Nature and Information Engineering Publishing

Eco-Tourism and Sustainable Development

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ARTICLE

Trail Runners' Repeated Participation in Natural Destinations: Insights from Thai Perspectives

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ABSTRACT

This study explores psychological and social factors influencing participation and repeat behaviour in trail running tourism through the lens of the Theory of Planned Behaviour (TPB). The proposed model combines attitude, subjective norm, perceived behavioural control, motivation, and destination image as predictors of intention, which subsequently affects behaviour and repeat participation. Runner experience is included as a mediating variable between behaviour and repeat participation. Data were gathered from 276 respondents via online and onsite surveys distributed through Thai running communities. Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4.0 was utilised for the analysis. The SEM model demonstrated that the TPB effectively explains trail runners' behavioural intentions and participation in Khon Kaen. However, not all TPB constructs had a significant impact on intention. Of the five predictors, PBC and destination image were significant and positively related, whereas attitude, subjective norms, and motivation were not. Additionally, it was found that intention significantly influences behaviour, which then affects runners' experiences and their likelihood of returning. Furthermore, runner experience mediates the relationship between behaviour and repeat participation. The findings highlight the importance of destination branding and experiential quality in promoting sustainable sport tourism, providing both theoretical insights and practical implications for event management and regional development.

Keywords: Trail Run; Sport Tourism; Repeat Participation; Theory of Planned Behavior

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ARTICLE INFO

Received: 23 January 2026 | Revised: 10 March 2026 | Accepted: 17 March 2026 | Published Online: 23 March 2026
DOI: https://doi.org/10.63385/etsd.v2i1.476

CITATION

Sann, R., Sang-in, T., Butt, P., et al., 2026. Trail Runners' Repeated Participation in Natural Destinations: Insights from Thai Perspectives. Eco-Tourism and Sustainable Development. 2(1): 131–146. DOI: https://doi.org/10.63385/etsd.v2i1.476

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1. Introduction

Sport tourism, particularly trail running, has gained increasing popularity in Thailand, attracting participants who seek not only physical challenges but also opportunities to connect with nature, socialize, and promote environmental awareness. Unlike conventional road marathons, trail running emphasizes natural landscapes, providing runners with immersive experiences in forests, mountains, and national parks. An exemplary event is the GREEN TRAILRUN KHAOYAI, held within Khao Yai National Park, a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Natural Heritage site renowned for its biodiversity and scenic beauty. Such events not only promote health and well-being but also stimulate local economies, enhance the destination's image, and encourage repeat visitation[1]. They generate expenditure on accommodations, food, transportation, and souvenirs, while concurrently positioning host destinations as centers for eco-tourism and sustainable sports. Moreover, the distinctive atmosphere of these events fosters community pride and strengthens the connection between tourism, conservation, and social values.

In Thailand, sport tourism has increasingly been acknowledged as a strategic instrument for regional development, with trail running in particular gaining rapid recognition. Trail running events constitute a form of sport tourism that occurs in numerous destinations worldwide[2], exemplified by the GREEN TRAILRUN KHAOYAI 2025, which reflects this trend. Such events play a pivotal role in attracting tourists, stimulating local economies, and fostering environmental awareness and community engagement[3]. The GREEN TRAILRUN KHAOYAI 2025 has been conceptualized not solely as a competitive athletic event but also as an experiential destination, integrating natural landscapes with cultural immersion. According to Fam et al.[4], destination running events have become integral features of the global tourism calendar, contributing to tourism growth, enhancing the reputation of host cities, and providing social benefits to local communities. Similarly, Getz and Page[1] emphasize that well-managed sporting events are effective mechanisms for augmenting tourism, enhancing destination branding, and encouraging repeat visitation. Empirical research indicates that participants are influenced by numerous motivational factors, including destination image, environmental quality, and memorable experiences, which, in turn, affect satisfaction and intentions to revisit[5]. Consequently, the GREEN TRAILRUN KHAOYAI 2025 is anticipated to elevate the visibility of Khao Yai as a premier sport and eco-tourism destination, while also generating economic benefits through expenditures on accommodation, dining, local transportation, and eco-friendly tourism activities. These outcomes exemplify how well-organised sporting events can function as sustainable catalysts for tourism development and community involvement within emerging destinations. Despite the rising popularity of sports tourism events in Thailand, there remains a lack of a comprehensive understanding of participants' motivations and the factors influencing their intention to revisit. This is especially pertinent for newly initiated or specialized events such as the GREEN TRAILRUN KHAOYAI 2025, which necessitate insights to foster long-term engagement and success. Absent a research-based comprehension of runners' motivations, attitudes, and perceptions, organisers risk neglecting critical elements that underpin participation. Accordingly, this study aims to address this gap by investigating the primary determinants affecting participants' decisions to revisit, employing a structured theoretical framework to offer practical insights into event planning, sustainability, and participant retention.

The Theory of Planned Behaviour (TPB) has been extensively employed to examine behaviours within the context of large-scale sporting events, demonstrating substantial robustness in forecasting various behavioural outcomes[6]. Attitudes, subjective norms, and perceived behavioural control are recognised as primary determinants of these intentions[7]. The TPB has been utilised to understand volunteer motivations and intentions to participate in future events, emphasising the mediating roles of subjective norms and perceived behavioural control in predicting these intentions.

Nevertheless, fundamental questions remain: What are the primary factors influencing participants' decisions to engage in subsequent Trail Run events? There exists a continual deficiency in comprehensive research on participant behaviour, especially utilizing the Theory of Planned Behaviour (TPB)[8] within the Thai context. Acquiring insights into the essential determinants that affect individuals' decisions to participate, as well as the motivations underly-

ing repeated attendance, is of paramount importance. This represents a notable gap in the current body of literature.

Consequently, this research aims to bridge the existing gap by developing an expanded framework of the Theory of Planned Behavior (TPB), designed to more precisely explain the behavioral intentions of Trail Run participants. Addressing these gaps has considerable academic and practical significance. A comprehensive understanding of the motivations and behavioural intentions of Trail Run participants can assist event organisers in devising more effective strategies for event management, marketing, and service design that better align with participants' authentic motivations. Furthermore, enhancing the motivational appeal of such events can promote repeat participation, attract additional sport tourists, and ultimately generate economic and social benefits for the host community.

