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ORIGINAL SCIENTIFIC PAPER

Sustainable Entrepreneurial Orientation (SEO), and Organizational Performance: A Gender-Moderated Perspective in Peru

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A B S T R A C T

Sustainable Entrepreneurial Orientation (SEO) is an emergent concept and a complex dynamic capability that could explain the behavioral predisposition of individuals and organizations to contribute to sustainable development. This study examined the impact of decision-makers' SEO on the organizational performance of their companies. In addition, the study evaluated the moderating role of gender in the relationship between SEO and performance. The approach of the study was explanatory and non-experimental. It used a PLS-SEM technique on a sample of 121 decision-makers of micro and small enterprises operating in different sectors in Peru, a highly entrepreneurial country in Latin America. After validating the SEO measurement from the individual perspective, the results showed that SEO does affect performance. However, the moderating role of gender on the SEO-performance relationship was not empirically validated. This study contributes to the literature on sustainable entrepreneurship by confirming that the phenomenon of SEO, typically assessed at the organizational level, is also an important antecedent of organizational performance when viewed from the individual perspective. Although the moderating effect of gender was not proven, this study provides insightful directions on the SEO-performance relationship. Thus, by validating the SEO instrument that considers its components from an individual perspective, the literature on this strategic orientation has been expanded.

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Introduction

In today's rapidly evolving business landscape, organizations face multiple challenges stemming from globalization, technological innovation, and increased environmental awareness and concern. In the midst of these complexities, the pursuit of sustainability practices has emerged as a strategic imperative for organizations seeking to enhance their competitive advantage, long-term viability, and overall performance. At the heart of this effort is the concept of dynamic capabilities, which encapsulates an organization's ability to adapt, innovate, and orchestrate resources in response to changing environmental conditions. Dynamic Capabilities Theory (hereafter DCT) posits that sustainable organizational success depends not only on the competent use of current resources, but also on the ability to reconfigure these resources dynamically in line with changing market demands and competitive pressures (Teece et al., 1997).

In the field of sustainability, dynamic capabilities play a key role in facilitating the integration of environmental, social, and economic considerations into organizational strategy and operations. In this quest, the relationship between Entrepreneurial Orientation (EO), a widely studied concept in the field of entrepreneurship (Wales et al., 2011), dynamic capabilities, and organizational performance is widely confirmed and accepted in the literature. Moreover, the literature continues to explore the role of gender in entrepreneurship, acknowledging that it is a fundamental issue for both theory and practice. However, there is conflicting evidence in the studies, making it difficult to determine whether women are more entrepreneurial or possess more entrepreneurial characteristics than men (Efendi et al., 2024).

While previous studies confirmed the relationship between EO and performance, by introducing the sustainability component as Sustainability Orientation (SO), Sustainable Entrepreneurial Orientation (SEO) has begun to attract the attention of several scholars seeking to understand this concept. SEO emerges as a novel concept and high-level strategic dynamic capability that could potentially explain the behavioral predisposition of individuals and organizations to contribute to sustainable development and, consequently, positively impact organizational performance (Ameer &

Khan, 2022; Criado-Gomis et al., 2017, 2020; Jiang et al., 2018). By recognizing the relevance of sustainable entrepreneurship over conventional entrepreneurship, new promising topics emerge that provide insights into this phenomenon and contribute to the global agenda. Moreover, a major puzzle in gender and sustainable entrepreneurship research remains under debate due to the inconclusive evidence in the literature.

In order to achieve the Sustainable Development Goals (SDGs) with the contribution of entrepreneurship, the present study aimed to contribute to expanding the current state of the literature on dynamic capabilities and their impact on performance by assessing the effect of SEO of decision-makers of micro and small enterprises on performance. In addition, it aimed to demonstrate that this relationship is moderated by gender, meaning that being female or male, or vice versa, in leadership or decision-making roles in organizations could improve the strength and/or direction of the SEO performance relationship. Considering the aforementioned issues, this study is based on two research questions:

RQ1. What is the effect of SEO on organizational performance?

RQ2. What is the effect of gender on the SEO-performance relationship?

