

Identifying self-drive tourists' main routes, motivations and decision-making in Peninsular Malaysia

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ABSTRACT

This study explores the under-researched domain of self-drive tourism in rural and developing regions, focusing on the Asia-Pacific, particularly Peninsular Malaysia. The primary objective is to enhance understanding of self-drive tourism dynamics in this region by examining aspects such as routes, motivations, and decision-making processes. Using an exploratory qualitative approach, interviews were conducted with key stakeholders from car rental companies and international self-drive tourists. Findings highlight main circular routes, popular stopovers, and key attractions. Additionally, three motivational dimensions emerged: experiential (emotional benefits), functional (spatial and service aspects), and attractions-based (aesthetic, cultural, and nature-related interests). The study also reveals the central role of recommendations from personal networks and digital platforms in tourists' decision-making. Contrary to prior literature, pre-trip planning proves crucial in route setting and stopover choices, challenging the notion of spontaneity often linked to self-drive tourists.

1. Introduction

Self-drive tourism has become increasingly popular for exploring regional and rural areas worldwide (Meng & Hudson, 2016). This trend reflects a broader shift from mass tourism toward more personalized, flexible travel. Contributing factors include widespread car ownership, better road infrastructure, globalization, and advances in digital navigation (Lenggogeni & Syafrizal, 2023; Schmallegger, 2011; Scott, 2002; Vilar-Rodríguez & Vallejo-Pousada, 2021). These changes have made independent road travel easier and more appealing.

The autonomy offered by self-drive tourism attracts a diversity of tourists with varying backgrounds and preferences (Carson & Waldhoer, 2011; Hardy, 2003, 2005; Prideaux & Carson, 2003). In many regions, it accounts for 70–90 % of domestic and regional travel (Carson & Waldhoer, 2011; Prideaux & McClymont, 2007), underlining the crucial role of cars in accessing remote areas and helping supporting distribution of non-mass tourism flows (Hardy, 2005; Prideaux & Carson, 2003; Prideaux & McClymont, 2007). As a result, this form of travel fosters rural development by boosting economic revitalization of local businesses and helping preserve traditional lifestyles and cultural landscapes (Carneiro, Lima, & Silva, 2018; Cruz, Ribeiro de Almeida, Pintassilgo, & Raimundo, 2022; López-Sanz, Penelas-Leguía, Gutiérrez-Rodríguez, &

Cuesta-Valiño, 2021).

Understanding self-drive tourists' preferences, motivations, and decision-making processes is crucial for optimizing tourism planning and infrastructure development. Their travel choices are guided by a complex relationship of personal preferences, available amenities, road conditions, and destination appeal. Additionally, digital tools increasingly influence how tourists plan trips and make decisions (UNWTO, 2023). However, despite its growing relevance, research on self-drive tourism remains fragmented, particularly in developing regions such as Malaysia.

Previous studies have explored aspects such as routes (Carson & Cartan, 2011; Iles & Prideaux, 2011), transportation modes (Ali & Carson, 2011; Timothy, 2011; Walker, 2011), motivations (Fakfare, Jianvittayakit, & Wattanacharoensil, 2024; Hardy & Gretzel, 2011), and satisfaction and behavioral intentions (Qiu, Hsu, Li, & Shu, 2018). While these studies provide valuable insights, they often adopt a compartmentalized approach without capturing the interconnected nature of motivations, decision-making processes, and route selection. Additionally, most studies rely on quantitative methodologies, providing valuable statistical insights but failing to capture the subjective and experiential aspects of self-drive tourism.

This study addresses these gaps by using a qualitative and integrative

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approach of self-drive tourism in Peninsular Malaysia. By conducting interviews with key stakeholders from car rental companies and international self-drive tourists, this study explores the relationship between motivations, decision-making processes, and route preferences. The findings provide practical insights about key motivations, decision-making patterns, and route preference for tourism stakeholders, destination planners, and policymakers, supporting sustainable tourism planning and targeted marketing in rural destinations.

2. Literature review

2.1. The potential of self-drive tourism

Self-drive tourism stands out as an effective tool for spreading economic benefits due to its unique characteristics of responsiveness, independence, and flexibility. These features enable tourists to explore lesser-known areas, contributing to rural revitalization by generating new sources of wealth. This aspect holds particular significance for the future of rural, remote, or underdeveloped regions, as tourism development is key for driving long-term economic growth and sustaining local economies (Briedenhann & Wickens, 2004; Carson & Schmalleger, 2011; Cruz et al., 2022; Hardy, 2003; Meng & Hudson, 2016; Taylor & Carson, 2010; Vilar-Rodríguez & Vallejo-Pousada, 2021). As a result, self-drive tourism strengthens small and family-owned businesses while creating new employment opportunities (Prideaux & Carson, 2011).

The presence of self-drive tourism stimulates vital tourism services, including accommodation, eateries, retail shops, and craft markets. Additionally, it drives the development of related services such as repair garages, gas stations, and retail outlets catering to the needs of this emerging tourist segment (Paulino, Zaragoza, Medina-Chavarria, & Gutiérrez, 2025; Smith, 2011; Taylor & Carson, 2010). In regions with limited economic opportunities, self-drive tourism offers residents alternative income sources, such as providing local experiences or selling crafts, and thus helps lessen dependence on traditional livelihoods (Hardy, 2003; Meng & Hudson, 2016).

Moreover, their influx encourages infrastructure development, leading to improved roads and telecommunications, ultimately enhancing the quality of life for both locals and visitors (Paulino et al., 2025; Scott, 2002; Taylor & Carson, 2010; Vilar-Rodríguez & Vallejo-Pousada, 2021). Such impacts are paramount for the economic advancement of these areas and have a significant role in alleviating poverty and rural depopulation (López-Sanz et al., 2021). In contrast to coach tourism, which is characterized by standardized offerings, rigid schedules, and large tourist groups (Schmalleger, 2011), self-drive travel involves smaller, more diverse groups seeking varied experiences. This shift promotes diverse activities, attractions, and services that enhance the visitor experience and help diversify the tourism industry (Gronau & Große-Hokamp, 2022; Hardy, 2005; Prideaux & McClymont, 2007; Scott, 2002).