This study aims to examine the factors influencing runners' intentions and repeat participation in trail running events using the TPB. It emphasises understanding how attitudes, social influences, perceived behavioural control, and destination image impact participation behaviour, as well as the role of trail running events in promoting tourism and fostering local economic development.

This study employs a quantitative research methodology utilising an online questionnaire as the primary instrument for data collection. The target population comprises individuals who have previously engaged in trail running events. The questionnaire was constructed based on the TPB, which delineates three principal determinants of behavioural intention: attitudes towards the behaviour, subjective norms, and perceived behavioural control. The application of TPB within the context of sport tourism facilitates a structured comprehension of runners' motivations and intentions, consistent with previous research that effectively applied TPB to predict participation behaviour in sporting events [7]. Notably, the model has demonstrated efficacy in elucidating repeat attendance behaviour among sport tourists [9].

The findings of this study are anticipated to augment the existing body of literature on sport tourism behaviour in Southeast Asia and offer practical implications for trail running event organisers and local tourism planners. Insights from this study may help formulate targeted strategies to increase participant satisfaction and encourage repeat visits.

2. Literature Review

2.1. Sport Tourism

Scholars have shared many ways to better understand this field's challenges. Moyle et al. [10] suggest that approaching sport tourism with a focus on sustainability helps balance economic growth, environmental care, and social inclusion. This is especially important in Thailand, where quick economic wins often overlook protecting the environment and promoting inclusive development. We think that using the "triple bottom line" idea can assist tourism planners in making sports events more sustainable over time. Collaboration among stakeholders is another key point in sports tourism studies. According to Mollah et al. [11], most partnerships involve government and private companies, which can sometimes overlook local communities during planning. The common top-down approach in regional events is widespread, but encouraging communities to be active partners rather than just passive recipients can create more authentic experiences and foster lasting local support. An additional important idea is shifting from viewing sport tourism as simply a recreational activity to a rich, meaningful experience. Weed [12] explains that sport-related tourist experiences include feelings, identity, and a sense of place—all of which greatly improve a destination's image and how satisfied visitors feel. The size of the event also matters. While huge events like the Olympics draw worldwide attention, Bazzanella et al. [13] point out that smaller, recurring events can deliver more sustainable benefits and a fairer spread of advantages. We believe this is true for places like Khao Yai, where annual activities like the GREEN TRAILRUN KHAOYAI 2025 offer a steady way to generate income and support the region without requiring huge investments or causing big disruptions. Lastly, the global spread of sport tourism raises some important issues. Higham and Hinch [14] mention that while international sports events can boost prestige and visibility, they might also lead to commercialization of local culture and the loss of local identity. From our view, globalization is a double-edged sword—bringing opportunities but also risks. While it can attract tourists from around the world, we need to protect what makes each destination special. Without that, sports tourism could become just a generic experience and lose its cultural richness.

2.2. Trail Run Events

The relationship between trail running events and tourism has been extensively documented in recent open-access studies. For instance, Papanikos [2] states: "Marathons are sport tourism events taking place in many cities around the globe." Additionally, he discusses evidence indicating that short-term economic effects may be uncertain, while highlighting the long-term benefits: "It emphasizes the long-term impacts of promoting exports and attracting foreign direct investment" [2]. Expanding upon the concept of destination events, Fam et al. [4] elucidate: "One of the niche markets that has gained popularity is the destination marathon. Since the early 1970s, destination marathons have become a key event in tourism calendars. Destination marathons promise tourism industry growth, an enhancement to the image of the host city, and an improvement to social benefits for the community."

Events such as the GREEN TRAILRUN KHAOYAI 2025 serve as significant instruments for the augmentation of tourism and the enhancement of city branding. When Khao Yai hosts such an event, it attracts not only participants but also their families and acquaintances, thereby resulting in a heterogeneous influx of visitors who contribute positively to the local economy. In contemporary times, these events transcend mere athletic competitions; they function as catalysts for tourism promotion and the cultivation of the city's image. By strategically positioning themselves as destination events, they incentivize participants to explore the host area and its attractions both prior to and subsequent to the race.

2.3. Theory of Planned Behavior (TPB)

The TPB is extensively recognized as one of the most influential frameworks in the study of human behavior, as affirmed by Ajzen [8]. It posits three primary, conceptually independent factors that influence intention: attitudes, subjective norms, and perceived behavioral control, which are regarded as the principal determinants of such intentions [7]. This research intends to investigate the factors that influence trail runners' motivation to participate again, employing the TPB. The TPB is a well-established framework appropriate for comprehending behavioral intentions within the context of sport tourism.

2.4. Attitude toward Behaviour (ATB)

Attitude pertains to the degree to which an individual holds a positive or negative perception of a specific behavior [8]. Consumers' attitudes towards particular behaviors are shaped by their beliefs regarding the outcomes of such behaviors [15]. Furthermore, attitude also signifies an individual's expectations and appraisals of the consequences derived from engaging in a designated behavior [16]. Moreover, Chen and Funk [17] found that participants in sporting events who derive enjoyment from their sport tourism experiences are inclined to repeat these experiences.

H1. *Attitude toward behaviour (ATB) of trail running tourism positively influences the intention (IT) to participate in trail running tourism.*

2.5. Subjective Norms (SN)

Subjective Norms denote the perceived social pressures that influence an individual's decision to engage in a specific behavior [18]. Ajzen [8] characterizes Subjective Norm as the perceived social pressure to either undertake or refrain from a particular action. Duan [16] further elaborates that it reflects the expectations and attitudes of significant others or groups regarding the individual. According to Rozenkowska [15], Subjective Norms measure the extent to which social pressures, opinions, or beliefs impact an individual.

