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Modelling Destination Loyalty in Wellness Tourism: Evidence from Portugal

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Abstract
Wellness tourism, a rapidly expanding sector within the global travel industry, focuses on experiences designed to maintain or enhance individuals' well-being. Building on Safety System Theory and Attention Restoration Theory (ART), this study investigates the dynamics of destination loyalty in the context of wellness tourism. Specifically, it examines the interplay between destination loyalty and tourist perceived safety at destinations (TPSD), tourist worry, tourist perception of restorative environments (TPRE), tourist well-being, and life satisfaction. An online questionnaire was administered to 237 wellness tourists who engaged in wellness experiences in Portugal. Data were analysed using partial least squares structural equation modelling (PLS-SEM), implemented in SmartPLS 4.0.8.2, to estimate and validate a complex model with second-order constructs. Results show that TPSD strengthens destination loyalty and that TPRE is key in enhancing tourist well-being, life satisfaction, and destination loyalty. While tourist worry negatively affects TPSD, it is positively associated with destination loyalty, inviting further exploration. The study advances the literature by empirically testing the Safety System Theory and ART in the context of wellness tourism, offering novel, destination-level evidence from Portugal. It also provides theoretical and practical implications for destination managers, wellness providers and policymakers.

Keywords: Destination Loyalty, Portugal, Restorative Environments, Safety Perceptions, Wellness Tourism, PLS-SEM

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1. Introduction

Wellness tourism has arisen as a rapidly expanding niche within international tourism, recognised for its capacity to diversify market offerings (Pereira *et al.*, 2023), enhance visitor expenditures, and attract investments to rural and underdeveloped regions (Global Wellness Institute GWI, 2024b). This market segment has shown remarkable resilience, rebounding from a significant decline during the COVID-19 pandemic and exhibiting robust growth between 2020 and 2022. Projections suggest that wellness tourism spending will exceed US$1 trillion by 2024, underscoring its increasing importance in global tourism dynamics (GWI, 2024b).

Well-being and good health, recognised as part of the United Nations' Sustainable Development Goals (SDGs) (United Nations, 2015), have gained heightened significance after the COVID-19 pandemic. This global health crisis has underscored the importance of improving and maintaining mental and physical health (Dini & Pencarelli, 2022; Li *et al.*, 2023; Parakkal *et al.*, 2024; Yao *et al.*, 2023). Meanwhile, the tourism industry has witnessed an upswing in demand for health-oriented travel experiences (Ahn & Kim, 2024) as more travellers seek opportunities for relaxation, rejuvenation, and stress relief (Goyal & Taneja, 2023). As a result, wellness tourism has experienced remarkable growth (GWI, 2024b), promoting a comprehensive approach to enhancing well-being (Kim *et al.*, 2024; Li & Gao, 2023). This segment emphasises preventive, proactive measures (GWI, 2024c; Lopes & Rodríguez-López, 2022; Yao *et al.*, 2023) to harmonise the spirit, mind and body (Backman *et al.*, 2023). A key appeal of wellness tourism lies in its ability to address travellers' physical and mental recovery needs (Dini & Pencarelli, 2022; Li *et al.*, 2023; Parakkal *et al.*, 2024; Yao *et al.*, 2023), making it a cornerstone for destinations aiming to cultivate a unique competitive advantage. While often associated with luxury resorts and spas (Backman *et al.*, 2023; Chen *et al.*, 2023; GWI, 2024b; Park *et al.*, 2021), wellness tourism encompasses a far broader range of experiences (GWI, 2024b; Xie *et al.*, 2022). Visitors can enjoy nutritious cuisine, connect with nature, participate in meditation and yoga sessions, attend spiritual retreats, visit thermal and mineral springs, and engage in cultural experiences. These activities are integral to the wellness journey, offering restorative benefits travellers seek (Dini & Pencarelli, 2022; GWI, 2024b; Xie *et al.*, 2022; Yao *et al.*, 2023).

This article positions wellness as distinct from, yet complementary to, health and well-being. Health is a complete state of mental, physical, and social well-being (WHO, 2025), whereas wellness is the proactive pursuit of behaviours and lifestyles that optimise that state (GWI, 2024b). Well-being, in turn, reflects subjective and psychological evaluations such as happiness and life satisfaction (Damijanić, 2019; Dillette *et al.*, 2021). Consistent with this framing, wellness tourism is treated here as a non-medical, preventive form of travel undertaken by generally healthy individuals to maintain or enhance well-being, distinct from medical tourism, which is reactive and treatment-oriented (Damijanić, 2019; He *et al.*, 2022). It encompasses both primary wellness travellers, who select a destination chiefly to pursue wellness and structure their trip around such offerings, and secondary wellness travellers, who travel for another primary purpose but intentionally incorporate one or more wellness activities during the trip (GWI, 2021; Saari *et al.*, 2023).

According to Maslow's Hierarchy of Needs, safety needs occupy the second level of the pyramid, emphasising a person's need for security and protection (Maslow, 1958). In tourism, this fundamental need translates into safety and security as essential elements of the destination image (Jo, 2024; Xie *et al.*, 2020). These factors significantly influence tourists' decision-making (Boakye, 2012; Toker & Emir, 2023) and have a substantial impact on destination loyalty (Xie *et al.*, 2020). Furthermore, wellness tourism is closely interconnected with fulfilling fundamental human needs and pursuing a balanced, enriched life (Jo, 2024). Peaceful and tranquil environments foster a sense of well-being, which is essential for enhancing destination loyalty (Backman *et al.*, 2023).

Pitakaso *et al.* (2024) emphasise that implementing effective security measures enhances the attractiveness of wellness tourism destinations. Worry, a complex cognitive activity with a strong emotional component, has also been identified as a critical factor influencing individuals' cognitive processes and behavioural responses (Brun *et al.*, 2011). Higher levels of worry are linked to increased risk perceptions (Chien *et al.*, 2017), which can negatively affect destination loyalty (Handler, 2022). Given the growing body of research on the influence of tourist worry on their risk perception in tourism and hospitality (e.g., Chien *et al.*, 2017; Handler, 2022; Jin *et al.*, 2016), Handler and Kawaminami (2023) emphasise the need for further investigation into travel-related worries in wellness tourism.

Recent bibliometric mapping on tourism safety and security by Toker and Emir (2023) highlights how tourist perceived safety has emerged as a prominent topic in academic literature. Despite growing interest in wellness tourism, limited research has explored how tourist safety perceptions influence this sector. The available studies primarily focus on COVID-19 and health-related risks, particularly perceived hygiene (e.g., Goyal & Taneja, 2023; Li & Huang, 2022; Majeed & Ramkisson, 2020), rather than exploring the broader dimensions of perceived safety (Xie *et al.*, 2020). Moreover, several investigations suggest that further exploration is needed to understand how tourist safety perceptions impact destination loyalty (e.g., Xie *et al.*, 2020; Zou & Meng, 2020; Zou & Yu, 2022).

Current studies have highlighted restorative environments as an important area of interest in wellness tourism research (Backman *et al.*, 2023; Jeong, 2024). Drawing from the Attention Restoration Theory (ART) proposed by Kaplan and Kaplan (1989), restorative environments are characterised by their ability to mitigate directed attention fatigue, support emotional and mental recovery, and restore cognitive function (Chen *et al.*, 2023; Lehto, 2012; Lehto *et al.*, 2017; Lin & Yang, 2024; Sun *et al.*, 2023). These environments have been considerably studied in wellness tourism contexts (e.g., Backman *et al.*, 2023; Chen *et al.*, 2023; Gill *et al.*, 2018; Jeong, 2024; Liu *et al.*, 2024; Sun *et al.*, 2023; Zhou *et al.*, 2024), demonstrating their importance in promoting life satisfaction, well-being and destination loyalty (Backman *et al.*, 2023). Moreover, findings from Stragà *et al.* (2023) indicate that perceived safety predicts perceived restorativeness.

Destination loyalty holds significant importance in the investigation of wellness tourism (Chua *et al.*, 2024; Han *et al.*, 2017), which examines the psychological factors influencing tourists' commitment and repeated visits to wellness destinations (Kim *et al.*, 2017). Han *et al.* (2018) assert that understanding the loyalty of wellness tourists is essential for ensuring the competitiveness and sustainable growth of tourism destinations. Recent research (e.g., Al-Ansi *et al.*, 2024) highlights that studies on loyalty in wellness tourism have primarily focused on specific services, such as hot spring hotels and spas. However, limited attention has been given to understanding tourist loyalty within the context of wellness tourism at the destination level (Al-Ansi *et al.*, 2024).

1.1 Research problem and questions

Although wellness tourism research has expanded, important gaps remain regarding the direct effects of psychological factors on destination-level loyalty. Building on Safety System Theory and ART, the aims of the study are twofold. First, to examine destination loyalty in wellness tourism and how it is impacted by the tourist perception of safety at the destinations (TPSD), tourist worry, and tourist perceived restorative environments (TPRE), alongside tourist well-being and life satisfaction. Secondly, to provide destination-level evidence for Portugal, a country heavily dependent on the tourism sector, and derive implications for destination managers and policymakers.

Portugal's tourism sector is a structural pillar of the economy, and wellness is recognised internationally as a meaningful economic domain. Official statistics report a €20.9 billion tourism balance in 2024, up 9.4% from 2023, confirming Portugal's third position among European Union countries on this indicator

and underscoring the weight of tourism in the national economy (Instituto Nacional de Estatística INE, 2024). In parallel, the wellness economy already accounts for 7.39% of Portugal's Gross Domestic Product (GDP) and around US$2,046 per capita spending in 2023 (GWI, 2025), while wellness tourism in Portugal generated US$6.4 billion in 2023, placing the country 19th worldwide by market size (GWI, 2024a). These figures indicate substantial growth potential for wellness-oriented products and services.

Despite this significance, no dedicated official statistical series exists for wellness tourism in Portugal (INE, 2024). Research in Portugal has primarily focused on thermal contexts within the broader health and wellness tourism domain, which often includes medical tourism (e.g., Brandão *et al*., 2021; da Costa Guerra *et al*., 2022; Loureiro *et al*., 2013; Loureiro *et al*., 2023; Lopes & Rodríguez-López, 2022; Mota *et al*., 2023; Pereira *et al*., 2023; Pina & Martins, 2022; Quintela, 2023). This gap motivates a destination-level investigation focused exclusively on tourists' wellness motivations, encompassing a diverse range of wellness options to provide a more comprehensive understanding of this niche segment. The empirical evidence for the study is based on an online questionnaire of wellness tourists in Portugal (n = 237), and the conceptual model was estimated using partial least squares structural equation modelling (PLS-SEM). Accordingly, the research questions are the following:

RQ1. How are TPSD, tourist worry, TPRE, tourist well-being, and life satisfaction linked to destination loyalty among wellness tourists in Portugal?