Moreover, the immersive experience embraced by self-drive tourists enhances sensory engagement and leads to a deeper appreciation for a region's unique resources (Agapito, Mendes, & Valle, 2013). By facilitating this type of connection, self-drive tourism promotes scenic landscapes and cultural heritage among visitors, while also encouraging locals to recognize the value of their own country. This dual effect not only helps preserve natural landscapes and uphold traditional rural values but also stimulates domestic tourism and ensures that economic benefits remain within the region (Alisa & Ridho, 2020; Carneiro et al., 2018).

Previous research has highlighted the potential for developing self-drive tourism through the implementation of curated themed touring routes and corridors (Briedenhann & Wickens, 2004; Carson & Cartan, 2010; Hardy, 2003; Olsen, 2002; Smith, 2011). These routes require planning, management, and marketing based on the network characteristics of self-drive tourist flows. In fact, fragmented regional planning and promotion weaken destination branding and hinder infrastructure

development necessary to meet the needs of self-drive tourism (Ajala & Aliu, 2013; Paulino, Prats, & Domènech, 2021; Smith, 2011; Thompson & Prideaux, 2023)

Despite these challenges, en-route businesses, local communities, and public authorities should be encouraged to collaborate as a system with the goal of developing a unified product tailored to self-drive markets (Meng & Hudson, 2016; Olsen, 2002; Smith, 2011). This approach should extend beyond promotional efforts to include the strategic placement of amenities, attraction development, and infrastructure maintenance, which in turn improves the efficiency of the planning process for product development. It should not only engage stakeholders within the tourism supply chain but also build collaboration with actors outside the tourism market, including those involved in non-commercial activities. (Carson & Cartan, 2011; Dileep & Pagliara, 2023; Hardy, 2003; Scott, 2002; Smith, 2011).

These network collaborations have the potential to enhance market pull by offering prospective visitors a diverse range of options and itineraries. As a result, they help distribute tourists more evenly and contribute to the economic revitalization of rural areas (Alisa & Ridho, 2020; Smith, 2011). Furthermore, touring routes present a promising opportunity for regions rich in cultural and natural resources that attract tourists seeking unique interactions. These regions benefit from access to distinct experiential elements that enrich the overall spectrum of tourism experiences (Alisa & Ridho, 2020; Carneiro et al., 2018; Smith, 2011). This strategic dispersion is crucial for implementing a visitor use management framework, which is essential for ensuring an equitable distribution of economic benefits and reinforcing the importance of long-term tourism development (Briedenhann & Wickens, 2004; Cruz et al., 2022; Qiu et al., 2018; Vilar-Rodríguez & Vallejo-Pousada, 2021).

Understanding the preferences of self-drive tourists is crucial for destinations and their partners to effectively plan, manage, and market touring routes tailored to this market segment. This understanding forms the foundation for successful cross-border and cross-sector cooperation. It enables more effective resource use, supports product and service innovation, and contributes to greater tourist satisfaction and agency in decision-making (Paulino et al., 2021; Smith, 2011; Uysal, Li, & Sirakaya-Turk, 2009). Therefore, the initial step should involve a comprehensive study of travel patterns, needs, motivations, preferences, and decision-making processes within this market segment (Becken & Wilson, 2007; Carson & Cartan, 2011; Fakfare et al., 2024; Hardy & Gretzel, 2011; Paulino et al., 2021; Qiu et al., 2018; Scott, 2002; Smith, 2011; Uysal et al., 2009).

2.2. The complexity of self-drive tourism

Self-drive tourism presents a complex market (Øgaard, Doran, Larsen, & Wolff, 2019), requiring tourist destinations to remain responsive to its evolving nature and emerging trends in order to enhance the sustainability of tourism development and support both the economic and cultural fabric of rural communities (Cruz et al., 2022). A distinguishing feature of self-drive tourism is its capacity to allow travelers to explore multiple destinations independently, making stops at various points of interest based on information gathered along the way (Olsen, 2002; Schmalleger, 2011; Waleghwa, 2025). This often involves traveling from 'A to B' with stops or exhibiting touring behavior (Hardy, 2003; Prideaux & Carson, 2003, 2011). Such spatial patterns align with several multi-destination travel models identified by Lue, Crompton, and Fesenmaier (1993), including the *En-route Pattern*, which involves visits to attractions on the way to a primary destination; the *Regional Tour Pattern*, which features sequential visits to multiple destinations within a region; and the *Trip-Chaining Pattern*, which is characterized by a touring vacation that includes multiple destinations.

The unpredictable nature and complexity of this tourism segment begin with the decision-making process, which encompasses a range of push and pull factors related to personal interests and motivations, destination characteristics, perceived barriers, information sources, and

more (Becken & Wilson, 2007; Carson & Cartan, 2011; Hardy & Gretzel, 2011; Jang & Cai, 2002; Meng & Hudson, 2016; Øgaard et al., 2019; Prideaux & Carson, 2003). Pull factors driving tourist behavior have been extensively studied for their influence on travel choices (Uysal et al., 2009), with attractions often representing the primary motivation that draws people to a destination (Mckercher & Prideaux, 2020; Paulino et al., 2021). However, the complexity of self-drive tourists' behavior suggests that push factors, which are linked to personal motivations and needs, largely explain their travel patterns and choice of attractions (Mckercher & Prideaux, 2020; Øgaard et al., 2019; Uysal et al., 2009). This tourist segment seeks a more personal and immersive travel experience that is closely connected with the local community and shaped by unique attractions and activities (Prideaux & Carson, 2003). Research on this topic highlights a diverse range of experiences and ways for visitors to engage with a destination's unique culture and scenic landscapes (Carneiro et al., 2018; Denstadli & Jacobsen, 2011). These experiences are also influenced by the community's positive attitude toward hosting visitors (Wu & Pearce, 2014).

