SHAPING ESG AND ECO-INNOVATION THROUGH RESPONSIBLE LEADERSHIP AND ORGANIZATIONAL CULTURE

1 INTRODUCTION

Organizations are changing their business models focusing on human and environmental sustainability, aiming to balance social development with economic and ecological issues. They are seen as key players in improving the quality of life in their societies, including reducing poverty, promoting education, improving health, recognizing employees, and generating economic growth (Suriyankietkaew et al., 2022), without harming the environment. Long-term perspectives advocate that it would take two planets to sustain the current lifestyle, and if the world continues at this pace, we may end up with an uninhabitable world (Seebode et al., 2012).

As a result, social and environmental issues have become recurring topics, transitioning from mere rhetoric to actual initiatives, such as the Environment, Social, and Governance (ESG) paradigm, which financially incentivizes companies to adopt sustainable practices. The ESG perspective addresses environmental concerns, social practices, and governance issues, aiming to reduce the company's environmental footprint in the long run and increase its market value.

In this context, leadership is an indispensable factor and must go beyond traditional views to embrace a leadership style focused on social and environmental objectives, giving rise to responsible leadership. Responsible leadership seeks to go beyond effectiveness and efficiency to engage in social responsibility based on discursive ethics and deliberative democracy, with the key differentiating factor being stakeholder involvement. In other words, leaders need to reflect on the consequences of their actions on all affected stakeholders, listen to their perspectives, and collaboratively make transparent, balanced, and fair decisions in conjunction with them (Voegtlin et al., 2012). Responsible leadership is based on accountability as the foundation of attitudes and decisions, and it has become the focus of research and goal of firms, seeking to develop this capability (Hincapie & Sánchez, 2022; Pless & Maak, 2012).

In that sense, eco-innovation challenges the definition of innovation solely focused on generating profits for companies (Tracey & Stott, 2017). It falls under the umbrella of sustainable innovation and is defined as any form of innovation that brings progress and contribution to society while reducing environmental harm, whether in products, processes, or organizational structure (Paraschiv et al., 2012). Eco-innovation is crucial for achieving global sustainability goals and generating significant results for companies. However, there are still barriers to its implementation, such as a lack of internal awareness, high investment requirements, and a lack of supportive public policies. Hence, it is important to study eco-innovation within the context of culture and knowledge (Harsanto et al., 2023). To be a sustainable organization, it must integrate stakeholder-oriented governance, and an organizational culture with a central focus on sustainability (Paraschiv et al., 2012).

Thus, this study aims to evaluate the relationship between responsible leadership, organizational culture, ESG practices, and, consequently, eco-innovation within organizations. The study finds its justification in the analysis of responsible leadership, concerned not only with the organization but also with humanity as a whole, guiding the company in ESG practices, and ultimately on its application for gaining a competitive advantage (Ullah et al., 2022).

2 LITERATURE REVIEW

2.1 Responsible leadership and organizational culture

The effects of responsible leadership extend from the internal environment to the global stage. With a broader vision, their outcomes impact not only shareholders but all stakeholders: employees, customers, consumers, business partners, and the community. Responsible leaders prioritize relationships and trust, going beyond being merely an example to follow, and instead becoming coordinators and cultivators of stakeholder relationships. Responsible leaders

possess what is defined as relational intelligence, and emotional and ethical skills to guide stakeholder relationships, such as empathy, respect, humility, citizenship, and morality. They are reflective leaders with integrity (Akhtar et al., 2023; Maak & Pless, 2006).

The relationship between leaders and organizational culture is fundamental because leaders are key agents in shaping culture. Culture is formed by individual beliefs and values that, over time, become internalized and accepted within the organization (Schein, 2017). Culture sets the principles that guide employees' behavior, orienting them in their daily routines and decision-making. It is a shared system of meaning and mutual understanding. Culture directs the company so that everyone achieves the expected outcomes. The lack of it has a negative influence on employees and, therefore, performance (Martins & Terblanche, 2003). **Hypothesis 1**: Responsible leadership has a positive relationship with organizational culture.