RQ2. What is the relationship between tourist worry and TPSD in the wellness tourism context?

RQ3. To what extent is TPSD associated with TPRE at the destination level?

RQ4. Do TPRE relate to differences in tourist well-being and life satisfaction?

2. Conceptual framework and research hypotheses

2.1 Destination loyalty

Jacoby and Kyner (1973) characterised loyalty as the consistent, biased behavioural patterns displayed repeatedly by individuals, with these responses significantly influenced by psychological processes. Yasami *et al*. (2021) argue that loyalty is multidimensional, including attitudinal and behavioural aspects. Assessing these dimensions together strengthens the overall understanding of loyalty. Attitudinal loyalty reflects consumers' emotional attachment to a product or service, while behavioural loyalty is demonstrated through consistent, repeated patronage over time (Kim *et al*., 2017).

Loyalty research within the tourism sector emerged in the late 1980s (Campón-Cerro *et al*., 2017). However, it has gained significant momentum in recent decades, drawing increased attention from tourism researchers, particularly in its conceptualisation (Zaman *et al*., 2021). Destination loyalty is an essential metric for recreational site managers, as it helps to understand visitor expectations and predict future demand and revenue (Akroush *et al*., 2016; Cheng *et al*., 2022). Therefore, destination loyalty is indicative of destination performance (Cheng *et al*., 2022; Ren & Pan, 2024). It is typically operationalised through three dimensions: behavioural, attitudinal, and a combination of both. This loyalty often manifests in tourists' willingness to repurchase, intention to revisit and positive recommendations to others (Cheng *et al*., 2022; Padrón-Ávila *et al*., 2022; Ren & Pan, 2024; Yasami *et al*., 2021; Zaman *et al*., 2021).

The importance of destination loyalty in ensuring the success of tourism destinations has been widely acknowledged, prompting extensive research into the factors that shape travellers' loyalty (e.g., Han *et al*., 2017; Ren & Pan, 2024; Solis-Radilla *et al*., 2021). In today's competitive global tourism landscape, it is essential for destinations to comprehend how loyalty is formed among international wellness

travellers and what factors contribute to it (Han *et al.*, 2018). As Al-Ansi *et al.* (2014) noted, wellness tourism is primarily chosen for its ability to support and restore health and well-being, making it likely that tourists will return to a destination if it effectively satisfies their wellness expectations. Ashton (2018) investigated revisit intentions among spiritual retreat visitors in the Asia-Pacific region of wellness tourism. The author concluded that destinations offering a peaceful atmosphere have a positive influence on tourists' return intentions. Furthermore, Han *et al.* (2017) researched wellness spa tourism in Thailand, highlighting the importance of offering diverse service options or programs in building destination loyalty.

2.2. Tourist perceived safety at destinations

The body of literature on tourism safety and security has experienced substantial growth across diverse research domains (Toker & Emir, 2023), such as business and management (e.g., Chan *et al.*, 2023; Hamm & Su, 2021), social sciences (e.g., Preko, 2021; Yu *et al.*, 2024), and environmental sciences (e.g., Yang *et al.*, 2019; Zhou *et al.*, 2023). While safety and security became a research agenda in tourism in the early 1970s, academic attention has intensified since 2010, particularly evident after 2019, with the increase in publications (Toker & Emir, 2023).

Over time, the literature has shown that safety is pivotal in tourism. For instance, George (2010) highlights how perceptions of crime and safety shape destination-choice decisions. Boakye (2012) reports that tourists' safety perceptions are influenced by the perceived quality of the tourism product. More recently, Zou (2023) examines Chinese tourists' safety perceptions in combination with personal characteristics, highlighting safety as a crucial dimension of the tourism experience. In the peer-to-peer accommodation context, Petruzzi and Marques (2024) analyse the pandemic period, showing how COVID-19 heightened safety concerns and segmented tourists according to their safety sensitivity. Within wellness tourism, Li and Huang (2022) test a model to show how risk perceptions among Chinese Generation Z affect behavioural processes related to wellness travel.

Travel safety is typically described as the opposite of travel risk, which refers to the potential for encountering danger or being aware of security risks during travel. According to Xie *et al.* (2020), "travel safety is defined as the degree of risk that can be tolerated during travel, which is a collective term for tourism activities in a balanced, stable, and orderly condition" (p. 1). For Chauhan (2007), travel safety implies experiencing without threats, losses, or injuries, with tourists' assessments forming their perceived safety at destinations.

Quintal *et al.* (2010) state that perceived safety reflects an individual's confidence when facing uncertainty. Zou and Meng (2020) argue that the sense of safety within the tourism setting focuses on individuals' emotional experiences. Consistent with this view, Xie *et al.* (2020) introduced the term TPSD, measured as a subdimension of destination image, which is a subjective psychological experience shaped by individuals' feelings and perceptions of objective occurrences based on their past experiences and the influence of external information about destination stability (Ding & Wu, 2022; Xie *et al.*, 2020; Zou, 2023). TPSD involves tourists' emotional changes (Zou, 2023) and continuous cognitive assessments that align with the intricate and dynamic nature of destination systems (Zou, 2023; Zou & Meng, 2020). This perception is strongly linked to an individual's perception of destination safety before embarking on their trip, during their trip, and upon their return (Zou & Meng, 2020). According to the literature, the most significant risk factors influencing TPSD are natural disasters, terrorism, political and social instability, public security, and health hazards (George, 2010; Hsu *et al.*, 2017; Zou & Meng, 2020; Zou, 2023). Furthermore, individuals' assessments within specific behavioural contexts (e.g., wildlife tourism vs rural tourism) and distinct destination environments (e.g., littoral regions vs mountain regions) also impact TPSD (Xie *et al.*, 2020).

Multiple theories have been proposed to address safety, risk, and accidents in general. However, as a unique risk environment, tourism lacks a specific safety theory. To fill this gap, Xie *et al.* (2020) suggested applying the Safety System Theory to explore TPSD. Biologist Ludwig von Bertalanffy is recognised for developing the foundations of general system theory (Khayal & Farid, 2017). According to this theory, systems should be approached holistically rather than focusing on their components (Larsson *et al.*, 2010; Singh & Azman, 2022). Following a systems perspective, the safety system theory is an integrated perspective to understanding accidents and safety management (Gao *et al.*, 2023; Hughes *et al.*, 2015). The theory focuses on two key concepts. First, the accident system, which encompasses unsafe conditions of facilities, the dangerous behaviour of humans, insufficient management measures and environmental risks, is referred to as the "4M" elements. Second, the safety system includes human safety abilities, the safety and reliability of equipment and environments, the safety functions of energy production processes, and the flow of safety-related information (Xie *et al.*, 2020). As a result, TPSD reflects tourists' perceptions of a "travel safety system", a complex and evolving cognitive process influenced by the interplay of the 4M elements (Xie *et al.*, 2020). This framework has been widely applied in tourism research. For example, Bentley *et al.* (2001) examined adventure tourism safety levels in New Zealand using the 4M analysis framework. Moreover, Xie *et al.* (2020) researched the construction of the Tourist Perceived Safety Scale (TPSS) grounded on the 4M analysis framework and the Safety System Theory.

According to several investigations, the relationship between TPSD and destination loyalty should be investigated (e.g., Zou & Meng, 2020; Zou & Yu, 2022). In their study on tourists' sense of safety at travel destinations, Zou and You (2022) found that visitors are more likely to remember destinations with notable safety characteristics or experiences. Additionally, the authors concluded that when a destination's safety conditions are better than expected, tourists are more likely to revisit, share the experience with prospective tourists, and recommend the destination to others. Liu *et al.* (2021) found that visitors' safety concerns about Thailand's natural environment, public health context, and political climate had a negative impact on tourists' willingness to return. In Kong *et al.* (2024) investigation of tourists who participated in a night tour in South Korea, the authors verified that perceived safety is an antecedent of revisit intention. Considering the importance of understanding destination loyalty and the absence of studies in the wellness tourism literature exploring the relationship between TPSD and destination loyalty, the following is proposed:

H1: Tourist perceived safety at destinations has a direct positive effect on destination loyalty.

2.3. Tourist Worry

According to the American Psychological Association (APA) Dictionary of Psychology (2018), worry is "a state of mental distress or agitation due to concern about an impending or anticipated event, threat, or danger" (para. 1). Although worry and anxiety are closely related, they represent distinct psychological constructs, whereby worry represents a cognitive component of anxiety (Chien *et al.*, 2017). Anxiety is "an emotion characterised by apprehension and somatic symptoms of tension in which an individual anticipates impending danger, catastrophe, or misfortune" (American Psychological Association [APA] Dictionary of Psychology, 2018, para. 1). Worry is described as a realistic or specific concern that problem-solving can address. Conversely, anxiety tends to be more generalised, undermines problem-solving confidence and is linked to adverse psychological outcomes (Chien *et al.*, 2017).

Worry encompasses cognitive processes with an emotional component (Brun *et al.*, 2011; Crowley-Cyr *et al.*, 2022), reflecting individuals' persistent thoughts about future events (Kiatkawsin *et al.*, 2021). Those who rely on explicit evidence in decision-making may find it challenging to cope with ambiguous or indeterminate outcomes, thus initiating chains of thought about potential unknown results (Kiatkawsin *et al.*, 2021). There is a common belief that worry is a determining factor in prioritising risk

reduction strategies, enhancing individuals' sense of control over potential outcomes (Larsen *et al.*, 2009).

In tourism, worry is typically associated with the intolerance of uncertainty, a trait likely shared by tourists due to the inherent unpredictability of travel experiences (Wolff & Larsen, 2013). In agreement with Larsen *et al.* (2009), worry manifests as a negative affect and uncontrollable streams of thoughts and images driven by uncertainty about future events (Brun *et al.*, 2011; Chien *et al.*, 2017; Handler, 2022; Larsen *et al.*, 2009). This uncertainty prompts tourists to engage in mental problem-solving concerning potential negative outcomes of their trips (Goo *et al.*, 2022). As per the findings of Goo *et al.* (2022), tourists who experience worry, especially during their trip planning phase, are more likely to face a negative travel experience.

