



From Transit to Belonging Spaces: Exploring Tourists' Emotional Bonds in the Minami-Machida Grandberry Park Station in Japan

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Abstract. Against the global evolution of railway stations from transit hubs to multi-functional spaces, this study explores the formation mechanism of tourists' sense of belonging in railway stations, focusing on Minami-Machida Grandberry Park Station, a representative "station-commerce-park" integrated Transit-Oriented Development (TOD) in Japan. Adopting a mixed-methods approach, the research analyzed tourist reviews from TripAdvisor, Google Reviews, and Dianping, using thematic analysis and text mining. Key findings revealed three dimensions of tourists' sense of belonging formation: 1) functions, such as transfer efficiency, signage, and family-friendly facility provide the baseline for place dependence; 2) emotional triggers: interactive cultural and ecological elements are the drivers of affective-cognitive bonds; 3) behavioral consolidation via interactive engagement. Thus, this study bridges gaps between transit satisfaction and tourism emotional attachment and provides guidance for emotion-alized railway station design, such as prioritizing interactive cultural experiences and evidence-based ecological integration.

Keywords: Railway Station; Place Attachment; Tourist Experience; TOD; Thematic Analysis

1 Introduction

In recent years, place attachment - a core concept in environmental psychology and human geography - has become a focal point of academic research. Defined as the positive bonds between individuals and places, shaped by affective, behavioral, and cognitive ties to social and physical settings, place attachment has far-reaching impacts on spatial vitality, social cohesion, and sustainable development [1].

Previous studies have established theoretical frameworks for place attachment. For example, the three-dimensional framework delineated place attachment into three dimensions: individual meaning assignment (person), psychological processes (affective, cognitive, and behavioral dimension), and spatial attributes (place dimension). However, it did not identify specific spatial elements that trigger each dimension—particularly in spaces like railway stations, where high passenger flow and transient

interactions define the user experience. Place attachment was expanded to multi-scale residential spaces, such as house, neighbourhood, or city, focusing on local residents, overlooking the experience-driven nature of tourists' interactions with transit hubs[2].

Among all the global transportation systems, Japan's railway stations serve as models of transit-oriented development, with an integration of buildings, commerce, and culture, driving a large share of the country's rail-based tourism. European multi-functional railway stations have evolved into mini centers by integrating retail, offices, and open spaces, but prioritized operational goals over emotional outcomes like a sense of belonging [3]. Another critical gap lies in the disconnection between satisfaction and a sense of belonging in transit research. Scholars also developed an urban rail transit passenger satisfaction model using partial least squares structural equation modeling, identifying factors such as facility convenience and service quality, but failed to explain how functional satisfaction evolves into deeper emotional attachment [4].

To address these gaps, this study takes Minami-Machida Grandberry Park Station (Japan), a pioneering station-commerce-park as a case. Using generated tourist reviews from online platforms and combining thematic analysis with text mining, it aims to explore the formation mechanism of tourists' sense of belonging in railway stations and to fill gaps in transit hub place attachment and provide further guidance for emotion-alized railway station design.

2 Literature Review

2.1 Place Attachment

Place attachment lies in the positive emotional bonds between individuals and spaces, rooted in affective, cognitive, and behavioral interactions [5]. The framework remains an influential theoretical basis for research: Firstly, person dimension, the meaning of a space is constructed by individuals or groups. Tourists may associate a railway station with family leisure memories, while local communities may view it as a regional cultural symbol. Secondly, the process dimension, which encompasses three inter-related components: affective (like comfort or joy), cognitive (perceptions of the space's value), and behavioral (actions such as revisiting or recommending space). Lastly, the place dimension focuses on spatial attributes, including scales (micro-spaces or macro-spaces), specificity (unique landmarks), and the balance between social elements (interactions with staff/tourists) and physical elements (architecture, landscapes). Notably, the framework aims to organize concepts and inspire research rather than identify specific trigger factors. This limitation is addressed by subsequent studies: a simplified two-dimensional model, distinguishing between place dependence (functional reliance on the space) and place identity, and developed a measurable scale [6]. It validated the scale in urban recreational settings, finding that the 4-item scale is reliable for measuring attachment to urban trails, providing a concise analytical tool for studying station-based place attachment.