2.2 Responsible leadership and ESG practices

Currently, ESG has become a differentiator for firms seeking competitive advantages and building good relationships with their stakeholders. It can contribute to stakeholder satisfaction and the company's market image. Additionally, certain companies, especially multinational ones, require ESG reports from organizations that wish to export products to them (Shalhoob & Hussainey, 2023). ESG addresses environmental concerns, social practices, and governance issues, aiming to reduce long-term negative impacts and increase the company's market value, focusing not only on shareholders but also on all stakeholders (Matos, 2020). Stakeholder engagement is crucial because it influences organizational orientation and contributes to the adoption of practices valued by stakeholders (Castka & Balzarova, 2008).

Through ethical behavior, responsible leadership inspires internal and external stakeholders to adopt more sustainable practices and can contribute to balancing the environmental, social, and economic dimensions. Studies, such as Liao and Zhang (2020), demonstrate a positive link between responsible leadership and environmental innovation performance. Support from top management is indispensable, as leaders should perceive environmental issues as opportunities rather than business threats (Liao & Zhang, 2020). **Hypothesis 2**: Responsible leadership has a positive relationship with ESG practices.

2.3 Organizational Culture and ESG Practices

Shalhoob and Hussainey (2023) point out that the lack of a clear ESG strategy and an organizational culture aligned with it can diminish the outcome of adopting environmental, social, and governance practices. A culture focused on sustainability is considered one of the necessities of the competitive market, as raised by Baumgartner (2009). In this regard, the literature suggests that market and investor demands can pressure companies to adopt ESG. This means opting for a business model supported by a system of mutual activity, beyond the firm's boundaries, creating value for the customer, and monetizing through efficient sales and profit structures. Thus, organizations develop a business model with multiple stakeholders through a relationship-oriented culture (Aouadi & Marsat, 2018).

Within the organizational culture, key values related to sustainability include safety, shareholder commitment, compliance, reputation, good business practices, and internal culture. Although sustainability is seen as important, there are still doubts about whether the same efforts will be sustained in the future, as there are companies that disregard sustainable practices and others that engage in "greenwashing" by only making rhetorical changes. Therefore, ESG must be integrated into the organizational culture to ensure its longevity (Baumgartner, 2009). **Hypothesis 3**: Organizational culture has a positive relationship with ESG practices.

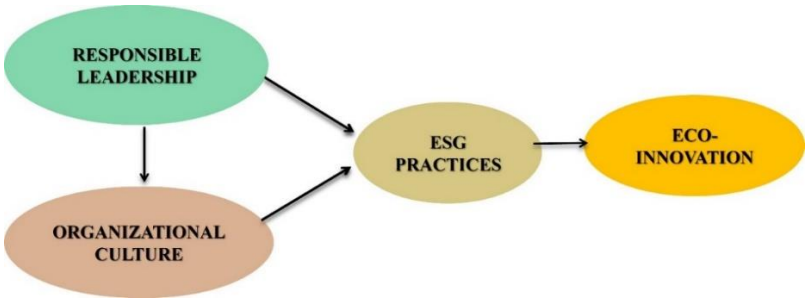
2.4 ESG practices and eco-innovation

Eco-innovation is the pursuit of alternatives, whether through the use of technologies or not, for reducing environmental impact while also achieving economic gains. It can be

motivated by external factors such as environmental legislation, as well as internal factors such as leadership profile since it involves the development of products and/or new organizational processes. Eco-innovation can be a path that introduces the company to broader innovation and/or the sustainability process, regardless of whether the company is innovative or not.

Harsanto et al. (2023) observe that eco-innovation practices for products focus on life cycle assessment, packaging structure, and eco-labels. For processes, the goal is to achieve cleaner and more eco-efficient production and waste treatment. For the organization, new business models with a focus on innovation, collaboration with other organizations, and risk management. Green consumption habits and regulations are factors that have a greater stimulating power for companies to pursue eco-innovation. Thus, it is understood that ESG can contribute to eco-innovation, as it drives the adoption of practices aimed at reducing environmental impacts, such as the use of clean energy, eco-friendly cleaning products, and water consumption reduction (Cheng & Shiu, 2012). **Hypothesis 4:** ESG practices have a positive relationship with eco-innovation. Following is the research design.

Figure 1 - Research Design



Source: Developed by the authors (2024).

3 METHODOLOGY

This descriptive study adopts a quantitative and cross-sectional approach as it aims to assess the relationship between responsible leadership and organizational culture in ESG and Eco-innovation practices (Figure 1). In terms of procedures, this study can be classified as a survey (Richardson, 2014). The study applied a questionnaire with 89 Likert scale questions, from the following constructs: Responsible Leadership, Organizational Culture, ESG Practices, and Eco-innovation (Table 1), along with 7 profile questions.