The role of emotions in shaping risk perceptions has become an increasingly recognised area of interest in psychology (Chien *et al.*, 2017). Research has shown that the emotional dimension is the most reliable predictor of risk estimates, with worry often emerging as the most salient emotional factor influencing risk perception (Brun *et al.*, 2011; Chien *et al.*, 2017; Handler, 2022). According to Chien *et al.* (2017), the extent to which individuals experience worry significantly shapes how they perceive health risks associated with travel. In particular, heightened concern about potential hazards is linked to an increased perception of travel-related risk. Brun *et al.* (2011) concluded that following terrorist attacks, tourists' worries related to terrorism and conflict increased considerably. Jin *et al.* (2016) concluded that Chinese tourists visiting Australia worried most about language and culture, and errors with reservations and tickets. In the wellness tourism context, Handler (2022) conducted a psychographic segmentation of senior travellers who visited Japanese hot springs and concluded that worry negatively impacts their intention to revisit. Although numerous researchers have investigated how tourist worry relates to risk perceptions, the concept of TPSD remains underexamined. Building on Handler and Kawaminami's (2023) recommendation for further research on travel-related worry in wellness tourism, this study proposes the following:

H2: Tourist worry has a direct negative effect on tourist perceived safety at destinations.

H3: Tourist worry has a direct negative effect on destination loyalty.

2.4. Tourist Worry

Restoration comprises revitalising an individual's health and body due to consecutive psychophysiological transformations (Xue & Shen, 2022). In environmental psychology research, restoration refers to the renewal or recovery of cognitive, affective, physical, and social resources (Dai & Tang, 2023; Lin & Yang, 2024; Packer, 2021; Sun *et al.*, 2023) that were depleted during the adaptation process to the external environment (Dai & Tang, 2023).

James's (1892) concepts of involuntary and voluntary attention laid the groundwork for Kaplan and Kaplan's (1989) ART. ART suggests that fatigue from directed attention reduces one's ability to perform cognitive tasks accurately and regulate emotions effectively (Lehto *et al.*, 2017; Packer, 2021; Xue & Shen, 2022; Zhou *et al.*, 2023). The theory distinguishes between involuntary attention, an automatic reaction to fascinating stimuli, and directed attention, which demands an effort to concentrate on less engaging activities (Chen *et al.*, 2023). While directed attention is essential for cognitive and emotional functions, such as problem-solving without distractions, it can be depleted, leading to irritability and stress (Chen *et al.*, 2023; Lehto, 2012; Zhou *et al.*, 2023). Kaplan (1995) suggests that engaging, aesthetically pleasing environments stimulate attention, promote recovery, and enhance concentration, promoting overall well-being (Backman *et al.*, 2023; Chen *et al.*, 2023). ART explains the benefits of natural environments on human health and well-being (Backman *et al.*, 2023; Lehto, 2012; Lehto *et al.*, 2017; Lin & Yang, 2024;

Zhou *et al*., 2023). These environments are termed perceived restorative environments as a result of how individuals perceive and experience them (Qiu *et al*., 2021; Zhou *et al*., 2024).

Grounded on Kaplan's ART (Kaplan, 1995; Kaplan & Kaplan, 1989), environments should feature four qualities to facilitate the recovery of directed attention. Being away implies disconnecting physically and mentally from daily routines, thus decreasing the need for directed attention (Chen *et al*., 2023; Hartig *et al*., 1997; Yoon *et al*., 2023) and allowing for restorative rest (Xue & Shen, 2022). Extent refers to an environment's ability to offer richness and coherence to stimulate the mind and provide a restorative experience (Lin & Yang, 2024; Packer, 2021) over a prolonged period (Packer, 2021). Fascination refers to appealing and pleasant elements (such as natural landscapes) that engage an individual's involuntary attention, whereby their directed attention is deactivated and re-established (Chen *et al*., 2023; Lehto, 2012; Zhai *et al*., 2023). Compatibility is the alignment between an individual's objectives and preferences and the requests imposed by the environment (Chen *et al*., 2023; Hartig *et al*., 1997), as well as the availability of supportive information for purposeful activities (Hartig *et al*., 1997).

Drawing on the ART framework, Backman *et al*. (2023) found that TPRE contributes to determining loyalty intentions. TPRE can influence tourists' likelihood of revisiting wellness hotels and recommending them to others. Based on these findings, the following hypothesis is proposed:

H4: Tourist perception of restorative environments has a direct positive effect on destination loyalty.

Perceived safety is a fundamental precondition to truly experiencing the restorative qualities of destination experiences (Stragà *et al*., 2023). Although the link between feelings of safety and environmental restorativeness has been suggested as necessary, it remains underexplored in the existing academic literature (Stragà *et al*., 2023). Stragà *et al*. (2023) test the roles of the four basic ART dimensions (fascination, being away, compatibility, and extent), reflection, and safety in predicting overall perceived restorativeness. Among the several results, the authors found that perceived safety directly predicts overall perceived restorativeness. Therefore, this study aims to analyse the relationship between TPSD and TPRE resulting from wellness experiences, as no studies were identified. Based on this, the following hypothesis is proposed:

H5: Tourist perceived safety at destinations has a direct positive effect on tourist perception of restorative environments.

2.5. Tourist well-being and life satisfaction

Academic interest in well-being emerged during the 1970s, particularly within North American and European contexts. This early wave of research was shaped by economic and sociological perspectives grounded in the social indicators movement (Chang *et al*., 2022). Subsequently, in the 1980s, psychology academics such as Ryff (1989) and Diener (1984) conducted investigations focused on individuals' subjective and psychological well-being (Smith & Diekmann, 2017; Yan *et al*., 2024). Although initially centred on psychology, contemporary well-being studies are often interdisciplinary (Chang *et al*., 2022).

The term "well-being" is commonly used in everyday language, but its definition is often unclear and conceptually ambiguous, encompassing multiple dimensions (Liu *et al*., 2023; Pomfret *et al*., 2023; Yan *et al*., 2024). Scientific research frequently employs the term broadly to include happiness, life satisfaction, quality of life, and related concepts (Chang *et al*., 2022; Yao *et al*., 2023). Drawing from the field of positive psychology, the scientific exploration of human flourishing (Seligman, 2004), well-being can be understood through two main perspectives: hedonia and eudaimonia (Chang *et al*., 2022; Huang *et al*., 2024; Rahmani *et al*., 2024; Ritpanitchajchaval *et al*., 2023; Yan *et al*., 2024). The hedonic

perspective, originating from the 4th-century Greek philosopher Aristippus, posits that the purpose of life is to maximise pleasure and minimise pain (Smith & Diekmann, 2017; Rahmani *et al.*, 2024). According to this view, happiness is the sum of one's hedonic experiences (Smith & Diekmann, 2017). Hedonic well-being, advocated by positive psychologists like Diener (1984), is measured by subjective well-being, which includes happiness, positive and negative affect, and life satisfaction (Kim *et al.*, 2020; Ritpanitchajchaval *et al.*, 2023; Yan *et al.*, 2024). In contrast, the eudaimonic perspective, associated with Aristotle, emphasises the pursuit of a meaningful and fulfilling life, both physically and spiritually, aiming to realise one's true potential (Ritpanitchajchaval *et al.*, 2023; Yan *et al.*, 2024). Eudaimonia involves personal growth (Liu *et al.*, 2023; Rahmani *et al.*, 2024) and living a meaningful life (Huang *et al.*, 2024; Rahmani *et al.*, 2024), centred on psychological well-being through meaningful and valuable actions (Ritpanitchajchaval *et al.*, 2023). The present investigation will consider both dimensions of well-being, eudaimonia and hedonia, in its analysis.

The concept of restorative environments is closely aligned with the objectives of wellness tourism, particularly in demonstrating how travel can enhance tourists' spiritual, psychological, and physical well-being (Liu *et al.*, 2024). In Huang's (2022) investigation of middle-aged and elderly adult well-being, the author found that wellness resorts are important restorative venues for promoting subjective well-being. Fan *et al.* (2024) verified in their research about Chinese tourists who engaged in a domestic pleasure trip a significant positive correlation between perceived restoration during a trip and both subjective and psychological well-being experienced throughout the journey. Based on the concepts of eudaimonic and hedonic well-being, the following hypotheses are proposed:

H6: Tourist perception of restorative environments has a direct positive effect on tourist well-being.

Empirical evidence from prior studies has demonstrated a positive relationship between tourists' subjective well-being and their loyalty (e.g., Baloglu *et al.*, 2019; Dekhili & Hallem, 2020; Huang *et al.*, 2019). Nevertheless, few studies have tested the impact of psychological well-being on loyalty (e.g., Karagöz *et al.*, 2024; Tsai, 2020; Vada *et al.*, 2019). Moreover, the relationship between eudaimonic and hedonic experiences and tourist loyalty remains insufficiently explored in the current literature (Karagöz *et al.*, 2024). Vada *et al.* (2019) and Karagöz *et al.* (2024) illustrated that hedonic experiences positively influence loyalty, whereas eudaimonic experiences did not significantly impact. On the other hand, research by Tsai (2020), Al-Okaily *et al.* (2023), and Lee (2024) indicated that both eudaimonic and hedonic experiences have a positive influence on loyalty. To further explore the relationship between hedonic and eudaimonic well-being and their impact on loyalty within the wellness tourism context, the following hypothesis is proposed:

H7: Tourist well-being has a direct positive effect on destination loyalty.

Life satisfaction reflects the cognitive and evaluative dimension of well-being, how individuals assess their lives based on their personal standards (Diener, 1984). While traditionally considered a component of subjective well-being, earlier investigations in wellness tourism characterised it as a single-factor measurement (Huang *et al.*, 2019), a perspective adopted in this study. Backman *et al.* (2023) verified that perceived restorative environments in wellness tourism directly affected life satisfaction (e.g., Backman *et al.*, 2023). Moreover, Huang (2019) found that life satisfaction positively influences destination loyalty, particularly in spa hotels. Drawing on these findings, this study proposes the following hypotheses:

H8: Tourist perception of restorative environments has a direct positive effect on life satisfaction.

H9: Life satisfaction has a direct positive effect on destination loyalty.

Therefore, the current study will estimate the conceptual model presented in Figure 1 to test the research hypotheses.

