Technology and sustainable development: analysis of the perception of residents in Florianópolis through Structural Equation Modeling (PLS-SEM)

Patrick Wendell Barbosa Lessa
patrickwbarbosa@gmail.com
Universidade Federal de Santa Catarina.
Florianópolis. Santa Catarina. Brasil.

Rudimar Antunes da Rocha
rudimar.antunes@ufsc.br
Universidade Federal de Santa Catarina.
Florianópolis. Santa Catarina. Brasil.

Marco Antonio de Moraes Ocke
marco.ocke@ufsc.br
Universidade Federal de Santa Catarina.
Florianópolis. Santa Catarina. Brasil.

ABSTRACT

The aim of this research is to identify the technological attributes of Florianópolis (Santa Catarina, Brazil) that have a significant impact on the city's sustainable development in the technological context. Structural equation modeling was conducted based on partial least squares structural equation modeling (PLS-SEM), using a questionnaire as the research instrument. With 200 valid responses, it was observed that the hypothesis related to the positive influence of Technological and Business Innovation (TBI) on Noteworthy Sustainable Development (NSD) was confirmed, emphasizing the strategic importance of promoting significant businesses in the city. Similarly, the hypothesis suggesting a positive relationship between Education and Social Impact (ESI) and NSD was also confirmed, reinforcing the relevance of education in promoting sustainable development. However, hypotheses related to Collaborative Technological Community (CTC) and Connections and Events (CE) did not receive statistically significant support, indicating the need for a more in-depth analysis of these aspects.

KEYWORDS: Place Branding; Technology; Sustainable Development; PLS-SEM

1 INTRODUCTION

Effectively managing a brand represents a constant battle for all companies. Establishing a brand identity that harmonizes with the vision of stakeholders is recognized as one of the imperatives for brand managers (Cruz-Ruiz et al., 2022; Farzin et al., 2022; M. A. de M. Ocke & Platt, 2022). However, this challenge acquires additional complexity when dealing with place branding, in which stakeholders, especially local residents, hold rights that transcend the importance attributed to corporate brands in relation to their customers (Anholt, 2010).

Although brand management is commonly linked to tourism (Cruz-Tarrillo et al., 2022; Donaldson et al., 2021; Jawahar & Muhammed M.K, 2022), this literature has developed and encompasses much more than the location as a tourist destination. Place branding can be defined as the creation of a web of connections in consumer perception, based on the visual, verbal, and behavioral representation of a location. (Zenker & Braun, 2010). This construction occurs through the integration of goals, communication, values and comprehensive culture of the place's stakeholders, as well as the environment's infrastructure (Chan, 2019; Grebosz-Krawczyk, 2021).

Brand identity and image are factors commonly studied in place branding literature (Braun et al., 2018; Kavaratzis & Hatch, 2013; Nogueira & Carvalho, 2022; Sadeque et al., 2020). This observation contributes to the understanding of the interaction between these two perspectives, highlighting the crucial importance of positioning strategies that effectively harmonize the initial conception with the current perception (Nogueira & Carvalho, 2022; Thelander & Cassinger, 2017; Tsai et al., 2022). Thus, the cohesive convergence between brand identity and image not only strengthens resonance with stakeholders, but also proves to be an essential element for successful place branding management (Wäckerlin et al., 2020).

While place branding is on the rise (Kavaratzis, 2005; Lessa & Ocke, 2023; Lucarelli & Berg, 2011; M. Ocke et al., 2023; Vuignier, 2017), It is essential to address essential gaps in the literature, seeking to promote continuous advancement in this scientific area. Notably, it is observed that the intersection between technology and place brand management is still at an early stage (Dubinsky, 2022; Lessa & Ocke, 2023; Nathan et al., 2019), further reinforcing the need to develop articles that explore and delve deeper into this topic.

Lessa e Ocke (2023) highlight the significant scarcity of scientific work that establishes a connection between brand management and technology. In turn, Khoi e Le (2022) emphasize the importance of generalizing research on place branding, pointing out the need to conduct more comprehensive studies capable of reaching a more diverse audience, distinct from qualitative approaches. Furthermore, it is important to note that few studies have been identified in which the application of more advanced statistical techniques has been used to develop models related to place branding(Khoi & Le, 2022; Lee et al., 2022; Vázquez-Martinez et al., 2019; Zhao et al., 2022; Zhou et al., 2023).

Given the need to fill these gaps, the objective of this research is to identify the technological attributes of Florianópolis (Santa Catarina, Brazil) that have a significant impact on the sustainable development of the city in the technological context. In addition to addressing these existing gaps, the study aims to contribute

Página | 197

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

to the advancement of research in a more quantitative and replicable approach. This focus will provide opportunities for other researchers to conduct comparisons between different locations, generating new insights that could significantly improve place brand management.

2 THEORETICAL REFERENCE

2.1 The importance of technology for the development of place branding

Place brand management is gaining increasing relevance in the panorama of urban, state and national development. Ocke e Platt (2022) observed a notable advance in place branding, evidenced by the significant increase in research production over the last two decades and the increase in investments in initiatives aimed at expanding the development of specific locations, aiming to attract both people and resources. Consequently, as place brand management consolidates itself as a fundamental piece in fostering development, it becomes imperative to consider the intersection between this growth and technological evolution (Kavaratzis & Hatch, 2013; Lessa & Ocke, 2023; Scarborough & Crabbe, 2021).

Technological advancement plays a crucial role in shaping perceptions about places, directly influencing the way people interact and engage with urban and regional environments (Blue, 2021). In this context, exploring the convergence between place brand management and technological innovations emerges as a pressing need to ensure sustainable development centered on the needs of the community (de Almeida & Cardoso, 2022; Mitropoulou & Spilanis, 2020; Sarabia-Sanchez & Cerda-Bertomeu, 2017).

The intersection between technology and place brand management is outlined by several authors, each contributing unique perspectives and conceptual evolutions. In a broader context of smart cities, Grebosz-Krawczyk (2021) presents a smart city brand management model, where technology is incorporated to improve the efficiency of the urban environment, invest in human and social capital, and promote participatory governance. This study contributes to the understanding of how technological solutions can be integrated into place branding strategies, highlighting identity, communication and stakeholder involvement as key elements.

In another context, Vrontis et al. (2021) focus on culinary tourism, identifying territorial characteristics that strengthen relationships and stakeholder perceptions. Highlighting online technology as a catalyst to transform destination managers and stakeholders into sources of word of mouth, the author highlights how technologically advanced communication can reinforce both the perception and image of a destination's brand.

Posteriorly, Zhanibek (2022) explores the impact of digital transformation on Kazakhstan's investment image using the case of the Astana International Financial Center (AIFC). Using Simon Anholt's competitive identity theory, the study highlights the effectiveness of using digital technologies in promoting the country's image, especially in the areas of investment and immigration. Here, technology emerges as a vital instrument in shaping and enhancing the reputation of a place on the global stage.

More recently, Zheng (2023) investigates how the quality brand of place influences the development of high-quality manufacturing. This study employs a moderated mediation model, revealing that technology plays a significant role in the relationship between branding and the development of high-quality manufacturing. Absorptive capacity and advanced standards emerge as crucial moderating factors, emphasizing the complexity of the relationship between place branding and practical outcomes in the manufacturing sphere. Thus, over time, these authors' progressive research provides a deeper understanding of how technology permeates place brand management, from promoting tourist destinations to enhancing investment image, the evolution of smart cities and the impact on manufacturing quality (Ocke & Platt, 2022). This chronological sequence reflects the growing complexity and importance of this intersection in the science of place branding.

