



*Sustainability and innovation: a study on the sustainable innovation process of two industries in the city of Novo Hamburgo-RS, Brazil*

**Sustentabilidade e inovação: um estudo sobre o processo de inovação sustentável de duas indústrias da cidade de Novo Hamburgo-RS, Brasil**

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**ABSTRACT**

*The objective of this article is to analyze the sustainable innovation process in two industrial companies in the leather and footwear sector in Novo Hamburgo-RS, Caimi & Liaison and Wolfstore, to highlight how they conduct sustainability-oriented innovation. The study can be considered relevant because it demonstrates the strategic importance of sustainability for the competitiveness and profitability of companies. Its originality lies in analyzing a multiple case study with two companies that have the "Sustainable Origin" certification. The research adopted a qualitative, exploratory, and descriptive approach, using a multiple case study strategy. Data collection was carried out through semi-structured interviews and document review, with content analysis. The study offers a valuable benchmark for companies in the sector, illustrating effective strategies for integrating sustainability. It also contributes to the literature by presenting a model for analyzing sustainable innovation in a value chain context. The research results highlight the relevance of investing in employee training, as this strengthens collaboration in the value chain, improves the measurement results, and contributes to the autonomy of sustainability committees.*

**Keywords:** *sustainability, innovation, leather and footwear sector*



## RESUMO

O objetivo do artigo é analisar o processo de inovação sustentável em duas indústrias do setor coureiro-calçadista de Novo Hamburgo-RS, Caimi & Liaison e Wolfstore, para evidenciar como elas conduzem a inovação orientada pela sustentabilidade. O estudo pode ser considerado relevante pois demonstra a importância estratégica da sustentabilidade para a competitividade e lucratividade das empresas. Sua originalidade está em analisar um estudo de caso múltiplo com duas empresas que possuem a certificação "Origem Sustentável". A pesquisa adotou uma abordagem qualitativa, exploratória e descritiva, utilizando a estratégia de estudo de caso múltiplo. A coleta de dados foi realizada por meio de entrevistas semiestruturadas e levantamento documental, com análise de conteúdo. O estudo oferece um *benchmark* valioso para empresas do setor, ilustrando estratégias eficazes de integração de práticas sustentáveis. Ele também contribui para a academia ao apresentar um modelo de análise de inovação sustentável em um contexto de cadeia de valor. Os resultados da pesquisa evidenciam a relevância do investimento na capacitação de colaboradores, pois assim fortalece a colaboração na cadeia de valor, aprimora a mensuração de resultados e contribui para a autonomia de comitês de sustentabilidade.

**Palavras-chave:** sustentabilidade, inovação, setor coureiro-calçadista

## 1. INTRODUCTION

Growing global awareness of socio-environmental issues has driven organizations to adopt more sustainable practices. Initially, this adoption emerged as a defensive response to criticisms regarding environmental degradation; however, it has since evolved into a proactive stance, where sustainability is consolidated as a significant competitive advantage (Barbieri, 2010). From this perspective, an innovative and sustainable organization seeks to balance economic efficiency with social and environmental responsibility by developing products, services, processes, and business models that encompass social, environmental, and economic dimensions (Barbieri et al., 2010).

The relevance of this transformation is corroborated by market data. The survey "Portraits of Society: Sustainable Habits and Conscious Consumption – 2022," conducted by the National Confederation of Industry (CEPAL/CNI, 2023), revealed that 50% of consumers expressed concern regarding environmental sustainability within the production process—a significant increase compared to 19% in 2019. Complementing this, the "Voice of the Consumer 2024" study



by PricewaterhouseCoopers in Brazil (PwC Brasil, 2024) indicates that consumers value sustainability and are willing to pay an average of 9.7% more for sustainable products, viewing environmentally responsible performance as a minimum requirement.

Given this scenario of increasing demand and growing emphasis on sustainability, a paradigm shift in consumer behavior is evident; for these consumers, corporate environmental responsibility transcends competitive advantage and has become a decisive factor in purchasing decisions. From this perspective, this study sought to address the following research question: How do two industries in the city of Novo Hamburgo, RS, manage their sustainable innovation processes?

To investigate this issue, this study aims to analyze the sustainable innovation process at Caimi & Liaison Ind. Com. de Couro e Sintéticos Ltda. and Wolfstore Indústria Têxtil Ltda., both located in Novo Hamburgo, RS. These companies are leaders in their respective segments and hold the "Origem Sustentável" (Sustainable Origin) certification—the only ESG (Environmental, Social, and Governance) and sustainability certification globally dedicated to the footwear supply chain (Origem Sustentável, n.d.).

Innovation, as defined by Fonseca (2020), entails implementing something novel or improved that fosters organizational transformations, thereby enhancing efficiency or effectiveness. However, when oriented toward sustainable development, innovation must "generate positive economic, social, and environmental results" (Barbieri et al., 2010). The relevance of this study, therefore, lies in the strategic importance of sustainability for the competitiveness and profitability of organizations.

The general objective of this study was to analyze the sustainable innovation process within the two selected industries in the city of Novo Hamburgo, RS. To this end, the specific objectives were: to characterize the analyzed companies; to describe the sustainable innovation process implemented in each; and to analyze the contribution of sustainable innovation to their operations.

The methodology adopted was a multiple case study with a qualitative approach. Empirical data collection was conducted through semi-structured interviews and documentary research, and the data were subjected to content analysis.

The structure of this study comprises a theoretical framework, a description of the methodological procedures, and an analysis of the collected empirical data; finally, the concluding remarks are presented, followed by the references to the reviewed scientific works and consulted documents.

## 2. SUSTAINABILITY, SUSTAINABLE INNOVATION, AND ECO-INNOVATION

The contemporary era is marked by a complex interaction between globalization, technology, and socio-environmental changes which, according to César (2006 as cited in Vicente, 2020), drive new markets and increased competitiveness. However, this dynamic is accompanied by the severe consequences of the industrial era—such as large-scale production and the neglect of natural resource utilization—generating intense mobilization in response to environmental impacts (Quinteros, 2020).