The purpose of this paper is to provide insights into the impact of sustainable entrepreneurial orientation (SEO) as an emerging and complex concept in the sustainability arena on organizational performance. It also seeks to understand whether gender is a determinant of this relationship. Therefore, this study aimed to fundamentally advance scholars' understanding of the impact of dynamic capabilities, such as SEO, on sustainability. The remainder of the paper is organized as follows: First, the theoretical framework is presented along with the proposed hypotheses. Second, the methodology is explained, including the research design, sampling, data collection, and procedure. Third, the results of the model under investigation are presented. Finally, theoretical implications are discussed, and future research directions are outlined.

Literature Review and Hypothesis Development

Sustainable entrepreneurs, especially women, need to look for business opportunities that can lead to better economic, social, and environmental performance (Criado-Gomis et al., 2020; Hernández-Perlines & Rung-Hoch,

2017). Therefore, this research considers the general hypothesis that the individual level of SEO can help to understand the nature of sustainable practices that decision-makers foster within their organizations to seek sustainable development, environmental protection, and improved organizational performance.

First, SEO is a high-level strategic construct that explains the tendency or predisposition of entrepreneurial behavior to achieve sustainable development based on individuals' concern for the environment (Criado-Gomis et al., 2017; Wu et al., 2019). Given the dual orientation of SEO through its EO and SO components (Criado-Gomis et al., 2017), it allows organizations to seek a level of social responsibility (Hernández-Perlines & Cisneros, 2018) and environmental, social, and financial performance (Afum et al., 2023) as desirable goals of a sustainable entrepreneurial organization (Criado-Gomis et al., 2017). EO is the most important category of SEO and contributes greatly to SEO having a positive and significant relationship with organizational performance (Ameer & Khan, 2020; Criado-Gomis et al., 2017; Hernández-Perlines et al., 2017; Tze San et al., 2022).

Furthermore, it has been found that in small firms under high competition, EO is oriented towards increasing sustainable practices to achieve high levels of performance (Akomea et al., 2022). Under these conditions, EO would be a precursor of SO (Ruiz-Ortega et al., 2021). For these reasons, SO can contribute to solving the problems caused by environmental degradation by creating sustainable products and services (Cohen & Winn, 2007; Dean & McMullen, 2007; Soo Sung & Park, 2018). Therefore, based on these arguments, the following hypothesis was proposed:

> ***Hypothesis 1.*** SEO is positively related to the organizational performance of micro and small-sized companies.

Second, the literature provides conflicting results regarding the relationship between gender and SEO or its components. Gender disparities in sustainable entrepreneurship often revolve around which gender tends to score higher. For instance, women, on average, exhibit higher levels of altruism or passion compared to men (Manjaly et al., 2022). These variations don't suggest that men and women only experience traits at opposing ends of the spectrum; rather, there can be notable distinctions alongside a substantial overlap between their distributions. However, by prioritizing sustainable well-being, women entrepreneurs contribute to

reducing environmental impact and promoting social welfare (Fallah & Soori, 2022). Thus, women entrepreneurs could assert environmental control through sustainable entrepreneurship (Sharma et al., 2023).

Women entrepreneurs are known to identify new entrepreneurial opportunities, which can contribute to global entrepreneurship through their resilient spirit, risk-taking ability, perseverance, and innovativeness, some of which are EO components (Agu et al., 2024). On the one hand, Sonfield et al. (2001) found that small business owners have similar levels of risk-taking and innovativeness, two of the five dimensions of EO. Similarly, studies comparing EO with organizations managed by men and women and its relationship to performance show no significant differences. For example, the study of Hosseininia and Ramezani (2016) suggested that sustainable entrepreneurship of small businesses in the Iranian context is moderated by education and experience rather than age and gender. In addition, the study of Fuentes-Fuentes et al. (2015) confirmed that the EO of men and women do not show significant differences in performance.

On the other hand, other studies have shown that based on the fact that EO is a positive and significant indicator of organizational performance (Runyan et al., 2006), women tend to show higher EO through risk-taking and innovativeness (Runyan et al., 2006; Zeb & Ihsan, 2020). Furthermore, Feng et al. (2023) found that EO has a significant impact on the financial and operational performance of women-led organizations only when external knowledge acquisition is considered. In summary, women show higher EO than men, which, together with SO, would lead to high SEO, which contributes to positive organizational performance, as confirmed by Criado-Gomis et al. (2020). In this regard, Criado-Gomis et al. (2020) sought to understand how gender moderates the relationship between SEO and organizational performance and, through an empirical model, confirmed that women have higher EO than men, which, together with their sustainability orientation, would translate into their undertaking sustainable initiatives. This means that companies with SEO have a positive performance, demonstrating a higher relationship in organizations managed by women.