2.2 Residents' perceptions of technological attributes and the sustainable development of Florianópolis

In this segment, the perspective of residents in relation to technological attributes and their influence on the sustainable development of Florianópolis is explored. In order to deepen this analysis, the factors examined in this research are subdivided, each of which is contextualized through literature reviews and findings from previous studies, thus supporting the formulation of the hypotheses.

2.2.1 Technological and Business Innovation (TBI)

The relationship between technological and business innovation is highlighted by Zheng (2023) and Tran (2022), providing a comprehensive understanding of the implications of these factors on high-quality manufacturing development and destination branding.

Zheng (2023) explores the influence of place quality mark, based on "advanced standards systems + quality certification standard", on the four dimensions of high-quality development of manufacturing. Advanced standards, aligned with international standards, mediate the relationship between the brand and development, moderated by the absorptive capacity of companies. The research connects this relationship with technological and business innovation, highlighting how advanced standards stimulate innovation and improve products and services.

On the other hand, Tran (2022) explores the interconnection between destination branding, social media, technological and business innovation. Social media and technological innovations offer opportunities for tourist destinations to differentiate themselves and connect with their audiences. Business innovations, such as new business models, facilitate the implementation of branding strategies on social media. Both authors highlight the importance of the interconnection between technological and business innovation and strengthening brands in the contemporary scenario.

In Florianópolis, technological and business innovation presents exponential growth (ACATE, 2021; Inácio, 2023a; Lóssio, 2008, 2017). This rise is evidenced by news (Inácio, 2023b), academic publications (Mascarenhas, 2022) e government documents (Prefeitura Municipal de Florianópolis, 2023). These sources contribute

Página | 199

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

to the construction of an image that instigates reflection on whether Florianópolis is effectively consolidating itself as a technological hub.

Consequently, the need to become a technological city also triggers discussions, especially in the context of sustainability (Deniz, 2023). Urban managers recognize the importance of making residents aware of the positions adopted, aiming not only at the city's growth, but also at the sustainability of this development (Goi, 2017; Kudva & Ye, 2017; Suartika & Cuthbert, 2020). Given this context and the reviewed literature, the first hypothesis of this research is formulated:

H1: Perceived Technological and Business Innovation positively impacts Notorious Sustainable Development.

2.2.2 Education and Social Impact (TSI)

The traditional approach to local branding largely focuses on attracting foreign tourists, businesses and talent, often neglecting the needs and perspectives of local residents (Ebrahimi et al., 2020). However, research highlights the importance of evaluating the impact of local branding on residents and their well-being (Dragićević et al., 2015; Kavaratzis, 2012; Taecharungroj et al., 2019; Uchinaka et al., 2019). The emerging concept of "local citizenship behavior" offers insights into how and why residents engage in discretionary behaviors to promote brand effectiveness (Lemarié & Domann, 2019; Taecharungroj et al., 2019; Uchinaka et al., 2019). This behavior encompasses positive word-of-mouth actions, assistance, support, tolerance and protection (Hudak, 2019; Uchinaka et al., 2019; Zhao et al., 2022). Residents' psychological attachment to the place exerts a positive influence on local citizenship behavior and can be enhanced through the adoption of a public value-centered approach by local branding. This change in focus aims to create value for residents, strengthen social relationships and, therefore, improve the location's global brand.

Sustainable development is a goal that can be achieved through a public value-centered approach (Uche et al., 2023). This approach consists of adopting measures that benefit society and the environment, in addition to strengthening the image of the local brand (Setiawan et al., 2021; Taberner & Juncà, 2021). Thus, the local brand can contribute to building a resilient and ecologically conscious community, incorporating sustainable practices, encouraging local environmental preservation initiatives and promoting social equity (Lucarelli, 2019; Ord & Behr, 2023; S. L. Smith & Darlington, 2010). With this strategy, the local brand can align with the principles of sustainable development and thereby attract more engaged residents, promote the long-term prosperity of the community, and cement the location's reputation as an outstanding example of sustainable development (Fakhouri Baia & De Souza Machado, 2021).

Given this context, although specific research on the direct relationship between education, social impact and sustainable development is limited, the intrinsic relevance of these elements cannot be underestimated. In this sense, the second hypothesis emerges:

H2: Education and perceived Social Impact positively impact Notorious Sustainable Development.

Página | 200

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

2.2.3 Collaborative Technology Community (CTC)

Contemporary times witness the evolution of tourism and place management, with a focus on authenticity, technology and quality. Vrontis (2020) highlights the importance of authenticity in tourism, exemplified by the Vascitour case study in Naples. At the same time, Grebosz-Krawczyk (2023) proposes a Smart City Brand Management model, emphasizing resident participation. Furthermore, Zheng (2023) examines the quality mark of place and its impact on sustainable manufacturing development. The cohesion between these elements supports the hypothesis that the perceived Collaborative Technological Community positively impacts Notorious Sustainable Development.

Driving technological advances requires close collaboration between diverse entities, including companies, research institutes and other organizations (Schroth & Häußermann, 2018). Technological ecosystems, which encompass a diversity of software components and services, emerge as fundamental platforms for business collaboration, providing the sharing of semantically defined data flows (García-Peñalvo, 2018). In the scenario of Brazilian federal universities, the presence of Technological Innovation Centers, technology-based company incubators and Technology Parks plays a crucial role in promoting environments conducive to innovation and regional development (Pereira et al., 2019). Digital business ecosystems emerge as facilitators of collaboration between small and medium-sized enterprises (SMEs), integrating their services and offering a platform for direct interaction with consumers (Khalil et al., 2011). Additionally, renowned software ecosystems such as Google, Android and Apache foster collaboration between diverse actors on a shared technology platform (Manikas & Hansen, 2013). The interconnection provided by these ecosystems allows companies to act together, taking advantage of collective knowledge and resources to drive innovation and development in the technological area. This scenario is crucial to understanding the contemporary dynamics of collaboration and innovation in business and technology.

Thus, the convergence of these perspectives highlights the relevance of the Collaborative Technological Community perceived in the context of Notorious Sustainable Development. By integrating authenticity, smart city brand management and place quality branding, the proposed hypothesis gains support. The interaction between companies, residents and technology emerges as an essential facilitator for sustainable development, consolidating the third hypothesis:

H3: The perceived Collaborative Technological Community positively impacts the Notorious Sustainable Development.

2.2.4 Connections and Events (CE)

Events play a prominent role in the development of cities, being essential catalysts to drive transformations and attract both national and international attention. Major events like the Olympic Games not only provide global visibility but also offer unparalleled opportunities for urban growth (Bodet & Lacassagne, 2012; M. A. de M. Ocke & Platt, 2022). A city's readiness, encompassing elements such as geography, history, culture and facilities, emerges as a crucial factor in determining its potential to host such events (Klinmalai & Kaewlai, 2023).

Página | 201

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

However, it is imperative to recognize that festivals and events can have varying impacts on urban spaces, influencing both the inclusion and use of public spaces (Smith et al., 2022). In this context, urban cultural management becomes crucial to activate positive dimensions of urban development in cities that stand out for their occasional activities (Chokur & Al-Khafaji, 2022). Mega-events, in turn, have a notable global appeal, contributing to significant changes in land use, political and socioeconomic changes, as well as the creation and marketing of places through brands, which in turn stimulates growth regional (Evans, 2019).