H2. *Subjective norm of trail running tourism positively influences the intention to participate in trail running tourism.*

2.6. Perceived Behavioural Control (PBC)

PBC constitutes a third variable within the TPB model, representing internal personal factors that influence intention, either as a predisposition or lack thereof [18]. PBC pertains to the ease or difficulty associated with performing a behavior, reflecting previous experiences and anticipated barriers [8]. Duan [16] characterizes it as the degree of control and the challenge involved in executing a behavior. Ajzen [8] identified behavioral intention as a direct predictor of behavior, which is influenced by an individual's perceived control over factors that may impede action, including internal and external influences. This concept was subsequently renamed "perceived behavioral control" [15].

H3. *Perceived behavioral control of trail running tourism positively influences the intention to participate in trail running tourism.*

2.7. Motivation (M)

People participate in Trail Runs for many heartfelt reasons. As Simasathiansophon et al.[19] explains, motivations can be grouped into four main themes: mental, physical, societal, and environmental. Many runners find joy and stress relief through mental benefits and personal growth, boosting their overall happiness. Physically, as noted by Simasathiansophon et al.[19], many participants are inspired to improve their fitness, manage their weight, and take better care of their health. The desire to build self-esteem and see personal progress is particularly strong among Trail Runners, showing how deeply connected they are to the sport[20]. Social influences also play a part, with community support and shared norms creating a real sense of belonging[20]. Hammer and Podlog[21] highlight that gender may also shape motivation—men may be more driven by competition, while women often focus on health benefits. Lastly, environmental factors like how well-organized the event is matter, though they usually aren't as influential as personal reasons. This includes the beauty of the scenery, local culture, and the special locations associated with the event[19]. These studies collectively underscore the intricacy of motivation for Trail Running, which is shaped by personal, social, and contextual factors. A thorough understanding of these motivators is crucial for developing effective programs, enhancing runner engagement, and promoting sustained participation in endurance events.

H4. *Motivation of trail running tourists positively influences the intention to participate in trail running tourism.*

2.8. Destination Image (DI)

The destination image exerts a considerable influence on tourists' perceptions of destinations and plays a central role in their behavioral patterns and decision-making processes related to travel and purchasing activities[22]. Fundamentally, research demonstrates that destinations possessing a strong, favorable image are more likely to be contemplated and chosen during the planning stages of travel[23]. The pivotal importance of destination image, both in understanding travel behavior and in developing effective tourism marketing strategies, underscores the necessity of establishing methodologies to measure this concept in a comprehensive and precise manner[24]. The latter investigation revealed that DI significantly influences revisit intentions in recurring events, implying that emotional and cognitive impressions of a location exert enduring effects on the behavior of sports tourists. Consequently, incorporating DI within TPB-based frameworks when examining participant motivation and behavior in Trail Run tourism can facilitate a more holistic comprehension of travel decision-making. By linking attitudes toward the event, perceived behavioral control, and subjective norms to perceptions of the destination, scholars can more effectively elucidate how sport tourists develop intentions and make destination choices.

H5a. *Destination image of trail running tourism positively influences the intention to participate in trail running tourism.*

H5b. *Destination image of trail running tourism positively influences repeat participation in trail running tourism.*

2.9. Intention (IT)

Recent empirical studies consistently demonstrate that intention serves as a strong and immediate predictor of participation in physical activity and tourism, aligning with the principles of the TPB[25]. Meta-analyses verify that intention reliably forecasts future conduct, with PBC facilitating both the formation and implementation of intention[25]. Nonetheless, the discrepancy between intention and behavior remains substantial, with nearly 50% of individuals holding intentions failing to act accordingly[26]. Factors such as action control, planning, intention stability, emotional attitude, and identity tend to enhance the probability that intention will translate into behavior.

In the domain of sports tourism and running events, TPB constructs, when integrated with contextual factors such as event quality, destination image, and place attachment, exert a positive influence on participation and revisit intentions[24]. Specifically, in the context of trail running, favorable evaluations, supportive social norms, and robust control beliefs serve to enhance intentions to register and attend[19, 24]. Furthermore, tourism research highlights the significance of cognitive–affective evaluations, social influences, and risk-mitigation strategies as stabilizing factors

for intention during periods of uncertainty[27]. Overall, a heightened intention to participate in trail-running tourism is likely to result in increased participation, particularly when reinforced by control beliefs, meticulous planning, self-regulation, and conducive environmental conditions.

H6. *The intention to participate in trail running tourism positively impacts the behavior of trail running participation.*

2.10. Runner's Experience

In trail run tourism, the quality of the on-site experience depends both on logistical efficiency and the psychological environment provided to participants[28]. When organizers combine technical skills with intentional experiential elements—such as motivational signage, curated volunteer interactions, and local cultural features—runners tend to feel more engaged and satisfied. "The real challenge for the tourism industry is to create the right psychological environment, not to worry just about technical aspects"[29]. Psychological environments influence more than solely navigation and timing; they affect participants' emotional well-being during the race. "The other aspect of the story is the 'psychological environment'; that is, the subjective personal reactions and feelings experienced by consumers when they consume a service"[29]. Absent these emotional components, even impeccable logistics may appear impersonal. Furthermore, "in tourism, understanding experiential phenomena is particularly significant, as emotional reactions and decisions often predominate among consumers"[29].

The runner's experience is influenced by a variety of tangible and intangible factors. Tangible elements encompass the quality of race organization—such as clear signage, aid stations, and timing systems—the scenic beauty of the route, including views and landmarks in Khon Kaen, and amenities such as expos and recovery facilities. Equally significant are intangible factors, which comprise the atmosphere generated by spectators, the sense of community among participants, and emotional support provided during the race. Collectively, these elements contribute to a memorable experience that extends beyond the act of running, fostering a stronger connection to the destination. To understand the runner's experience in Northeastern Thailand Trail Run tourism, it is imperative to examine how these factors synergistically create a meaningful and emotionally engaging journey that influences overall satisfaction and the desire to return.