In summary, gender differences in sustainable entrepreneurship are context-dependent, as culture influences orientation towards green behavior (Chowdhury & Audretsch, 2021; Rauch et al., 2009; Wiklund & Shepherd, 2003). Therefore, it is important to understand how men and women differ in SEO and its components, and how this variable affects performance,

although this is a complex issue and results in a conflicting evidence gap in the literature. The arguments suggest that SEO is not only an antecedent of performance, but also a positive predictor in female-led ventures. Therefore:

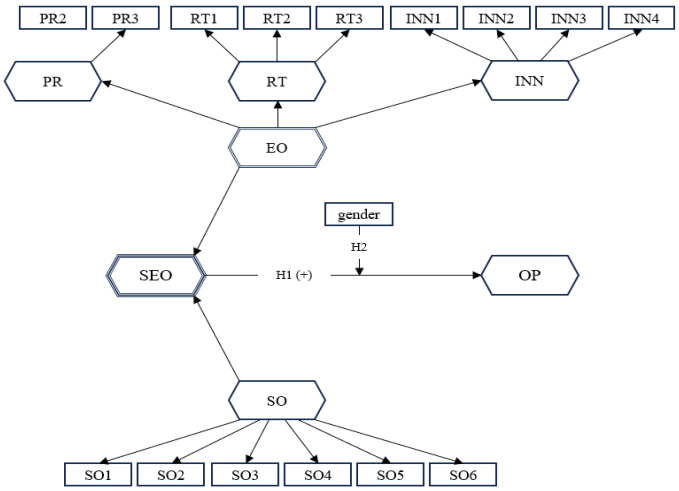
> ***Hypothesis 2.*** The relationship between SEO and organizational performance of micro and small-sized companies is moderated by gender.

Research Methodology

Research Design

This study used a quantitative approach with an explanatory and non-experimental research design to investigate the relationships between SEO, performance, and gender. The explanatory nature of the study aimed to go beyond merely describing the relationships between variables. It sought to explore why certain phenomena occur and why two or more variables are interconnected (Cazau, 2006; Ramos-Galarza, 2020). In this quantitative study, the scope was to establish a causal relationship between the SEO of the decision-maker and organizational performance, considering gender as a moderating factor. **Figure 1** presents the proposed SEO-Performance structural model.

Figure 1: Proposed model of SEO-Performance with gender



Source: Authors own source. Notes (1) Triple-line hexagon refers to a third-order construct. Doubled-line hexagon refers to a second-order construct. (2) INN = Innovativeness; PR = Proactivity; RT = Risk-taking; SO = Sustainability Orientation; EO = Entrepreneurial Orientation; SEO = Sustainable Entrepreneurial Orientation; OP = Organizational Performance.

Sample Design

The population under study comprised Peruvian decision-makers from micro and small-sized enterprises with sustainability reports according to the Global Reporting Initiative (GRI) Standards. Peru was chosen because it is considered one of the most entrepreneurial countries worldwide (GEM, 2019) and has a high number of micro and small enterprises, which make up 96% of the total businesses in the country (ComexPerú, 2021).

Given the absence of records on the size of the population of Peruvian enterprises with sustainability reports, the 2021 database was provided by the GRI. This private and non-public database was granted by the Latin America regional manager of the GRI upon request. The complete database included all the Peruvian companies that delivered a GRI report in 2021; however, the main inclusion criteria was the firm size, thus only micro and small-sized enterprises were considered for being in the scope of this study. However, since accurate information about the decision-maker was crucial for data collection, micro and small-sized companies with incomplete or incorrect details were excluded from further contact.

Consequently, out of the complete database of micro and small-sized enterprises, which accounted for 303, 280 had valid contacts of decision-makers from micro and small-sized enterprises. As the expected response rate for surveys is typically very low (Kumar, 2011), it was decided to send invitations to as many companies as possible. By sending the questionnaire to the entire database with valid contact information, probabilistic sampling was pursued. A total of 126 responses were received, resulting in a 45% response rate; however, after eliminating outliers, 121 responses were used to conduct the structural analysis.

