewardship in eco-innovation networks. Effective collective action requires at least minimal recognition of organizational rights by the government (Ostrom, 2000).

**H5a: Government support has a positive effect on a firm's eco-process innovation.**



**H5b: Government support has a positive effect on a firm’s eco-organizational innovation.**

**H5c: Government support has a positive effect on organizational performance.**



## 4 Methodology and Data

Partial least squares structural equation modeling (PLS-SEM) was employed to analyze the proposed theoretical framework and test the developed hypotheses, utilizing SmartPLS 3.0 software. Before assessing the structural model, the measurement model of the latent constructs was rigorously evaluated for dimensionality, validity, and reliability. The sample size was sufficiently large to support the PLS method’s regressions without issues of singularity. PLS-SEM was chosen due to the model’s complexity and the lack of prior papers discussing a similar conceptual framework (Gefen et al., 2000; Peng & Lai, 2012). Moreover, PLS-SEM is advantageous when distributional assumptions are not met, as demonstrated in various social science studies (Hair et al., 2019). Thus, the PLS path model was used to estimate both the measurement and structural models, offering a robust analysis of the research hypotheses.

### 4.1 Research constructs, dimensions, and measurement items

Given that English is not the first language in Vietnam, the questionnaire was prepared in Vietnamese. The authors developed the questionnaire in two phases: initially translating it into Vietnamese, and then conducting a focus group discussion with four individuals from

academia and the public sector to ensure clarity of each statement. The questionnaire items for eco-innovation were adopted from Cheng et al. (2014), including three items measuring eco-process innovation and six items measuring eco-organizational innovation, all assessed using a five-point Likert scale (1 = "Strongly Disagree" to 5 = "Strongly Agree"). Four items for green organizational culture were adopted from Shahzad et al. (2020), also using a five-point Likert scale. Additionally, measurement scales for government support and organizational performance were adopted from Gold et al. (2001) and Lee & Choi (2003), respectively. Organizational performance was measured by five items on a five-point Likert scale (1 = "Much Lower" to 5 = "Much Higher").

#### 4.2 Research population and sampling method

This study employed a quantitative method targeting local companies in Ho Chi Minh City, Vietnam, within the public sector. Managerial-level representatives from these companies were selected as respondents. The designed questionnaire was distributed to each targeted company, and reminder messages were sent to non-respondents after one week to enhance the response rate. Data collection spanned three months, from January to April 2024. Out of 400 distributed surveys, 200 were returned and deemed usable, resulting in a 50% response rate.

#### 4.3 Respondents' profile

As shown in Table 1, the majority of respondents are from thirty-six to forty-five years old (38%), with an additional representation of 21% of people in the twenty-six to thirty-five age group and 7.5% of people in the eighteen to twenty-five age group, and 33.5% of people are over forty-five years old. Regarding educational background, a significant portion (74%) has completed post-graduate education, while others hold a bachelor's degree (16.5%) or high school degree (9.5%).

Table 1: Demographic Information

Respondent profile Attributes	Distribution	Number of respondents (n=200)	Percentage (%)
Age	18-25	15	7.5%
	26-35	42	21.0%
	36-45	76	38.0%
	Above 45	67	33.5%
Education	High School	19	9.5%

Undergraduate	33	16.5%
Postgraduate	148	74%

**4.4 Validation and reliability**

The quality of instrumental exhibits relies on the validity and reliability of construct measurement, assessed by three key standards: internal consistency, convergent validity, and discriminant validity. Reliability was evaluated using composite reliability (CR) and Cronbach’s Alpha (CA), with CR values surpassing the 0.70 threshold (Ventre & Kolbe, 2020) and CA values also exceeding 0.70, indicating satisfactory internal consistency (Thorndike, 1995). Validity of eco-organizational innovation was assessed through convergent and discriminant validity. Convergent validity, measured by average variance extracted (AVE), met the criterion of exceeding 0.50 (Hair et al., 2017). Discriminant validity was examined using cross-loadings (Ventre & Kolbe, 2020), the Fornell-Larcker criterion (Fornell & Larcker, 1981), and the Heterotrait-Monotrait ratio (HTMT) (Henseler et al., 2016). While results generally showed acceptable discriminant validity, some values for eco-process innovation, green organizational culture, and organizational performance exceeded the 0.9 thresholds, indicating issues among these constructs. Internal consistency was reaffirmed with CA values above the satisfactory threshold (Nunnally, 1975). Convergent validity was confirmed through outer loadings and AVE, meeting the benchmarks of 0.5 for AVE and 0.7 for CR (Hair Jr et al., 2013). Discriminant validity was further validated using HTMT and the Fornell-Larcker criterion, with most HTMT values below 0.85 (Henseler et al., 2015), although some values surpassed this threshold, highlighting issues with discriminant validity among the constructs of eco-process innovation, green organizational culture, organizational performance.