H7a. *Behaviour of trail running tourism positively influences the runner's experience in trail running tourism.*

H7b. *Runner's experience in trail running tourism positively influences repeat participation in trail running tourism.*

2.11. Behaviour (BH)

Tourists are progressively becoming cognizant of the environmental impacts of their actions and are consequently modifying their travel behaviors. They now demonstrate a heightened interest in experiencing local culture and supporting regional enterprises, favoring these pursuits over mass tourism activities. This developmental shift benefits local communities and affords tourists more substantial and meaningful travel experiences. Within the context of trail running tourism, behavioral patterns have been demonstrated to exert a positive influence on repeat participation. Empirical studies indicate that actual participation enhances the intention to revisit, particularly when it is linked to a favorable destination image, high-quality events, and active sports involvement[24]. The satisfaction derived from participation further elevates motivation and the propensity to return[28]. Consistent engagement in trail running events not only reaffirms prior intentions but also fosters emotional bonds, thereby increasing loyalty and future engagement[24]. Consequently, trail running behavior functions as both a predictor and reinforcement of repeated visits, underscoring the cyclical relationship between action and revisit intent within active tourism.

H8. *Behaviour of trail running tourism positively influences the repeat participation in trail running tourism.*

2.12. Repeat Participation (RP)

Repeat participation pertains to an individual's willingness or behavior to engage in the same activity or event again in the future. Within the context of Trail Run tourism, it functions as a vital indicator of event success and sustainability, reflecting participants' satisfaction, loyalty, and ongoing engagement with both the event and the destination[30]. The extensively utilized TPB, introduced by Ajzen[8], provides a framework for understanding such behavioral intentions. TPB posits that an individual's intention to act is influenced

by three key factors: ATB, SN, and PBC. Collectively, these elements aid in predicting the likelihood of an individual's return to participate in a Trail Run event. Numerous academic studies have employed TPB to examine repeat participation in sports events. For example, Bang et al.[9] demonstrated the effectiveness of TPB in predicting volunteers' intentions to revisit large sporting events. Their research emphasized the significance of subjective norms and perceived behavioral control in fostering repeated engagement. Likewise, Kaplanidou and Gibson[30] underscored that positive past experiences, satisfaction, and emotional involvement substantially influence the desire to return.

In the Thai context, Hamkhamphai et al.[5] examined trail run tourists in Northeastern Thailand and identified destination image and event satisfaction as critical factors influencing their intention to revisit. Their findings imply that a positive perception of the host city and well-organized events can cultivate enduring loyalty among participants. Overall, repeated participation is crucial for maintaining the longevity of sports tourism events and reflects the efficacy of organizers' marketing and management strategies. This research intends to identify the primary factors influencing runners' willingness to participate in future Trail Run events in Northeastern Thailand, grounded in the TPB (see **Figure 1**).

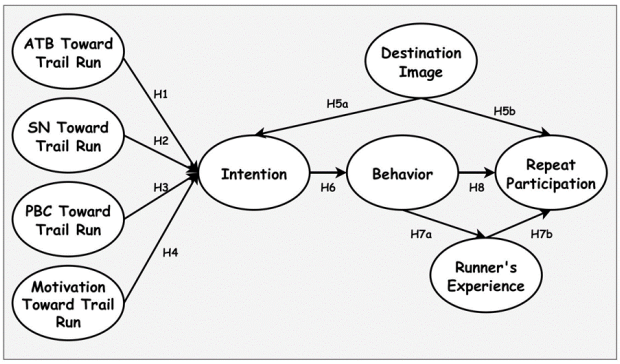

Figure 1. The conceptual framework.

3. Materials and Methods

3.1. Research Design

This study shall be conducted at Khon Kaen University's Agricultural Park and Bueng Thung Sang Park in Khon Kaen, Thailand. In contrast to traditional road marathons, trail running emphasizes challenging terrains, forest trails, and diverse natural scenery, thereby offering participants unique physical challenges and a deeper engagement with nature. Recently, trail running has gained increasing popularity as both a recreational and competitive activity, in conjunction with the rising interest in eco-tourism and sustainable outdoor sports. Building upon this trend, the current study seeks to investigate the psychological and social factors that influence runners' intentions to participate in future trail running events.

The research team shall disseminate a Google Form over a period of approximately two weeks. The survey link will be shared across various personal and public social media platforms, with particular emphasis on Facebook groups and online communities dedicated to running and trail running within Thailand. This strategy is intended to engage a wide demographic of runners, including those who have previously participated in trail running events.

To supplement the online responses, the team intends to collaborate with the administrator of "วิ่งไหนกัน: เรามาคุยเรื่องวิ่งกันนะ (Where are we running? Let's talk about running)," a Facebook group comprising numerous runners. Through this partnership, digital versions of the questionnaire will be distributed within the group. Furthermore, the survey may also be disseminated at local parks and across various running groups on social media. To ensure the accuracy and relevance of the data, the questionnaire will commence with a screening question inquiring whether the respondent has previously participated in trail running events. Should the response be "No," the survey will be automatically terminated, and the response will be excluded from the final dataset. This measure is implemented to maintain the integrity and appropriateness of the collected data. A minimum of 250 responses is anticipated.

3.2. Measurement

The questionnaire is organised into three sections. Part 1 encompasses general information and comprises five subsections, such as Age, Gender, and Occupation, as delineated by. Part 2 contains items designed to measure four principal constructs: ATB, SN, PBC, and DI, which were adopted from prior studies[8, 15, 17, 22, 31, 32]. All items are rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). These questions have been adapted from previous scholarly research[18]. The ATB section evaluates participants' perceptions of their Trail Run experience, in-

cluding enjoyment, health benefits, and satisfaction. The SN reflects the social influence exerted by friends, family, and peers on participation decisions. PBC assesses the confidence of participants in their ability to engage in future trail runs, considering factors, such as time, financial resources, physical ability, and accessibility. The DI section appraises perceptions of Northeastern Thailand as a tourism destination for Trail Running, focusing on city attractiveness, hospitality, event organisation, and cultural appeal.

A pilot test was conducted after the collection of the initial 72 samples, using Cronbach's alpha [31, 33]. The Cronbach's alpha for PBC was below 0.6, thereby prompting a revision. Researchers refined the questions by incorporating detailed descriptions, varying the wording to prevent similarity with other questions, reducing potential confusion, and including an additional question adapted from Ajzen [8]. For other constructs, Cronbach's alpha exceeded 0.6, indicating satisfactory reliability, and a 5-point Likert scale was employed.