Data and Methods

This study employed a survey method to collect primary data from a sample of decision-makers in Peruvian micro and small-sized enterprises. The survey was prepared using validated instruments from the literature and operationalized the constructs of SEO and organizational performance. SEO

was measured using two scales developed following the recommendations of Miles et al. (2009), one for SO and the other for EO. The former utilized the scale developed by Kuckertz and Wagner (2010), based on the work of Bos-Brouwers (2010), while the latter employed the scale developed by Bolton and Lane (2012), who adapted the original EO scale to enhance accuracy at the individual level. Consequently, IEO was assessed using the dimensions of risk-taking (RT), proactivity (PR), and innovativeness (INN) from Covin and Slevin's (1989) EO framework. To measure organizational performance (OP), the study followed the suggestions of Wiklund (1999) and considered indicators such as sales growth, market share growth, and profit growth, benchmarked against main competitors over the past three years. OP was quantified using the scale developed by Rodríguez et al. (2011).

Data were collected using a 5-point Likert scale. All survey items underwent double translation (English to Spanish and Spanish to English) to ensure clarity and ease of understanding. In addition, an extensive content validity process was conducted through expert judgment (Escobar-Pérez & Cuervo-Martinez, 2008). A pilot study using a sample of 30 enterprises with sustainability reports according to the Global was conducted to assess the consistency of the measurement scales and overall instrument validity using correlational criteria before applying the selected technique of PLS-SEM.

Procedure

The methodological decision to apply the PLS-SEM relied on the evaluation of the proposed hypotheses through a complex model (Chin, 1998). Additionally, the study aimed to assess the moderating effect of gender on the relationship between SEO and organizational performance. The analytical framework adhered to the methodology outlined by Hair et al. (2017), ensuring rigor and consistency throughout the study. Initially, the data underwent thorough examination, including checks for anomalies such as inconsistencies, missing values, skewed distributions, and outliers. This was particularly important because when the same person provides both the independent and dependent variable data (i.e., SEO and performance), it can result in inflated correlations due to the shared method of data collection, which is called common method bias (CMB). In the case of assessing CMB for this study, Harman's factor analysis yielded a factor that accounted for 23.19% of the variance, meeting the threshold of less than 50% (Fuller et al., 2016).

Subsequently, reliability tests were conducted, followed by the application of the structural model and a comprehensive analysis of the results in relation to the research hypotheses. In this final phase, hypotheses were evaluated for acceptance or rejection, accompanied by an exploration of the significance of the findings within the broader context of existing literature. In summary, the implications of these findings for both the studied population and future research endeavors were delineated (Creswell, 2009).

Results

The demographic composition of the respondents shows that the sample consisted of 56% male decision-makers and 44% female decision-makers from micro and small-sized companies. Furthermore, 54% of the sampled companies were classified as small companies, with the remaining 46% classified as micro-sized companies. The majority of companies were in the service sector, followed by manufacturing and fishery-related industries, among others.

Evaluation of Measurement Models

The estimation of reflective and formative measurement models adheres to different criteria (Sarstedt et al., 2016). By prioritizing composite reliability over Cronbach's α (Cho, 2016), the assumptions of internal consistency for the first-order reflective constructs are fulfilled (Hair et al., 2019a, 2019b). Furthermore, all item loadings exceeded the threshold of 0.7 (Hair et al., 2019a, 2019b). Regarding convergent validity, it was assessed using the criterion of AVE values above 0.5 (Hair et al., 2019a, 2019b). Discriminant validity was evaluated according to the Fornell and Larcker criterion and the HTMT matrix, where the off-diagonal values were found to be lower than the diagonal values, and the HTMT values for first-order constructs were below 0.85, respectively (Henseler et al., 2015). Table 1 presents the results of the evaluation of the first-order reflective model.

In the evaluation of the second-order reflective variable, a two-staged approach was employed. Significant loadings from the second-order variable to the first-order variables, all greater than 0.7, are shown in Table **2**. Using these loadings, composite reliability, Cronbach’s alpha, and AVE were manually calculated, resulting in values of 0.819, 0.660, and 0.601 respectively, meeting validation criteria.

Table 1: Evaluation of first-order reflective measurement model

Construct	Internal consistency			AVE
	αC	ρA	ρC	
INN	0.644	0.649	0.788	0.483
OP	0.880	0.887	0.926	0.806
PR	0.694	0.695	0.831	0.621
RT	0.557	0.573	0.773	0.535
SO	0.812	0.816	0.865	0.518

Source: Authors own source. Notes (1) INN = Innovativeness; PR = Proactivity; RT = Risk-taking; OP = Organizational Performance; SO = Sustainability Orientation. (2) SEO and EO are not reported because they are higher-order constructs.