Researchers further explored mediating role of place attachment dimensions between local social identity and well-being [7]. The study of 375 participants found that

place identity and social relations positively mediate the link between local social identity and well-being, while a lack of resources (the inverse of place dependence) negatively mediates this relationship only for individual well-being. This confirms that functional satisfaction alone cannot form stable place attachment and emotional and interactive elements are essential, a conclusion that directly guides the analysis of tourists' short-term station experiences.

2.2 Place Attachment in Transit and Tourism Contexts

Multi-functional railway stations act as public hubs. Their analysis focused on accessibility, retail diversity, and other operational indicators. They noted that adjacent open spaces enhance station attractiveness but did not explore whether such spaces foster a sense of belonging. The satisfaction model identified facility convenience (e.g., transfer efficiency, sign clarity) as a core driver of passenger satisfaction, aligning with the place dependence dimension in Williams and Roggenbuck's model, and laid the groundwork for exploring the satisfaction to sense of belonging pathway.

In tourism, researchers reviewed place attachment studies and highlighted its mediating role between tourist experience and loyalty [8]. Unlike general spatial attachment, tourism place attachment is rooted in experience-specific emotional resonance, for example, cultural symbols or natural landscapes that evoke unique memories. Researcher studied one thousand tourists in China, finding that cultural immersion shortens psychological distance between tourists and destinations, with a stronger effect in non-homologous cultural contexts [9]. Their focus on immersive experience provides a critical lens for analyzing how cultural elements in railway stations trigger tourists' sense of belonging, especially for international tourists encountering unfamiliar cultural symbols. Ecological elements are another key trigger for place attachment. Researchers used eye-tracking experiments to study urban waterfront parks in China, confirming that plants capes and waterscapes evoke stronger naturalness and restorative feelings than hardscapes [10]. These findings extend to railway stations, suggesting that ecological design can redefine tourists' perception of stations as leisure spaces rather than transit nodes. And ecological elements in Chinese wetland parks enhance place identity by reducing stress and fostering a sense of natural connection.

2.3 Methodological Foundation

Thematic analysis is the core qualitative method. Scholars defined thematic analysis as a flexible approach to identifying, analyzing, and reporting patterns (themes) in data, making it ideal for processing unstructured tourist reviews [11]. They emphasized reflexivity and transparency to avoid bias—addressing common misinterpretations of their framework [12]. They further provided step-by-step guidance on aligning themes with research questions and validating results against raw data—ensuring rigor in analyzing tourist experiences [13]. For text validation, this study uses LDA, a probabilistic model developed to identify latent themes in text data [14]. It was applied to user reviews of the Lenovo computer. The model effectively extracted user-focused product attributes and, when combined with dictionary-matching sentiment analysis,

demonstrated LDA's efficacy in uncovering hidden patterns in large-scale unstructured comment text [15]. This quantified theme coherence reducing subjective bias—consistent with validation of LDA in document modeling. The study of mountain bikers offers key methodological guidance, adopting a two-dimensional place attachment model (place dependence, place identity) [16]. They found that place identity is shaped by activity involvement intensity and perceived activity importance, while place dependence relates to users' reliance on the site's environmental quality and functional suitability.

This specific "space + user group logic" is further validated by cross-cultural scale research, confirming the stability of the place dependence-identity framework across contexts through the Place Attachment theory. Their work also supports that group traits directly influence attachment dimensions, such as higher activity specialization linking to stronger place identity—mirroring how "activity specialization" shapes place attachment for specialized groups [17]. Scholars adapted the framework to transit-adjacent leisure spaces, refining how user behavior connects to attachment. For this study, this group-space matching approach guides focus on tourists and railway stations: we distinguish tourists (short-term, experience-focused users) from other groups (commuters) and analyze their unique attachment to stations.