3.3. Data Analysis

Initially, the data were subjected to descriptive and correlational analyses employing SPSS 27. Subsequently, the proposed causal relationships among the latent variables were examined and evaluated utilising structural equation modelling (SEM) with Smart PLS 4.0.

4. Results

4.1. Data Characteristics

The sample (n = 276) is predominantly male (64.5%), with 32.6% female and 2.9% identifying as other. Age distribution is strongly youth-oriented: 21–30 years constitute 52.2%, followed by 31–40 (21.7%) and 41–50 (13.0%); fewer participants are 18–20 (6.2%), 51–60 (5.1%), and >60 (1.8%). Occupations are led by students (35.1%), full-time employees (24.3%), and business owners (17.8%); freelancers (10.1%), government officers (8.0%), retirees (3.6%), and others each <1% comprise the remainder. Overall, the profile indicates a male, young-adult cohort with substantial student representation, suggesting that promotional strategies should emphasise accessibility, affordability, and career-friendly scheduling. Event design should emphasise challenge, nature immersion, and flexible race formats (see **Table 1**).

Table 1. Sample characteristics (N = 276).

Variable	Frequency	Percent
Gender		
Female	90	32.6
Male	178	64.5
Other	8	2.9
Age		
18–20	17	6.2
21–30	144	52.2
31–40	60	21.7
41–50	36	13
51–60	14	5.1
More than 60	5	1.8
Occupation		
Other	1	0.4
Retire	10	3.6
Government Officer	22	8
Business Owner	49	17.8
Lawyer	1	0.4
Student	97	35.1
Full Time Employee	67	24.3
Freelance	28	10.1
Educator	1	0.4

4.2. Measurement Model

The measurement model was assessed using SmartPLS 4.0. The Average Variance Extracted (AVE) values spanned from 0.609 to 0.844, exceeding the 0.50 threshold necessary for establishing convergent validity [34]. Cronbach's alpha coefficients ranged from 0.624 to 0.815; although some constructs exhibited values below 0.70, those above 0.60 are deemed acceptable within exploratory research contexts [35]. Composite reliability scores varied from 0.751 to 0.915, thereby fulfilling established standards [36]. Discriminant validity was confirmed as the square roots of AVE exceeded inter-construct correlation coefficients. Collectively, the indicators of reliability and validity substantiate that the measurement model is statistically robust for hypothesis testing (refer to **Table 2**). The construct correlations are detailed in **Table 3**.

We assessed multicollinearity via indicator VIFs (<3.3), discriminant validity via Heterotrait–Monotrait Ratio of Correlations (HTMT) (HTMT < 0.85; bootstrapped CIs not crossing 1), effect sizes (f^2) for structural paths, and Q^2 values from blindfolding to confirm predictive relevance. PLSpredict was performed to evaluate out-of-sample predictive performance relative to a linear benchmark (reporting Root Mean Square Error (RMSE)/Mean Absolute Error (MAE); Intention 0.412/0.303, Behaviour 0.819/0.680, Runner Experience 0.865/0.707, and Repeated Participation 0.812/0.659). To address potential common-method bias, we employed procedural remedies (anonymity and item separation) and statistical checks (full collinearity VIFs and a marker-variable test).

4.3. Structural Model

The bias-corrected and accelerated bootstrap (BCa) technique was employed to analyze 5,000 subsamples. The results indicate that all five hypotheses were supported, with R-squared values of IT = 0.842, BH = 0.300, E = 0.262, and RPI = 0.737. Hypotheses 1, 2, 3, and 4 were tested. The findings demonstrated that ATB (βATB→IT = 0.018, p = 0.625), SN (βSN→IT = 0.001, p = 0.720), PBC (βPBC→IT = 0.583, p = 0.000), and M motivation (βM→IT = −0.018, p = 0.649) exerted a positive and significant influence on the intention to participate in Trail running. These findings supported only Hypothesis 3. The proposed relationships among intention, destination image, and the RPI of Trail running were evaluated. As anticipated, destination image was a positive and significant predictor of intention to participate (βDI→IT = 0.463, p = 0.000), whereas it was not a significant predictor of RPI (βDI→RPI = 0.045, p = 0.290). These findings supported Hypothesis 5a but did not support Hypothesis 5b. Additionally, the bootstrap results indicated that the indirect effect of E on RPI for Trail running was significant (βE→RPI = 0.136, p = 0.004). Given that both behavior and intention also had significant direct impacts on RPI, the variable R served as a partial mediator in the relationship between BH and RPI in Trail running. Consequently, Hypothesis 7 was confirmed. Hypothesis 8 was also examined. The results demonstrated that BH had a positive and significant effect on RPI in Trail running (βBH→RPI = 0.755, p = 0.000). Therefore, Hypothesis 8 was accepted (see **Table 4** and **Figure 2**).

Table 2. Construct reliability and validity.

Construct	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
ATB	0.682	0.708	0.823	0.609
BH	0.424	0.609	0.751	0.613
DI	0.687	0.718	0.824	0.611
E	0.679	0.680	0.824	0.609
IT	0.571	0.588	0.822	0.698
M	0.764	0.774	0.863	0.677
PBC	0.746	0.844	0.852	0.659
RPI	0.805	0.873	0.882	0.714
SN	0.815	0.818	0.915	0.844

Note: ATB: Attitude toward Behaviour; SN: Subjective Norms; PBC: Perceived Behavioral Control; M: Motivation; DI: Destination image; IT: Intention; BH: Behaviour; E: Experience; RPI: Repeat Participation.

Table 3. Construct correlation and the square roots of AVE.