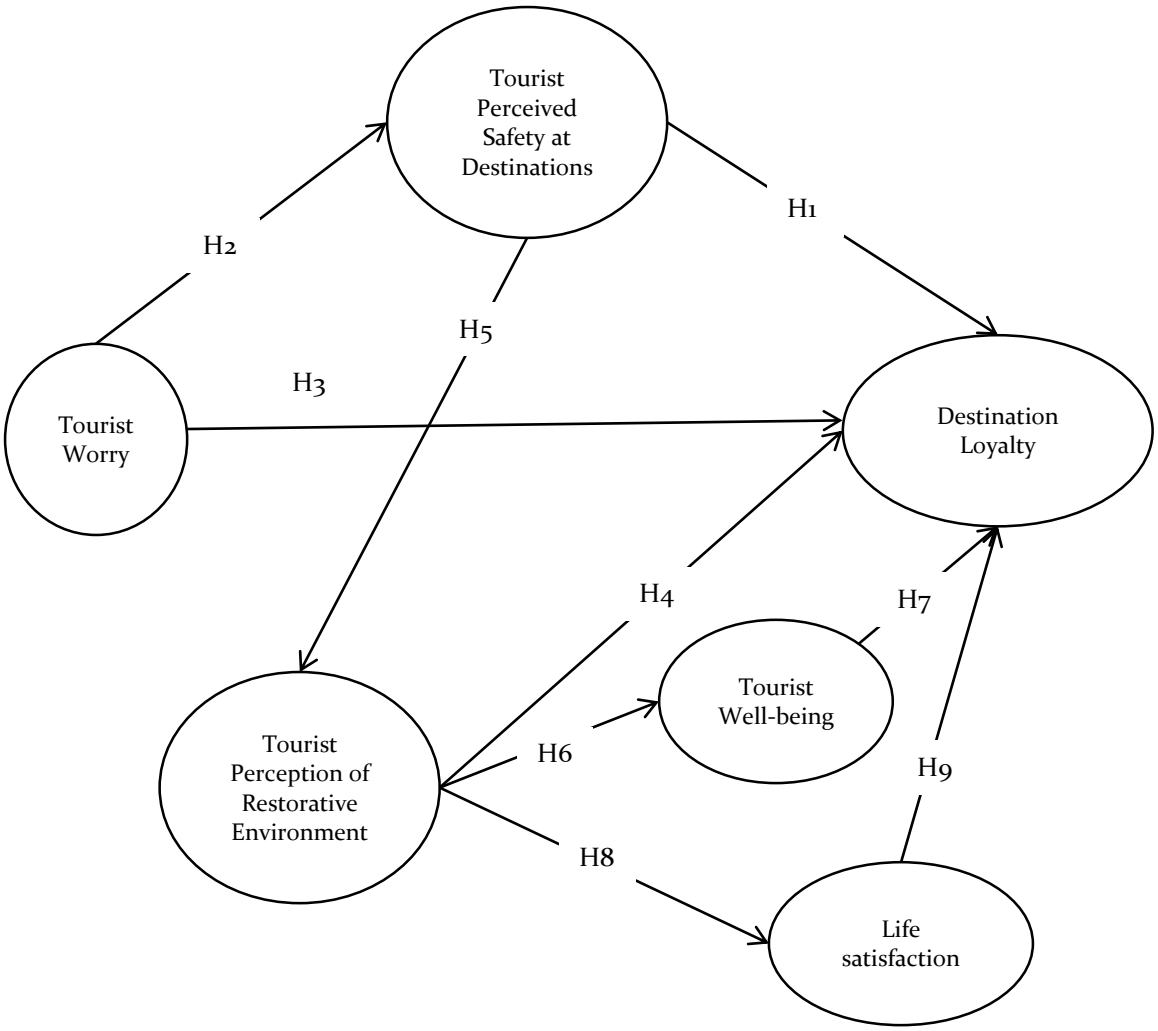

Figure 1. *Conceptual model.*

3. Methodology

3.1. Study area and target population

Located in Southern Europe, Portugal, officially known as the Portuguese Republic, was established in 1143 and occupies a total area of 92.212 km². The continent is positioned in the extreme southwest of the Iberian Peninsula, bordered north and east by Spain and the west and south by the Atlantic Ocean. The Portuguese territory also includes two autonomous regions: the archipelagos of Madeira and the Azores, located in the Atlantic Ocean (Visit Portugal, 2024).

Based on the 19th report by the European Travel Commission (ETC), published in June 2024, Portugal ranked as Europeans' 9th favourite destination in Europe (European Travel Commission [ETC], 2024). Recognised as one of Europe's most competitive destinations, Portugal's international tourism revenues reached €25.1 billion in 2023, exceeding the figure recorded in 2022 by 18.9%. The results achieved in 2023 for this indicator also represented a 36.6% increase over 2019 (the pre-pandemic year), marking the highest value ever and confirming the sector's full recovery (Turismo de Portugal, 2024b).

Portugal boasts mild winters and warm summers, diverse natural landscapes, a rich gastronomy, and a profound cultural heritage, positioning it as an ideal destination for wellness tourism (Moreira, 2018; Turismo de Portugal, 2024a). Complementing these attributes, Portugal's ranking as the 7th safest country globally, according to the 2023 Global Peace Index (GPI) (Institute for Economics & Peace, 2023), further underscores its potential as a privileged destination for wellness-focused travel.

Although the wellness economy already accounts for a significant share of output and expenditure, indicating strong growth prospects for wellness-oriented products and services (INE, 2024; GWI, 2025; GWI, 2024a), there is still no dedicated official statistical series for wellness tourism. Moreover, the Portuguese literature remains largely focused on thermal contexts within the broader health and wellness field, frequently overlapping with medical tourism (INE, 2024; Brandão *et al.*, 2021; da Costa Guerra *et al.*, 2022; Loureiro *et al.*, 2013; Loureiro *et al.*, 2023; Lopes & Rodríguez-López, 2022; Mota *et al.*, 2023; Pereira *et al.*, 2023; Pina & Martins, 2022; Quintela, 2023).

Given the recent global emphasis on health and well-being, Portugal is well-positioned to attract wellness travellers. Thus, considering the travel restrictions during the 2020-2021 pandemic, the target population of this research are national and international tourists who have participated in wellness experiences in Portugal since 2022.

3.2. Measurement of constructs

A questionnaire was developed using previously validated scales to assess the proposed hypotheses, ensuring the reliability and validity of the measurements. The first section comprises questions to identify the tourist profile, covering aspects such as age, gender, nationality, occupation, and the characteristics of the visit, including the wellness experience they most enjoyed in Portugal, when it took place and in which city. The second section's questions evaluate the model's constructs: tourist worry, TPSD, TPRE, tourist well-being, life satisfaction, and destination loyalty. As detailed in the appendix, a five-point Likert scale (1 = strongly disagree and 5 = strongly agree) was employed to assess the first-order constructs' items.

Tourist worry was assessed using the Tourist Worry Scale (TWS) designed by Larsen *et al.* (2009) and tested in numerous investigations (e.g., Brun *et al.*, 2011; Jin *et al.*, 2016). This scale was developed to measure tourists' worries concerning potential adverse outcomes of their trips. The TWS consists of eight items, half relating to planning a vacation and the other half to potential events occurring during a vacation.

TPSD was evaluated using the reliable Tourist Perceived Safety Scale (TPSS) developed by Xie *et al.* (2020). This scale is based on the Safety System Theory and 4M analysis framework (Xie *et al.*, 2020), comprising 20 items across five factors: perceived safety of facility and equipment elements (PSFE), perceived safety of human elements (PSH), perceived safety of social environments (PSSE), perceived safety of natural environments (PSNE), and perceived safety of management elements (PSM).

TPRE was measured in four factors: extent, being away, compatibility, and fascination, by adopting the 14-item Perceived Restorativeness Scale (PRS). This scale is grounded in the ART and is based on studies

by Hartig *et al*. (1997), Purcell *et al*. (2001), and Laumann *et al*. (2001). Backman *et al*. (2023) recently adapted the scale to the wellness tourism context. This measurement approach has since been widely adopted by researchers, with numerous studies confirming its four-factor structure (e.g., Backman *et al*., 2023; Cho *et al*., 2016; Huang, 2022; Xue & Shen, 2022).

Tourist well-being was evaluated using the 12-item scale created by Lengieza *et al*. (2019), which encompasses two factors of hedonia (avoid and pleasure) and two factors of eudaimonia (self-reflection and personal meaning) within travel experiences. Studies from Lee *et al*. (2024) and Karagöz *et al*. (2024) confirmed the validity of the measurement. Life satisfaction was gauged through the Satisfaction with Life Scale (SWLS) designed by Diener *et al*. (1985), comprising five items that evaluate an individual's overall cognitive judgement of their life satisfaction. Tourist destination loyalty was tested through seven items from Padrón-Ávila *et al*. (2022), encompassing behavioural and attitudinal dimensions.

Two questionnaire versions were administered: the original English version and a translated Portuguese version. To ensure functional and conceptual equivalence of the items in Portuguese, a back-translation procedure was employed, translating the content from English to Portuguese and then back to English.

The Portuguese version was then piloted with a convenience sample of 15 Portuguese residents who had engaged in wellness tourism in the country. The pilot assessed face and content validity, response-process validity (including clarity of instructions and item interpretation), and the usability of the instrument. Overall comprehension and item flow were satisfactory, and no substantive changes to constructs were required. Three minor refinements were implemented based on participant feedback: (i) the 5-point Likert scale was fully labelled to remove ambiguity around the neutral midpoint; (ii) one respondent had difficulty with the term "coherent" in PRS item 5, so the wording was adjusted from "I felt that the surroundings were coherent" to "I felt that the surroundings were harmonious"; and (iii) two respondents reported that PRS item 6 sounded overly general, so the wording was clarified from "I felt that the different elements of the environment constituted a larger whole" to "I felt that the different elements of the environment worked together as a larger whole". These adjustments improved response consistency and usability without altering the theoretical structure of the measures.

3.3. Data collection

Wellness tourism in Portugal remains largely underexplored, as it has not received significant attention from researchers, industry stakeholders, or policymakers. This underdevelopment is also reflected in the absence of official data to provide specific statistics for this sector. Consequently, determining a minimum number of cases to reach a representative sample was not feasible.

Moreover, the wellness tourism market posed significant challenges for data collection. As a niche segment, the likelihood of easily identifying eligible tourists who had undertaken a wellness experience was limited. Consequently, it was necessary to approach organisations in the wellness sector. However, efforts to gather data from hotels, thermal spas, integrative therapy centres and other specialised facilities were largely unsuccessful, as these establishments did not authorise access to their guests on privacy grounds. Without an adequate sampling frame, a convenience sampling method was adopted.

Data was collected through Google Forms, an online survey tool (https://workspace.google.com/products/forms/). Recruitment was conducted via social media (Facebook and Instagram). Public pages of hotels, spas, spiritual retreats, and other wellness providers in Portugal were systematically reviewed to identify publicly available user posts that tagged or mentioned these pages. Prospective participants who had tagged the pages in their own posts were then contacted via direct message to confirm that they had engaged in a wellness experience during their

trip. Only after verification was the questionnaire link provided. Data was gathered from November 2023 to July 2024.

The survey targeted national and international tourists aged 18 and above who had experienced wellness activities in Portugal since 2022. It included primary and secondary wellness travellers, those whose main motivation for selecting a destination is to pursue wellness and those who want to preserve their wellness routines or engage in wellness experiences during their leisure or business trips. Participants were required to complete a questionnaire that included an introduction with informed consent, research objectives, and definitions of key terms to ensure clarity and understanding. To minimise potential non-response bias, respondents were assured of the anonymity and confidentiality of their answers. In addition, several follow-up reminders were sent to encourage participation. Out of the 271 questionnaires initially collected, a final sample of 237 (87%) was retained for analysis following a detailed data cleaning and screening process.