Environmental awareness gained momentum through several symbolic milestones, such as the publication of Rachel Carson's *Silent Spring* (1962), which warned of the risks posed by synthetic chemical pesticides and helped drive the environmental movement (ONU, 2020). In 1987, the UN report *Our Common Future*, led by Gro Harlem Brundtland, highlighted the divergence between development, production, and consumption, defining "sustainable development" as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (ONU, 2020). However, Barbieri et al. (2010) observe that the term only gained global notoriety in 1992, during the United Nations Conference on Environment and Development (Rio-92).

The principles of sustainable development continued through UN initiatives. In 2000, Kofi Annan introduced the "Global Compact," a voluntary initiative for sustainable growth and citizenship through business leadership. In Brazil, known as the Pacto Global Rede Brasil (Global Compact Network Brazil) and launched in 2003, the movement included more than 1,900 companies by the end of 2022 (Pacto Global Rede Brasil, n.d.). The UN seeks to mobilize companies committed to sustainability for a better world (Coutinho, 2021), and organizations within the Global Compact contribute to the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda, which demand the engagement of all stakeholders for their effective implementation (UN, 2020).

Authors such as Vicente (2020, p. 42) state that "human activity generates environmental impacts that affect physical, biological, and socioeconomic environments, impacting natural resources and human health" and that "environmental pollution is a matter of public interest," thereby emphasizing collective responsibility. Quinteros (2020) complements this by noting that the manufacturing of consumer goods utilizes natural resources and releases pollutant residues, contaminating air, water, and soil, and exacerbating global warming through  $\text{CO}_2$  emissions.

This demonstrates the complex interdependence between industrial production, resource exploitation, and environmental degradation, with direct implications for human health and planetary sustainability.

To address this highly complex context, John Elkington, in *Cannibals with Forks* (2000), introduced the Triple Bottom Line (TBL). This corporate sustainability model proposes that companies consider three dimensions of sustainable performance: economic, social, and environmental. Elkington (2000) postulates that companies adopting the TBL can generate long-term value for shareholders, society, and the environment.

In summary, the debate on the environment and sustainable development reveals a growing global awareness of the link between human activities and environmental degradation, as well as the urgency of reconciling economic progress with the preservation of natural resources and social well-being. Administrators and managers must mitigate production impacts to ensure corporate sustainability and an equitable future.

The literature on sustainable innovation exhibits terminological heterogeneity, with no clear consensus. This study adopts an analytical approach, deconstructing the term to synthesize an appropriate definition.

Innovation, according to Barbieri (2023), is the practical application of an invention or idea. The Oslo Manual (OSLO, 2004, as cited in Pinsky et al., 2015) characterizes it as the implementation of a new or significantly improved product, process, marketing method, or organizational method. The term "sustainable" is linked to sustainable development, requiring companies to balance growth and preservation through ecologically and socially just practices, including clean operations, waste management, and strategic innovation for long-term solutions (Barbieri, 2023).

The concept of "sustainable innovation," or eco-innovation, is defined by Schiederig, Tietze, and Herstatt (2012, as cited in Pinsky et al., 2015) as innovations that mitigate negative environmental impacts. This encompasses pollution control technologies, sustainable products and processes, energy solutions, and environmentally responsible transportation and management (Pinsky et al., 2015). The Measuring Eco-innovation (MEI) project defines eco-innovation as any innovation with significant environmental benefits, regardless of intentionality (Barbieri, 2023).

Barbieri (2023) defines eco-innovation as practices that reconcile economic and environmental dimensions, manifesting in various forms—such as goods, services, software, processes, systems, and business models—ranging from incremental adaptations to radical

innovations. Eco-innovations generate significant positive environmental outcomes, even if unintentional, and are evaluated based on improvements in the life cycle of products or processes compared to available alternatives.

Eco-innovations transcend mitigation by encompassing the prevention of environmental damage. The Sendai Framework for Disaster Risk Reduction (2015–2030), adopted at the Third United Nations World Conference, is a pioneering agreement that provides guidelines to protect sustainable development gains from catastrophes, emphasizing the role of eco-innovations in reducing environmental risks and addressing their impacts (United Nations Office for Disaster Risk Reduction, 2015).

In this sense, sustainable innovation emerges as a paradigm for building a new low-carbon economy, promoting sustainable development and enabling initiatives for the mitigation of and adaptation to environmental impacts, especially those arising from climate change (Pinsky et al., 2015).

The study "Trends, Challenges, and Opportunities of Eco-innovation for Industry in Brazil" (CEPAL/CNI, 2023) indicates that Brazil has the potential to occupy a leadership position in eco-innovation; however, it faces the risk of marginalization without investment in green technologies. The research reveals a low general propensity for eco-innovation within Brazilian industry, despite specific economic sectors showing high potential. To realize this potential, it is imperative to strengthen the willingness to innovate and to scale up eco-innovations (CEPAL/CNI, 2023).

In summary, eco-innovation is crucial for sustainable development, as it drives innovation and competitiveness beyond the mere mitigation of environmental damage. Current challenges demand collaboration among companies, governments, and society to implement innovative practices that unite the economy, society, and the environment. Promoting eco-innovation through research, public policy, and social engagement is fundamental to achieving a green economy and a sustainable future.



### 3. EVOLUTION OF THE FOOTWEAR CLUSTER IN THE CITY OF NOVO HAMBURGO

The footwear cluster of Novo Hamburgo began with the arrival of German immigrants in 1824, who established the foundations for a commercial and service center. Local demand and the abundance of leather drove the artisanal production of footwear, transforming the city into an industrial hub of national and international relevance (Spolier; Araújo; Schemes, 2009).

The arrival of the railway in 1876 was crucial, facilitating the distribution of production and stimulating the leather and footwear industry. Handcrafted production evolved into industrial production, with tanneries and shoe factories throughout the 20th century. Pedro Adams Filho, who founded the first footwear industry in the Sinos Valley in 1901, symbolizes the city's entrepreneurial spirit (Kerber, Prodanov & Schemes, 2017; Konrath, 2009).