Construct	Mean	Std.	ATB	SN	PBC	DI	IT	M	E	BH	RPI	(AVE)
ATB	4.417	0.515	0.780									0.609

Table 3. *Cont.*

Construct	Mean	Std.	ATB	SN	PBC	DI	IT	M	E	BH	RPI	(AVE)
SN	4.059	0.812	0.304**	0.783								0.613
PBC	4.206	0.654	0.465**	0.504**	0.782							0.611
DI	4.363	0.526	0.520**	0.449**	0.495**	0.780						0.609
IT	4.228	0.637	0.533**	0.516**	0.777**	0.747**	0.780					0.698
M	4.359	0.584	0.512**	0.424**	0.491**	0.501**	0.519**	0.823				0.677
E	4.310	0.552	0.509**	0.424**	0.570**	0.551**	0.586**	0.567**	0.812			0.659
BH	4.389	0.547	0.718**	0.317**	0.471**	0.520**	0.531**	0.562**	0.503**	0.845		0.714
RPI	4.274	0.647	0.436**	0.388**	0.553**	0.505**	0.595**	0.539**	0.549**	0.722**	0.919	0.844

Note: ATB: Attitude toward Behaviour; SN: Subjective Norms; PBC: Perceived Behavioral Control; M: Motivation; DI: Destination image; IT: Intention; BH: Behaviour; E: Experience; RPI: Repeat Participation. ** indicates correlation is significant at the 0.01 level (2-tailed).

Table 4. Results of the structural model of the study.

Construct	β	Std.	T-Statistics	*p*-Values	Supported
ATB → IT	0.018	0.016	0.452	0.652	H_1 = No
SN → IT	0.011	0.012	0.358	0.720	H_2 = No
PBC → IT	0.583	0.583	19.049	0.000	H_3 = Yes
M → IT	−0.018	−0.017	0.456	0.649	H_4 = No
DI → IT	0.463	0.463	15.027	0.000	H_{5a} = Yes
DI → RPI	0.045	0.046	1.057	0.290	$H5_b$ = No
IT → BH	0.548	0.549	12.454	0.000	H_6 = Yes
BH → E	0.512	0.516	10.887	0.000	H_{7a} = Yes
E → RPI	0.136	0.137	2.853	0.004	H_{7b} = Yes
BH → RPI	0.755	0.755	21.706	0.000	H_8 = Yes

Note: ATB: Attitude toward Behaviour; SN: Subjective Norms; PBC: Perceived Behavioral Control; M: Motivation; DI: Destination image; IT: Intention; BH: Behaviour; E: Experience; RPI: Repeat Participation

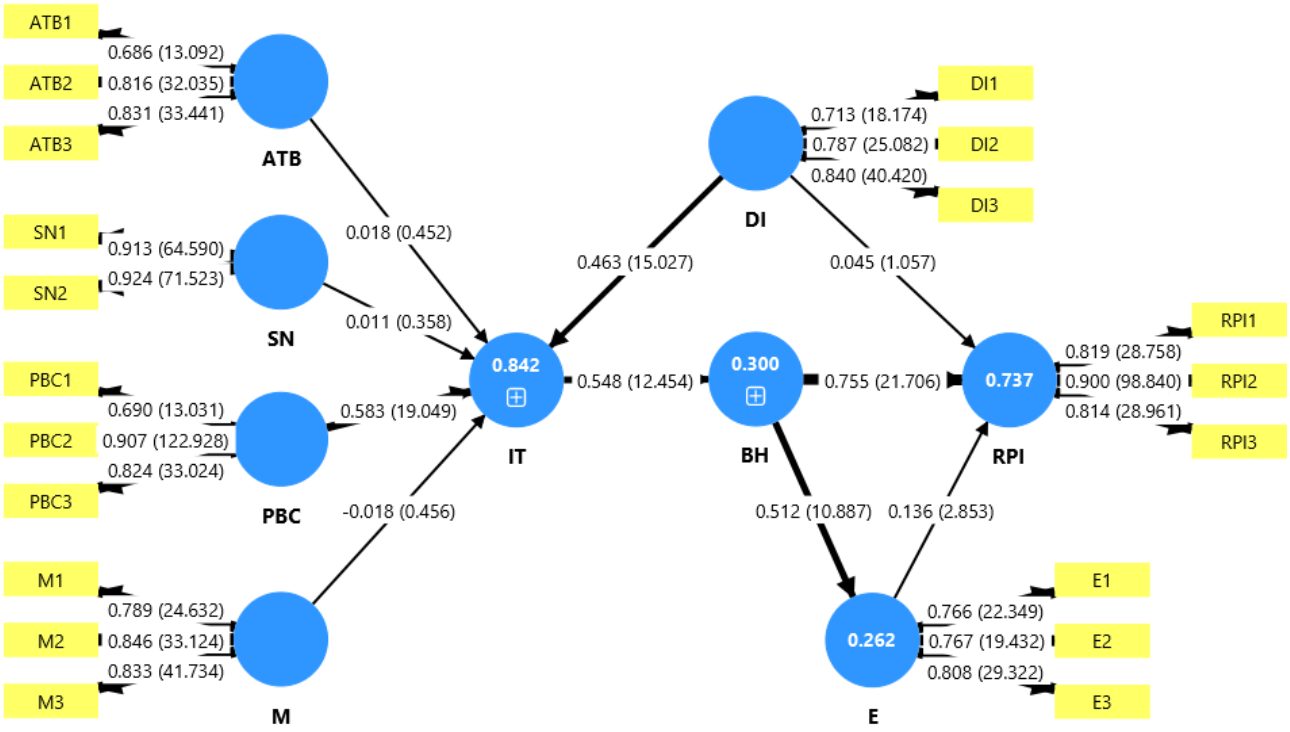

Figure 2. Diagram for the measurement model of the study.

Note: (1) ATB: Attitude toward Behaviour; SN: Subjective Norms; PBC: Perceived Behavioural Control; M: Motivation; DI: Destination image; IT: Intention; BH: Behaviour; E: Runner Experience; RPI: Repeated Participation. (2) Inner model: path coefficient and *t*-value; outer model: outer weights/loadings and *t*-value. (3) construct: R-square.