In short, events not only shape the identity and presence of cities on the global stage, but also serve as drivers of urban development, leaving a lasting impact on cultural, social and economic aspects. (Cabras et al., 2020; Finkel & Platt, 2020; Mair & Weber, 2019; K. D. Scherf, 2021). However, to ensure that these impacts are positive and lasting, it is essential to consider residents' perceptions, actively integrating them in the planning and execution of events, ensuring an inclusive approach that promotes well-being and social cohesion.

H4: Perceived Connections and Events positively impact Notorious Sustainable Development.

Based on the four hypotheses elaborated, the structural model is now outlined, which comprises the observed variables, the latent construct and their corresponding hypothetical relationships (Ringle et al., 2014).

Figure 1. Structural Model.
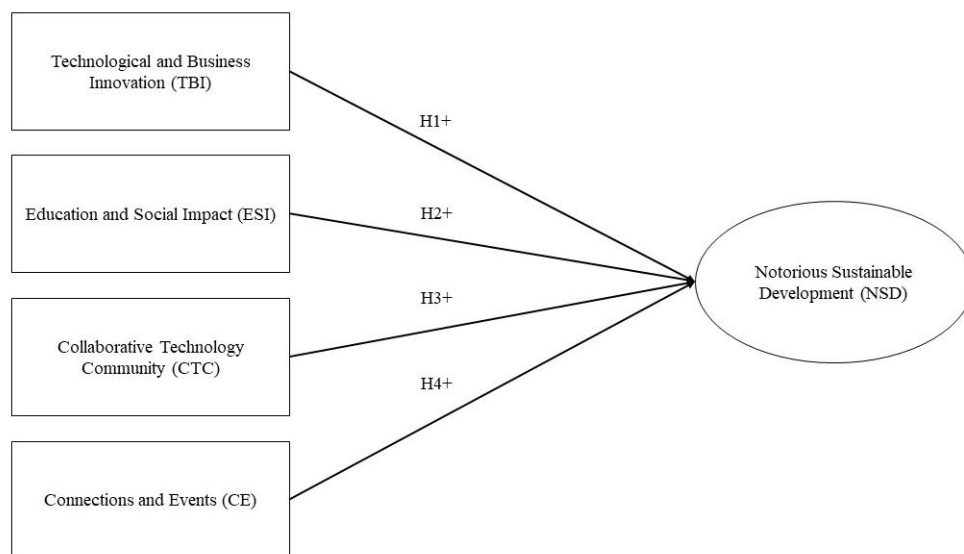
Source: prepared by the authors, 2023.

3 METHODOLOGICAL PROCEDURE

In order to identify the technological attributes of Florianópolis that have a significant impact on the sustainable development of the city, this study was based on predominantly quantitative methodological approaches. From this perspective, research was conducted through a survey, using a questionnaire prepared based on a literature review and existing potential convergences, in order to explore the perceptions of Florianópolis residents in relation to the previously mentioned factors.

With regard to the research instrument, 20 variables were chosen, aligned with the existing theoretical basis and analyzed for each factor in question. In this way, four items were assigned to each construct, complemented by seven sociodemographic questions. Details of each item selected to measure resident perception are found in Appendix A (original version) and Appendix B (translated version).

The questionnaire was applied using the non-probability and convenience sampling technique between November and December 2023 (cross-sectional), totaling 217 responses. However, 16 participants did not meet the criteria of living in Florianópolis, and one individual was under 18 years old. These criteria were established to ensure adherence to the scope of the research, avoiding deviations from the general objective and ensuring a territorial coverage consistent with the purposes of the study. Therefore, 17 responses were removed, resulting in a sample of 200 respondents.

Regarding testing and analysis of the model, the plspm library was used (Humble & Forsgren, 2020) using the Python programming language (v3.10.12). Additionally, the procedures outlined by Ringle, Silva e Bido (2014), which provide a clear and cohesive method for research that makes use of structural equation modeling, based on partial least squares fit estimation models. Therefore, the following steps were followed: (i) evaluation of the measurement model (procedures: Variance of the Extracted Mean (VME), Convergent and Discriminant Validity and Cronbach's Alpha); (ii) evaluation of the structural model (procedures: Student's t test, Pearson's coefficients of determination (R^2), path coefficient, commonality of constructs and average redundancy). After completing these procedures, it was expected that the model would meet the necessary statistical validations, providing more reliable results for the context in which it is being applied.

3.2 Characteristics of Respondents

When analyzing the characteristics of the respondents (Table 1), a significant diversity in demographic and socioeconomic variables is observed. The median age of participants is 29 years old, reflecting a centralized age distribution. Notably, the age fad is 20 years. Regarding gender, the majority of participants identify as men (54%), followed by women (45.50%) and a small proportion as non-binary (0.50%).

With regard to marital status, the majority of respondents are single (68.50%), followed by married (29.50%) and a smaller percentage of divorced (2%). In relation to monthly income, there is a varied distribution, with most participants earning between 3 and 5 minimum wages (34.50%), followed by 1 to 2 minimum

wages (27.50%). In terms of education, the majority of respondents have a postgraduate degree (47%), followed by undergraduate (37%) and secondary education (16%).

Table 1. Characteristics of Respondents.

Variable	Characteristic	Value
Age	Median Age	29
	Mode Age	20
Gender	Man	54%
	Woman	45,50%
	Non-Binary	0,50%
Marital status	Married	29,50%
	Divorced	2,00%
	Single	68,50%
Income	Less than 1 mw	8,50%
	1 to 2 mw	27,50%
	3 to 5 mw	34,50%
	6 to 10 mw	21,50%
	More than 10 mw	8,00%
Education	High school	16,00%
	Undergraduate degree	37,00%
	Postgraduate	47,00%
Do you work with Technology?	Yes	50%
	No	50%
Respondents	200	

Source: prepared by the authors, 2023.

Note: mw means minimum wage.

When asked about their involvement in technology, an even split is evident, with half of the participants claiming to work in technology and the other half stating they are not involved in this field. This balance suggests a representative sample of individuals with different profiles and experiences. In short, the data highlights the diversity in the demographic, socioeconomic and professional aspects of the respondents, providing a rich basis for further analysis on the intersection between technology, demographic profile and attitudes towards specific issues.

4 RESULTS

As mentioned previously, the evaluation sequence to verify the robustness of the model is presented in Table 2, where Cronbach's Alpha (α), the Extracted Mean Variance (EMV) and discriminant validity are simultaneously considered (Fornell & Larcker, 1981). Observing the EMV (Table 3), it is noted that all factors exhibit values greater than 0.5, indicating a good amount of shared variance between the items that make up each construct. Regarding discriminant validity, which requires that the square roots of the EMVs are greater than the correlations between the

constructs (Fornell & Larcker, 1981; Ringle et al., 2014), the presence of satisfactory values is also noted, demonstrating the appropriate distinction between the constructs in the model. These results provide a solid basis for continued evaluation, suggesting that the model has an adequate and reliable measurement structure.

Table 2. Cronbach's alpha, square root of EMV and convergent and discriminant validity.

Constructos	α	CE	CTC	NSD	ESI	TBI
CE	0,76	**0,76**				
CTC	0,70	-0,02	**0,71**			
NSD	0,89	-0,18	-0,39	**0,86**		
ESI	0,71	-0,20	-0,07	0,31	**0,73**	
TBI	0,81	0,34	-0,17	-0,01	-0,32	**0,78**

Source: prepared by the authors, 2023.

Note: α = Cronbach's alpha; the square roots of the EMVs are in bold, diagonally.