3 Methodology

3.1 Study area

Minami-Machida Grandberry Park Station (Fig 1) (in Tokyo, Japan with the coordinates of 139.41°E, 35.62°N) was selected for three key reasons, aligned with gaps identified in the literature: First, diverse trigger elements, renovated in 2019 (23,000 m²), it is Japan's first station-commerce-park TOD, integrating functional elements (seamless transfers, family-friendly facilities), cultural elements (Snoopy Museum, IP merchandise), and ecological elements (indoor green walls, outdoor waterfalls, direct access). This diversity allows testing of multiple belonging triggers, addressing gap of unspecified trigger elements. 85% of users in this station are family tourists, ensuring the sample focuses on short-term experiences—avoiding commuter bias in transit attachment studies. Last, multi-lingual review data, reviews from Trip Advisor and Google Reviews cover Chinese, Japanese, and English, reflecting cross-cultural perspectives.

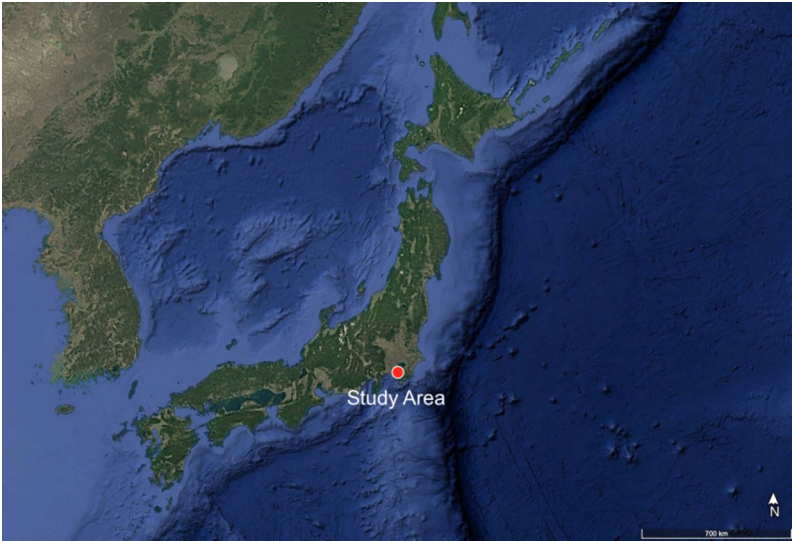


Fig. 1. Study area

3.2 Data Collection and Analysis

A total of 60 tourist reviews were collected using python focusing on the period of 2023-2025, with inclusion criteria: 1) focus on station experiences (excluding surrounding attractions); 2) contain emotional/experiential content (excluding factual information like opening hours); 3) more than 10 words (ensuring sufficient detail for thematic extraction). Data cleaning includes removing 7 irrelevant reviews and translating non-English reviews to English via Google translator. At last, fifty valid reviews remained, which consistent with qualitative standards, where 50 samples achieve data saturation.

For thematic analysis, open coding includes (Table 1): extract 127 initial codes (e.g., 5-minute transfer - functional convenience, Snoopy statue - joy, green wall - relaxation) using tourists’ original language to preserve authenticity. Second, axial coding defines three core categories: functional elements which trigger place dependence (transfers, signage, family facilities); cultural elements which trigger affective-cognitive bonds (IP museums, interactive workshops); ecological elements which trigger place identity (green walls, waterfalls, park integration). At last, selective coding refines three themes: functional convenience builds basic place dependence, interactive cultural elements stimulate emotional connection, seamless ecological integration enhances place identity.