Self-drive tourists value independence and flexibility, avoiding rigid timetables and fixed locations, which makes push factors such as freedom of movement especially important (Hardy, 2005; Olsen, 2002; Prideaux & Carson, 2003, 2011). Consequently, while primary attractions often receive the most attention (Mckercher & Prideaux, 2020; Paulino et al., 2021), lesser-known locations strategically situated along routes to popular destinations have the potential to be discovered by self-drive tourists (Becken & Wilson, 2007; Mckercher & Prideaux, 2020; Meng & Hudson, 2016). Although very few tourists travel without any plans at all, in most cases their activities and final choices remain loosely planned and are often adapted based on decisions made during the journey (Becken & Wilson, 2007). This results in highly unpredictable behavior patterns when it comes to activity choices (Prideaux & Carson, 2003).

In contrast, specific core decisions are carefully planned before the trip and are unlikely to change (Becken & Wilson, 2007). In this context, basic infrastructure and accessibility to attractions play a crucial role in directing tourists' decisions and movements within a destination. Therefore, the demand for self-drive tourism, along with tourist satisfaction and likelihood of recommendation, depends heavily on the area's ability to provide quality infrastructure and services. Road conditions, particularly in rural areas, are a significant factor because the limited number and standard of infrastructure and support services contribute to a greater spatial dispersion of attractions and longer travel distances (Dileep & Pagliara, 2023; Meng & Hudson, 2016; Paulino et al., 2025; Prideaux & McClymont, 2007; Qiu et al., 2018; Taylor & Carson, 2010).

Both planned core decisions and flexible travel plans require information gathering before the trip as well as during the journey. As a result, information plays a crucial role in decision-making and in directing travelers' understanding of the destination, which may influence their choices along the way (Becken & Wilson, 2007). Research highlights the importance of various information sources, including maps from automobile clubs and motorist associations, road signs (Prideaux & McClymont, 2007), online sources, and social media (Carson & Waldhoer, 2011; Wu, Pearce, & Li, 2018). However, the most frequently used and trusted source continues to be word-of-mouth recommendations (Becken & Wilson, 2007; Carson & Waldhoer, 2011; Gronau & Große-Hokamp, 2022; Murphy, Mascardo, & Benckendorff, 2007; Ni, Rhim, Chiu, & Ho, 2022).

While self-drive tourists share many common characteristics, the complexity of this market also stems from its heterogeneity, which requires micro-segmentation (Øgaard et al., 2019; Olsen, 2002; Prideaux & McClymont, 2007). Recent research highlights variations in travel motivations among self-drive tourists, influenced by factors such as transportation mode, lodging preferences, and length of stay. Moreover, these motivations may evolve depending on the destination or the tourist's life stage (Carson & Waldhoer, 2011; Hardy, 2003, 2005;

McClymont, Thompson, & Prideaux, 2011; Walker, 2011). For example, the well-established caravanning sector in some countries demonstrates high levels of self-sufficiency, with tourists bringing their own food and entertainment and managing their own lodging, thereby reducing reliance on local services (McClymont et al., 2011; Scott, 2002). In contrast, motorcycle tourists depend more heavily on local services due to limited luggage capacity. They also perceive the road and the journey as attractions in themselves, deriving enjoyment from the riding experience and navigating challenging routes (Gronau & Große-Hokamp, 2022).

Despite valuable contributions from previous studies, gaps remain in the understanding of self-drive tourism. Its inherent complexity necessitates a multidimensional approach (Fakfare et al., 2024), which has often been lacking in past research. Additionally, most existing studies focus on developed regions, with limited attention given to rural and developing contexts, particularly in Asia. Furthermore, the predominant reliance on quantitative methodologies has overlooked the depth and nuance of tourists' experiences. This study addresses these gaps by adopting a qualitative, integrative approach to explore the multidimensional relationships between motivations, decision-making processes, and route preferences in Peninsular Malaysia.

3. Methods

This study adopts an exploratory qualitative approach to gain in-depth insights into the travel patterns, motivations, and decision-making processes of self-drive tourists in Peninsular Malaysia. Data were collected in 2018, providing a baseline for understanding self-drive tourism operations and offering insights that can guide future development and support long-term sustainability. Ethical considerations were strictly observed, including obtaining informed consent from all participants and ensuring data anonymization to maintain confidentiality, trust, and research integrity.

Data collection was conducted in two phases. In the first phase, semi-structured interviews were carried out with five representatives from leading car rental companies to identify popular self-drive routes and stopovers. These five companies were selected from a total of 16 operating in the study area, as identified by the Car Rental Association of Malaysia (CRAM). Selection criteria included market leadership, extensive service networks, competitive pricing, strong local and international presence, and diverse vehicle offerings tailored to both tourists and businesses. Each company provided one representative for the interviews (total $n = 5$), specifically customer service managers or senior staff who had direct interactions with self-drive tourists. The semi-structured format allowed for flexibility while ensuring that key topics related to tourist preferences, route selection, and travel behaviors were addressed (Adams, 2015). The guiding questions used in these interviews are summarized in Fig. 1.

All interviews were transcribed, coded, and categorized to identify common travel routes and stopovers. This preliminary route mapping was essential for determining optimal locations for the second phase of data collection. Additionally, an inventory of key attractions at these preferred stops was compiled using official tourism documents, which further informed the development of interview questions for tourists in Phase 2. The second phase aimed to complement the findings from Phase 1 by exploring push and pull motivational factors and examining how tourists selected routes and made travel decisions. Semi-structured interviews were conducted with 140 international self-drive tourists between October and December 2018. Participants were selected through purposive sampling at two prominent lodging stations near Royal Belum, identified in Phase 1 as key stopover points. The final sample size ($n = 140$) was determined based on data saturation (Weller et al., 2018), ensuring that no new insights emerged from additional interviews. Interviews were conducted at different times of the day and across various days of the week to capture a broad range of perspectives and provide a comprehensive reflection of tourist experiences.