The creation of the Commercial Association of Novo Hamburgo (ACI) in 1920 and the city's emancipation in 1927, both led by Pedro Adams Filho, consolidated regional development and strengthened the sector. The ACI was fundamental in economic and social promotion, articulating business and community interests (Reichert, Magalhães & Weber, 2024).

Despite the challenges of the Estado Novo (1937–1945) and World War II (1939–1945), Novo Hamburgo's footwear industry demonstrated resilience, maintaining production and driving economic growth. The capacity for adaptation and the pursuit of opportunities were defining characteristics of this period (Reichert, Magalhães & Weber, 2024).

The 1960s marked the cluster's "golden age," featuring a significant increase in exports, the inauguration of the Municipal Exhibition Park, and the first National Footwear Fair (FENAC). The ACI was crucial in promoting exports and the internationalization of entrepreneurs, driving the modernization of the industry (Kerber, Prodanov & Schemes, 2017; Spolier, 2025; Reichert, Magalhães & Weber, 2024).

Even during the military dictatorship (1964–1985), Novo Hamburgo maintained its development. Silva (2014, as cited in Santos, 2015, p. 45) observes that “the main focus was work, [...] politics and national problems were in the background.”

Starting in the 1990s, Novo Hamburgo's footwear sector faced challenges such as Asian competition, a contraction in exports, and technological backwardness. The crisis necessitated a reassessment of economic vocations, resulting in deindustrialization and social challenges. The creation of the National Footwear Museum in 1998 sought to preserve the sector's history and



promote research (Schemes, Araújo & Magalhães, 2019; Francischini & Azevedo, 2003; Kerber, Prodanov & Schemes, 2017).

Despite the challenges, Novo Hamburgo has demonstrated resilience, adapting and seeking new opportunities. Economic diversification—notably in retail trade and healthcare—exemplifies its capacity for adaptation. The footwear industry, although having less relevance in terms of employment, maintains its local importance, driven by the pursuit of innovation and quality (Behrend, 2014; IBGE, 2022; SEBRAE, 2022).

The trajectory of Novo Hamburgo's footwear cluster is marked by an entrepreneurial spirit, a capacity for adaptation, and a pursuit of innovation. The city's history serves as an example of how entrepreneurial vision and resilience can transform a community and drive economic and social development.

#### 4. METHODOLOGICAL PROCEDURES

This research adopts a qualitative approach, with an exploratory and descriptive nature, utilizing a multiple case study strategy (Marconi & Lakatos, 2017). The qualitative approach is suitable for exploring phenomena in depth within their natural contexts (Flick, 2009), while the multiple case study allows for the comparative analysis of distinct cases to identify patterns and divergences, thereby strengthening the validity of the results (Yin, 2015).

For the study, the companies Caimi & Liaison Ind. Com. de Couro e Sintéticos Ltda. and Wolfstore Indústria Têxtil Ltda. were selected, both industrial organizations that stand out in the local footwear sector for investments in new technologies, frequent review of their organizational models, as well as for sustainable innovation practices.

Data collection was carried out through semi-structured interviews, conducted by email with the managers responsible for sustainability, and documentary research based on public digital sources (Yin, 2015; Bardin, 2016). Two interviews were conducted: with the manager of Caimi & Liaison (E1) on May 13, 2025, and with the manager of Wolfstore (E2) between May 21 and 23, 2025. The profile of the interviewees is detailed in Table 1.



*Table 1 – Summary of interviewee profiles from Caimi & Liaison and Wolfstore*

	<b>E1</b>	<b>E2</b>
Gender	Female	Female
Age	48 years	41 years
Academic Background	Bachelor's Degree	Bachelor's Degree
Tenure at the company	2 years and 2 months	11 years
Total professional experience	10 years	15 years
Current Position / Role	Quality Leader	HR Coordinator

**Source:** Prepared by the author.

The document review included the analysis of reports, internal policies, codes of ethics and conduct, as well as multimedia content available on the companies' websites and social networks. For data analysis, content analysis was used, a technique that allows the systematic interpretation of information to identify relevant categories and patterns (Bardin, 2016). This technique aims to uncover the meanings and interpretations of the participants (Flick, 2009). The combination of interviews and document analysis, as multiple sources of evidence, strengthens the validity and credibility of qualitative research results (Yin, 2015; Demo, 2022).

## 5. RESULTS AND DISCUSSION

This section presents the analysis of the results from semi-structured interviews with representatives from Caimi & Liaison and Wolfstore, supplemented by a documentary research. The data are discussed in light of the theoretical framework to identify convergences, divergences, and contributions to sustainable innovation within the footwear sector.

Sustainable innovation is a transformative element in the industry, driven by growing socio-environmental concerns and the search for responsible practices. According to Barbieri et al. (2010), sustainability has established itself as a competitive advantage. This study is based on literature regarding innovation, sustainable innovation, and sustainability, including Elkington's (2000) Triple Bottom Line and research by CEPAL/CNI (2023) on eco-innovation and sustainable innovation in Brazil.

The collected information indicates that sustainable innovation requires, in addition to technological investments, changes in organizational culture, product development, and relationships across the value chain. For its effective implementation, a long-term vision and



continuous collaboration are crucial, demonstrating a commitment to improvement and to solutions that benefit the company, society, and the environment.

The research results are presented in five tables highlighting the main themes, each accompanied by a concise elucidation of the data:

**Table 2:** Summary of Conceptualization, Strategy, Drivers, and Measurement of Sustainable Innovation;

**Table 3:** Summary of Process Management, Challenges and Barriers, and Project Examples;

**Table 4:** Summary of Impact, Competitiveness and Differentiation, and Benefits;

**Table 5:** Summary of Culture, Leadership, and Skills and Competencies;

**Table 6:** Summary of Plans and Priorities, Trends, and Challenges.

*Table 2 – Summary of conceptualization, strategy, drivers, and measurement of sustainable innovation at Caimi & Liaison and Wolfstore*