Table 1. Thematic Analysis

Keywords	Themes	Codes
Functional Founda- tion of Place De-	Transit Operational Effi- ciency	express train, smooth transfer, on-time train, short commute, clear

Keywords	Themes	Codes
pendence		platform signage
Functional Founda- tion of Place De- pendence	Functional Facility Per- formance	luggage lockers, accessible re- strooms, working vending machines, stable Wi-Fi, well-lit corridors
Functional Founda- tion of Place De- pendence	Operational Pain Points	train delays, platform crowding, expensive parking, confusing exit signs, out-of-service elevators
Cultural Triggers for Affective-Cognitive Bonds	IP-Themed Interactive Experiences	Snoopy workshop, DIY Snoopy crafts, limited-edition Snoopy merch, Snoopy photo booth
Cultural Triggers for Affective-Cognitive Bonds	Visual Cultural Symbol Presence	Snoopy mural, Snoopy statue, Snoopy-themed platform decor, seasonal Snoopy exhibits
Ecological-Spatial Drivers of Place Identity	Leisure Space Integration	park connection, covered walkway to mall, seamless station-mall link, park picnic access
Ecological-Spatial Drivers of Place Identity	Aesthetic Ambience Cu- ration	green wall, LED decorative stairs, cloud-themed ceiling, potted plants, warm entrance lighting
Human-Centric Refinement of Be- longing	Proactive Service Support	staff direction assistance, lost-and-found help, information desk guidance, elderly support
Human-Centric Refinement of Be- longing	Physical Comfort Design	non-slip floors, backrest benches, dual handrails, temperature control, quiet waiting corners
Inclusive Expansion of Belonging	Family-Oriented Features	kids' play area, stroller-friendly space, family restroom, child-height signage
Inclusive Expansion of Belonging	Diverse Group Accessi- bility	slow escalators for elderly, wheel- chair ramps, pet water stations, priority seating

Then, word cloud analysis was done (fig. 2). It generated from the 60 reviews reflects clear patterns of user attention, with high-frequency terms mapping to three core experience dimensions: cultural experience terms like Snoopy (12 mentions) stands out as the most repeated term—users frequently reference interactions with Snoopy-themed elements, from decorating key-chains to buying limited-edition tickets. And functional experience terms like train (19 mentions), platform (7 mentions), station (35 mentions) dominate the functional layer, with users noting smooth transfers, express train access, and clear signage. Thirdly, leisure and ecological terms like park (10 mentions, e.g., walked to the park, park picnic, park playground), made (7 mentions) highlight the station’ s connection to outdoor and retail spaces. Other notable terms include kids (6 mentions), staff (6 mentions), nice (8 mentions), and waiting (5 mentions), reflecting user focus on family-friendliness, service quality, crowd conditions, and hygiene.

At last, a sentiment analysis was finished (Fig 4). 82% of reviews were positive, with 62% focusing on cultural/ecological elements (e.g., Snoopy made my kids happy) and 38% on functional elements (e.g., Quick transfer saved time), supporting finding that experience-focused elements drive stronger positive emotions [8]. Positive sentiment is driven by some key scenarios, for example, “Took my kids here for the Snoopy workshop, and they had a blast decorating key-chains”, “The Snoopy limited-edition tickets are so cute—bought one as a souvenir”. Leisure integration shows that “Love that the station connects straight to the park too—we walked there after and it felt like the whole day flowed perfectly”, “The seamless link to Grandberry Park is a game-changer—I went shopping after my train ride and did not get wet”. Negative sentiment focused on operational points. For example, “Weekend crowd was crazy! Tried to take a photo with the Snoopy statue but had to wait 10 mins”, “Rush hour is chaotic—people pushing to get on the train, and the platform gets so crowded you can’t move”. Then, there were some service gaps: “Train delays last week ruined my meeting—announcements were confusing Wish the Wi-Fi worked better! Tried to send a work email while waiting but kept disconnecting”.