The interviews with self-drive tourists were guided by a semi-

Key areas	Example of questions asked during the interview
Tourist Preferences	<ul style="list-style-type: none"> Based on your interactions, what types of destinations do your self-drive customers prefer (e.g., rural, nature-based, urban)? Have you observed a growing interest among customers in rural or sustainable tourism experiences?
Route Selection	<ul style="list-style-type: none"> Are there specific routes your company actively recommends to customers? If yes, what criteria do you use to select these routes? Which routes, from your perspective, are most suitable for promoting sustainable rural tourism, and why?
Travel Behaviors	<ul style="list-style-type: none"> How long do most customers rent vehicles, and what kinds of travel distances are typical? What behaviors or patterns have you noticed in how customers plan their trips (e.g., spontaneous detours, multi-stop itineraries)?

Fig. 1. Key interview questions for car rental company representatives. (Source: Author)

structured format based on seven key themes, covering aspects such as motivations, decision-making, planning sources, route choices, and challenges encountered. This approach allowed for in-depth exploration while maintaining consistency across all interviews. The full list of guiding questions is presented in Fig. 2.

Following data collection, all interviews were transcribed and

analyzed using thematic analysis, employing a hybrid approach that combined deductive and inductive coding. Deductive coding was informed by existing literature on push and pull factors (Mckercher & Prideaux, 2020; Uysal et al., 2009), ensuring alignment with established theoretical frameworks. At the same time, inductive coding allowed for the emergence of new themes specific to self-drive tourism in Malaysia.

Key areas	Example of questions asked during the interview
Interviewees' motivation for opting for self-drive tourism tours over other travel options.	<ul style="list-style-type: none"> Why did you decide to drive yourself instead of joining a tour group or taking public transport?
Anticipated experiences and objectives of interviewees on self-drive tourism.	<ul style="list-style-type: none"> What did you hope to see or experience during this trip by driving yourself?
Sources of information utilized by interviewees in their trip planning and moment of utilization.	<ul style="list-style-type: none"> Where did you find the information to plan your trip, and when did you use it most?
Overall decision-making process of the travel plans, both pre-trip and during the trip.	<ul style="list-style-type: none"> How did you decide on your route, stops, and activities before the trip? Did you make any changes while traveling?
Concerns and push and pull factors affecting their motivations and decision-making.	<ul style="list-style-type: none"> What made you want to take this trip, and was there anything that made you hesitate or worry before going?
Interviewees' selection of stopovers, routes, and duration of stay (with the support of a map).	<ul style="list-style-type: none"> How did you choose the places to stop, the route to take, and how long to stay at each stop?
Challenges faced by interviewees when experiencing the self-drive trip.	<ul style="list-style-type: none"> What problems or difficulties did you face during the trip while driving yourself?

Fig. 2. Script of the semi-structured interview to self-drive tourists. (Source: Author)

The analysis process involved several steps. First, initial coding was conducted to identify key responses related to motivations, decision-making, and route selection. Second, themes were categorized by grouping similar responses into push and pull motivational themes.

Third, the coding process was independently reviewed by two additional researchers to ensure reliability and minimize bias. Fourth, thematic mapping was conducted using GIS technology to visualize tourist movement patterns, with routes represented as purple lines (thicker