Table 2: Evaluation of second-order reflective measurement model

Construct	Internal consistency		AVE	Loading		
	αC	ρA		Score	*p*-value	CI 97.5%
INN ← EO				0.811	***	[0.718; 0.880]
PR ← EO	0.660	0.819	0.601	0.745	***	[0.597; 0.843]
RT ← EO				0.768	***	[0.666; 0.844]

*Source: Authors own source. Notes (1) EO = Entrepreneurial Orientation; INN = Innovativeness; PR = Proactivity; RT = Risk-taking. (2) ***p-value < 0.001.*

In the case of formative variables, multicollinearity among components was assessed using the variance inflation factor (VIF). Table 3 indicates that the VIF for both EO and SO was below 3.3, which is considered the maximum acceptable threshold (Diamantopoulos & Siguaw, 2006). Secondly, the significance of the weights and loadings of the components was evaluated, retaining components with significant weights (p-value < 0.05) and loadings greater than 0.5 (Hair et al., 2014). In addition, bootstrapping was employed as a resampling method (Guenther et al., 2023; Streukens & Leroi-Werelds, 2016). For EO, the p-value is significant at the 10% level and is theoretically related to SEO. Therefore, despite the results of the evaluation of the formative measurement model, the analysis of the relevance and significance of the weights and loadings of the indicator variables suggests that none should be excluded (Sarstedt et al., 2016).

Table 3: Evaluation of the formative measurement model

Construct	Collinearity (VIF)	Outer weights		Outer loadings	
		Score	*p*-value	Score	*p*-value
EO → SEO	1.094	0.239	0.499	0.482	0.094
SO → SEO	1.094	0.837	***	0.906	***

*Source: Authors own source. Notes (1) EO = Entrepreneurial Orientation; SO = Sustainability Orientation; SEO = Sustainable Entrepreneurial Orientation. (2) ***p-value < 0.001.*

Evaluation of the Structural Model

From the evaluation of the structural model, as presented previously, the assumptions of non-collinearity are met (Becker et al., 2015). In addition, bootstrapping with 10,000 resamples was performed to obtain the path coefficients and to evaluate the statistical significance of the structural model (Guenther et al., 2023; Hair et al., 2019a, 2019b). As can be seen in Table 4, there is strong support in the empirical data for the main hypothesis proposed in the model. The assessed direct path coefficient (SEO performance) was found to be significant at a higher level of significance (*p*-value < 0.001).

In addition to assessing the significance and relevance of path coefficients, the evaluation of the structural model also involves determining its predictive accuracy and relevance, as outlined by Hair et al. (2017). It is crucial to emphasize that the evaluation of the predictive accuracy parameters describes the explanatory power of the model, as highlighted by Shmueli et al. (2019). The most important parameter indicating predictive accuracy is the variance explained (R^2), with thresholds of 0.67 indicating strong significance, 0.33 indicating moderate significance, and 0.19 weak significance, as established by Chin (1998). In addition, the effect size (f^2) was assessed according to Cohen's (1988) criteria, where 0.02 reflects a small effect, 0.15 is moderate, and 0.35 is large. Consequently, these metrics helped to identify the variables that predominantly contribute to the explanation of variance, as highlighted by Hair et al. (2017). The analysis revealed a weak R^2 effect and a moderated f^2 effect for OP, indicating an overall low explanatory power. Both the precision and predictive relevance scores proved that the model is a first approximation to explain the impact of SEO on performance in emerging economies such as Peru, providing support for the acceptance of hypothesis H1.

Table 4: Evaluation of the structural model

Construct	Exogenous variable	Score	*t* value	*p*-value	R^2	f^2
OP	SEO	0.265	3.329	0.001***	0.063	0.067

*Source: Authors own source. Notes (1) OP = Organizational Performance; SEO = Sustainable Entrepreneurial Orientation. (2) ***p-value considers a statistical significance level of 1%.*

To verify the moderating role of the decision maker's gender in the SEO-performance relationship, the path of this relationship considered the inclusion of the moderating variable gender. According to Table 5, the effect was not confirmed, so hypothesis H2 was rejected. The results indicate that the proposed moderating influence does not exist, meaning that the gender of the decision-maker does not affect the influence of SEO on business performance.