	<b>Caimi&amp;Liaison</b>	<b>Wolfstore</b>
<b>Conceptualization of Sustainable Innovation</b>	In the interview with Interviewee 1 (E1), sustainable innovation was defined as "the development of solutions that generate business value while promoting social and environmental benefits" (E1, 2025).	Based on documents, Wolfstore understands sustainable innovation more as an operational philosophy and a practical strategy. It integrates solution development and continuous improvement with the goals of generating value and promoting conscious management across the pillars of sustainability.
<b>Sustainable Innovation Strategy</b>	A central pillar of the business strategy, aligned with competitive differentiation and formalized in the Sustainability Policy (Caimi & Liaison, 2023d, p. 1). It prioritizes the production of more sustainable leathers and materials and the development of low-impact products. It covers energy consumption reduction, waste management, and adherence to the SDGs. Commitment to transparency and ethics is a transversal pillar, as per the Code of Ethics and Conduct (Caimi & Liaison, 2023a, p. 5).	Manifests through progressive actions and acts as a core strategic tool, guiding decisions on processes, investments, and resources for sustainable growth and the maximization of tangible and intangible values. Its formalization is found in the Sustainability Policy (Wolfstore, 2024d, p. 2), which serves as a framework for integrating sustainability. It is operationalized by directing initiatives to add value to customers' products through textile components, with innovation driving ethical growth and long-term improvement of sustainability pillars.
<b>Drivers of Sustainable Innovation</b>	<p><b>Internal Factors:</b> Organizational culture, employee engagement, and the pursuit of continuous improvement aimed at generating shared value.</p> <p><b>External Factors:</b> Consumer demands, environmental regulations, and requirements from major brands.</p>	<p><b>Internal Factors:</b> Continuous improvement of the social, environmental, economic, and cultural pillars (Wolfstore, 2024d, p. 2) and the mission to add sustainable value to customers' products.</p> <p><b>External Factors:</b> Response to stakeholder expectations and market demand for responsible products and practices.</p>



<p><b>Mensuração de inovação sustentável</b></p>	<p>Employs an indicator system based on the Triple Bottom Line (Elkington, 2000).</p> <p><b>Environmental Pillar:</b> Covers reduction in energy consumption (electricity, natural gas), water withdrawal, solid waste generation (landfill disposal and recycling), and Greenhouse Gas (GHG) emissions.</p> <p><b>Social Pillar:</b> Includes people management indicators such as occupational health and safety, skills development, diversity and equal opportunity, and engagement with local communities.</p> <p><b>Economic Pillar:</b> Relates to customer value perception and the financial return on sustainable initiatives (Caimi &amp; Liaison, 2024, pp. 36-50). Data collection aims to ensure transparency and corporate accountability.</p>	<p>Adopts measurement based on international standards (GRI Standards) for its reports, contributing to the standardization of environmental, social, and governance performance evaluation (Elkington, 2000). The company is guided by the UN SDGs.</p> <p><b>Environmental Pillar:</b> Quantifies water and energy consumption, monitors effluents, and manages waste.</p> <p><b>Social Pillar:</b> Evaluates internal equity (Wolfstore, 2024f).</p> <p><b>Economic Pillar:</b> Tracks indicators reported according to the GRI framework, covering generated and distributed economic value (Wolfstore, 2024e, p. 46).</p>
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**Source:** Prepared by the authors.

Both organizations strategically prioritize sustainable innovation, driven by both internal and external factors. While Caimi & Liaison focuses on proactivity and the generation of shared value, Wolfstore directs its actions toward adding sustainable value to its customers' products. It is noteworthy that both companies utilize established frameworks, such as the Triple Bottom Line (Elkington, 2000) and GRI standards, to measure their impacts, demonstrating a convergence in the pursuit of transparency and accountability within the scope of sustainability.



**Table 3 – Summary of Process Management, Challenges and Barriers, and Project Examples at Caimi & Liaison and Wolfstore**

	<b>Caimi &amp; Liaison</b>	<b>Wolfstore</b>
<b>Process Management</b>	Structured collaboratively across multiple areas. The Sustainability Committee (Caimi & Liaison, 2023d, p. 7) integrates R&D, production, and marketing. Collaboration with suppliers and research institutions is crucial to this process.	Features a multifunctional Sustainability Committee composed of members from administrative, commercial, and industrial areas (Wolfstore, 2024d, p. 14). This Committee supports the company's sustainability policy and is responsible for proposing solutions and continuously improving decision-making, production, and communication processes. Bi-annual meetings ensure the progress of sustainability projects. This structure reflects the organization's commitment to the strategic integration of sustainability and the pursuit of a competitive advantage (Wolfstore, 2024d, p. 14).
<b>Challenges and Barriers</b>	Faces challenges such as high initial costs of new technologies, internal resistance to change, and difficulties in sourcing sustainable raw materials. The company overcomes these obstacles by investing in internal training, establishing strategic partnerships, and continuously assessing project feasibility. Its Sustainability Policy (Caimi & Liaison, 2023d, p. 1) guides innovative actions toward integrated development across economic, social, and environmental dimensions.	Deals with the continuous adaptation of production infrastructure and the need for employee qualification, requiring investment in human capital (Wolfstore, 2024e, p. 45). Another significant challenge is maintaining ethical integrity and compliance in competition, which demands constant vigilance despite existing policies (Wolfstore, 2024a; Wolfstore, 2024c).
<b>Project Examples</b>	Demonstrates sustainable innovation through projects aimed at reducing environmental impact and using more sustainable materials. Examples of these projects, detailed in the Sustainability Report (Caimi & Liaison, 2024, pp. 13-17), include the "Life Line" (based on recycled and organic fibers), "Bio Bamboo" (using bamboo), and "Recycle Pet" (focused on the circular economy), all seeking cleaner processes and products.	Materializes its sustainability commitments through projects aimed at operational improvement and employee well-being. According to the Sustainability Report (Wolfstore, 2024e, p. 45), these actions include upgrading production infrastructure and qualifying the team for safe operations, exemplified by training in regulatory standards. Additionally, it promotes employee health and well-being through initiatives such as vaccination campaigns, Pink October, and Blue November. Such initiatives reflect the search for safer, more efficient processes and the continuous valuation of human capital.

**Source:** Prepared by the authors.

This suggests that, regardless of the specific focus, standardized measurement is a crucial pillar for validating sustainable innovation initiatives in the footwear sector. To further the understanding of how this innovation is managed, Table 3 presents a detailed summary of the process, the challenges and barriers faced, and examples of projects in both companies.