5. Discussion

The SEM model in this study demonstrated that the TPB effectively accounts for trail runners' behavioral intentions and participation in Khon Kaen. However, not all TPB constructs exerted a significant influence on intention. Among the five predictors, PBC and destination image were significant and positively correlated, whereas attitude, subjective norms, and motivation were not. This suggests that, within the context of trail running tourism, participants' perceived ability and perceptions of the destination exert a greater influence on their decisions than internal attitudes or social norms. Furthermore, it was found that intention significantly impacts behavior, which subsequently affects runners' experiences and their propensity to return. These findings provide valuable insights into the psychological factors underlying sport tourism behavior and support both theoretical frameworks and practical management strategies for events within the region.

The study revealed that attitudes towards trail running did not significantly influence participants' intentions, suggesting that personal evaluations of the sport do not substantially affect decision-making. This finding contrasts with Ajzen[8] TPB and prior research by Chen and Funk[17] and Kaplanidou and Gibson[30], which demonstrated that positive attitudes generally enhance behavioral intentions. A plausible explanation is that most trail runners already possess a generally favorable view of running; therefore, variations in attitude do not markedly affect their choices. Consequently, attitude functions more as a background factor rather than a primary determinant. Practically, event organisers should focus on providing environmental and logistical support rather than attempting to alter runners' personal attitudes, thereby facilitating participation and enhancing enjoyment. Sustainable destination management should be prioritised, such as running paths, green footpaths, and green landscapes, since these factors can change runners' attitudes and encourage them to participate more in trail running.

Similarly, the subjective norm did not significantly influence intention, contrary to findings by Bang et al.[9], where social factors were instrumental in shaping behavior. This likely reflects the individualistic nature of trail running—an activity driven predominantly by personal challenge and self-improvement rather than social approval. In this context, encouragement from family or peers appears to have less impact on participation decisions. Practically, marketing strategies focused on group or peer influence, such as "run with your friends," may exhibit limited effectiveness. Instead, emphasizing self-achievement, independence, and personal growth could more effectively align with the psychological motivations of trail runners.

Conversely, PBC was recognized as the most influential determinant of intention, in accordance with the fundamental principles of the Theory of Planned Behavior[8], and corroborates the findings of Cunningham and Kwon[7] as well as Sann et al.[18]. This indicates that runners who perceive greater ease and ability—pertaining to time, resources, or physical capacity—are more inclined to intend to participate in upcoming events. Factors such as logistical accessibility, effective communication, and supportive management are therefore essential in enhancing runners' sense of control. Practically, event organizers should prioritize the development of user-friendly registration procedures, the provision of comprehensive pre-race information, and the availability of multiple race categories to accommodate various levels of fitness. Implementing these measures is expected to improve perceived feasibility and attract a wider participant demographic.

Interestingly, motivation did not significantly influence intention, contrary to the findings of Simasathiansophonet al.[19] and Partyka and Waśkiewicz[20], who identified motivation—whether physical, psychological, or social—as essential for participation. This lack of significance may suggest that current trail runners already possess high motivation levels, rendering motivation less predictive of their behavioral intentions. Instead, their decisions could depend more on immediate factors such as event quality, timing, and location. Accordingly, future event marketing should move beyond generic motivational messages like "run for health" and focus on emphasizing the unique aspects of each event, such as special routes, cultural experiences, or environmental sustainability.

The destination image considerably influenced the participants' intentions, affirming that favorable perceptions of the natural and cultural environment enhance the probability of engagement. This finding corroborates research conducted by Kaplanidou and Gibson[30], Setyaningtyas et al.[24], and Hamkhamphai et al.[5], which identified that an

attractive destination increases satisfaction and fosters future participation. In this study, participants were more inclined to partake if they perceived the venue as scenic, welcoming, and well-organized. Practically, this underscores the significance of destination branding. Local tourism authorities and event organizers should collaborate to emphasize the area's distinctive features—such as agricultural parks, lakes, and cultural festivities—and integrate these elements into the identity of the trail run, thereby creating a memorable and appealing image to attract future participants. This is also implemented for sustainable sport tourism.

Conversely, the destination image did not exert a significant direct influence on repeat participation. This outcome contrasts with prior research [5, 25], which indicated that a robust destination image enhances loyalty. In the present context, participants may appreciate the destination yet seek novel challenges elsewhere. Repeat participation appears to depend less on place attachment and more on the experiential quality of the event. From a practical perspective, it is therefore recommended that destination image strategies be complemented by initiatives aimed at fostering ongoing engagement—such as introducing new course variations, themed races, or loyalty rewards for returning participants—to promote sustained involvement over time.

According to the TPB, intention plays a pivotal role in shaping behavior, thereby corroborating the model's efficacy in elucidating trail running tourism behavior. This observation aligns with the findings of Kaplanidou and Gibson [30] and Bang et al. [9], which demonstrate that strong intentions frequently lead to actual participation. Practically, this underscores the importance of translating intentions into actions through continuous communication, registration reminders, and early incentives. Facilitating potential participants to act on their intentions—such as via streamlined online registration and adaptable scheduling—can substantially enhance participation rates.

Behaviour significantly influences the runner's experience, supporting Otto and Ritchie's [29] view that direct engagement fosters emotional and psychological fulfilment. When participants actively participate in trail running, they develop a stronger bond with the destination and the event atmosphere. This interaction boosts their enjoyment and overall satisfaction. For organisers, focusing on on-site experiential quality—such as well-designed routes, friendly volunteers, and local cultural aspects—can deepen the emotional impact of participation and create lasting positive impressions.

The runner's experience significantly impacts their propensity for repeat participation, aligning with the findings of Sato et al. [32]. Positive emotions and high-quality service are essential in transforming first-time participants into loyal attendees. A satisfying and memorable experience enhances emotional connection to the event, thereby increasing the likelihood of future participation. This underscores the importance of post-event engagement, such as dispatching appreciation messages, sharing race photographs, and cultivating online communities that recognize achievements and sustain ongoing relationships with participants between events.

Ultimately, behavior was instrumental in promoting repeat engagement. This suggests that following an event, participants are more likely to return, motivated by familiarity, confidence, and satisfaction, consistent with the findings of Kaplanidou et al. [37]. This underscores the importance of initial participation as a pivotal step toward fostering long-term loyalty. To facilitate this, organizers should prioritize upholding high-quality standards, providing exclusive incentives for returning participants, and cultivating a sense of community, thereby aiding in transforming first-time runners into dedicated, repeat attendees.