Table 5: Evaluation of the moderating effect of gender

Construct	Score	*t* value	*p*-value	f^2
Gender x SEO → OP	0.128	1.472	0.141	0.019

Source: Authors own source. Notes OP = Organizational Performance; SEO = Sustainable Entrepreneurial Orientation.

While the use of any single parameter to assess the overall goodness-of-fit of the model requires caution, goodness-of-fit alone will not define the model quality. The quality has been determined through the evaluation of both measurement and structural models. Goodness-of-fit parameters will instead serve as additional criteria for model evaluation. In this study, goodness-of-fit parameters applied in CB-SEM with some corrections to be applied in PLS-SEM were assessed. In this sense, these are the standardized root mean square residual (SRMR), which must be less than 0.08; and the Bentler-Bonett normed fit index (NFI), which varies between 0 and 1, with a value greater than 0.90 and close to 1 indicating an acceptable model fit (Chin et al., 2020). Likewise, following the procedure proposed by Dijkstra & Henseler (2015), two metrics were considered: geodesic distance (d-G) and squared Euclidean distance (d-ULS). Values must be less than 0.10 to indicate an acceptable model fit. Table 6 presents the goodness-of-fit indexes for the current study, showing satisfactory results for the

saturated model with SRMR, NFI, and d-G. In summary, the proposed model exhibits low explanatory accuracy, as evidenced by the weak R^2 of the main endogenous variable, despite the results of the goodness-of-fit measures.

Table 6: Goodness of fit assessment

Index	Saturated model	Estimated model
SRMR	0.050	0.050
NFI	0.831	0.831
d-ULS	0.025	0.025
d-G	0.006	0.006

Source: Authors own source. Notes SRMR = Standardized root mean square residual; NFI = Normed fit index OF Bentler& Bonett (1980); d-ULS = Squared Euclidean distance; d-G = Geodesic distance.

Discussion

The application of PLS-SEM has allowed us to confirm that SEO, in the Peruvian context, could affect the performance of micro and small companies with sustainability reports according to the GRI standards. The main results of this research are discussed in the following lines.

The results of this study shed light on the relationship between SEO and organizational performance. In particular, previous research on this relationship has been conducted primarily at the organizational level. In contrast, this study examines SEO at the individual level, considering it as a decision-maker skill and exploring its relationship to organizational performance. An extensive literature highlights the positive impact of organizational SEO on performance (Criado-Gomis et al., 2017; Jiang et al., 2018) and its subconstructs, such as EO (Aftab et al, 2022; Covin & Slevin, 1989; Wiklund & Shepherd, 2005) and SO (Córcoles Muñoz et al., 2023; Porter & van der Linde, 1995), in the Peruvian context. However, this study provides a unique perspective by examining this relationship from an individual perspective. Specifically, it elucidates how SEO at the individual level contributes to the performance of micro and small firms. With strong results, Hypothesis 1 was confirmed.

Given these findings, it becomes imperative to examine EO as a primary driver of SEO, given its well-established relationship with performance. The influence of EO represents a complex interplay that varies based on

organizational contexts and internal capabilities, such as decision-maker characteristics and knowledge-based resources (Rauch et al., 2009; Wiklund & Shepherd, 2003). EO has been found to thrive in dynamic yet stable environments, especially when coupled with minimal financial resources (Kreiser & Davis, 2010; Wiklund & Shepherd, 2005). By contrast, its effect on performance can be positive in hostile environments (Covin & Slevin, 1989; Lee et al., 2019), highlighting the need for decision-makers to possess certain characteristics such as charisma and leadership (Todorovic & Schlosser, 2007). Essentially, EO provides significant explanatory power as to why Peruvian entrepreneurs' SEO has a remarkable and strong relationship with performance. Nevertheless, contextual factors such as cultural norms, regulatory frameworks, market dynamics, economic development, and political stability need to be evaluated in future studies (Akomea et al., 2022; Rauch et al., 2009). This is particularly important given Peru's political turbulence (Jütten, 2023) and in the light of previous studies, which are explained as follows.