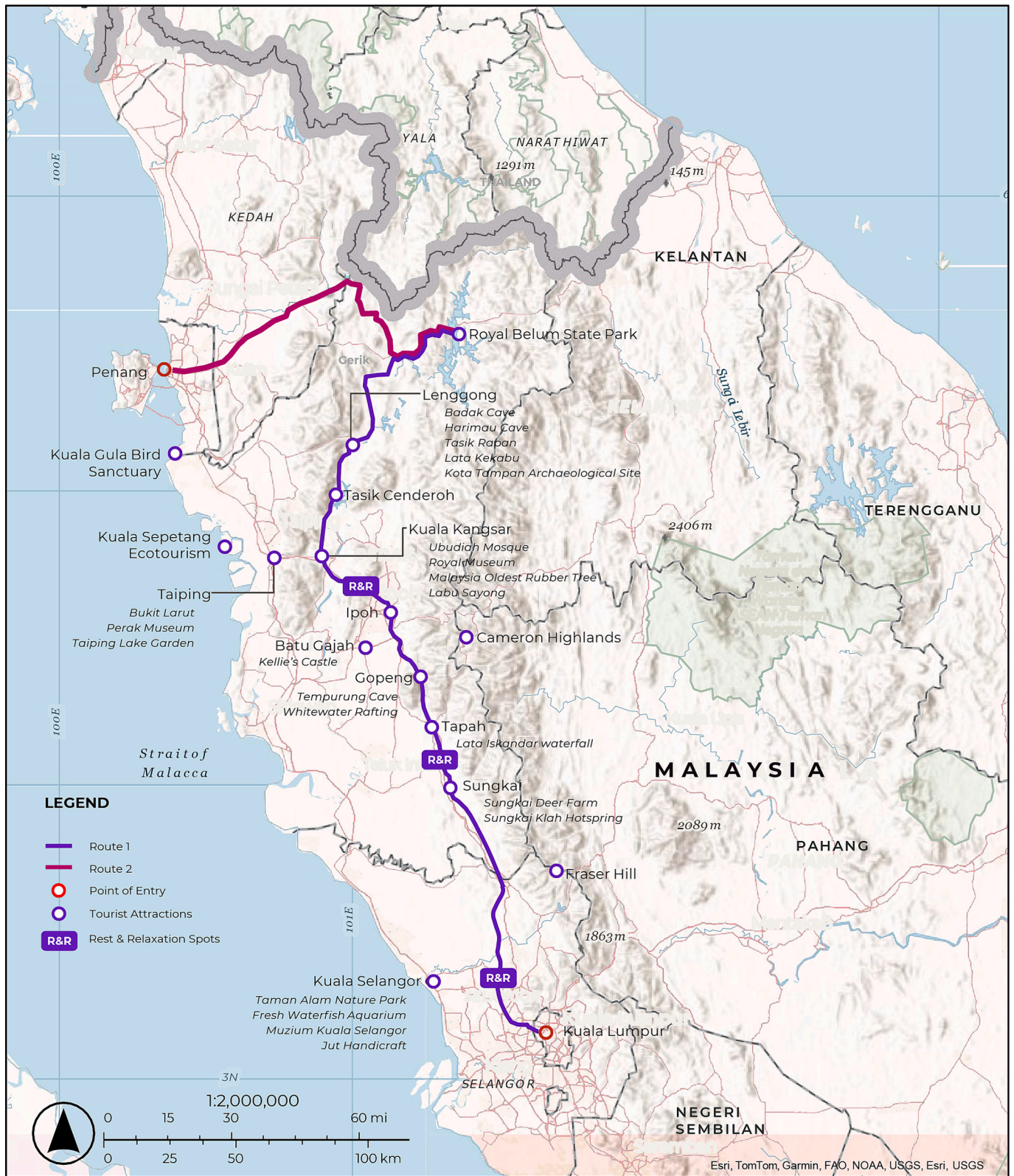


Fig. 3. Self-drive tourism routes in Malaysia and the attractions along the route according to car rental companies. (Source: Authors)

lines indicating higher traffic volume) and stopovers depicted as points, their size reflecting stop frequency. The final thematic framework synthesized the complex relationships among motivations, decision-making processes, and route preferences, offering new insights into self-drive

tourism behavior.



Fig. 4. Overall movement of self-drive tourist. (Source: Authors)

4. Case study

Self-drive tourism in Peninsular Malaysia gained momentum around 2000, when the Eighth Malaysia Plan (2000–2005) designated fly-drive holidays as a key strategy for increasing tourism revenue. Although driving in Malaysia can be challenging for international tourists who are unfamiliar with local conditions, such as left-hand driving, an International Driving Permit (IDP) allows visitors to drive for up to 90 days, which enhances the appeal of self-drive tourism. Malaysia also offers well-maintained roads and a toll highway network supported by the Touch 'n Go card system, which is available at toll plazas, convenience stores, and some car rental providers. Initially, car rental companies were unprepared for the demands of fly-drive holidays due to a lack of understanding and limited capacity. This situation required collaboration with airlines and international tour operators.

The National Tourism Policy recognizes self-drive tourism as a potentially high-value sub-sector that requires coordinated efforts among government agencies, industry players, and local communities to enhance tourist experiences and increase access to rural destinations (Ministry of Tourism, Arts, and Culture, 2019). Recognizing the potential of self-drive tourism, Malaysia has continued to develop strategies to expand and promote this sector. Recent initiatives by the Ministry of Tourism, Arts, and Culture (MOTAC) aim to strengthen self-drive tourism routes, including cross-border connections with neighboring ASEAN countries. Routes such as Hat Yai–Sungai Kolok–Kota Bharu–Kuala Lumpur and Hat Yai–Alor Setar–George Town have been highlighted as key corridors for supporting regional tourism and encouraging greater mobility for travelers (Ministry of Tourism, Arts, and Culture, 2019).

5. Results

5.1. Self-drive tourists' routes and stops

Car rental companies have identified two routes with high potential for sustainable rural tourism development (Carneiro et al., 2018; Cruz et al., 2022; López-Sanz et al., 2021). The first route extends 369 km north from Kuala Lumpur and includes a mix of urban, rural, and nature-based attractions. The second route, spanning 157 km from Penang, is more focused on rural experiences (see Fig. 3).

However, interviews with self-drive tourists reveal that their travel patterns extend beyond these identified routes. Rather than following a linear path, tourists predominantly adopt a circular, clockwise touring route around Peninsular Malaysia (Carson & Cartan, 2011). They typically begin their journey in either Kuala Lumpur or Penang, depending on their entry airport, spending the first night there before continuing with an en-route travel pattern. This approach involves multiple stopovers and concludes with a return to the starting point, often following a structured itinerary (Hardy, 2003; Lue et al., 1993).

The dominant route begins in Kuala Lumpur and heads north toward Royal Belum State Park, with popular en-route stops including Cameron Highlands, Ipoh, and Penang. Along the way, travelers enjoy scenic views of the Titiwangsa Range and occasional wildlife sightings before continuing via the East Coast Expressway. This route passes through key destinations such as Kota Bharu, Kuala Terengganu, and Cherating, where tourists often combine driving with short boat trips (see Fig. 4). Traffic from the East Coast Expressway then diverges into three primary routes: approximately half of the tourists return to Kuala Lumpur via the Kuala Lumpur–Karak Highway, a moderate number continue to Melaka via the Tun Razak Highway, and a smaller group follows the southern coastal route. Despite these variations, tourists generally follow similar travel patterns, challenging previous research that characterized self-drive tourists as unpredictable (Carson & Waldhoer, 2011; Hardy, 2003, 2005; Hardy & Gretzel, 2011; Prideaux & Carson, 2003).

5.2. Self-drive tourists' motivations

Understanding preferred routes requires analyzing the motivations behind these choices (Uysal et al., 2009). Our method identified both push factors, which relate to the experiential dimension of self-drive tourists (Blomstervik, Prebensen, Campos, & Pinto, 2020; Chan & Baum, 2007), and pull factors, which are linked to the exploration of external destination features (Denzin & Lincoln, 2011). This analysis revealed three key motivational dimensions:

1. Experiential dimension (Push factors): Tourists seek emotional benefits, such as enjoyment, novelty, comfort, and a sense of freedom (Chan & Baum, 2007).
2. Functional dimension (Pull factors): Practical considerations related to spatial elements and the availability of services during travel.
3. Attractions dimension (Pull factors): The aesthetic appeal of destinations and opportunities for engaging in diverse cultural and nature-based activities.