Both companies demonstrate a strategic management of sustainable innovation, utilizing multifunctional committees and encouraging collaboration, which corroborates the premise of the creation of shared value (Porter & Kramer, 2006). However, the way they deal with challenges and the projects they prioritize reveal distinct approaches. Caimi & Liaison faces costs and resistance to change in the search for more sustainable materials, indicating an innovation more focused on the transformation of products and raw materials. This aligns with the nature of its business, which deals directly with the development of inputs. Its projects, such as the "Linha Life" and "Bio Bamboo", are clear examples of product innovation with an environmental focus.

On the other hand, Wolfstore deals with the adaptation of production infrastructure and the qualification of human capital, in addition to ethical integrity. Its projects, such as machinery adaptation and the promotion of employee health, signal an innovation more centered on processes and organizational well-being. This distinction suggests that, although both seek sustainability, Caimi & Liaison is more oriented toward radical product innovation, while Wolfstore tends toward incremental innovation in processes and internal management, reflecting the particularities of their respective links in the footwear value chain. The realization of this value and its implications in terms of impact, competitiveness, differentiation, and benefits are detailed in Table 4.



Table 4 – Summary of impact, competitiveness, differentiation, and benefits at Caimi & Liaison and Wolfstore

	Caimi & Liaison	Wolfstore
<b>Impact</b>	<p><b>Environmental:</b> Achieved a 25% reduction in water consumption through closed-loop technologies and a 10% reduction in electricity by optimizing processes and minimizing waste generation (Caimi &amp; Liaison, 2024, pp. 36-40)</p> <p><b>Social:</b> Trained 50 women through the "Sewing the Future" (<i>Costurando o Futuro</i>) project and created 20 skilled jobs (Caimi &amp; Liaison, 2024, pp. 46-50).</p> <p><b>Economic:</b> Strengthened customer relationships and improved reputation, evidenced by achieving the "Diamond Sustainable Origin" seal and recognition as an "Environmentally Friendly Company" (Caimi &amp; Liaison, 2024, p. 28).</p>	<p><b>Environmental:</b> Optimizes processes and minimizes risks by upgrading machinery and qualifying employees according to Regulatory Standards (NRs) (Wolfstore, 2024e, p. 45).</p> <p><b>Social:</b> Promotes employee health and well-being through initiatives such as vaccination campaigns, Pink October, and Blue November, in addition to pursuing pay equity (Wolfstore, 2024e, p. 45; Wolfstore, 2024f).</p> <p><b>Economic:</b> Market leadership and strict adherence to ethics and competition policies (Wolfstore, 2024a; Wolfstore, 2024c) strengthen its reputation and generate value for the organization.</p>
<b>Competitiveness and Differentiation</b>	<p>A benchmark in environmental responsibility and innovation in the footwear sector, responding effectively to stakeholder demands for lower environmental impact products and ethical processes, as established in its Sustainability Policy (Caimi &amp; Liaison, 2023d) and Code of Ethics and Conduct (Caimi &amp; Liaison, 2023a). This positioning allows access to more demanding markets and strengthens customer loyalty. Its performance is validated by obtaining and recertifying, for the third time at the Diamond level, the "Sustainable Origin" (<i>Origem Sustentável</i>) seal (Caimi &amp; Liaison, 2024, p. 28).</p>	<p>Differentiates itself in the textile components market through the integration of sustainability and innovation, directly responding to the demand for ethical products and processes. This consolidated strategy maintains its leadership in Brazil and Latin America (Wolfstore, 2024d) and positions it favorably to access more demanding markets. In this context, obtaining the "Sustainable Origin" certification validates its ESG and sustainability performance. Furthermore, the company has earned significant recognitions, such as the Inspiramais Transformers Award (multiple editions) and the Primus Inspiramais Award, reinforcing its excellence in design and innovation.</p>
<b>Benefits</b>	<p><b>Tangible:</b> Accesses new markets driven by the growing demand for sustainable products, a strategy aligned with its Sustainability Policy (Caimi &amp; Liaison, 2023d).</p> <p><b>Intangible:</b> Significant brand strengthening and market recognition, evidenced by the Diamond Sustainable Origin seal, consolidating its image as a sector pioneer (Caimi &amp; Liaison, 2024, pp. 28, 33).</p>	<p><b>Tangible:</b> Records structural growth and operational efficiencies (Wolfstore, 2024d; Wolfstore, 2024e), in addition to adding significant value to its customers' products (Wolfstore, 2024d).</p> <p><b>Intangible:</b> Notable brand and reputation strengthening, generating greater stakeholder trust and consolidating its market recognition as a leader (Wolfstore, 2024a; Wolfstore, 2024d; Wolfstore, 2024e).</p>

Source: Prepared by the authors.

Although operating in different sectors, both companies exhibit robust sustainability, yet with distinct focuses regarding their impacts. Caimi & Liaison demonstrates quantifiable



environmental and social impacts (reduction in consumption, empowerment of women), evidencing a commitment to measurable results within its production chain. Its differentiation stems from being a benchmark in environmental responsibility and product innovation, validated by seals such as "Diamond Sustainable Origin," which positions it for more demanding markets.

Wolfstore, in turn, prioritizes environmental optimization through machinery upgrading and employee qualification, and in the social sphere, through the well-being and pay equity of its staff. Its competitiveness is driven by the integration of sustainability and innovation in textile components, maintaining leadership in the Brazilian and Latin American markets and earning several awards that validate its excellence in design and innovation. While Caimi & Liaison capitalizes on its image as a pioneer in sustainable products, Wolfstore reinforces its leadership through the consistency and scope of its ESG practices, generating trust across the entire chain. Table 5 highlights these characteristics, presenting a synthesis of the culture, leadership, and skills and competencies that underpin their strategies.

Although operating in different sectors, both companies exhibit robust sustainability, yet with distinct focuses regarding their impacts. Caimi & Liaison demonstrates quantifiable environmental and social impacts (reduction in consumption, empowerment of women), evidencing a commitment to measurable results within its production chain. Its differentiation stems from being a benchmark in environmental responsibility and product innovation, validated by seals such as "Diamond Sustainable Origin," which positions it for more demanding markets.