Hair et al. (2009) establish the range of 0.60 to 0.70 as the acceptable lower limit for the Cronbach's Alpha coefficient. It is observed that all constructs in this study meet this criterion, indicating satisfactory internal consistency in the responses. Additionally, it is noticeable that the correlations between the constructs are lower than the square roots of the corresponding EMVs, thus fulfilling the discriminant validity criteria. Additionally, the Extracted Mean Variances (EMVs) present values greater than 0.50 (Table 3), demonstrating a good amount of shared variance between the items of each construct and satisfying the convergent validity criteria proposed by Fornell e Larcker (1981). Consequently, the evaluation of the measurement model was concluded with positive results, strengthening the robustness of the research.

Table 3. Latent Variable Performance Metrics.

Code	Variable Type	R^2	Adjusted R^2	Commonality	Average Redundancy	EMV
CE	Exogenous	-	-	0,58	-	0,58
CTC	Exogenous	-	-	0,51	-	0,51
NSD	**Endogenous**	**0,57**	**0,56**	**0,75**	**0,43**	**0,75**
ESI	Exogenous	-	-	0,53	-	0,53
TBI	Exogenous	-	-	0,62	-	0,62

Source: prepared by the authors, 2023.

As part of the evaluation of the structural model, it is possible to observe satisfactory results. As evidenced in Table 3, Pearson's coefficient of determination (R^2) exceeds 26%, indicating a substantial impact of the endogenous variable Notorious Sustainable Development (NSD), with a specific value of 57%. This expressive percentage denotes a considerable effect, as pointed out by Ringle et al. (2014). Furthermore, the relevance of the communalities of the variables stands out, which exceed 0.50. This result suggests a sufficient explanation of the items in relation to the latent variable, showing that the variance of the latent variable is being adequately captured by the associated observed variables, as outlined by Hair et al. (2009). This analysis reinforces the consistency and robustness of the

model, demonstrating the ability of the observed variables to explain the underlying variance of the latent variable in question.

Regarding Table 4, it is possible to visualize the results of the path analyzes between the exogenous variables (TBI, ESI, CTC and CE) and the endogenous variable NSD. The variables TBI (H1) and ESI (H2) exhibit statistically significant and positive relationships with NSD, indicating that increases in these variables are associated with increases in the endogenous variable (TBI: coefficient = 0.448528, p > |t| = 9.905060e -11; ESI: coefficient = 0.330946, p > |t| = 2.086194e-07). In contrast, the relationship between CTC and NSD (H3), although it presents a positive coefficient (0.104241), does not reach statistical significance (p > |t| = 0.129014). Likewise, the influence of the exogenous variable CE on NSD turns out to be non-significant (coefficient = -0.003847, p > |t| = 0.954540), resulting in the rejection of the associated hypothesis (H4). These results suggest that, in the context of the analyzed model, TBI and ESI play more pronounced roles in explaining variability in NSD, while CE and CTC do not show statistically significant effects.

Table 4. Results of Hypothesis Tests for Path Coefficients.

Path	Coefficient	Standard Error	t	p>|t|	Hypothesis
TBI -> NSD	0,448528	0,065565	6,840951	$9,905060e^{-11}$	H1 Confirmed
ESI -> NSD	0,330946	0,061475	5,38345	$2,086194e^{-07}$	H2 Confirmed
CTC -> NSD	0,104241	0,068379	1,52446	$1,290141e^{-01}$	H3 Rejected
CE -> NSD	-0,003847	0,067391	-0,057080	$9,545400e^{-01}$	H4 Rejected

Source: prepared by the authors, 2023.

The analysis and evaluation of the model reveal significant validity in the constructs investigated, although it is important to note that two of the four hypotheses formulated were rejected. These results indicate that, while some proposed relationships were not statistically confirmed, others proved to be robust and statistically significant. The next section will address the interpretation of these findings in more detail and perform a critical comparison with the existing literature on place brand management in the technological context and its intersection with sustainable development. This more in-depth analysis allows for a more comprehensive understanding of the dynamics and complexities underlying the model, contributing to a more accurate and informed contextualization of the results obtained.

5 DISCUSSÕES

Analysis of the results reveals valuable insights into the interconnection between various factors and the perception of Notorious Sustainable Development (NSD) in Florianópolis. The relationship between Technological and Business Innovation (TBI) and NSD reveals a statistically significant and positive correlation. This indicates that, in the perception of residents, the presence of Technological and Business Innovation in the city is positively associated with notable sustainable development. Innovations are perceived as catalysts for development, attracting attention, investment and opportunities (Finkel & Platt, 2020; Klinmalai & Kaewlai, 2023; Laurell & Björner, 2018; Mair & Weber, 2019; A. Smith et al., 2022; Taberner & Juncà, 2021). This finding highlights the strategic

Página | 206

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

importance of promoting significant companies and establishing entrepreneurship in the city as drivers of sustainable development.

Regarding the relationship between Education and Social Impact (ESI) and NSD, the presence of a statistically significant and positive correlation highlights the relevance of the education in promoting sustainable development. When residents perceive that education in the city contributes positively to social impact, this is positively reflected in their perception of sustainable development (Andersson & Ekman, 2009; Uchinaka et al., 2019). This highlights the need for educational strategies that not only transmit knowledge, but also promote social values and sustainable practices, consolidating education as an essential pillar for sustainable development(Ocke & Platt, 2022).

In the context of the Collaborative Technology Community (CTC), the absence of a statistically significant relationship with NSD in residents' perceptions suggests that collaboration in the technology community is not directly linked to overt sustainable development. Other factors, such as public policies, business practices and community engagement, may play more prominent roles in the perception of sustainability (Di Martino, 2021; Dubinsky, 2022; Hedling, 2020; Ocke & Platt, 2022). This finding instigates a more in-depth analysis of the elements that truly influence the community's sustainable vision.

When approaching the relationship between Connections and Events (CE) and NSD, a lack of statistical significance is observed, indicating that, in the local context, events and their connections do not exert a direct and marked influence on the city's notable sustainable development. This finding raises reflections on residents' understanding of the sustainable benefits generated by events, as well as the possible presence of other preponderant factors in shaping their perceptions of sustainable development (Deniz, 2023; Kapferer, 2008; Suartika & Cuthbert, 2020). The lack of clarity or knowledge about how technological events contribute to sustainability may be an explanatory factor, highlighting the importance of educational and informational initiatives to promote a more comprehensive understanding among residents (Zehrer & Grabmüller, 2012).

In summary, the results of this analysis offer a comprehensive view of the complex dynamics that permeate the relationship between different variables and the perception of sustainable development in Florianópolis. Such insights are crucial to guide public policies, educational strategies and community initiatives, aiming to support effective and notable sustainable development in the city.

6 CONCLUSIONS

The objective of this research was to identify the technological attributes of Florianópolis that have a significant impact on the sustainable development of the city in the technological context. Based on residents' perceptions and through a survey, it was possible to carry out structural equation modeling based on partial least squares adjustment estimation models, commonly known as PLS-SEM (Partial Least Squares Structural Equation Modeling).

With the hypothesis test, it was noticed that the latent variables Technological and Business Innovation (TBI) and Education and Social Impact (ESI) significantly impact Notorious Sustainable Development. In other words, these results provide a solid basis for asserting that the relationships between these variables are not

merely fortuitous, but rather have statistical implications that support the positive and measurable influence of Technological and Business Innovation, as well as Education and Social Impact, in achieving goals related to sustainable development.