Positive cultural norms can enhance the relationship between SEO performance by fostering routines that prioritize environmental impact, for instance, through place attachment, where sustainable entrepreneurs' strong connection to their location leads to sustainable actions (Ameer & Khan, 2022; Sankaranarayanan & Ray, 2019; Meek et al., 2010). Therefore, Peruvian managers ought to foster their place attachment to influence strategic decisions, aiming to benefit both people and the environment. Furthermore, aggressive competitive strategies driven by SEO, particularly through EO, are perceived differently across cultures, which impacts performance. Interestingly, despite the EO-performance relationship being similar among countries within a continent, it varies with firm size, being stronger in micro businesses than in small ones (Rauch et al., 2009). Other environmental factors such as dynamism and hostility moderate the EO-performance relationship (Rauch et al., 2009), warranting further study when turning attention to SEO.

Concerning institutional frameworks, small firms face institutional challenges such as weak regulations, limited financial access, and inadequate market support (Amoako, 2018). Consequently, resource constraints and underdeveloped regulatory environments in developing countries hinder small firms from engaging in sustainability (McAdam et al., 2019). These limit investment in innovation, weakening the EO-performance link (Amoako, 2018). However, small firms, characterized by

fewer structures, independence, and owner-manager control, can leverage their flexibility to focus on innovativeness and proactiveness, leading to economically viable sustainability (McAdam et al., 2019; Akomea et al., 2022). In the Peruvian context, with institutional constraints, and financial access restrictions (Cordova & Cancino, 2020), companies can enhance the SEO-performance relationship by directing their competitive efforts towards risk-taking, innovation, and proactive capabilities in response to sustainability practices, to strengthen the SEO-performance relationship (Amoako, 2018). Nevertheless, regulatory authorities should also establish a clear institutional framework to encourage sustainable activities in emerging countries such as Peru (Ameer & Khan, 2022).

The results indicate that gender does not exert a significant moderating effect on the relationship between SEO and organizational performance, thus failing to support Hypothesis 2. This finding is consistent with theoretical expectations, as the empirical evidence collected to date has been inconclusive. While some studies (Costa & Pita, 2020; Criado-Gomis et al., 2020; Feng et al., 2023; Runyan et al., 2006; Zeb & Ihsan, 2020) have found significant evidence for the moderating effect of gender, others have not (Chen et al., 2023; Fuentes-Fuentes et al., 2015; Hosseininia & Ramezani, 2016; Ong & Ismail, 2011). Despite joining the latter group, it is imperative to address the discrepancy between theory and empirical findings.

First, the lack of a moderating effect of gender implies that the gender of the decision-maker does not alter the magnitude of the SEO-performance relationship. Second, given the significant relationship between SEO and performance, the discrepancy between theoretical expectations and empirical results may be due to contextual nuances. The descriptive analysis reveals a slight gender imbalance among the decision-makers surveyed, with 56% men and 44% women. This demographic composition provides a plausible explanation for the lack of a moderating effect of gender in this study. Although Latin American countries represent a suitable context for studying women's labor force participation (Bazán & Rivera, 2024), which in this study is sustainable entrepreneurship, further research is warranted to explore whether the Peruvian socio-political context influences the SEO-performance relationship and, subsequently, the moderating effect of gender.

Conclusion

The SEO in the incipient Peruvian entrepreneurial ecosystem could potentially explain the nature of the decision-makers or founders of sustainable organizations and, at the same time, elucidate why they demonstrate higher levels of performance. This is based on the fact that sustainable entrepreneurship is a complex phenomenon and that not all entrepreneurs are equally concerned with environmental and social issues. Thus, the general hypothesis that guides this research has been proven. SEO can positively affect the performance of micro and small enterprises with sustainability reports in the context of Peru.

The study has some theoretical implications because it helps fill two gaps identified in the literature on SEO. First, this study introduces a novel approach to assessing SEO at the individual level. The study confirms the validity of evaluating SEO through an approximation of EO at the individual level, referred to as individual entrepreneurial orientation (IEO) (Bolton & Lane, 2012) and SO (Bos-Brouwers, 2010). Traditionally, SEO has been assessed using instruments designed for EO (Covin & Slevin, 1989; Matsuno et al., 2002) and SO (Bos-Brouwers, 2010; Kuckertz & Wagner, 2010), as recommended by Miles et al. (2009). However, this study validates the use of the individual scale, IEO, as an important component of SEO at the individual level. Consequently, a significant contribution of this research lies in providing a more accurate method for measuring entrepreneurial SEO. In addition, while previous studies have predominantly focused on the influence of organizational SEO on performance in developed countries, the results extend this relationship to developing countries such as Peru.