The state of Santa Catarina is home to 44,731 manufacturing firms, according to the Industry Portal, which constitutes the population of this study. The sample consisted of firms categorized as manufacturers of all sizes (IBGE, 2023). The respondents were managers, coordinators, and supervisors, selected through LinkedIn®, where profiles meeting the criteria were invited to participate, and the instrument was made available online. From the 1.500 individuals approached, 200 questionnaires were received, of which 12 were excluded due to incompletion. The final sample consisted of 188 valid responses (response rate=12%).

Table 1 - Research Construct Design

Construct	Type	Dimensions/questions	Theoretical framework
LIDER- Responsible Leadership	1st order	12 questions	Voegtlin et al. (2012)
CULT – Organizational Culture	2nd order	3 dimensions, 16 questions	Carmona et al. (2020)
ESG – ESG Practices		3 dimensions, 36 questions	Shalhoob & Hussainey (2023)
ECOIN – Eco-innovation		3 dimensions, 18 questions	Cheng & Shiu (2012)

Source: The authors (2024).

4. RESULTS AND DISCUSSION

Initially, outliers were then checked using the interquartile range rule (Tukey, 1977) and excluded from the analysis. Internal consistency reliability was assessed using Cronbach's Alpha (Malhotra, 2019) for each construct and dimension, indicating a adequate level of

reliability (minimum of 0.70). To assess the model's reliability, parameters indicated in the literature were tested, and the factor loading of each item was examined. Nine questions were discarded from the model, due to lower factor loadings (<0.70). Then, correlations and bootstrapping were analyzed in Smart PLS (de Souza Bido & da Silva, 2019). Composite reliability, Rho(A), and average variance extracted - AVE) were assessed following the approach proposed by Hair et al. (2016) (Table 2), and discriminant validity was evaluated using the Fornell and Larcker criterion, with results considered adequate.

Table 2 - Convergent validity

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Composite Reliability	0.942	0.968	0.980	0.945	0.923	0.939	0.893	0.983	0.958	0.981	0.964	0.951	0.915
Rho (A)	0.920	0.969	0.979	0.940	0.941	0.924	0.910	0.979	0.954	0.978	0.955	0.947	0.877
Alpha (α)	0.918	0.962	0.979	0.929	0.869	0.923	0.866	0.979	0.953	0.954	0.978	0.949	0.872
AVE	0.802	0.493	0.737	0.569	0.653	0.720	0.501	0.906	0.621	0.882	0.844	0.619	0.729

Source: Research Data (2024). Note: 1. Communication; 2.ESG; 3. Eco-innovation; 4.Environm.; 5.Governance; 6.Stimulus; 7.Leadership; 8.Organizational; 9.Org. Culture; 10.Process; 11.Product; 12.Social; 13.Strategy.

Next, in Table 3, the results of hypothesis testing are presented through a path analysis of the structural equation model.

Table 3 - Hypothesis testing results

	Hypothesis	**f^2**	**R^2 adjusted**	**VIF**	**P-values**	**Results**
H1	Responsible Leadership → Organizational Culture	0.632	0.458	1.000	0.000	Supported
H2	Responsible Leadership → ESG	0.006	1.000	1.731	**0.971**	**Rejected**
H3	Organizational Culture → ESG	0.107	1.000	2.843	0.083*	Supported
H4	ESG → Eco-innovation	1.442	0.626	1.000	0.000	Supported

Source: Research Data (2024). Note: p-values estimated by bootstrapping with 5000 iterations. *Sig < 0.10.

It can be observed that responsible leadership has a positive relationship with organizational culture (f^2=0.632, adjusted R^2 45.8%) and a low impact on ESG (f^2 = 0.006, adjusted R^2 1%). Thus, hypothesis H1 (p<0.001) was supported by the data, and H2 (p>0.100) was rejected. Hypothesis H3, which tests the relationship between organizational culture and ESG, indicates a moderate effect (f^2 = 0.151) and is supported (p<0.10). H4 was supported, indicating that ESG practices (p<0.001) have a positive relationship with Eco-innovation.

Currently, firms are not only expected to deliver economic results such as sales and operational profit but also to prioritize environmental protection and social contribution. They can no longer limit themselves to compliance with laws and corporate ethics; they need to enhance corporate governance and increase sustainability. Years of environmental and social disregard have compelled leaders to reverse this situation, regain trust, and strengthen their businesses. They are now accountable primarily to society.