**Table 2:** Reliability and convergent validity

	<b>Cronbach’s alpha</b>	<b>Composite reliability</b>	<b>Average variance extracted (AVE)</b>
<b>Eco-Organizational Innovation</b>	0.726	0.821	0.479
<b>Eco-Process Innovation</b>	0.546	0.767	0.524
<b>Government Support</b>	0.635	0.601	0.265

<b>Green Organizational Culture</b>	0.668	0.800	0.501
<b>Organizational Performance</b>	0.681	0.796	0.440

**Table 3:** Heterotrait-monotrait ratio (HTMT) – Matrix

	<b>Eco-Organizational Innovation</b>	<b>Eco-Process Innovation</b>	<b>Government Support</b>	<b>Green Organizational Culture</b>	<b>Organizational Performance</b>
<b>Eco-Organizational Innovation</b>					
<b>Eco-Process Innovation</b>	1.160				
<b>Government Support</b>	0.278	0.271			
<b>Green Organizational Culture</b>	1.091	1.246	0.312		
<b>Organizational Performance</b>	1.135	1.201	0.346	1.170	

**Table 4:** Fornell-Lacker criterion

	<b>Eco-Organizational Innovation</b>	<b>Eco-Process Innovation</b>	<b>Government Support</b>	<b>Green Organizational Culture</b>	<b>Organizational Performance</b>

<b>Eco-Organizational Innovation</b>	0.692				
<b>Eco-Process Innovation</b>	0.736	0.724			
<b>Government Support</b>	0.219	0.147	0.515		
<b>Green Organizational Culture</b>	0.765	0.756	0.224	0.708	
<b>Organizational Performance</b>	0.806	0.740	0.227	0.801	0.663

### 5 Results and Discussions

Table 5 demonstrates statistically significant relationships between organizational performance (OP) and eco-process innovation (EPI), eco-organizational innovation (EOI), and green organizational culture (GOC), as well as between GOC and government support. Most hypotheses had p-values below 0.05, indicating a confidence level above 95%. Specifically, EPI and EOI positively influenced OP with mean values of 0.175 (SE = 0.054, p = 0.000) and 0.390 (SE = 0.063, p = 0.001), respectively. Additionally, EOI and EPI positively affected GOC with mean values of 0.456 (SE = 0.073, p = 0.000) and 0.422 (SE = 0.072, p = 0.000), respectively. GOC also positively influenced OP with a mean of 0.357 (SE = 0.068, p = 0.000). The relationship between government support and OP was significant only with the supporting effect of EOI, showing a mean of 0.222 (SE = 0.070, p = 0.003). The R-square values (Table 6) indicated that OP was well-explained by its predictors ( $R^2 = 0.748$ ), while EPI, EOI, and GOC had R-square values of 0.022, 0.048, and 0.667, respectively, suggesting substantial predictive power (Ch'ng et al., 2021). The effect sizes of significant relationships were large, exceeding 0.025 (Ch'ng et al., 2021). These findings support hypotheses 1, 2, 3a, 3b, 4a, and 4b, confirming the strong influence of the independent variables on the dependent variables, as indicated by R-square values ranging from 0.45 to 0.7.

**Table 5:** Hypothesis testing results for a direct relationship

	<b>Path</b>		<b>Sample Mean</b>	<b>Standard deviation</b>	<b>P values</b>	<b>Results</b>
<b>H1</b>	EOI GOC	->	0.456	0.073	0.000	Supported
<b>H2</b>	EOI OP	->	0.390	0.063	0.000	Supported
<b>H3a</b>	EPI GOC	->	0.422	0.072	0.000	Supported
<b>H3b</b>	EPI -> OP		0.175	0.054	0.001	Supported
<b>H4</b>	GS EOI	->	0.222	0.070	0.003	Supported
<b>H5a</b>	GS -> EPI		0.145	0.072	0.073	Not supported
<b>H5b</b>	GS -> OP		0.066	0.041	0.096	Not supported
<b>H5c</b>	GOC OP	->	0.357	0.068	0.000	Supported