Second, by including the moderation of gender between SEO and organizational performance in the field of micro and small enterprises, it was possible to evaluate the impact in the context of Peru as one of the most entrepreneurial countries in the world. While studies show a significant and positive relationship between internal factors such as risk-taking, and external factors such as sociocultural issues when it comes to female entrepreneurship in developing countries (Stanković et al., 2023), the present study could not close the gap regarding the relationship between SEO and performance. Given the conflicting evidence in previous research indicating the positive influence of gender on sustainable entrepreneurship, the present study provides evidence that organizations led by men and women do not

show significant differences in performance. Thus, although the structural model provides evidence supporting the relationship of SEO performance, it does not support the moderating effect of gender. Therefore, it remains uncertain whether female or male decision-makers have anything to do with the performance of their organizations to the extent that they exhibit high levels of SEO.

In conclusion, this study advances the understanding of the complex relationship between SEO, performance, and gender in Peruvian micro and small enterprises. While it demonstrates the importance of promoting high levels of SEO to influence performance, it also highlights the need for nuanced approaches to address gender disparities in the SEO-performance relationship. Further research could explore strategies to strengthen the relationship between SEO and performance to more effectively assess gender impacts.

Limitations and Future Research

As with any scientific study, there are limitations to this research. Based on these limitations, research opportunities were identified. A primary limitation is the use of self-reported data (Podsakoff & Organ, 1986). Self-reports are inherently subjective and reflect the personal perceptions and biases of the respondents, thus, different decision-makers may interpret and report their actions and outcomes differently, leading to variability in the data. However, as mentioned before, the study provided an absence of CMB evidence, confirming that the observed relationship between SEO performance is less likely to be artificially inflated due to the method of data collection. Consequently, this increases confidence that the findings reflect true relationships rather than artifacts of the measurement method, and confirms that the conclusions drawn from the study are more reliable and can be considered a more accurate reflection of the true state of the studied phenomena.

Nevertheless, given the recent emergence of sustainability reporting in Peru, participant responses, particularly regarding performance, may be susceptible to recall bias, which means that the respondents may not accurately remember past behaviors or outcomes, leading to inaccuracies in the data. Another potential bias based on the self-reported data is the non-response bias, thus, the evaluated sample of 121 decision-makers who chose to respond might differ systematically from those who did not, potentially

limiting the generalizability of the findings. If non-respondents are less engaged in sustainability practices, the results may present an overly optimistic view of the state of sustainability among these enterprises. Furthermore, due to limited access to updated data, the sample was drawn from the GRI's non-public database of 2021 reports, which means that the organizations contacted may no longer maintain sustainable practices or may have ceased to operate. As a result, it was challenging during data collection to determine whether participating firms maintained sustainable practices similar to those reported in 2021. Future research could expand beyond Peru's nascent sustainable entrepreneurial ecosystem to explore diverse contexts, thereby stimulating new studies in politically, socially, and economically stable environments where firms have stronger incentives to engage in sustainable practices. Future studies should also consider using a more updated database and multiple data sources, such as objective performance metrics, for instance, to measure performance.

Another limitation relies on the assessment of the model using PLS-SEM. While PLS-SEM is considered suitable for smaller sample sizes compared to other techniques, such as CB-SEM, this could also represent a limitation. Therefore, larger sample sizes can provide more robust and generalizable results. Despite the study reporting the goodness of fit indices such as SRMR, NFI, d-ULS, and d-G, CB-SEM offers a wider range of global fit indices that can improve the potential estimation bias. Additionally, PLS-SEM's reliance on variance-based estimation, despite the favorable results, can introduce multicollinearity issues and less precise bootstrapping results, making it less effective for theory testing and model validation. To address these limitations, future research should consider larger sample sizes, integrate objective data sources to mitigate self-report biases and evaluate the pertinence of advanced techniques like Bayesian SEM to address estimation bias and multicollinearity.

Despite the fact that the present study validates the SEO instrument at the individual level, this also implies a limitation, as it was a novel approach to the construct. Given the conceptual novelty of SEO and the complexities involved in measuring its associations with different variables, certain analytical limitations arise. Future research efforts could explore and further validate the individual SEO scale across different populations and contexts. Therefore, there are many opportunities for further research.

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