Our results confirmed the relationship between responsible leadership and organizational culture, supporting the propositions of Akhtar et al. (2023), Maak & Pless (2006), Paraschiv et al. (2012), and Ullah et al. (2022). Leaders are identified as determining factors in shaping organizational culture, as they contribute to its creation and/or change through individual values and beliefs that are shared and accepted by members of the organization (Schein, 2017). For ESG practices to be successfully adopted in organizations, it is important to have an organizational culture aligned with these objectives.

The results also demonstrate the positive relationship between organizational culture and ESG practices, corroborating studies by Baumgartner (2009), Jin & Kim (2022), Sassen et al. (2016), and Shalhoob & Hussainey (2023) that highlight the importance of an organizational culture oriented towards ESG for greater effectiveness in implementing practices in organizations. Currently, ESG represents a requirement and competitive advantage for

companies, influencing their market value. To achieve this, it is necessary to analyze the organizational culture and implement actions that align it with sustainable objectives.

The positive relationship between ESG practices and eco-innovation was also confirmed, in line with studies by Jin & Kim (2022) and Sassen et al. (2016), which identified ESG as a driver of eco-innovation, as a form of social innovation. The environmental premises of ESG prompt companies to seek innovative solutions in processes, products, and organizational models to reduce environmental impact. Similarly, social and governance issues encourage organizations to engage in social innovation to address global problems, increase competitiveness, and enhance market image.

Despite the confirmed relationship between responsible leadership and organizational culture, the former did not have a positive impact on ESG practices. This finding aligns with the literature, with leaders making decisions more reactively to the market and interacting only with stakeholders of interest to address specific demands, such as employees, customers, and top management. Some potential obstacles to the adoption of sustainable practices include difficulties in measurement, internal and external challenges such as lack of specialized employees, or financial resources, high implementation costs, and sector specificities that may hinder the adoption of ESG practices (Shalhoob & Hussainey, 2023). Hence, for leaders to contribute to greener outcomes in organizations, it is important to understand the degree of freedom that leadership has within the company, as it is the key factor for responsible leadership in cooperation with stakeholders, to seek consensus on the practices to be taken.

5. FINAL CONSIDERATIONS

This study aimed to assess the influence of responsible leadership and organizational culture on ESG practices and consequently on organizational eco-innovation. The study results confirmed that ESG effectively contributes to eco-innovation, involving improvements, development, or introduction of new products, processes, or organizational models that seek to minimize environmental impact. In other words, it promotes more sustainable innovation, not solely focused on profit and results, but on reducing harm to the environment. In this regard, stakeholder engagement is an essential factor for responsible leadership to enhance its contribution to corporate responsibility. Therefore, it is believed that the results of this study will contribute to future research that can delve deeper into ESG issues, organizational best practices, and the development of responsible leadership, which is considered essential to address the future socio-environmental challenges faced by companies.

As limitations, the scope of the sample consisted of 188 manufacturing industries, with the majority belonging to the textile segment and concentrated in two macro-regions of the state of Santa Catarina, Brazil. New avenues of research can address whether ESG will bring permanent and long-term changes to the business world. Consequently, there is a need for longitudinal studies that can repeatedly investigate various parameters, including responsible leadership and organizational culture, over multiple time points, to seek more precise answers to the factors related to ESG practices and eco-innovation.

REFERENCES

Akhtar, M. W., Garavan, T., Javed, M., Huo, C., Junaid, M., & Hussain, K. (2023). Responsible leadership, organizational ethical culture, strategic posture, and green innovation. *The Service Industries Journal*, 1–21.

Aouadi, A., & Marsat, S. (2018). Do ESG controversies matter for firm value? Evidence from international data. *Journal of Business Ethics*, *151*, 1027–1047.

Baumgartner, R. J. (2009). Organizational culture and leadership: Preconditions for the development of a sustainable corporation. *Sustainable Development*, *17*(2), 102–113.

Carmona, L. J. D. M., Gomes, G., & Curto, D. de L. (2020). Elements of organizational culture that encourage innovation development. *Revista de Administração FACES Journal*, *19*(1), 8–26.

Castka, P., & Balzarova, M. A. (2008). ISO 26000 and supply chains—On the diffusion of the social responsibility standard. *International Journal of Production Economics*, *111*(2), 274–286.