3.4. Data collection

To estimate and validate the proposed model, the study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS version 4.0.8.2 (Ringle *et al.*, 2022). This technique is widely recognised in tourism research for its suitability in analysing complex models, especially when dealing with non-normally distributed data and smaller sample sizes (Hair *et al.*, 2019). Besides a relatively small sample size, our study involves a complex model with second-order constructs, and the data do not follow a normal distribution (Kolmogorov-Smirnov and Shapiro-Wilk tests: p-values = 0.000). Additional reasons for using PLS-SEM instead of Covariance-based SEM (CB-SEM) included the exploratory nature of our study (as some relations in our model are not yet well established) and its prediction orientation (as it explores theoretical models and previous research with the ultimate goal of better predicting destination loyalty).

Prior to proceeding with model estimation, we assessed potential common method bias (CMB), which is important given that all the constructs were measured on the same scale from 1 to 5. Such a design can lead to CMB, where respondents may provide consistent answers that could artificially inflate covariances between variables (Podsakoff *et al.*, 2003, 2012). In line with recent methodological recommendations, two robust techniques for detecting CMB that are simple to implement in PLS-SEM were applied in our study. First, a collinearity test was performed (Kock, 2015). According to this test, the variance inflation factor (VIF) for the exogenous latent variables in the model should not exceed 3.3, which was verified in our study. An additional test for CMB was performed using the Common Latent Factor (CLF) approach, which involves including an unmeasured latent variable linked to all indicators in the model. The standardised loadings with and without the CLF were then compared. The results showed that the differences were below the 0.20 threshold, with the CLF accounting for less than 25% of the variance in the indicator. Therefore, CMB was not considered a concern in our study.

The two-step method was adopted to estimate the reflective second-order constructs on the model (Hair *et al.*, 2022). Firstly, scores for each dimension (first-order construct), which form the second-order constructs, were derived by running the PLS-SEM algorithm on a model connecting all first-order constructs. These scores were then used in the subsequent phase to represent the associated second-order constructs. Following the validation of the measurement model through these two steps, the structural model was estimated, and the proposed hypotheses were tested.

4. Results

4.1. Sample Characteristics

The demographic characteristics of the sample are summarised in Table 1. Participants engaged in wellness experiences across Portugal between February 7, 2022, and July 1, 2024. The sample was

predominantly female, with 81.9%, 17.7% male, and one respondent choosing the option "prefer not to answer". Participants spanned all age groups (M = 34.45, SD = 9.39), ranging from 18-24 (11.4%) to 55+ (2.5%), and the most represented age group was 25-34 years (48.5%). In terms of nationality, 46.4% were Portuguese and 53.6% held other nationalities. A slightly larger proportion of respondents live in Portugal (52.3%) compared to those residing abroad (47.7%). Regarding employment, the majority (66.2%) worked in public-private sector. When asked about their preferred wellness experience during their trip, the most popular choice was walking in nature (28.3%), followed by yoga/meditation/mindfulness (21.6%) and thermal/mineral baths (20.3%). The settings where participants experienced wellness activities varied, with natural surroundings being the most popular (35.9%), followed by hotels (26.6%), retreat centres (17.7%), thermal centres (10.5%), and spas (5.1%). Geographically, most wellness experiences took place in the northern region of Portugal (21.5%), followed by the central region (17.7%), the Azores (16.9%), and the Lisbon region (15.6%).

Table 1. Characteristics of the sample.

Variables (*n* = 237)	***N***	**Percentage**
Gender		
Female	194	81.9
Male	42	17.7
Prefer not to answer	1	0.4
Age		
18-24	27	11.4
25-34	115	48.5
35-44	55	23.2
45-54	34	14.4
≥55	6	2.5
Nationality		
Portuguese	110	46.4
Other	127	53.6
Country of residence		
Portugal	124	52.3
Other	113	47.7
Occupation		
Self-employed	61	25.7
Public-private sector	157	66.2
Student	16	6.8
Unemployed	3	1.3
Favourite wellness experience in Portugal		
Nature walk	67	28.3
Yoga/meditation/mindfulness	51	21.6
Thermal/mineral baths	48	20.3
Massage	31	13.1
Nature cycling tour	7	3.0
Other	33	13.7
Setting where the wellness took place		
Nature	85	35.9
Hotel	63	26.6
Retreat centre	42	17.7
Thermal centre	25	10.5
Spa	12	5.1
Other	10	4.2
Region where the wellness experience took place		
Northen Portugal	51	21.5
Central Portugal	42	17.7
Lisbon region	37	15.6
Alentejo	30	12.7
Algarve	25	10.5
Azores	40	16.9
Madeira	12	5.1

4.2. Assessing the measurement model

Table 2 shows the measurement model results for the reflective first-order latent variables. Some items from the initial scales (specifically, Tourist Worry, TPSD, TPRE, and Destination Loyalty) were removed to ensure that all constructs met the required levels of reliability and validity. For the same reason, the dimensions "*extent*" and "*compatibility*" were combined into a single factor, and "*personal meaning*" and "*self-reflection*" were merged into "*meaning & reflection*". Consequently, in the final solution presented in Table 2, all factor loadings exceeded the commonly accepted threshold of 0.707, indicating an adequate level of individual reliability (Hair *et al*., 2011). In addition, "composite reliability" (CR) values ranged from 0.870 to 0.948, surpassing the minimum criterion of 0.7 (Fornell & Larcker, 1981), thereby confirming internal consistency among all indicators corresponding to one construct. Concerning convergent validity, each latent variable's "average variance extracted" (AVE) values reflecting the variance shared between each construct and its indicators were analysed. As a result, all AVEs exceed the recommended threshold of 0.5 (Hair *et al*., 2011). In addition, bootstrapping t statistics revealed that the indicators of each first-order latent variable significantly measured the proposed latent variable, with all t-values exceeding 1.96 ($p < 0.05$) or 2.585 ($p < 0.01$), further corroborating convergent validity.

Table 2. *Descriptive statistics of the measurement model (First-order constructs).*

Dimensions and items	**Mean[a]**	**Loading**	**CR**	**AVE**	***t-value***	***p-value***
Tourist worry (TW)			0.870	0.573		
TW-1. When planning a vacation, I worry that hotel reservations, train tickets or other travel documents may contain mistakes	2.56	0.724			8.671	0.000
TW-2. When planning a vacation, I worry about the possibility of acts of terrorism or war at the destination	2.09	0.802			12.508	0.000
TW-3. When on vacation, I worry about petty crime (that someone will steal my belongings)	2.71	0.750			11.051	0.000
TW-4. When on vacation, I constantly worry that something may go wrong	2.00	0.785			11.926	0.000
TW-5. When on vacation, I worry that I'll get lost or lose contact with my travel companions	1.86	0.722			9.176	0.000
Perceived safety of social environments (PSSE)			0.948	0.858		
PSSE-1. I rarely encountered fraud and theft at the destination	4.55	0.907			8.731	0.000
PSSE-2. I rarely encountered violence at the destination	4.60	0.956			9.364	0.000
PSSE-3. I rarely encountered public security problems at the destination	4.58	0.915			8.912	0.000
Perceived safety of facility and equipment elements (PSFE)			0.896	0.685		
PSFE-1. The facilities/physical space where the wellness tourism experience took place were reliable in performance	4.51	0.707			2.651	0.008
PSFE-2. The facilities/physical space where the wellness tourism experience took place seemed safe and secure	4.56	0.857			3.738	0.000

Dimensions and items	Mean[a]	Loading	CR	AVE	*t-value*	*p-value*
PSFE-3. The facilities/physical space where the wellness tourism experience took place was comfortable	4.49	0.805			3.019	0.003
PSFE-4. I did not encounter any danger when I used the facilities/physical space where the wellness tourism experience took place	4.55	0.926			4.970	0.000
Perceived safety of management elements (PSM)			0.917	0.847		
PSM-1. At the destination, I found clear information about the safety procedures to be adopted	3.82	0.951			2.638	0.008
PSM-2. The destination's public security forces seemed very effective to me	3.93	0.888			2.762	0.006
Perceived safety of human elements (PSH)			0.895	0.740		
PSH-1. Tourism professionals where the wellness tourism experience took place had a professional safety ability	3.73	0.795			2.297	0.022
PSH-2. Tourism professional where the wellness tourism experience took place provided service safely	4.26	0.919			2.323	0.020
PSH-3. Tourism professionals where the wellness tourism experience took place ensured my safety	4.29	0.862			2.221	0.026
Perceived safety of natural environments (PSNE)			0.893	0.807		
PSNE-1. The destination is less prone to natural disasters	3.63	0.881			2.550	0.011
PSNE-2. There was no need to worry about extreme natural conditions at the destination, such as weather	3.92	0.915			2.726	0.006
Extent and compatibility (E&C)			0.914	0.641		
E&C-1. I felt that the surroundings were harmonious	4.67	0.807			21.148	0.000
E&C-2. I felt that the different elements of the environment constituted a larger whole	4.55	0.854			28.474	0.000
E&C-3. I felt that the elements of the environment were interconnected	4.55	0.862			31.212	0.000
E&C-4. Many of the objects/elements caught my attention	4.43	0.755			19.779	0.000
E&C-5. I rapidly adapted to the setting	4.65	0.711			14.245	0.000
E&C-6. There was an accordance between what I like to do and the surroundings	4.61	0.805			23.810	0.000
Fascination (FA)			0.914	0.726		
FA-1. There was a lot to discover	4.30	0.857			38.811	0.000
FA-2. There were many things I found beautiful	4.68	0.830			28.045	0.000
FA-3. There was a lot I wanted to do	4.27	0.872			36.963	0.000