Each dimension categorizes tourists' motivations into distinct motivational domains. These findings not only validate previous research on push factors (experiential dimension) in self-drive tourism but also deepen our understanding of pull motivations (Fakfare et al., 2024; Øgaard et al., 2019; Uysal et al., 2009).

In the experiential dimension of push factors (see Fig. 5), key domains include pleasure, social interaction, and novelty. Tourists place high value on the aesthetics of local landscapes and cultural elements, which demonstrates a strong motivation to immerse themselves in the unique aspects of their destinations (Carneiro et al., 2018; Denstadli & Jacobsen, 2011). This highlights their pursuit of pleasure or hedonic experiences, as previously observed by Wu et al. (2018). In addition, tourists actively seek novelty and unique activities, driven by a desire to escape routine, engage in unfamiliar experiences, and satisfy their curiosity about unexplored areas (Blomstervik et al., 2020; Chan & Baum, 2007).

"I go on self-drive trips primarily for the purpose of having fun. I enjoy immersing myself in the local cultures and discovering the unique features of each place." [R3].

"I love stopping to see what each place has to offer. It is all about getting a feel for the local vibe and culture, discovering what makes each spot special." [R17].

In terms of interactivity, tourists value sharing experiences with family and friends while also engaging with locals, which highlights the inherently social nature of self-drive tourism. They seek authentic experiences across urban, rural, and natural landscapes, as well as culturally immersive encounters that go beyond transactional interactions with hosts as service providers (Alisa & Ridho, 2020; Carneiro et al., 2018). Notably, positive host–guest interactions play a crucial role in enhancing the overall tourist experience (Wu et al., 2018).

"Driving by myself allows me to truly experience local life." [R10].

"I enjoy meeting new people and chatting with the locals." [R21].

Tourists prioritize relaxation and leisure, which reflects the importance of comfort and includes the flexibility to adjust plans during the journey based on their evolving interests.

"When I'm driving, I do not need to wait for others. I have the freedom to stop anytime and anywhere I want." [R35].

While previous literature has noted that self-drive tourists often perceive driving as an attraction in itself, finding enjoyment in the act of driving (Gronau & Große-Hokamp, 2022; Qiu et al., 2018), our results indicate that driving is also closely associated with safety within the experiential dimension. This concern significantly influences the psychological and emotional aspects of the tourist experience.

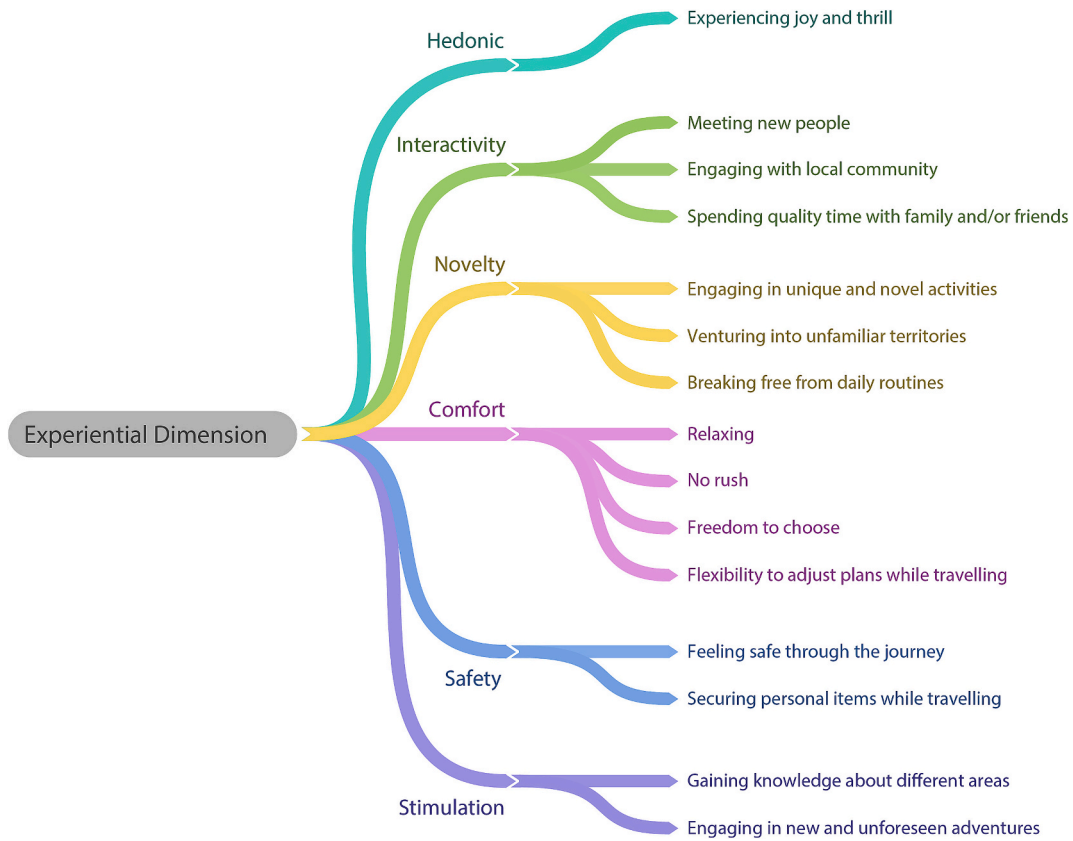


Fig. 5. Motivations of self-drive tourists linked to the experiential dimension of the push factors. (Source: Authors)