In addition to the results obtained, the academic relevance of this research stands out, highlighting the gap in the literature on place brand management in the Brazilian context. The scarcity of studies addressing this topic in Brazil is highlighted by researchers such as Lucarelli e Berg (2011), Mariutti e Florek (2022), e Ocke e Platt (2022). Autoras como Mariutti e Florek (2022) emphasize the urgency of promoting more research aimed at developing place branding not only in Brazil, but also in countries that do not belong to the regions of North America, Europe and Asia, as there is a lack of studies in locations outside these continents. Additionally, it is crucial to highlight that this study represents only an initial stage in exploring possible causal relationships between factors that influence variables such as sustainable development. This work signals the need for more in-depth investigations, seeking to instigate new perspectives and relationships that may be more substantial, thus contributing to the expansion of knowledge in this area and corroborating the results presented here.

Analysis of the results reveals crucial managerial implications for promoting Notorious Sustainable Development (NSD) in Florianópolis. The strong positive correlation between Technological and Business Innovation (TBI) and NSD highlights the need to actively encourage and support innovative and entrepreneurial initiatives in the city. This suggests that policies and programs that encourage innovation can be strategic tools to boost sustainable development, attracting investments and opportunities.

In the educational sphere, the significant correlation between Education and Social Impact (ESI) and NSD points to the importance of educational strategies that go beyond the academic aspect, integrating social values and sustainable practices. Educational managers can explore approaches that promote more holistic education, thus contributing to residents' positive perception of sustainable development.

The Collaborative Technology Community's (CTC) lack of significant relationship with NSD indicates that while technology collaboration is valuable, other initiatives may have a more direct impact on perceived sustainability. Public managers and community leaders must consider more comprehensive strategies that integrate collaborative actions with public policies and business practices.

With regard to Connections and Events (CE), the lack of statistical significance highlights the need to more effectively manage residents' perception of the sustainable benefits generated by events. Educational and informational marketing initiatives can be implemented to clarify the role of technology events in sustainable development, promoting clearer and more positive understanding among the community.

In summary, managers have the opportunity to use these results to shape strategies that actively promote innovation, integrate sustainable values in education, align technological collaboration with other impactful practices and clarify the contribution of events to sustainable development, consolidating Florianópolis as a notable example in this regard.

This study presents some limitations that must be considered when interpreting its results. Firstly, non-probabilistic convenience sampling can introduce selection bias, compromising the generalization of findings. Furthermore, the quantitative approach adopted may not capture important qualitative nuances in residents' perceptions. Further research is suggested to address these limitations, such as the inclusion of qualitative methods to deepen the understanding of the reasons underlying participants' responses. It is also recommended to expand the sample to include different segments of the population and consider additional variables, in addition to technological ones, for a more comprehensive analysis of sustainable development. Longitudinal studies could provide insights into changes over time, while geographic comparisons would allow comparative analysis between different locations. These suggestions aim to improve the validity and applicability of the results, contributing to a more complete understanding of the role of technological attributes in the context of sustainable development in Florianópolis.

Página | 209

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Tecnologia e desenvolvimento sustentável: análise da percepção dos moradores de Florianópolis por meio da Modelagem de Equações Estruturais (PLS-SEM)

RESUMO

O objetivo desta pesquisa é identificar os atributos tecnológicos de Florianópolis (Santa Catarina, Brasil) que têm impacto significativo no desenvolvimento sustentável da cidade no contexto tecnológico. A modelagem de equações estruturais foi conduzida com base em mínimos quadrados parciais (PLS-SEM), utilizando um questionário como instrumento de pesquisa. Com 200 respostas válidas, observou-se que a hipótese relacionada à influência positiva da Inovação Tecnológica e Empresarial (ITE) no Desenvolvimento Sustentável Notável (DSN) foi confirmada, enfatizando a importância estratégica da promoção de negócios significativos na cidade. Da mesma forma, a hipótese que sugere uma relação positiva entre Educação e Impacto Social (EIS) e DSN também foi confirmada, reforçando a relevância da educação na promoção do desenvolvimento sustentável. Contudo, as hipóteses relacionadas à Comunidade Tecnológica Colaborativa (CTC) e Conexões e Eventos (CE) não receberam suporte estatisticamente significativo, indicando a necessidade de uma análise mais aprofundada desses aspectos.

PALAVRAS-CHAVE: Identidade Visual; Tecnologia; Desenvolvimento Sustentável; PLS-SEM

REFERENCES

ACATE. (2021). ACATE Tech Report 2021. https://drive.google.com/file/d/1-pEwCu4lbPOUmuzVv035cpZxB3uAlc1w/view

Andersson, M., & Ekman, P. (2009). Ambassador networks and place branding. Journal of Place Management and Development, 2(1), 41–51. https://doi.org/10.1108/17538330910942799

Anholt, S. (2010). Places: Identity, Image and Reputation (1st ed.). Palgrave Macmillan UK.

Blue, A. (2021). Evaluating Estonian E-residency as a tool of soft power. Place Branding and Public Diplomacy, 17(4), 359–367. https://doi.org/10.1057/s41254-020-00182-3

Bodet, G., & Lacassagne, M. F. (2012). International place branding through sporting events: A British perspective of the 2008 Beijing Olympics. European Sport Management Quarterly, 12(4), 357–374. https://doi.org/10.1080/16184742.2012.693114

Braun, E., Eshuis, J., Klijn, E.-H., & Zenker, S. (2018). Improving place reputation: Do an open place brand process and an identity-image match pay off? Cities, 80, 22–28. https://doi.org/10.1016/j.cities.2017.06.010

Cabras, I., Lorusso, M., & Waehning, N. (2020). Measuring the economic contribution of beer festivals on local economies: The case of York, United Kingdom. International Journal of Tourism Research, 22(6), 739–750. https://doi.org/10.1002/jtr.2369

Chan, C. S. (2019). Which city theme has the strongest local brand equity for Hong Kong: green, creative or smart city? Place Branding and Public Diplomacy, 15(1), 12–27. https://doi.org/10.1057/s41254-018-0106-x

Chokur, M. F. S., & Al-Khafaji, S. J. (2022). Urban and culture management in eventful cities. International Journal of Health Sciences, 9335–9354. https://doi.org/10.53730/ijhs.v6ns5.11943

Cruz-Ruiz, E., de la Cruz, E. R. R., Zamarreño-Aramendia, G., & Cristòfol, F. J. (2022). Strategic Management of the Malaga Brand through Open Innovation: Tourists and Residents' Perception. Journal of Open Innovation: Technology, Market, and Complexity, 8(1). https://doi.org/10.3390/joitmc8010028

Página | 211

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Cruz-Tarrillo, J. J., Tarqui, E. E. A., Turpo-Chaparro, J., & Haro-Zea, K. L. (2022). "Design and validation of the Brand Personality Scale in Tourist Destinations." Innovative Marketing, 18(2), 1–12. https://doi.org/10.21511/im.18(2).2022.01

de Almeida, G. G. F., & Cardoso, L. (2022). Discussions between Place Branding and Territorial Brand in Regional Development—A Classification Model Proposal for a Territorial Brand. Sustainability (Switzerland), 14(11). https://doi.org/10.3390/su14116669

DENİZ, D. (2023). The Importance of Digitalization for Sustaining Cultural Environments in Resilient Cities. Environmental Science & Sustainable Development, 8(1), 01–09. https://doi.org/10.21625/essd.v8i1.963