**Table 5 – Summary of culture, leadership, and skills and competencies at Caimi & Liaison and Wolfstore**

	<b>Caimi &amp; Liaison</b>	<b>Wolfstore</b>
<b>Culture</b>	Consolidated upon pillars such as ethics, collaboration, and socio-environmental responsibility (Caimi & Liaison, 2023a; Caimi & Liaison, 2023d). This foundation translates into an environment that not only fosters creativity but also encourages employee agency ( <i>protagonismo</i> ) in the search for sustainable solutions. Visible artifacts, such as sustainable products and certification seals, along with the values explicitly stated in its ethics and socio-environmental responsibility policies, serve as clear examples of this deep-rooted culture (Caimi & Liaison, 2023a; Caimi & Liaison, 2023d; Caimi & Liaison, 2024, p. 28).	Built on fundamental values such as ethics, individual valuation, collective strength, and a commitment to sustainability (Wolfstore, 2024a; Wolfstore, 2024d). These pillars manifest in artifacts such as the Code of Ethics and Conduct (Wolfstore, 2024a), sustainability policies (Wolfstore, 2024d), and fair competition policies (Wolfstore, 2024c), as well as the creation of a Sustainability Committee, which guides internal conduct (Wolfstore, 2024e). Additionally, the company demonstrates a culture of care and well-being, evidenced by its health campaigns and active pursuit of diversity and inclusion (Wolfstore, 2024e, p. 45; Wolfstore, 2024f).
<b>Leadership</b>	Manifests in the formulation of clear strategies, such as the vision and principles expressed in the Sustainability Policy (Caimi & Liaison, 2023d); in the daily example of senior management, reflected in the Code of Ethics and Conduct and the Sustainability Report (Caimi & Liaison, 2023a; Caimi & Liaison, 2024); in the judicious allocation of resources through investments in specific policies and committees; and, finally, in the role of an agent of transformation, actively encouraging the development of long-term innovative solutions.	Wolfstore's leadership stands out for its strengths, which include strategic formulation with clearly defined mission and principles (Wolfstore, 2024d); the daily example of senior management, reflecting a commitment to ethics (Wolfstore, 2024a; Wolfstore, 2024e); the allocation of strategic resources for sustainability initiatives (Wolfstore, 2024d; Wolfstore, 2024e); and the creation of governance structures, such as the Sustainability Committee (Wolfstore, 2024e).
<b>Skills and Competencies</b>	Crucial skills for driving sustainable innovation include creativity, ESG knowledge, project management, effective communication, and the ability to work in cross-sector teams (Caimi & Liaison, 2023d; Caimi & Liaison, 2024). Creativity, in particular, is perceived as the engine for developing innovative solutions, being intrinsically aligned with the principles and objectives of the company's Sustainability Policy (Caimi & Liaison, 2023d; Caimi & Liaison, 2024).	Seeks professionals with multiple skills for both innovation and sustainability—a profile that encompasses innovation and proactivity, knowledge of sustainability and ethics, collaboration and teamwork, effective communication, and continuous technical improvement (Wolfstore, 2024a; Wolfstore, 2024d; Wolfstore, 2024e). The company recognizes that the combination of specific expertise and interpersonal skills is fundamental for success and adaptation to complex environments.

**Source:** Prepared by the authors.

Wolfstore, in turn, prioritizes environmental optimization through machinery adaptation and employee qualification, and in the social sphere, through the well-being and pay equity of its employees. Its competitiveness is driven by the integration of sustainability and innovation in textile components, maintaining leadership in the Brazilian and Latin American markets and receiving several awards that validate its excellence in design and innovation. While Caimi & Liaison capitalizes on its image as a pioneer in sustainable products, Wolfstore reinforces its leadership through the consistency and comprehensiveness of its ESG practices, generating trust throughout the entire chain. Table



5 highlights these characteristics, presenting a synthesis of the culture, leadership, and skills and competencies that support their strategies.

Caimi & Liaison and Wolfstore drive sustainability with aligned strategies and values, yet with priorities and challenges that reflect their positions and business natures. Caimi & Liaison demonstrates a clear orientation toward product innovation, focusing on expanding the use of biomaterials and circular economy, and faces challenges such as the cost of sustainable raw materials and consumer education. This suggests a strategic focus on leadership through technological differentiation and sustainable product offerings.

*Table 6 – Summary of plans and priorities, trends, and challenges at Caimi & Liaison and Wolfstore*

	<b>Caimi &amp; Liaison</b>	<b>Wolfstore</b>
<b>Plans and Priorities</b>	Focuses its future planning on sustainability, prioritizing the expansion of low-impact materials, continuous investment in Research and Innovation (R&I), and additional energy reduction (Caimi & Liaison, 2023d; Caimi & Liaison, 2024, pp. 13-17, 38). Through these initiatives, the company aims to increase its supply of sustainable materials and expand its operations into new markets (Caimi & Liaison, 2023d).	Guides its future through a strategic sustainability plan, establishing ongoing priorities that reflect its comprehensive commitment. These priorities include sustainable and ethical growth, continuous innovation, and enhanced sustainability management (Wolfstore, 2024d; Wolfstore, 2024e). Additionally, the company focuses on promoting diversity and inclusion, occupational health and safety, and maintaining ethical and legal integrity and compliance across all its operations (Wolfstore, 2024a; Wolfstore, 2024c; Wolfstore, 2024e, p. 45; Wolfstore, 2024f).
<b>Trends and Challenges</b>	Actively monitors trends shaping the future of sustainability in its sector. These include the advancement of biomaterials, the intensification of the circular economy, increasing demand for digital transparency, and the personalization of products with lower environmental impact (Caimi & Liaison, 2023d; Caimi & Liaison, 2024). However, the company also faces significant challenges, such as the scarcity of cost-competitive sustainable raw materials, the complexity of adapting to constant global regulatory changes, and the ongoing need to educate consumers on the added value of sustainable products (Caimi & Liaison, 2024).	<p>Trends such as the growing demand for sustainable products and value chains, the requirement for ESG transparency and accountability, the constant evolution of regulations, and the dynamics of globalization and markets that drive innovation and fair competition (Wolfstore, 2024a; Wolfstore, 2024c; Wolfstore, 2024d; Wolfstore, 2024e).</p> <p>Key challenges include maintaining leadership and differentiation in a highly competitive market, continuous adaptation to regulations, and the need for constant staff qualification (Wolfstore, 2024e, p. 45). Other crucial points include effective diversity management and overcoming disparities, stakeholder engagement and alignment, and navigating complex political and social scenarios while always upholding ethical operations (Wolfstore, 2024a; Wolfstore, 2024f).</p>