Cheng, C. C., & Shiu, E. C. (2012). Validation of a proposed instrument for measuring eco-innovation: An implementation perspective. *Technovation*, *32*(6), 329–344.

de Souza Bido, D., & da Silva, D. (2019). SmartPLS 3: especificação, estimação, avaliação e relato. *Administração: Ensino e Pesquisa*, *20*(2), 1–31.

Hair, J., Anderson, R., Black, B., & Babin, B. (2016). *Multivariate Data Analysis*. Pearson Education. https://books.google.com.br/books?id=LKOSAgAAQBAJ

Harsanto, B., Primiana, I., Sarasi, V., & Satyakti, Y. (2023). Sustainability Innovation in the Textile Industry: A Systematic Review. *Sustainability*, *15*(2), 1549.

Hincapie, M. X., & Sánchez, I. D. (2022). O contexto importa? Liderança responsável na América Latina. Uma revisão de literatura. *Estudios Gerenciales*, *38*(165), 529–544.

Jin, M., & Kim, B. (2022). Effects of ESG Activity Recognition Factors on Innovative Organization Culture, Job Crafting, and Job Performance. *Administrative Sciences*, *12*(4), 127.

Liao, Z., & Zhang, M. (2020). The influence of responsible leadership on environmental innovation and environmental performance: The moderating role of managerial discretion. *Corporate Social Responsibility and Environmental Management*, *27*(5), 2016–2027.

Maak, T., & Pless, N. (2006). Responsible Leadership in a Stakeholder Society – A Relational Perspective. *Journal of Business Ethics*, *66*(1), 99–115.

Maak, T., Pless, N., & Voegtlin, C. (2016). Business statesman or shareholder advocate? CEO responsible leadership styles and the micro-foundations of political CSR. *J. of Management Studies*, *53*(3), 463–493.

Malhotra, N. K. (2019). *Pesquisa de Marketing-: Uma Orientação Aplicada* (7°). Bookman Editora.

Martins, E., & Terblanche, F. (2003). Building organisational culture that stimulates creativity and innovation. *European Journal of Innovation Management*, *6*(1), 64–74.

Paraschiv, D. M., Nemoianu, E. L., Langă, C. A., & Szabó, T. (2012). Eco-innovation, responsible leadership and organizational change for corporate sustainability. *Amfiteatru Economic Journal*, *14*(32), 404–419.

Pless, N. M., & Maak, T. (2012). Responsible leadership: Pathways to the future. *Responsible Leadership*, 3–13.

Richardson, R. J. (2014). *Pesquisa social: métodos e técnicas.* (3° Ed.). Atlas.

Sassen, R., Hinze, A.-K., & Hardeck, I. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*, *86*, 867–904. https://doi.org/https://doi.org/10.1007/s11573-016-0819-3

Schein, E. H. (2017). *Organizational Culture and Leadership* (I. John Wiley & Sons (ed.); 5°). Wiley.

Seebode, D., Jeanrenaud, S., & Bessant, J. (2012). Managing innovation for sustainability. *R&D Mgmt*, *42*(3), 195–206.

Shalhoob, H., & Hussainey, K. (2023). Environmental, Social and Governance (ESG) Disclosure and the Small and Medium Enterprises (SMEs) Sustainability Performance. *Sustainability*, *15*(1), 200.

Suriyankietkaew, S., Krittayaruangroj, K., & Iamsawan, N. (2022). Sustainable Leadership practices and competencies of SMEs for sustainability and resilience: A community-based social enterprise study. *Sustainability*, *14*(10), 5762.

Tracey, P., & Stott, N. (2017). Social innovation: a window on alternative ways of organizing and innovating. *Innovation*, *19*(1), 51–60.

Tukey, J. W. (1977). *Exploratory data analysis* (Vol. 2). Reading, MA.

Ullah, I., Hameed, R. M., Kayani, N. Z., & Fazal, Y. (2022). CEO ethical leadership and corporate social responsibility: Examining the mediating role of organizational ethical culture and intellectual capital. *Journal of Management & Organization*, *28*(1), 99–119.

Voegtlin, C., Patzer, M., & Scherer, A. G. (2012). Responsible leadership in global business: A new approach to leadership and its multi-level outcomes. *Journal of Business Ethics*, *105*(1), 1–16.