Di Martino, L. (2021). Fear and empathy in international relations: Diplomacy, cyber engagement and Australian foreign policy. Place Branding and Public Diplomacy. https://doi.org/10.1057/s41254-021-00211-9

Donaldson, R., Toit-Helmbold, M. Du, & Bolton, A. (2021). Repositioning the Swellendam Municipal Area as a Tourist Destination: Trends, Destination Marketing and Place Branding. African Journal of Hospitality, Tourism and Leisure, 10(5), 1576–1589. https://doi.org/10.46222/ajhtl.19770720-180

Dragićević, V., Bole, D., Bučić, A., & Prodanović, A. (2015). European capital of culture: Residents' perception of social benefits and costs – maribor 2012 case study. Acta Geographica Slovenica, 55(2), 283–302. https://doi.org/10.3986/AGS.747

Dubinsky, Y. (2022). Sport-tech diplomacy: exploring the intersections between the sport-tech ecosystem, innovation, and diplomacy in Israel. Place Branding and Public Diplomacy, 18(2), 169–180. https://doi.org/10.1057/s41254-020-00191-2

Ebrahimi, P., Hajmohammadi, A., & Khajeheian, D. (2020). Place branding and moderating role of social media. Current Issues in Tourism, 23(14), 1723–1731. https://doi.org/10.1080/13683500.2019.1658725

Evans, G. (2019). Mega-Events (G. Evans, Ed.). Routledge. https://doi.org/10.4324/9780429466595

Fakhouri Baia, S., & De Souza Machado, L. R. (2021). Relações interpessoais na escola e o desenvolvimento local. Interações (Campo Grande), 177–193. https://doi.org/10.20435/inter.v22i1.2355

Página | 212

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Farzin, M., Sadeghi, M., Fattahi, M., & Eghbal, M. R. (2022). Effect of Social Media Marketing and eWOM on Willingness to Pay in the Etailing: Mediating Role of Brand Equity and Brand Identity. Business Perspectives and Research, 10(3), 327–343. https://doi.org/10.1177/22785337211024926

Finkel, R., & Platt, L. (2020). Cultural festivals and the city. Geography Compass, 14(9). https://doi.org/10.1111/gec3.12498

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. Journal of Marketing Research, 18(1), 39–50. https://doi.org/10.1177/002224378101800104

García-Peñalvo, F. J. (2018). Technological Ecosystems for Enhancing the Interoperability and Data Flows. In Journal of Information Technology Research (Vol. 11, Issue 1).

Goi, C.-L. (2017). The impact of technological innovation on building a sustainable city. International Journal of Quality Innovation, 3(1). https://doi.org/10.1186/s40887-017-0014-9

Grebosz-Krawczyk, M. (2021). Place branding (r)evolution: the management of the smart city's brand. Place Branding and Public Diplomacy, 17(1), 93–104. https://doi.org/10.1057/s41254-020-00167-2

Hair, J. F., Babin, B. J., Tatham, R., Anderson, R., & Black, W. (2009). Análise Multivariada de Dados. In Bookman (6th ed.).

Hedling, E. (2020). Storytelling in EU public diplomacy: reputation management and recognition of success. Place Branding and Public Diplomacy, 16(2), 143–152. https://doi.org/10.1057/s41254-019-00138-2

Hudak, K. C. (2019). Resident stories and digital storytelling for participatory place branding. Place Branding and Public Diplomacy, 15(2), 97–108. https://doi.org/10.1057/s41254-019-00117-7

Humble, J., & Forsgren, N. (2020). plspm · PyPI. Python Org. https://pypi.org/project/plspm/#description

Inácio, L. (2023a). Floripa Tech: saiba como a capital catarinense se tornou referência em tecnologia no país. ND+. https://ndmais.com.br/educacao/floripa-tech-saiba-como-a-capital-catarinense-se-tornou-referencia-em-tecnologia-no-pais/

Página | 213

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Inácio, L. (2023b, March 20). Floripa Tech: saiba como a capital catarinense se tornou referência em tecnologia no país. ND+. https://ndmais.com.br/educacao/floripa-tech-saiba-como-a-capital-catarinense-se-tornou-referencia-em-tecnologia-no-pais/

Jawahar, D., & Muhammed M.K, A. (2022). Product–place image and destination brand equity: special reference to "Kerala is an ayurvedic destination." Journal of Place Management and Development, 15(3), 248–263. https://doi.org/10.1108/JPMD-06-2020-0047

Kapferer, J.-N. (2008). The new strategic brand management: Creating and sustaining brand equity long term. Kogan Page Publishers.

Kavaratzis, M. (2005). Place Branding: A Review of Trends and Conceptual Models. In The Marketing Review (Vol. 5). www.themarketingreview.com

Kavaratzis, M. (2012). From "necessary evil" to necessity: Stakeholders' involvement in place branding. Journal of Place Management and Development, 5(1), 7–19. https://doi.org/10.1108/17538331211209013

Kavaratzis, M., & Hatch, M. J. (2013). The dynamics of place brands: An identity-based approach to place branding theory. Marketing Theory, 13(1), 69–86. https://doi.org/10.1177/1470593112467268

Khalil, M. A. T., Dominic, P. D. D., Kazemian, H., & Habib, U. (2011). A study to examine if integration of Technology Acceptance Model's (TAM) features help in building a hybrid Digital Business Ecosystem framework for Small and Medium Enterprises (SMEs). Proceedings - 2011 9th International Conference on Frontiers of Information Technology, FIT 2011, 161–166. https://doi.org/10.1109/FIT.2011.37

Khoi, N. H., & Le, A. N. H. (2022). Is coolness important to luxury hotel brand management? The linking and moderating mechanisms between coolness and customer brand engagement. International Journal of Contemporary Hospitality Management, 34(7), 2425–2449. https://doi.org/10.1108/IJCHM-10-2021-1230

Klinmalai, S., & Kaewlai, P. (2023). Major Event-led Strategy for Urban Development and Revitalization. Journal of Architectural/Planning Research and Studies (JARS), 20(2), 123–142. https://doi.org/10.56261/jars.v20.251603

Kudva, S., & Ye, X. (2017). Smart cities, big data, and sustainability union. Big Data and Cognitive Computing, 1(1), 1–13. https://doi.org/10.3390/bdcc1010004

Laurell, C., & Björner, E. (2018). Digital festival engagement: On the interplay between festivals, place brands, and social media. Event Management, 22(4), 527–540. https://doi.org/10.3727/152599518X15300559276930

Lee, K., Kladou, S., Usakli, A., & Shi, Y. (2022). Inspiring winery experiences to benefit destination branding? Insights from wine tourists at Yantai, China. Journal of Hospitality and Tourism Insights, 5(1), 116–137. https://doi.org/10.1108/JHTI-06-2020-0109

Lemarié, J., & Domann, V. (2019). Branding Huntington Beach, Surf City USA®: Visitors, residents, and businesses. Loisir et Societe, 42(3), 401–419. https://doi.org/10.1080/07053436.2019.1681805

Lessa, P. W. B., & Ocke, M. A. de M. (2023). EXPLORINGTHE RELATIONSHIP BETWEEN PLACE BRANDING AND TECHNOLOGY: A SYSTEMATIC REVIEW. Revista Gestão Em Análise, 12(3), 137. https://doi.org/10.12662/2359-618xregea.v12i3.p137-152.2023

Lóssio, R. (2008, November 16). A Florianópolis tecnológica. Floripa. https://floripamanha.org/2008/11/a-florianopolis-tecnologica/