Dimensions and items	Mean[a]	Loading	CR	AVE	*t-value*	*p-value*
FA-4. The environment allowed me to do activities I like	4.56	0.849			29.993	0.000
Away (AW)			0.872	0.695		
AW-1. I did not have to think about my responsibilities while I was there	4.10	0.798			19.800	0.000
AW-2. Spending time there gave me a good brake from my daily routine	4.66	0.873			37.529	0.000
AW-3. I've been away from my obligations	4.42	0.828			19.356	0.000
Meaning & reflection (M&R)			0.930	0.689		
PG-1. The trip helped me think about my true potential	4.11	0.842			29.527	0.000
PG-2. The trip helped me grow as a person	4.13	0.852			34.175	0.000
PG-3. The trip gave me a sense of purpose in my life	3.68	0.821			31.978	0.000
PG-4. I experienced times when I could self-reflect	4.24	0.833			33.967	0.000
PG-5. I thought about the meaning of life on the trip	3.91	0.824			20.704	0.000
PG-6. I was able to think deeply about topics I care about	4.06	0.809			19.806	0.000
Pleasure (PL)			0.920	0.793		
PL-1. I had many laughs on the trip	4.49	0.892			36.792	0.000
PL-2. The trip was entertaining	4.52	0.913			56.447	0.000
PL-3. The trip made me happy	4.75	0.866			32.907	0.000
Avoid (AV)			0.902	0.755		
AV-1. The trip helped me forget the problems in the world	4.24	0.896			50.087	0.000
AV-2. The trip helped me get away from negative news in the papers, TV, internet postings, etc	4.44	0.852			27.950	0.000
AV-3. The trip allowed me to live like I did not have a care in the world	4.09	0.857			30.112	0.000
Life Satisfaction (LS)			0.900	0.643		
SWL-1. In most ways, my life is close to my ideal	3.83	0.805			17.315	0.000
SWL-2. The conditions of my life are excellent	3.91	0.752			12.794	0.000
SWL-3. I am satisfied with my life	4.07	0.869			30.573	0.000
SWL-4. So far, I have gotten the important things I want in life	4.07	0.833			30.124	0.000
SWL-5. If I could live my life over, I would change almost nothing	3.68	0.743			14.107	0.000
Destination loyalty (DL)			0.905	0.705		
DL-1. I would repeat this trip	4.65	0.745			16.902	0.000
DL-2. I still refer this trip to others	4.39	0.873			38.548	0.000
DL-3. I encourage my family and friends to do this trip	4.30	0.847			29.134	0.000
DL-4. I recommend this trip to anyone who asks me	4.46	0.886			39.281	0.000

Note: CR = composite reliability; AVE = average variance extracted.

[a]Each item was asked on a 5-point Likert-type scale: 1 = strongly disagreed and 5 = strongly agreed.

Table 3 presents the assessment of discriminant validity, which determines whether each construct represents a concept distinct from the others. Two established criteria were applied, the Fornell-Larcker criterion (Fornell & Larcker, 1981) and the "heterotrait-monotrait" (HTMT) ratio of correlations (Henseler *et al.*, 2015). According to the Fornell-Larcker criterion, the square root of a construct's AVE must be greater than its correlations with any other construct. The HTMT criterion, on the other hand, requires that inter-construct correlation ratios remain below the 0.9 threshold (Henseler *et al.*, 2015). The findings confirm that all constructs satisfy both criteria, supporting the discriminant validity of the measurement model. Consequently, the constructs demonstrate reliability and validity.

Table 3. *Correlations among latent variables (First-order constructs).*

Constructs	LS	E&C	FA	AW	PSSE	PSFE	PSM	PSH	PSNE	M&R	PL	AV	DL	TW
LS	0.802*													
E&C	0.280 0.312**	0.801*												
FA	0.270 0.306**	0.658 0.743**	0.852*											
AW	0.175 0.206**	0.609 0.727**	0.417 0.497**	0.834*										
PSSE	0.205 0.226**	0.422 0.469**	0.184 0.206**	0.283 0.331**	0.926*									
PSFE	0.231 0.263**	0.427 0.492**	0.259 0.300**	0.324 0.416**	0.392 0.419**	0.827*								
PSM	0.196 0.227**	0.337 0.397**	0.279 0.317**	0.178 0.214**	0.357 0.417**	0.370 0.492**	0.920*							
PSH	0.194 0.209**	0.360 0.420**	0.300 0.353**	0.258 0.309**	0.361 0.411**	0.517 0.633**	0.454 0.566**	0.860*						
PSNE	0.064 0.111**	0.165 0.195**	-0.058 0.092**	0.150 0.196**	0.287 0.343**	0.280 0.334**	0.110 0.149**	0.247 0.305**	0.898*					
M&R	0.268 0.311**	0.422 0.462**	0.441 0.478**	0.237 0.257**	0.029 0.061**	0.222 0.263**	0.301 0.341**	0.243 0.274**	-0.042 0.066**	0.830*				
PL	0.314 0.349**	0.500 0.568**	0.540 0.617**	0.394 0.471**	0.154 0.170**	0.282 0.363**	0.251 0.306**	0.257 0.301**	0.088 0.107**	0.302 0.319**	0.891*			
AV	0.205 0.225**	0.447 0.511**	0.360 0.412**	0.514 0.630**	0.158 0.180**	0.222 0.303**	0.261 0.311**	0.237 0.282**	0.186 0.235**	0.335 0.357**	0.451 0.520**	0.869*		
DL	0.288 0.312**	0.563 0.632**	0.530 0.599**	0.425 0.501**	0.252 0.276**	0.257 0.343**	0.311 0.366**	0.349 0.410**	0.122 0.146**	0.364 0.387**	0.571 0.652**	0.367 0.415**	0.840*	
TW	-0.164 0.214**	-0.031 0.089**	-0.023 0.074**	-0.010 0.108**	-0.190 0.206**	-0.168 0.161**	-0.084 0.121**	-0.053 0.080**	-0.063 0.117**	-0.052 0.091**	0.014 0.074**	0.008 0.132**	0.107 0.137**	0.757*

Note: LS: Life satisfaction; E&C: Extent and compatibility; FA: Fascination; AW: Away; PSSE: Perceived safety of social environments; PSFE: Perceived safety of facility and equipment elements; PSM: Perceived safety of management elements; PSH: Perceived safety of human elements; PSNE: Perceived safety of natural environments; M&R: Meaning and reflection; PL: Pleasure; AV: Avoid; DL: Destination loyalty; TW: Tourist worry
**Diagonal values corresponding to the Fornell-Larcker criterion, **HTMT values.*

Subsequently, the estimated scores for the first-order constructs were used as measurement items for the second-order factors of TPSD, TPRE, and tourist well-being. According to the results shown in Table 4, individual reliability was observed for most of the indicators, with loading values exceeding the recommended threshold of 0.707 (Hair *et al.*, 2011), except for the dimension "*meaning & reflection*" (0.670). However, since it was close to the reference value and its exclusion did not enhance the measurement model, the indicator was maintained in the analysis. Additionally, the dimension "*perceived safety of social environments*" was eliminated from the model, as its factor loading was below the minimum acceptable threshold of 0.4 (Hair *et al.*, 2011). CR was confirmed, with coefficients from 0.801 to 0.879, exceeding the established threshold of 0.7 (Fornell & Larcker, 1981). As for convergent validity, the assessment yielded robust results as all AVEs were above the 0.5 cut-off point (Hair *et al.*, 2011), and bootstrapping revealed t-values greater than 2.585, indicating significance at the 1% level. The loadings, the CRs and the AVEs of the remaining first-order constructs (tourist well-being, life satisfaction, and destination loyalty), not presented in the table, are similar to those presented in Table 2.

Table 4. *Descriptive statistics of the measurement model (Second-order constructs).*

Constructs and dimensions	Mean	Loading	CR.	AVE	*t-value*	*p-value*
Tourist perceived safety at destinations (TPSD)			0.834	0.557		
Perceived safety of social environments (PSSE)	4.58	0.702			12.154	0.000
Perceived safety of facility and equipment elements (PSFE)	4.53	0.773			20.420	0.000
Perceived safety of management elements (PSM)	3.88	0.718			16.737	0.000
Perceived safety of human elements (PSH)	4.09	0.789			19.838	0.000
Tourist perception of restorative environments (TPRE)			0.879	0.709		
Extent and compatibility (E&C)	4.58	0.913			73.116	0.000
Fascination (FA)	4.45	0.832			25.863	0.000
Away (AW)	4.39	0.776			18.074	0.000
Tourist well-being (TWB)			0.801	0.575		
Meaning and reflection (M&R)	4.02	0.670			13.479	0.000
Pleasure (PL)	4.59	0.823			30.209	0.000
Avoid (AV)	4.26	0.773			24.102	0.000

Note: CR = composite reliability; AVE = average variance extracted.
[a]Each item was asked on a 5-point Likert-type scale: 1 = strongly disagreed and 5 = strongly agreed.

Regarding the model's discriminant validity, the square root of each AVE was greater than its correlations with other constructs, as shown in Table 5, suggesting adequate discriminant validity. Likewise, most HTMT ratio values remained below the recommended threshold of 0.9. The exception was the relation between the tourist well-being and TPRE (HTMT = 0.949). Given this higher than desirable HTMT value, the crossloadings for these two constructs were also observed as an additional measure of discriminant validity (Hair *et al.*, 2022). The crossloadings analysis, not presented in this study due to space limitations, shows that items measuring tourist well-being and TPRE load more strongly on the intended construct than on the other, supporting discriminant validity. Finally, since the constructs are also theoretically distinct, the measurement model was considered to present enough discriminant validity (Hair *et al.*, 2022).

Table 5. *Correlations among latent variables of the complete model*

Constructs	LS	TPSD	TPRE	DL	TWB	TW
LS	0.804*					
TPSD	0.273	0.747*				
	0.335**					
TPRE	0.290	0.486	0.842*			
	0.342**	0.628**				
DL	0.284	0.394	0.608	0.839*		
	0.312**	0.484**	0.715**			
TWB	0.347	0.387	0.677	0.589	0.758*	
	0.460**	0.567**	0.949**	0.764**		
TW	-0.165	-0.168	-0.026	0.108	-0.010	0.755*
	0.214**	0.217**	0.088**	0.137**	0.140**	

Note: LS: Life satisfaction; TPSD: Tourist perceived safety at destinations; TPRE: Tourist perception of restorative environments; DL: Destination loyalty; TWB: Tourist well-being; TW: Tourist worry
**Diagonal values corresponding to the Fornell-Larcker criterion, **HTMT values.*

4.3 Assessing the structural model and testing the research hypotheses

The structural model was assessed prior to testing the proposed hypotheses, focusing on its explanatory power. First, the model's explanatory ability was examined through the coefficient of determination (R^2) for the dependent latent constructs (TPSD, TPRE, tourist well-being, life satisfaction, and destination loyalty). Hair *et al.* (2011) outlined that R^2 values of 0.75, 0.50, and 0.25 reflect high, moderate, and low levels of explanatory power, respectively. The coefficients for the construct's tourist well-being (0.456) and destination loyalty (0.449) indicate a moderate level of variance explained by the model's predictors. Path coefficients were computed for the second-order model to evaluate the proposed hypotheses, as shown in Table 6. The findings indicated that path coefficients ranged from -0.168 to 0.677 and were statistically significant at the 5% level. Based on the path coefficient results, all hypotheses 1-9 were supported, except hypothesis 3, which posited that tourist worry negatively impacts destination loyalty. The final estimated PLS-SEM model, along with the results, is presented in Figure 2.