**Table 6:** R-square values

	<b>R-square values</b>	<b>R-square values adjusted</b>
<b>Eco-process innovation</b>	0.048	0.043
<b>Eco-organizational innovation</b>	0.022	0.017
<b>Green organizational culture</b>	0.667	0.663
<b>Organizational Performance</b>	0.748	0.743

This study investigates the effects of eco-innovation on organizational performance, emphasizing the relationships between green organizational culture and government

support. Empirical results provide new evidence on how eco-process and eco-organizational innovations impact organizational performance, government support, and green organizational culture. These findings corroborate previous research (Ch'ng et al., 2021; Xie et al., 2019; Wang, 2019; Roh et al., 2021; Imran & Jingzu, 2022) which also underscores the positive influence of eco-innovation on green organizational culture and organizational performance. A trustworthy and supportive green organizational culture fosters a secure and comfortable green working environment, facilitating organizational adaptation to eco-innovation (Imran & Jingzu, 2022; Wang, 2019). This study illustrates the positive impact of green organizational culture on organizational performance, aligning with the broader literature. Industrial players and policymakers can thus focus on specific eco-innovation practices and green organizational culture to boost organizational performance. The findings indicate that both eco-process and eco-organizational innovations directly and positively affect the performance of airline companies in Ho Chi Minh City. Government support directly influences eco-organizational innovation, which in turn enhances environmental performance, demonstrating an indirect impact on organizational performance. This aligns with studies showing the role of government support in transforming organizational operating structures through innovation. Employing energy-saving technologies and high recycling practices reduces waste and emissions, improving environmental impact, particularly in manufacturing sectors like mechanical parts, electronics, and automotive items (Ch'ng et al., 2021). Sharing and discussing eco-innovation information promotes an eco-culture and eco-friendly behaviors, although these may not immediately improve environmental performance. In conclusion, eco-process and eco-organizational innovations distinctly impact organizational performance, green organizational culture, and government support.

## **6 Conclusion**

The results of this study demonstrate that both eco-process and eco-organizational innovations significantly impact three key variables: organizational performance, green organizational culture, and government support.

### **6.1 Implications of the study**

This study enriches the literature on eco-innovation practices, green organizational culture, government support, and organizational performance in Ho Chi Minh City's public sector. By empirically analyzing the connections between eco-innovations and organizational performance, while considering the roles of green organizational culture and government support, the research provides new insights into these complex relationships. The developed framework offers a comprehensive interpretation of how eco-process and eco-organizational innovations interact with green organizational culture

and government support. Managerially, the study highlights the importance of integrating eco-innovation practices and green organizational culture into business strategies, reducing uncertainties about their benefits. Findings reveal distinct impacts of each type of eco-innovation on organizational performance, green organizational culture, and government support. Policymakers can leverage these insights to formulate strategies that encourage eco-innovation and a green economy. For public sector management, adopting eco-process innovation is crucial for environmental performance, while eco-organizational innovation is vital for achieving better financial outcomes.

In the Vietnamese public sector's quest for innovation, recent research has identified the main drivers of innovative organizational performance. The findings indicate that eco-innovation and green organizational culture significantly influence organizational performance, emphasizing the importance of government support in advancing innovative strategies. This suggests a need for transformative programs that prioritize financial investment in technological infrastructure, leadership styles, and green human resource management to create an environment conducive to eco-innovation practices.

Green organizational culture directly influences eco-innovation practices and organizational performance, with government support playing a crucial role. This underscores the importance of constructing a solid foundation to facilitate eco-innovation processes. Prioritizing and promoting green organizational culture can enhance individual job performance and overall organizational success, necessitating the establishment of nurturing innovative systems. Additionally, stricter government regulations on environmental policies in manufacturing can create a supportive work environment that drives organizational success, making eco-friendly practices not only beneficial but essential for profitability.

## **6.2 Limitations**

This study focused on commercial airline companies in Ho Chi Minh City, centered around Tan Son Nhat Airport, a major hub for Vietnam's commercial airlines. The research highlights a crucial connection between eco-innovation, green organizational culture, government support, and organizational performance. By examining only two types of eco-innovation, the study suggests future research could include additional constructs such as marketing, management, business model innovations, and contemporary concepts like Six Sigma and green management to better understand their impact on sustainable business performance. Furthermore, exploring other predictors like regulatory and technological advancements, machine learning, the Internet of Things, and extended artificial intelligence could provide valuable insights. This study's focus was largely on administration; therefore, future research should expand to other sectors to broaden the understanding of eco-innovation. Additionally, examining other influential factors can deepen insights and improve strategies for enhancing organizational performance through eco-innovation.



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