Lóssio, R. (2017). Os 7 motivos que fazem de Floripa o melhor ecossistema de tecnologia e empreendedorismo do Brasil. https://www.linkedin.com/pulse/os-7-motivos-que-fazem-de-floripa-o-melhor-tecnologia-rodrigo-l%C3%B3ssio?originalSubdomain=pt

Lucarelli, A. (2019). Constructing a typology of virtual city brand co-creation practices: an ecological approach. Journal of Place Management and Development, 12(2), 227–247. https://doi.org/10.1108/JPMD-04-2018-0031

Lucarelli, A., & Berg, P. O. (2011). City branding: a state-of-the-art review of the research domain. Journal of Place Management and Development, 4(1), 9–27. https://doi.org/10.1108/17538331111117133

Mair, J., & Weber, K. (2019). Event and festival research: a review and research directions. In International Journal of Event and Festival Management (Vol. 10, Issue 3, pp. 209–216). Emerald Group Holdings Ltd. https://doi.org/10.1108/IJEFM-10-2019-080

Manikas, K., & Hansen, K. M. (2013). Software ecosystems-A systematic literature review. Journal of Systems and Software, 86(5), 1294–1306. https://doi.org/10.1016/j.jss.2012.12.026

Página | 215

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Mariutti, F., & Florek, M. (2022). The future pathways of place branding – Brazilian landscape. ReMark - Revista Brasileira de Marketing, 21(1), 1–8. https://doi.org/10.5585/remark.v21i1.21486

Mascarenhas, P. B. de. (2022). GESTÃO DE MARCAS NO MARKETING B2B: ESTUDO DA RELAÇÃO ENTRE STARTUPS, ACELERADORAS E INVESTIDORES [Dissertação, Universidade Federal de Santa Catarina]. https://repositorio.ufsc.br/bitstream/handle/123456789/247364/PCAD1194-D.pdf?sequence=1&isAllowed=y

Mitropoulou, A., & Spilanis, I. (2020). Towards a contemporary research agenda for island branding: developments, challenges, and dynamics. Place Branding and Public Diplomacy, 16(4), 293–303. https://doi.org/10.1057/s41254-020-00181-4

Nathan, M., Vandore, E., & Voss, G. (2019). Spatial Imaginaries and Tech Cities: Place-branding East London's digital economy. Journal of Economic Geography, 19(2), 409–432. https://doi.org/10.1093/jeg/lby018

Nogueira, S., & Carvalho, J. M. S. (2022). Unlocking the dichotomy of place identity/place image and its impact on place satisfaction for ecotourism destinations. Journal of Ecotourism. https://doi.org/10.1080/14724049.2022.2106236

Ocke, M. A. de M., & Platt, A. A. (2022). Place Branding Brazil: Research Agenda and Advisory Panel for the 21St Century. Revista Brasileira de Marketing, 21(1), 29–63. https://doi.org/10.5585/REMARK.V21I1.20194

Ocke, M., Braga, D. C., & Lessa, P. W. B. (2023). Destination branding e mídias sociais. Revista de Turismo Contemporâneo, 11(3), 443–463. https://doi.org/10.21680/2357-8211.2023v11n3ID30506

Ord, M., & Behr, A. (2023). Curating the music city: The accommodation sector in Glasgow's music tourism ecology. Tourist Studies, 23(3), 227–246. https://doi.org/10.1177/14687976231177963

Pereira, R. M., Marques, H. R., & Gava, R. (2019). Ecossistemas de inovação das universidades federais brasileiras: um mapeamento dos núcleos de inovação tecnológica, incubadoras de empresas de base tecnológica e parques tecnológicos. International Journal of Innovation, 7(3), 341–358. https://doi.org/10.5585/iji.v7i3.66

Página | 216

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Prefeitura Municipal de Florianópolis. (2023). Florianópolis prepara mão de obra qualificada no setor de tecnologia da informação. https://g1.globo.com/sc/santa-catarina/especial-publicitario/prefeitura-municipal-de-florianopolis/florianopolis-uma-cidade-para-todos/noticia/2023/08/21/florianopolis-prepara-mao-de-obra-qualificada-no-setor-de-tecnologia-da-informacao.ghtml

Ringle, C. M., Da Silva, D., & Bido, D. D. S. (2014). Modelagem de Equações Estruturais com Utilização do Smartpls. Revista Brasileira de Marketing, 13(2), 56–73. https://doi.org/10.5585/remark.v13i2.2717

Sadeque, S., Roy, S. K., Swapan, M. S. H., Chen, C.-H., & Ashikuzzaman, M. (2020). An integrated model of city and neighborhood identities: A tale of two cities. Journal of Business Research, 117, 780–790. https://doi.org/10.1016/j.jbusres.2019.06.040

Sarabia-Sanchez, F. J., & Cerda-Bertomeu, M. J. (2017). Place brand developers' perceptions of brand identity, brand architecture and neutrality in place brand development. Place Branding and Public Diplomacy, 13(1), 51–64. https://doi.org/10.1057/s41254-016-0017-7

Scarborough, W. J., & Crabbe, R. (2021). Place brands across U.S. cities and growth in local high-technology sectors. Journal of Business Research, 130, 70–85. https://doi.org/10.1016/j.jbusres.2021.02.055

Scherf, K. D. (2021). Creative tourism in smaller communities : place, culture, and local representation (K. Scherf, Ed.). University of Calgary Press.

Schroth, F., & Häußermann, J. J. (2018). Collaboration Strategies in Innovation Ecosystems: An Empirical Study of the German Microelectronics and Photonics Industries. In Technology Innovation Management Review (Vol. 8, Issue 11).

Setiawan, C., Meivitawanli, B., Arrieta-Paredes, M.-P., Morrison, A. M., & Coca-Stefaniak, J. A. (2021). Friendly Locals and Clean Streets?—Evaluating Jakarta's Destination Brand Image. Sustainability, 13(13), 7434. https://doi.org/10.3390/su13137434

Smith, A., Osborn, G., & Quinn, B. (2022). Festivals and the City: The Contested Geographies of Urban Events (A. Smith, G. Osborn, & B. Quinn, Eds.; 1st ed.). University of Westminster Press. https://doi.org/10.16997/book64

Smith, S. L., & Darlington, K. (2010). Emotional ecologies as brands: Towards a theory of occasioned local feelings. Place Branding and Public Diplomacy, 6(2), 112–123. https://doi.org/10.1057/pb.2010.8

Página | 217

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

Suartika, G. A. M., & Cuthbert, A. A. (2020). The sustainable imperative—smart cities, technology and development. Sustainability (Switzerland), 12(21), 1–15. https://doi.org/10.3390/su12218892

Taberner, I., & Juncà, A. (2021). Small-scale sport events as place branding platforms: A content analysis of osona's projected destination image through event-related pictures on instagram. Sustainability (Switzerland), 13(21), 12255. https://doi.org/10.3390/su132112255

Taecharungroj, V., Muthuta, M., & Boonchaiyapruek, P. (2019). Sustainability as a place brand position: a resident-centric analysis of the ten towns in the vicinity of Bangkok. Place Branding and Public Diplomacy, 15(4), 210–228. https://doi.org/10.1057/s41254-019-00127-5

Thelander, Å., & Cassinger, C. (2017). Brand new images? Implications of instagram photography for place branding. Media and Communication, 5(4), 6–14. https://doi.org/10.17645/mac.v5i4.1053

Tsai, H. Y., Chen, H. W., Hsu, B. C. Y., & Chen, M. Y. (2022). Place image, quality of life, and behavioral intention of residents during the Dajia Mazu Pilgrimage in Taiwan. Managing Sport and Leisure. https://doi.org/10.1080/23750472.2022.2134184