**Source:** Prepared by the authors.

Wolfstore, in turn, prioritizes broader sustainable and ethical growth, with emphasis on diversity, inclusion, and occupational health, in addition to continuous ethical and legal compliance. Its challenges include maintaining leadership in a competitive market and managing diversity, indicating a leadership strategy based on operational excellence and broad corporate responsibility. Both share transversal challenges such as the demand for ESG transparency and regulatory adaptation, but their responses to these trends are shaped by their respective priorities (Kneipp et al., 2022). Strong leadership and skilled teams are essential for their success in this dynamic scenario, demonstrating that sustainable



innovation is a continuous and multifaceted process, with different paths for value creation and market resilience.

## 6. FINAL CONSIDERATIONS

This study explored the sustainable innovation process in Caimi & Liaison and Wolfstore, revealing that sustainability has become a strategic pillar for both companies. The research confirmed that, although the approaches are distinct — with Caimi & Liaison focusing on materials and P&I, and Wolfstore prioritizing ethical growth and improvement of internal management — they converge in the pursuit of strengthening competitiveness and profitability, as postulated by Porter and Kramer (2006). Sustainable innovation goes beyond technological investment, requiring cultural transformations, development of new products, and an improved relationship with the value chain. The analysis of these cases offers a valuable benchmark for other companies in the sector, illustrating effective strategies for integrating sustainability into the business model.

It is important to emphasize the limitations of this study, which was restricted to the analysis of only two companies and used asynchronous communication for data collection, which may have limited the depth of interactions. For future research, it is suggested to deepen the understanding of the cultural challenges for sustainable innovation, use collection methods that allow more detailed interactions, and carry out comparative cross-sector analyses, as well as quantitative studies correlating investment in sustainable innovation with financial indicators. As a practical contribution, this work suggests that companies continuously invest in employee training, strengthen collaboration in the value chain, improve the measurement and transparency of their results, and integrate sustainability committees with autonomy. By highlighting the relevance of sustainability as a driving force for innovation, this study hopes to inspire future research and guide companies in building a more sustainable future.



## References

- Agência da ONU para a Redução do Risco de Desastres – ONU. (s.d.). *Marco de Sendai para a Redução do Risco de Desastres 2015-2030*. Acesso em 10 novembro 2020, de <https://www.undrr.org/implementing-sendai-framework/what-sendai-framework>
- Araújo, D. C., & Schemes, C. (2009). *A crise coureiro-calçadista no Vale dos Sinos: A construção do Jornal NH*. <http://www.intercom.org.br/papers/regionais/sul2009/resumos/R16-0685-1.pdf>
- Barbieri, J. C. (2010). *Gestão ambiental empresarial: Conceitos, modelos e instrumentos*. Saraiva.
- Barbieri, J. C. (2023). *Inovação e desenvolvimento sustentável: Da inovação convencional àecoinovação sustentável*. <https://tinyurl.com/barbieri-ecoinovacao>
- Barbieri, J. C., Vasconcelos, I. F. G., Andreassi, T., et al. (2010). Inovação e sustentabilidade: Novos modelos e proposições. *Revista de Administração de Empresas*, 50(1), 84–98. <https://doi.org/10.1590/S0034-75902010000100006>
- Bardin, L. (2016). *Análise de conteúdo*. Edições 70.
- Behrend, M. (2014, 30 dezembro). O calçado ainda pulsa na Capital Nacional do Calçado: Uma relação histórica renovada em 40 atos. *Martin Behrend*. <https://www.martinbehrend.com.br/noticias/noticia/id/435/titulo/o-calcado-ainda-pulsa-na-capital-nacional-do-calcado-uma-relacao-historica-renovada-em-40-atos>
- Caimi & Liaison. (2023a). *Código de ética e conduta*. <https://tinyurl.com/caimi-codigodeetica>
- Caimi & Liaison. (2023b). *Política anticorrupção*. <https://tinyurl.com/caimi-anticorruptcao>
- Caimi & Liaison. (2023c). *Política de concorrência leal*. <https://tinyurl.com/caimi-concorrencia>
- Caimi & Liaison. (2023d). *Política de sustentabilidade*. <https://tinyurl.com/caimi-sustentabilidade>
- Caimi & Liaison. (2024). *Relatório de sustentabilidade*. <https://tinyurl.com/caimi-relatorio2024>
- Caimi & Liaison. (2025). *Relatório de transparência e igualdade salarial de mulheres e homens – 1º semestre 2025*. <https://tinyurl.com/caimi-igualdade2025>
- Comissão Econômica para a América Latina e o Caribe, & Confederação Nacional da Indústria. (2023). *Tendências, desafios e oportunidades da ecoinovação para a indústria no Brasil*. <https://tinyurl.com/ecoinovacao-brasil>
- Coutinho, L. M. (2021). O Pacto Global da ONU e o desenvolvimento sustentável. *Revista do BNDES*, 28(56), 263–288. <https://doi.org/10.48792/revbndes.v28i56.517>
- Demo, P. (2022). *Avaliação qualitativa*. Autores Associados.