Table 6. *Result of structural model and hypotheses testing.*

Hypotheses		*Path coefficients*	*t-value*	*p-value*	Results
Hypothesis 1	TPSD → Destination loyalty	0.124	1.766	0.039	Support
Hypothesis 2	Tourist worry → TPSD	-0.168	2.000	0.023	Support
Hypothesis 3	Tourist worry → Destination loyalty	0.153	3.269	0.001	Not support
Hypothesis 4	TPRE → Destination loyalty	0.332	4.167	0.000	Support
Hypothesis 5	TPSD → TPRE	0.486	8.203	0.000	Support
Hypothesis 6	TPRE → Tourist well-being	0.677	15.043	0.000	Support
Hypothesis 7	Tourist well-being → Destination loyalty	0.290	4.009	0.000	Support
Hypothesis 8	TPRE → Life satisfaction	0.290	5.053	0.000	Support
Hypothesis 9	Life satisfaction → Destination loyalty	0.078	1.649	0.050	Support

R^2 for TPSD = 0.024; for TPRE = 0.233; for Tourist well-being = 0.456; for Life satisfaction = 0.080; for Destination loyalty = 0.449.

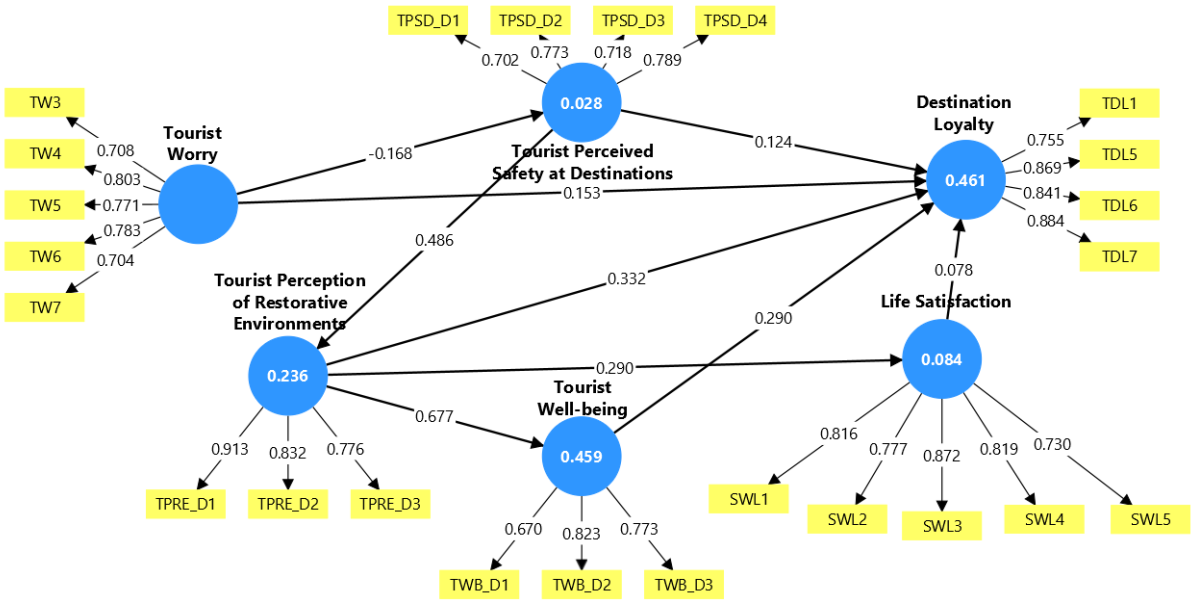

Figure 2. *Results of the final estimated PLS-SEM model.*

5. Discussion

The findings reveal that the model is particularly robust in explaining tourist well-being (0.456) and destination loyalty (0.449). Additionally, the highest significant associations were between TPRE and tourist well-being (0.677), TPSD and TPRE (0.486), and TPRE and destination loyalty (0.332).

The results support hypothesis 1, indicating that TPSD significantly enhances tourist destination loyalty (0.124), aligning with Zou and You (2022), Liu *et al.* (2021), and Kong *et al.* (2024) investigations, which found that tourists who perceive destinations as safe are more inclined to revisit, share their experience and recommend it to others. Furthermore, these results follow Ashton (2018), who states that destinations offering a peaceful atmosphere positively influence wellness tourists' return intentions.

Hypothesis 2 was also supported, revealing that tourist worry significantly negatively influences TPSD (-0.168). This aligns with Chien *et al.* (2017) and Brun *et al.* (2011) investigations, which argue that worry predicts risk perception. Contrary to Handler's (2022) findings, which concluded that senior travellers visiting Japanese hot springs who experienced high worry negatively impacted their intention to revisit, hypothesis 3 was not supported in this study. Instead, tourist worry was positively correlated with destination loyalty (0.153). These results can be attributed to the distinction made in the present investigation, where tourists were asked about their general travel-related worries. At the same time, destination loyalty was evaluated specifically in relation to their wellness tourism experience in Portugal. Consequently, although tourists may express general concerns about travel, they might not experience significant worry during these particular wellness trips in Portugal. Moreover, tourists with higher levels of travel worry may prefer to revisit destinations they are already familiar with and that are perceived as safe, such as Portugal. This might be a possible explanation for the positive and significant relationship between tourist worry and destination loyalty found in our study.

TPRE positively affects destination loyalty (0.332), confirming hypothesis 4. These findings resonate with Backman *et al.* (2023), who noted that restorative environments contribute to wellness tourists' behavioural intentions. Moreover, TPRE positively influences tourist well-being (0.677) and life satisfaction (0.290), supporting hypotheses 6 and 8. These results align with Backman *et al.* (2023),

Huang (2022), and Fan *et al*. (2024) investigations, who confirmed that when tourists perceive the environment where the wellness experience occurs as restorative, their subjective and psychological well-being and life satisfaction increase. The most influential dimensions of TPRE are "*extent & compatibility*" (0.913). Kaplan and Kaplan's (1989) ART posits four restorative components: fascination, being away, compatibility, and extent. The present findings identified three dimensions, with "*extent*" and "*compatibility*" becoming a single factor. These results were inconsistent with previous investigations (e.g., Backman *et al*., 2023; Cho *et al*., 2016; Huang, 2022; Xue & Shen, 2022), which had validated the four-factor structure of the Perceived Restorativeness Scale (PRS).

The results revealed that TPSD positively influences TPRE (0.486), confirming hypothesis 5. This implies that tourists who perceive a destination as safe are more inclined to consider the environment of their wellness experience restorative. These outcomes are in line with Stragà *et al*. (2023), which demonstrated that TPSD predicts TPRE. The results also demonstrate that "*perceived safety of human elements*" (PSH) is the most important dimension, when compared to the "*perceived safety of social environments*" (PSSE), "*perceived safety of facility and equipment elements*" (PSFE), and "*perceived safety of management elements*" (PSM) dimensions, in shaping TPSD (0.789). These findings align with those of Xie *et al*. (2020), whose study on the development of the TPSD scale revealed that PSH is one of the highest concerns among tourists within the TPSD system.

Tourist well-being (0.290) significantly contributes to destination loyalty, confirming hypothesis 7. Previous studies by Tsai (2020), Al-Okaily *et al*. (2023), and Lee (2024) have similarly found that hedonic and eudaimonic well-being positively impact destination loyalty. Among the well-being dimensions, pleasure (0.823) and avoid (0.733), corresponding to the hedonic dimensions, were the strongest predictors of tourist well-being. Although eudaimonic and hedonic well-being contribute positively to destination loyalty, hedonic well-being was a stronger predictor in this relationship. This finding aligns with Vada *et al*. (2019), Karagöz *et al*. (2024) and Han *et al*. (2025), who reported that hedonia has a positive influence on destination loyalty, whereas eudaimonia does not. It is worth highlighting that, contrary to the four-factor structure suggested by Lengieza *et al*. (2019), this study identifies three factors: "*personal meaning*" and "*self-reflection*" have merged into a single factor. Hypothesis 9 was also confirmed, as research by Backman *et al*. (2023) and Huang (2019) found that life satisfaction has a positive effect on destination loyalty.

6. Conclusions

This study provides important contributions to destination loyalty formation in wellness tourism research. Drawing on Safety System Theory and ART, this research highlights the interaction between key variables, including TPSD, tourist worry, TPRE, tourist well-being, and life satisfaction, to form destination loyalty. The findings underline the importance of mitigating tourist worries, strengthening safety perceptions, fostering restorative experiences, and enhancing tourist well-being and life satisfaction as effective strategies for improving destination loyalty in wellness tourism.

The results highlight that tourist worry negatively impacts TPSD, which is important for fostering positive wellness tourist experiences, particularly in shaping TPRE. The significant positive relationship between TPSD and TPRE underscores that safety perceptions are essential in enabling tourists to experience restorative benefits in wellness settings. Furthermore, the positive impact of TPRE on tourist well-being and life satisfaction reaffirms the transformative potential of wellness tourism in enhancing both eudaimonic and hedonic dimensions of well-being. The findings also show that TPSD, TPRE, tourist well-being and life satisfaction positively influence destination loyalty. Despite previous literature identifying a negative relationship between tourist worry and destination loyalty, the unexpected positive correlation found in this study invites further reflection.

Addressing existing gaps in wellness tourism research, the study advances theoretical understanding and delivers insights for stakeholders, including policymakers, marketers, and destination managers. These findings hold particular relevance for creating and promoting wellness tourism experiences that cater to the evolving needs of travellers while ensuring a sustainable competitive advantage in this growing industry. Ultimately, this investigation provides a foundation for future research on wellness tourism and underscores Portugal's potential to emerge as a renowned international destination in this field.

6.1. *Theoretical implications*

This research provides a substantial contribution to the theoretical knowledge of wellness tourism. Firstly, it advances knowledge of tourists' decision-making processes by examining destination loyalty among wellness travellers, a subject of considerable interest in the academic literature (e.g., Ahn & Kim, 2024; Chua *et al.*, 2024; Han *et al.*, 2017; Han *et al.*, 2018; Kim *et al.*, 2017). Specifically, this investigation addresses the call by Al-Ansi *et al.* (2024) for further research into wellness tourism at the destination loyalty level, as a considerable number of existing studies predominantly focus on specific products or services within the sector.

Secondly, it approaches a significant gap in tourism research by shifting the focus from risk perceptions, the dominant theme in prior studies (e.g., Fuchs *et al.*, 2024; Godovykh *et al.*, 2021; Kim *et al.*, 2023), to safety perceptions. Within the context of wellness tourism, this perspective remains largely unexamined since the limited studies available primarily focus on COVID-19 and health-related risks (e.g., Goyal & Taneja, 2023; Li & Huang, 2022; Majeed & Ramkisson, 2020), making the findings particularly relevant for advancing the field. Furthermore, this study is among the first to employ the Tourist Perceived Safety Scale (TPSS), developed by Xie *et al.* (2020), to evaluate TPSD, specifically in the context of wellness tourism, thereby extending the applicability of Safety System Theory to this domain. This novel application not only underscores the robustness of the TPSS but also offers an empirical baseline for future investigations.