Uche, O. A., Uzuegbu, C. N., & Uche, I. B. (2023). STRATEGIES THAT PROMOTE SUSTAINABILITY OF COMMUNITY DEVELOPMENT PROJECTS IN SOUTHEAST NIGERIA. Transylvanian Review of Administrative Sciences, 2023(68), 132–148. https://doi.org/10.24193/tras.68E.8

Uchinaka, S., Yoganathan, V., & Osburg, V.-S. (2019). Classifying residents' roles as online place-ambassadors. Tourism Management, 71, 137–150. https://doi.org/10.1016/j.tourman.2018.10.008

Vázquez-Martinez, U. J., Sanchís-Pedregosa, C., & Leal-Rodríguez, A. L. (2019). Is gastronomy a relevant factor for sustainable tourism? An empirical analysis of Spain country brand. Sustainability (Switzerland), 11(9). https://doi.org/10.3390/su11092696

Vrontis, D., Basile, G., Tani, M., & Thrassou, A. (2021). Culinary attributes and technological utilization as drivers of place authenticity and branding: the case of Vascitour, Naples. Journal of Place Management and Development, 14(1), 5–18. https://doi.org/10.1108/JPMD-03-2020-0024

Vuignier, R. (2017). Place branding & place marketing 1976–2016: A multidisciplinary literature review. International Review on Public and Nonprofit Marketing, 14(4), 447–473. https://doi.org/10.1007/s12208-017-0181-3

Wäckerlin, N., Hoppe, T., Warnier, M., & de Jong, W. M. (2020). Comparing city image and brand identity in polycentric regions using network analysis. Place Branding and Public Diplomacy, 16(1), 80–96. https://doi.org/10.1057/s41254-019-00128-4

Zehrer, A., & Grabmüller, A. (2012). Social media marketing in tourism education: Insights into the development and value of a social network site for a higher education institution in tourism. Journal of Vacation Marketing, 18(3), 221–228. https://doi.org/10.1177/1356766712449368

Zenker, S., & Braun, E. (2010). The Place Brand Centre-A Conceptual Approach for the Brand Management of Places. 39th European Marketing Academy Conference. https://www.academia.edu/23309481/The_Place_Brand_Centre_A_Conceptual_Approach_for_the_Brand_Management_of_Places

Zhanibek, A., Abazov, R., & Khazbulatov, A. (2022). DIGITAL TRANSFORMATION OF A COUNTRY'S IMAGE: THE CASE OF THE ASTANA INTERNATIONAL FINANCE CENTRE IN KAZAKHSTAN. Virtual Economics, 5(2), 71–94. https://doi.org/10.34021/ve.2022.05.02(4)

Zhao, Y., Cui, X., & Guo, Y. (2022). Residents' Engagement Behavior in Destination Branding. Sustainability (Switzerland), 14(10). https://doi.org/10.3390/su14105852

Zheng, H., Sun, Y., Zhang, Y., & Lu, C. (2023). The impact of place quality brand on high-quality development of manufacturing: a moderated mediation model. Total Quality Management and Business Excellence. https://doi.org/10.1080/14783363.2023.2256230

Zhou, H., Zhang, Y., & Zhou, L. (2023). The impact of government policies on place branding performance: evidence from China. Total Quality Management and Business Excellence, 34(5–6), 712–742. https://doi.org/10.1080/14783363.2022.2092469

Página | 219

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

APÊNDICE A - Questionnaire codes and items (Original Version)

Código	Atributos e suas respectivas variáveis
Inovação Tecnológica e Empresarial (ITE)	
ITE1	Acredito que Florianópolis seja uma cidade inovadora.
ITE2	Florianópolis é uma cidade com empresas tecnológicas e inovadoras.
ITE3	Florianópolis possui muitas empresas de base tecnológica. (startups, aceleradoras e incubadoras)
ITE4	Florianópolis não é uma cidade tecnológica nem inovadora.
Ensino e Impacto Social (EIS)	
EIS1	Florianópolis está investindo em tecnologia para aprimorar o ensino.
EIS2	Projetos em Florianópolis incentivam os moradores a criar tecnologias.
EIS3	O ensino tecnológico é um ponto forte em Florianópolis.
EIS4	Há pouco investimento tecnológico em educação no município.
Comunidade Tecnológica Colaborativa (CTC)	
CTC1	Florianópolis tem uma comunidade tecnológica ativa e colaborativa.
CTC2	As empresas de tecnologia em Florianópolis apoiam iniciativas locais e outras empresas do setor.
CTC3	Em Florianópolis, as empresas tecnológicas trabalham juntas para enfrentar desafios comuns.
CTC4	As empresas tecnológicas de Florianópolis não cooperam uma com as outras.
Conexões e Eventos (CE)	
CE1	Florianópolis possui muitos eventos voltados à tecnologia.
CE2	Participar de eventos tecnológicos em Florianópolis aumenta as chances de fazer novos contatos.
CE3	Florianópolis oferece uma variedade de eventos tecnológicos que facilitam a expansão da minha rede de contatos.
CE4	É difícil eu conseguir um novo contato nos eventos de tecnologia em Florianópolis.
Desenvolvimento Sustentável Notório (NSD)	
DSE1	Enxergo Florianópolis como uma cidade tecnológica e sustentável.
DSE2	Florianópolis une técnicas sustentáveis com avanços tecnológicos.
DSE3	Considero Florianópolis um modelo a seguir quando se trata de desenvolvimento sustentável.
DSE4	Florianópolis não é um exemplo de cidade que integra tecnologia e práticas sustentáveis.

Página | 220

R. Bras. Planej. Desenv., Curitiba, v. 15, n. 01, p. 196-221, jan./abr. 2026.

APÊNDICE B - Questionnaire codes and items (Translated Version to English)

Florianópolis	Attributes and their respective variables
Technological and Business Innovation (TBI)	
TBI1	I believe that Florianópolis is an innovative city.
TBI2	Florianópolis is a city with technological and innovative companies.
TBI3	Florianópolis has many technology-based companies (startups, accelerators and incubators).
TBI4	Florianópolis is neither a technological nor an innovative city.
Teaching and Social Impact (ESI)	
ESI1	Florianópolis is investing in technology to improve teaching.
ESI2	Projects in Florianópolis encourage residents to create technologies.
ESI3	Technological education is a strong point in Florianópolis.
ESI4	There is little technological investment in education in the municipality.
Collaborative Technology Community (CTC)	
CTC1	Florianópolis has an active and collaborative technology community.
CTC2	Technology companies in Florianópolis support local initiatives and other companies in the sector.
CTC3	In Florianópolis, technology companies work together to tackle common challenges.
CTC4	Tech companies in Florianópolis don't cooperate with each other.
Connections & Events (CE)	
CE1	Florianópolis has many events focused on technology.
CE2	Participating in technological events in Florianópolis increases the chances of making new contacts.
CE3	Florianópolis offers a variety of technological events that facilitate the expansion of my network of contacts.
CE4	It's hard for me to get a new contact at technology events in Florianópolis.
Notable Sustainable Development (NSD)	
NSD1	I see Florianópolis as a technological and sustainable city.
NSD2	Florianópolis combines sustainable techniques with technological advances.
NSD3	I consider Florianópolis a model to follow when it comes to sustainable development.
NSD4	Florianópolis is not an example of a city that integrates technology and sustainable practices.