Overall, the results indicate that perceived behavioral control, destination image, and experiential quality are critical determinants influencing participation and loyalty in trail running tourism. While personal attitudes and social norms exert a limited influence, the experiential and environmental facets of the event are vital for sustaining engagement. Practically, trail running events should improve logistical access, promote the city's natural and cultural attractions, and craft emotionally compelling experiences. These strategies not only encourage repeat participation but also position the location as a premier destination for sustainable sport tourism in Thailand.

6. Conclusions

This study aimed to investigate the factors affecting runners' behavioral intentions and their repeat participation in trail running tourism through the TPB framework. The model

included ATB, SN, PBC, motivation, destination image, intention, behavior, and experience to explain why runners revisit. Results indicated that PBC and destination image significantly impacted intention, which in turn positively influenced actual participation. Furthermore, repeat participation was strongly predicted by behavior and mediated by the runner's experience. Overall, findings demonstrate that psychological and perceptual factors are essential in shaping runners' choices to engage in trail running, with a positive destination image enhancing PBC and intentions. This underscores the contribution of trail running tourism to destination development and local economic growth.

6.1. Theoretical Contributions

This study advances both theoretical understanding and practical application by applying the TPB to trail running tourism in Thailand. It confirms that PBC is the strongest predictor of intention, aligning with Ajzen's[8] framework and enhancing TPB's relevance in sport tourism research. The findings also indicate that attitude, subjective norm, and motivation were not significant factors, suggesting that in endurance sports, participants' confidence and perceived event feasibility influence intention more than social or emotional factors. These insights are valuable for researchers in behavioral models, implying that TPB variables may need to be reassessed or differently weighted based on the sport type and cultural context.

Furthermore, the integration of the destination image and the runner's experience expands the conventional TPB framework beyond merely predicting intention to also encompass post-behavioral outcomes. This refinement offers researchers a more comprehensive model that links cognitive (intent), behavioral (participation), and emotional (experience) components. The revelation that the runner's experience functions as a mediator between behavior and repeated participation enhances the understanding of loyalty development in sport tourism and provides a foundation for developing future event-based behavioral models.

From an industry perspective, the findings favor event organizers, tourism authorities, and destination marketers by emphasizing essential psychological and experiential factors that influence participation and loyalty. Understanding that perceived control, destination image, and event experience are crucial for repeat behavior enables practitioners to craft strategies aligned with participants' decision-making. As a result, this study not only reinforces TPB's theoretical importance in sport tourism but also offers a practical framework to improve the sustainability and competitiveness of trail running events in Thailand.

6.2. Practical Implications

This study provides valuable insights for event organizers, destination management organizations (DMOs), and local authorities engaged in trail running tourism. The significant influence of Destination Image emphasizes the necessity of promoting both the event itself and the overall appeal of the host region. Marketing initiatives should emphasize the region's distinctive natural landscapes and cultural heritage, while ensuring that trails and facilities are maintained clean, safe, and well-managed. This strategy aims to enhance participant satisfaction and cultivate a favorable perception of the destination.

The considerable influence of PBC underscores that logistical convenience and safety are essential factors in motivating participation among runners. Event organizers are advised to simplify the registration process, provide comprehensive pre-race information, and visibly uphold safety and support protocols throughout the event. These initiatives are likely to enhance participants' confidence and reduce obstacles, thereby fostering higher engagement and a greater propensity for repeated attendance.

In conclusion, trail running events can support sustainable regional development through the active involvement of local communities, businesses, and environmental projects. Engaging local stakeholders—such as using local products, recruiting volunteers, and supporting conservation efforts—helps strengthen community bonds and generate lasting tourism advantages. Ultimately, focusing on destination branding, enhancing participant experience, and encouraging community participation are key strategies to boost satisfaction, build loyalty, and ensure sustainable growth in trail running tourism.

6.3. Limitations and Future Study Suggestions

This study presents several limitations that warrant acknowledgement. Data collection predominantly occurred through online platforms and running communities, poten-

tially restricting the diversity and representativeness of the respondent sample. Future research should encompass participants with various levels of experience and demographic backgrounds, utilizing broader sampling methodologies. Additionally, given that the research was confined to a single region in Thailand, the findings may not be wholly applicable to other geographical or cultural contexts. It is recommended that comparative studies be conducted across multiple regions to investigate potential variations in motivation and behavioral intentions. The employment of a cross-sectional design and dependence on self-reported data may also constrain the comprehension of behavioral developments over time and may introduce response bias; hence, longitudinal or mixed-method approaches (i.e., qualitative study) could yield more comprehensive insights. Lastly, certain constructs demonstrated moderate reliability, suggesting that subsequent studies should refine measurement items, incorporate factors such as satisfaction, loyalty, and environmental awareness, and increase sample sizes and data collection periods to enhance reliability and generalizability.

Author Contributions

Conceptualization, R.S. and T.S.; methodology, R.S. and P.B.; software, R.S. and S.P.; validation, R.S.; formal analysis, R.S.; investigation, R.S. and P.S.; resources, R.S.; data curation, R.S. and T.S.; writing—original draft preparation, R.S.; writing—review and editing, R.S.; visualization, R.S., T.S., S.P., and P.S.; supervision, R.S.; project administration, R.S. and T.S.; funding acquisition, R.S. All authors have read and agreed to the published version of the manuscript.

Funding

This work received no external funding.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Khon Kaen University's Ethics Committee for Human Research (protocol code HE683510, 30 October 2025).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Data available upon request due to the privacy and ethical restrictions.

Acknowledgments

I wish to express my sincere appreciation for your invaluable assistance (editorial teams) throughout the peer review process. Your careful evaluation, constructive feedback, and professional guidance have greatly strengthened the quality and rigour of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

AI Use Statement

No artificial intelligence tools were employed in the conceptualization, analysis, or writing of the manuscript. AI assistance was limited solely to language polishing, such as improving grammar, clarity, and style, without altering the substantive content or scholarly contributions of the work. The authors take full responsibility for the final content of the published article.

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