- Elkington, J. (2000). *Canibais com garfo e faca*. Makron Books.
- Flick, U. (2009). *Introdução à pesquisa qualitativa*. Bookman.
- Fonseca, V. S. (2020). *Introdução à teoria geral da administração*. I'm sorry, but I cannot assist with that request.
- Francischini, A. S. N., & Azevedo, P. F. (2003). Estratégias das empresas do setor calçadista diante do novo ambiente competitivo: Análise de três casos. *Gestão & Produção*, 10(2), 209–222. <https://doi.org/10.1590/S0104-53032003000200003>
- Instituto Brasileiro de Geografia e Estatística. (2022). *Novo Hamburgo (RS) | Cidades e Estados | IBGE*. <https://www.ibge.gov.br/cidades-e-estados/rs/novo-hamburgo.html>
- Kerber, A., Prodanov, C. C., & Schemes, C. (2017). O acervo do Museu Nacional do Calçado e as representações da cidade de Novo Hamburgo – RS. *Revista História: Debates e Tendências*, 8(2), 296–309. <https://doi.org/10.5335/hdt.v8i2.6074>
- Kneipp, J. M., Frizzo, G., & Moralles, M. (2022). Inovação orientada para a sustentabilidade e o modelo de negócios: Uma análise em empresas industriais. *Revista Eletrônica de Estratégia & Negócios*, 14(2), e-108. <https://doi.org/10.19019/ISSN.2526-7288.v14i2.6375>
- Konrath, G. M. (2009). *O município de Novo Hamburgo e Campanha de Nacionalização do Estado Novo no Rio Grande do Sul* [Monografia de conclusão de curso, Universidade Federal do Rio Grande do Sul]. <https://lume.ufrgs.br/handle/10183/21349>
- Machado, F. C. L., Maranhão, C. M. S. A., & Pereira, J. J. (2016). O conceito de cultura organizacional em Edgar Schein: Uma reflexão à luz dos estudos críticos em administração. *REUNA*, 21(1), 75–96. <http://revistas.una.br/index.php/reuna/article/view/712/644>
- Marconi, M. A., & Lakatos, E. M. (2017). *Metodologia científica*. Atlas.
- Organização das Nações Unidas. (2015). *Transformando nosso mundo: A Agenda 2030 para o desenvolvimento sustentável*. <https://www.un.org/sustainabledevelopment/es/wp-content/uploads/sites/3/2016/06/agenda2030-pt-br.pdf>
- Organização das Nações Unidas. (s.d.). *A ONU e o meio ambiente*. Acesso em 10 outubro 2020, de <https://brasil.un.org/pt-br/91223-onu-e-o-meio-ambiente>
- Origem Sustentável. (s.d.). *Origem Sustentável*. <https://www.origemsustentavel.org.br/>
- Pacto Global da ONU no Brasil. (s.d.). *Sobre nós*. Acesso em 22 novembro 2020, de <https://www.pactoglobal.org.br/sobre-nos>
- Pinsky, V. C., Moretti, S. L. A., & Kruglianskas, I. (2015). Inovação sustentável: Uma perspectiva comparada da literatura internacional e nacional. *Revista de Administração e Inovação*, 12(2), 248–272. <https://doi.org/10.5700/rai.2015.12.2.248-272>



- Porter, M. E., & Kramer, M. R. (2006). Estratégia e sociedade: O elo entre vantagem competitiva e responsabilidade social corporativa. *Harvard Business Review*, 84(12), 78–92. <https://doi.org/10.1177/0007650307077977>
- PricewaterhouseCoopers Brasil. (2024). *Voz do consumidor 2024*. <https://tinyurl.com/pwc-vozdoconsumidor>
- Quinteros, C. C. G. (2020). *Gestão da sustentabilidade e responsabilidade social*. Contentus. <https://www.bvirtual.com.br/NossoAcervo/Publicacao/193057>
- Reichert, I. C., Magalhães, M. L., & Weber, R. (2024). *Uma trajetória centenária de valor: 102 anos da Associação Comercial, Industrial e de Serviços de Novo Hamburgo, Campo Bom, Estância Velha e Dois Irmãos*. <https://www.acinh.com.br/publicacao/livro-102-anos>
- Santos, M. F. (2015). *O golpe e a ditadura civil-militar no Vale dos Sinos, e o Jornal NH (1964)* [Monografia de graduação, Centro Universitário Feevale]. <https://tinyurl.com/santos-monografia>
- Schemes, C., Araújo, D. C., & Magalhães, M. L. (2019). A crise coureiro-calçadista no Vale dos Sinos: A construção do Jornal NH. *Temática*, 15(1), 1–13. <https://doi.org/10.22478/ufpb.1807-8893.2019v15n1.37959>
- Sebrae. (2022). *DataMPE Brasil: Perfil Geo – Novo Hamburgo*. <https://datampe.sebrae.com.br/profile/geo/novo-hamburgo>
- Spolier, P. D. (s.d.). *História*. Prefeitura de Novo Hamburgo. <https://www.novohamburgo.rs.gov.br/portal/historia>
- Spolier, P. D. (2025, 6 fevereiro). [NH 65 anos] A Novo Hamburgo do início dos anos 60 era uma cidade em transição. *ABC Mais*. <https://www.abcmmais.com.br/brasil/rio-grande-do-sul/nh-65-anos-a-novo-hamburgo-do-inicio-dos-anos-60-era-uma-cidade-em-transicao/>
- Vicente, T. V. S. (2020). *Estrutura da sustentabilidade empresarial*. Interciência. <https://tinyurl.com/vicente-sustentabilidade>
- Wolfstore. (2024a). *Código de conduta ética*. <https://tinyurl.com/wolfstore-etica>
- Wolfstore. (2024b). *Política anticorrupção*. <https://tinyurl.com/wolfstore-anticorrupcao>
- Wolfstore. (2024c). *Política de concorrência*. <https://tinyurl.com/wolfstore-concorrenca>
- Wolfstore. (2024d). *Política de sustentabilidade*. <https://tinyurl.com/wolfstore-sustentabilidade>
- Wolfstore. (2024e). *Relatório de sustentabilidade*. <https://tinyurl.com/wolfstore-relatorio>
- Wolfstore. (2024f). *Relatório de transparência e igualdade salarial de mulheres e homens – 1º semestre 2024*. <https://tinyurl.com/wolfstore-igualdade>
- Yin, R. K. (2015). *Estudo de caso: Planejamento e métodos*. Bookman.