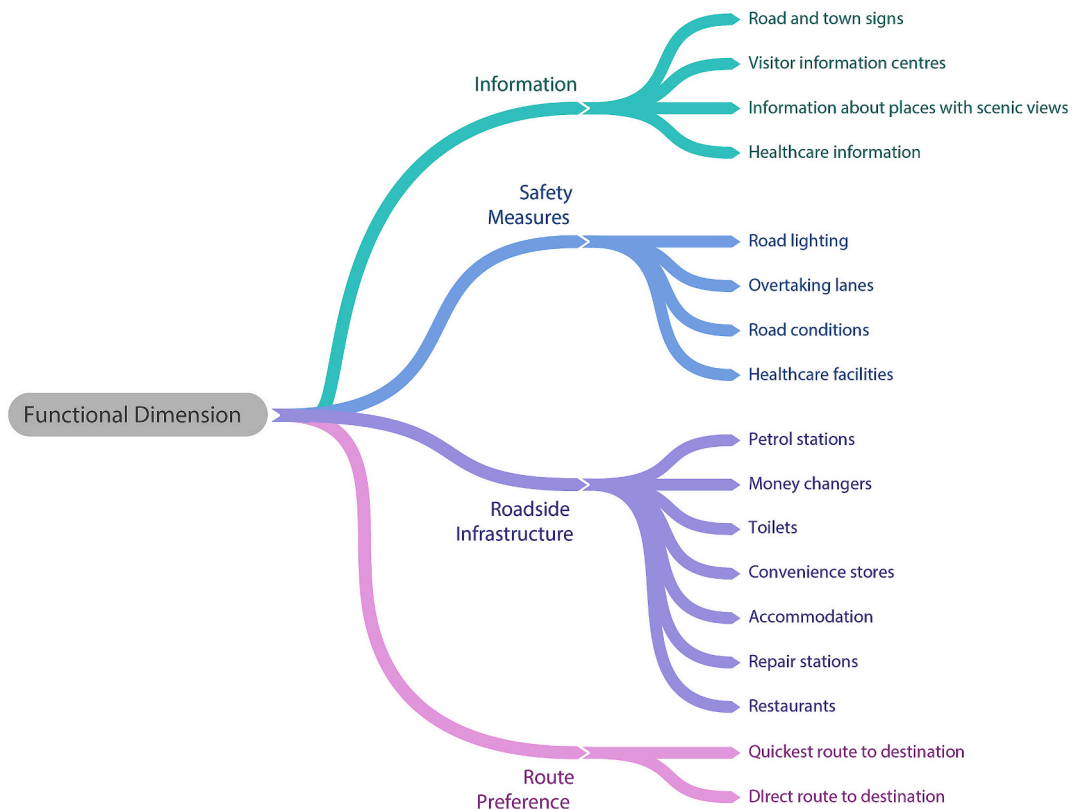


Fig. 6. Motivations of self-drive tourists linked to the functional dimension of the pull factors. (Source: Authors)

“Driving on my own for vacation means I can avoid crowded spots and keep my family in a safe bubble.” (R5).

“Feeling safe on the trip is really important. It lets you chill out and enjoy yourself.” [R24].

Additionally, linked to the ‘stimulation’ aspect, tourists are driven by the opportunity to learn about different regions and cultures, highlighting their eagerness for knowledge and cultural enrichment.

“I enjoy learning new things and experiencing different cultures up close. It is truly eye-opening. [R56].

Pull factors that influence self-drive tourists’ choices within the functional dimension (see Fig. 6) focus on access to information, service standards, infrastructure, safety measures, and a preference for well-maintained, direct routes. These elements collectively help reduce risks and uncertainties throughout the journey (Ni et al., 2022). The availability and effectiveness of visitor information, particularly road and town signage, play a crucial role in ensuring smooth navigation and overall enjoyment. Notably, the clarity of road signs remains a major concern, as well-defined signage significantly enhances the travel experience. Additionally, access to preventive measures and emergency response information is vital for tourists’ safety and is part of the critical safety dimension. This includes objective safety measures and physical infrastructure such as road quality, safety protocols, and secure facilities and services (Dileep & Pagliara, 2023). Since safety is a key concern in both the experiential and functional dimensions, destinations must ensure a secure environment and provide accessible healthcare services to improve visitors’ overall experience.

“Having healthcare facilities nearby is crucial for my trips. Knowing that medical help is accessible if needed makes me feel safer and more secure while traveling.” [R55].

“Well-maintained roads are non-negotiable for me. I need them to be in good shape for a safe drive.” [R91].

Travelers consider roadside infrastructure essential for meeting their daily needs, a finding supported by previous research (Meng & Hudson,

2016; Paulino et al., 2025; Prideaux & McClymont, 2007; Qiu et al., 2018). They emphasize the importance of petrol stations, restrooms, and other key services, including the availability of restaurants and cafés (Ni et al., 2022). The presence of such infrastructure plays a significant role in determining the popularity of specific stops along travel routes, as tourists seek reliable services and facilities (Denstadli & Jacobsen, 2011). Additionally, self-drive tourists prioritize time efficiency and prefer the quickest or most direct routes to their destinations. This preference helps explain the popularity of the circular loop, as it effectively connects a variety of travel experiences.

“We chose the most direct route for us.” [R31].

“We always look for the fastest way to get there to save time.” [R94].

“I like to take the direct path, keeping the trip easy and smooth.” [R111].

In the attractions dimension (see Fig. 7), tourists express a strong fascination with scenic and stunning vistas, particularly the panoramic landscapes and natural beauty of the northern region (Carneiro et al., 2018; Denstadli & Jacobsen, 2011). They place high value on visual elements throughout their journey and often view the act of driving itself as part of the attraction (Denstadli & Jacobsen, 2011; Hardy, 2003). However, their preference for scenic routes does not outweigh their desire for quicker, more direct paths, which suggests that efficiency remains a priority even when selecting visually appealing routes. In addition, their appreciation for nature’s beauty and cultural visuals reinforces the appeal of authentic natural and cultural experiences found in the rural areas of Peninsular Malaysia (Alisa & Ridho, 2020; Carneiro et al., 2018).