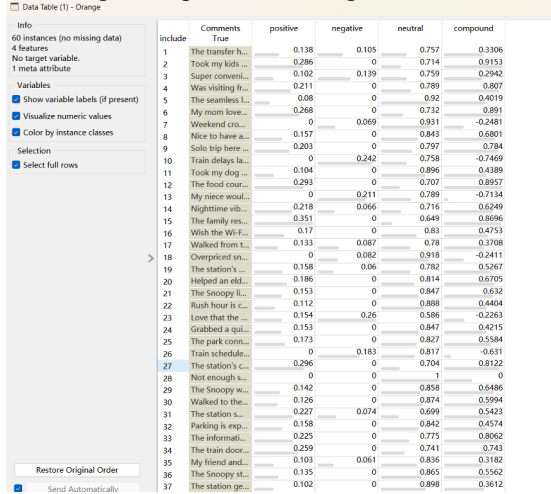


Fig. 4. Emotions in the text

4 Results and Discussion

The thematic coding reveals a hierarchical and interactive framework of user experiences at the Park Station, where each theme and its corresponding codes reflect distinct layers of how users perceive, engage with, and form connections to the space. At the core of the framework lies the function of place dependence, which captures the station’s role as a transit hub and the basic conditions that shape users’ initial reliance on it. Transit operational efficiency rooted in keywords like express train and smooth transfer—highlights the station’s ability to meet users’ core need for efficient mobility; these elements make the station a practical choice for daily commutes or travel, laying the groundwork for repeated use. Facility performance extends this practicality to

on-site amenities: accessible restrooms, and working vending machines address users' immediate, tangible needs, reinforcing the sense that the station is easy to use.

Building on this functional layer, the cultural triggers for Affective-Cognitive Bonds introduces emotional and symbolic dimensions to the user experience. IP-Themed Interactive Experiences—such as Snoopy workshops and limited-edition merch—transform the station from a passive transit space into an active site of engagement; these activities invite users to participate, create memories, and associate the station with joy or nostalgia. Visual Cultural Symbol Presence (such as murals, statues, themed decor) amplifies this effect by embedding a distinct, recognizable identity in the station's design. Together, these codes show how cultural symbols move the station beyond utility to meaning—users no longer just use the space, but relate to it on an emotional or cognitive level. Complementing the cultural layer, the Ecological drivers redefines the station's role by blurring boundaries between transit, leisure, and nature. Leisure integration—via seamless links to parks and malls—means the station is a gateway to broader experiences; users might visit the station not just to catch a train, but to picnic in the park or shop afterward, expanding their engagement with the space. Aesthetic ambience (green walls, decorative lighting, themed ceilings) further shapes this perception by infusing the station with personality and comfort. These elements turn the station into a place that feels inviting, encouraging users to linger and develop a sense of familiarity or preference for the space. The other themes “Belonging and Inclusive Expansion of Belonging” refine and broaden these connections by addressing granular user needs and diverse group preferences. And proactive service support (staff assistance, lost-and-found help) adds a human element to the station's operations, making users feel seen and cared for rather than just like passengers. Physical comfort (non-slip floors, backrest benches) ensures that positive experiences are not undermined by discomfort, reinforcing the sense that the station is designed for people. At last, Family-Oriented features extend this care to specific groups: stroller-friendly spaces and kids' play areas cater to families, while slow escalators and wheelchair ramps ensure the station is usable and welcoming for the elderly or those with mobility needs.

Thus, a three-stage model is proposed. 1: Functional foundation: functional elements generate satisfaction, translating to place dependence, but remains passive. 2: Emotional trigger: cultural immersion shortens psychological distance, while ecological elements reshape spatial perception, activating emotional/cognitive components. 3: Behavioral consolidation: Interactive experiences (e.g., workshops) transform passive emotional triggers into stable belonging, driving revisit intentions. This model addresses the satisfaction to belonging gap in previous research and clarifies how transient tourist experiences evolve into emotional attachment.