Thirdly, investigating the impact of tourist worry on TPSD offers novel insights into wellness tourism. While prior research has frequently linked tourist worry to risk perceptions (e.g., Brun *et al.*, 2011; Chien *et al.*, 2017; Handler, 2022; Jin *et al.*, 2016), the relationship between tourist worry and TPSD has remained underexplored. This study responds directly to Handler and Kawaminami's (2023) call for further research on travel-related worry in wellness tourism, and the findings obtained align with previous studies positioning worry as an antecedent of perceived safety (Brun *et al.*, 2011; Chien *et al.*, 2017). In parallel, tourism studies typically find that higher levels of worry are associated with lower destination loyalty (Li *et al.*, 2021) or reduced revisit intentions (Handler, 2022), a key dimension of loyalty. Against this backdrop, the positive association observed here between tourist worry and destination loyalty points to a boundary condition in which worry does not uniformly undermine conative outcomes in wellness settings. This proposes that some more worry-prone travellers can still become highly loyal when the experience reliably alleviates their concerns and provides a sense of restoration. Taken together, these observations suggest that context may influence the direction of the relationships between tourist worry and destination loyalty, warranting an explicit comparison in future research. This is particularly important given the absence of wellness tourism studies that test this link and the broader scarcity of tourism research that examines it directly.

Fourthly, this research offers a deeper understanding of the benefits of restorative environments in wellness tourism. Following the suggestions of Backman *et al.* (2023) and Jeong (2024), it features the essential role of TPRE in shaping enriching wellness tourism experiences. Employing the ART and the Perceived Restorativeness Scale (PRS), the study demonstrates the robustness and applicability of these theoretical and methodological frameworks in understanding the dynamics of wellness tourism

settings. Furthermore, the research explores the interaction between TPSD and TPRE, aligning with Stragà *et al*. (2023), who identified perceived safety as a prerequisite in enabling tourists to experience the restorative qualities of wellness experiences fully. This positive link suggests that improving TPSD maximises the TPRE of wellness tourism experiences.

Lastly, this research enriches the comprehension of tourist well-being by linking its hedonic and eudaimonic dimensions to destination loyalty. The findings confirm that while both dimensions influence destination loyalty, as reported by the studies from Tsai (2020), Al-Okaily *et al*. (2023), and Lee (2024), hedonic well-being, rooted in pleasure and enjoyment, has a stronger impact (Karagöz *et al*., 2024; Vada *et al*., 2019). This suggests that the tangible, immediate aspects of wellness experiences, such as relaxation and sensory enjoyment, are more significant in promoting destination loyalty than intangible aspects like personal growth (Chua *et al*., 2024). Nonetheless, addressing both dimensions ensures a more holistic approach to enhancing tourist destination loyalty (Al-Okaily *et al*., 2023; Lee, 2024; Tsai, 2020).

6.2. Practical implications

The results of this investigation offer important practical implications for wellness tourism stakeholders, including key industry players such as tourism marketers, business operators, and governmental agencies, as well as indirectly involved groups like local communities.

Wellness tourism has traditionally been linked with high-end resorts and luxurious spas (Backman *et al*., 2023; Chen *et al*., 2023; GWI, 2024b; Park *et al*., 2021). Therefore, most academic studies have focused on a specific wellness experience (e.g., Backman *et al*., 2023; Huang *et al*., 2022). In contrast, this study broadens its scope by addressing a variety of wellness activities, including meditation, nature walks, thermal and mineral baths, yoga sessions, and massages. Considering this broader perspective, stakeholders can design inclusive, adaptable, and applicable strategies across various wellness tourism settings.

The destination's attractiveness is deeply influenced by its image, directly impacting tourists' decision-making processes. Maintaining and enhancing a wellness destination's competitiveness requires creating environments that foster a peaceful atmosphere, as such environments positively influence tourists' intentions to return. For instance, Ashton (2018) highlighted that peaceful settings are decisive in encouraging spiritual retreat visitors to revisit. Similarly, the findings of this research corroborate that safety and security measures are fundamental in promoting a destination's appeal. Wellness tourism stakeholders are encouraged to prioritise improvements to TPSD, focusing on human elements, which were found to be the most influential in this study, namely the ability of staff to ensure visitors' safety, deliver services securely, and respond effectively to emergencies are crucial. In addition, wellness tourism providers should not overlook the other dimensions of TPSD. Facility and equipment safety should be regularly reviewed and upgraded to meet high standards. Social environments must be managed to create a welcoming and safe ambience for visitors, while organisational management should foster trust through transparent communication about safety procedures to be adopted. For example, this could involve mandatory staff training on first-aid and conflict resolution, routine safety audits, and clear instructions for emergency scenarios. By investing in such comprehensive safety practices, destinations can build trust, enhance visitor satisfaction, and inspire destination loyalty.

Another crucial area of practical application is addressing tourist worries, which are often linked to the unpredictability of travel experiences. Goo *et al*. (2022) noted that travel-related worries negatively influence tourists' overall experiences, particularly during trip planning. To mitigate these concerns, wellness destinations should prioritise clear and proactive communication through diverse channels. This could include detailed guides on transportation systems, public safety information, and accessible

contact points for visitors' inquiries. In light of the positive association between tourist worry and destination loyalty observed in this study, managers should focus on identifying and supporting travellers who are prone to worry, converting concern into attachment through reassurance-centred service design (pre-trip clarity, visible on-site competence, and flexible policies) that protects perceived safety and consolidates destination loyalty. Providing digital platforms or mobile apps that allow tourists to access such information in real-time would enhance convenience and peace of mind.

Furthermore, the competitive advantage of wellness destinations lies in their ability to offer restorative environments that help tourists recover physical, mental, and emotional resources. To achieve this, destinations should actively create serene natural spaces promoting relaxation and recovery. This could involve developing scenic trails, setting up outdoor yoga decks, or maintaining mineral springs with eco-friendly infrastructure. Additionally, ensuring noise control and incorporating biophilic design elements into indoor spaces can help maximise the restorative benefits of the destination. Marketing campaigns should highlight these qualities, focusing on how the destination satisfies the growing demand for meaningful and rejuvenating travel experiences. For instance, stakeholders could create promotional content emphasising wellness retreats that combine nature immersion with cultural experiences, such as guided meditation in heritage sites or yoga sessions by the ocean.

Given that this research was conducted in Portugal, its findings underscore the country's potential as a leading wellness tourism destination. Portugal's rich natural landscapes, abundant thermal and mineral waters, and diverse cultural heritage create a unique value proposition. Policymakers and tourism boards have the opportunity to elevate Portugal's international reputation by collaborating with private enterprises and public organisations to develop initiatives like dedicated wellness routes or seasonal wellness festivals. Additionally, partnerships with international wellness tourism platforms and travel agencies could position Portugal as a preferred destination for wellness travellers. For example, regions with natural hot springs could be promoted through thematic packages combining spa visits, local culinary experiences, and nature exploration.

To summarise, the practical implications of this study underscore the need to combine safety measures, restorative environments, and well-being strategies to foster stronger loyalty among tourists to destinations. Destinations that address travellers' physical, mental and emotional needs through thoughtful design, effective communication, and exceptional service will be well-positioned to flourish in the highly competitive wellness tourism market.

6.3. Limitations and future research

While this research provides valuable insights into wellness tourism, it is important to acknowledge its limitations, which also present opportunities for future exploration. One of the key limitations is the small sample size, primarily due to the challenge of collecting data from wellness tourists in Portugal. This constraint reduces the extent to which the findings can be generalised. Future research should consider gathering larger datasets to enhance the reliability and applicability of the results.

Another limitation is the demographic imbalance in the sample, with a significant majority (81.9%) of participants identifying as female. Although this pattern aligns with previous findings in wellness tourism research, which consistently report a predominance of women participants (Hall *et al.*, 2011; Karagianni *et al.*, 2025), it also restricts the generalizability of the results. Thus, future research should strive to include more balanced gender representation to capture a broader spectrum of perspectives and preferences.

The sample included participants across a broad age spectrum, ranging from 18 to 55 years and older, with the largest group being those aged 25-34 (48.5%). The reliance on an online questionnaire may

have influenced these results, as the methodology predominantly attracted younger respondents who were more proficient with digital tools. To ensure greater diversity, future research should incorporate a range of data collection methods, including in-person interviews or offline surveys, to engage participants from various age groups and levels of digital literacy.

Moreover, the study's context is geographically and culturally specific, focusing solely on Portugal. This limits the applicability of the findings in different regional or cultural settings. Future studies should extend this work to other countries and cultural contexts to determine whether the observed patterns are universal or influenced by local factors.

As wellness tourism remains a relatively recent academic field, continuous research is essential to deepen understanding. One promising avenue is further studying the intricate connection between tourist worry and destination loyalty. While this study found an unexpected positive correlation between tourist worry and destination loyalty, further research is needed to investigate the psychological processes that may explain this relationship. For example, qualitative studies could examine whether tourists who experience pre-travel worries later develop a stronger attachment to destinations that successfully alleviate these worries. It would also be valuable to test TPSD as a moderator between tourist worry and destination loyalty, given our finding that worry negatively affects TPSD. In addition, future research could assess whether TPRE, tourist well-being and life satisfaction act as mediators between tourist worry and destination loyalty, on the premise that restorative experiences and enhanced well-being may convert initial concern into post-visit attachment.

TPSD is categorised as a sub-dimension of destination image (Xie *et al*., 2020). Future research could explore destination image as a potential antecedent of TPSD. Furthermore, Lever *et al*. (2024) found that safety perceptions tend to decline as travel distance from home increases. Future studies could explore variations in TPSD between domestic and international tourists, considering their country of residence, offering a comparative perspective.

While this study found that TPRE enhances tourist well-being, future research should investigate how different environmental elements contribute to this effect. Previous investigations (e.g., Chen *et al*., 2023; Hartig, 1993; Zhou *et al*., 2023) suggest that TPRE is more prevalent in natural environments than in urban settings. However, unlike Western literature, Lehto *et al*. (2017) found that TPRE was more pronounced in urban environments. Similarly, Zhai *et al*. (2023) argue that temples, retreats or urban parks could also provide restorative experiences that enhance well-being. Employing field experiments that incorporate physiological indicators, for example, heart rhythm and cortisol concentration levels, could yield measurable insights into the restorative potential of different environments.

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