4.1 Comparison with Previous Studies

Functional elements were foundational, with 72% of reviews mentioning convenience. This aligns with the findings that facility convenience drives satisfaction and observation that functional accessibility is the baseline for transit-adjacent place attachment. However, functional satisfaction alone cannot generate belonging: 15% of reviews

focusing solely on function lacked emotional language, while 89% of reviews combining function with cultural/ecological elements expressed emotional attachment. This confirms that place dependence is necessary but not sufficient and that functional elements set a basic threshold, but emotional connection requires cultural/ecological triggers. Then, interactive cultural elements were the strongest emotional triggers, with 35% of reviews mentioning Snoopy. LDA linked Snoopy to emotional words (happy, family), reflecting finding that cultural symbols shorten psychological distance. What's critical to this mechanism is interactivity: passive elements (static posters, 12% of cultural mentions) rarely evoked emotion, while interactive elements (workshops, 23% of mentions) frequently did (e.g., Making a keychain felt like taking the station home). This validates that active engagement strengthens place identity, extending it to railway stations. And ecological elements enhanced place identity, with 28% of reviews mentioning relaxation (e.g., Green walls calmed my travel fatigue). Sentiment analysis showed these reviews had a polarity of positive reviews, aligning with eye-tracking data that plantscapes/ waterscapes evoke restorative feelings: 11% of reviews noted the station's waterfall reflection, describing it as calming. Unlike residents, tourists form immediate ecological bonds via sensory experiences—redefining the station as a leisure space.

4.2 Implications

The study expands place attachment theory to transit contexts. By integrating three-dimensional framework with validated place identity, this study identifies interactive cultural symbols and seamless ecological integration as transit-specific belonging triggers, filling the gap of unspecified trigger elements in previous framework. Second, the study validates the previous studies in transit-tourism. By building on the satisfaction model and tourism research, this study confirms that place attachment is important to tourists' revisit intention. It extends the pathway to railway stations, an understudied context in place attachment research. Third, the study bridges urban green space and transit research. This study shows that ecological elements in stations also enhance place identity, expanding the application of attachment theory to transit hubs.

5 Conclusion

This study explores the formation mechanism of tourists' sense of belonging in Japanese railway stations using Minami-Machida Grandberry Park Station as a case and tourist reviews as data, there are 3 major findings. First, multi-dimensional trigger elements: Functional elements (convenience) provide a baseline for place dependence, but cultural elements (interactive experiences) and ecological elements (seamless nature integration) are the primary drivers of emotional connection and place identity—functional dependence alone cannot form stable place attachment. Second, three-stage formation pathway: Tourists' sense of belonging evolves from functional satisfaction to emotional connection and finally to belonging. This bridges the gap between the satisfaction research and tourism attachment findings. Tourists form be-

longing through immediate, sensory-driven interactions with salient elements (e.g., Snoopy workshops, green walls) rather than prolonged use—reflecting insight into short-term cultural immersion in tourism contexts.

However, this study has several limitations: it focuses on 50 reviews, which may not cover other cultural contexts or station types. Future research should expand to multi-case studies to test the three-stage model across diverse settings. Second, the reviews were collected in 2025 (post-pandemic), a period when tourists may have prioritized ecological spaces more than usual in observation of heightened demand for green spaces. It may overstate the impact of ecological elements and longitudinal data collection is needed to verify trigger stability over time. Third, this study relies on review text rather than objective data (e.g., eye-tracking) to validate emotional responses to cultural/ecological elements. Integrating eye-tracking method in future research would enhance the validity of belonging trigger mechanisms. Future research will further expand to international stations to test whether the three-stage model and trigger elements (interactive culture, ecological integration) vary by cultural context or station function. This could reveal universal principles and context-specific differences. Mixed-methods design with objective data: Combine online reviews with on-site surveys and physiological measurements (e.g., heart rate variability) to quantify the causal link between cultural interaction frequency and belonging intensity. This would address the limitation of self-reported data and validate the emotional triggers identified in this study. Third, segmented analysis of tourist groups: divide tourists by demographics (age, family structure) or travel purposes (leisure, business) to explore group-specific belonging needs. This insight would enable more targeted station design for diverse user groups.

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