Nature-based and cultural attractions play a crucial role in route selection because they align with tourists’ desires for authentic and novel experiences, as outlined in the experiential dimension (Alisa & Ridho, 2020; Carneiro et al., 2018; Denstadli & Jacobsen, 2011). Among nature and eco-adventure activities, island exploration stands out for offering unique ecosystems and breathtaking landscapes. In addition, the combination of local cuisine tasting and cultural exploration is central to the culture and history dimension. It provides authentic culinary experiences that reflect rural life and the local identity of

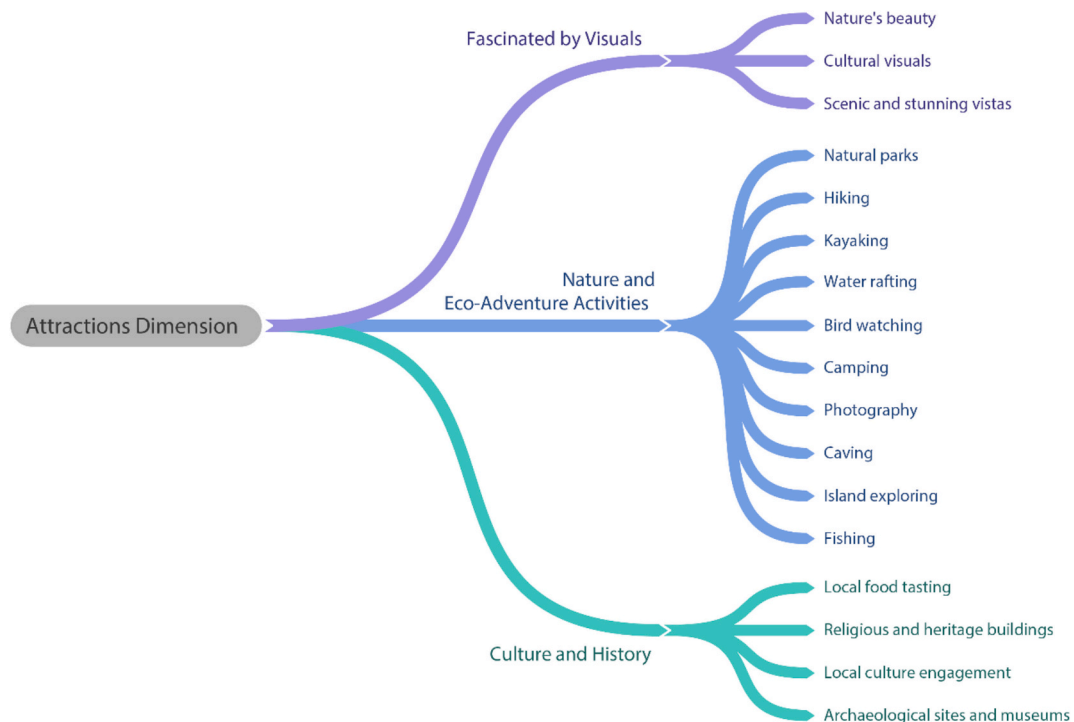


Fig. 7. Motivations of self-drive tourists linked to the attractions dimension of the pull factors. (Source: Authors)

Peninsular Malaysia (Cruz et al., 2022). This integration not only enriches the overall travel experience but also stimulates meaningful cultural interactions with local communities (Alisa & Ridho, 2020; Carneiro et al., 2018).

While these preferred activities are available along designated routes, northern Peninsular Malaysia offers a concentrated mix of natural, cultural, and gastronomic experiences. This likely contributes to higher tourist traffic in that region and causes many captivating attractions elsewhere in the country to remain underexplored. The pattern suggests that although motivations spark initial interest, additional factors influence tourists' movement choices. This highlights the need for a deeper understanding of self-drive tourists' decision-making processes (Oppermann, 1992).

5.3. Self-drive tourists' decision-making in trip planning and attraction selection

Our findings reveal that most decisions regarding travel plans are made during the pre-trip planning phase. All interviewees confirmed that they meticulously planned both their route selection and choice of attractions in advance, ensuring they followed safe routes and managed their time effectively. This behavior is closely tied to the desire to minimize uncertainties and perceived travel risks, as identified in the experiential and functional dimensions (Ni et al., 2022). The importance of pre-planning is evident, as areas not included in the initial travel plans were typically left unvisited, according to our interviewees. This indicates that the motivational factors discussed in the preceding section play a crucial role in influencing travel plans, with destinations that do not align with these motivations often excluded from consideration. However, despite the extensive level of pre-planning, some respondents lacked accurate information about certain attractions they did not visit. This highlights the need to further explore the underlying reasons for this information gap.

"You cannot visit everywhere, and you must decide what and where you want to go and see in advance." [R19].

"It was not on the route we had planned." [R14].

In line with prior research (Becken & Wilson, 2007; Carson & Waldhoer, 2011; Gronau & Große-Hokamp, 2022; Ni et al., 2022; Murphy et al., 2007), many travelers rely on recommendations from friends and relatives for travel information. These suggestions often include must-see attractions and the most efficient routes and typically come from trusted sources such as friends, family, and online communities like TripAdvisor and social media networks. This finding highlights the significant role of word-of-mouth in influencing travel behaviors and preferences. The authenticity and personal nature of such information make it highly influential, as firsthand experiences offer insights that help tourists make informed decisions. Our study, along with recent literature (Carson & Waldhoer, 2011; Wu et al., 2018), identifies a growing shift toward word-of-mouth recommendations appearing on online platforms, particularly social media. This trend likely reflects broader societal changes driven by the rapid advancement of digital technologies (Ni et al., 2022).

"I usually start by asking friends and family for recommendations." [R3].

"I rely heavily on TripAdvisor and other social media platforms. Reading other people's reviews helps me decide where to go and what to do." [R12].

Subsequently, many self-drive tourists expand their initial insights by consulting a variety of online sources, as previously noted by Wu et al. (2018) and Ni et al. (2022). Travelers often spend a significant amount of time online gathering information to help plan their routes and select sites to visit. This finding contrasts with the earlier observations of Prideaux and McClymont (2007), who found online sources to be less influential at the time of their study. The shift reflects the

evolving nature of tourist behavior, largely driven by advancements in digital technology (Ni et al., 2022).

"I spend a lot of time browsing various travel websites." [R9].

The appeal of popular attractions plays a significant role in determining route and destination choices, regardless of the motivations associated with the attraction dimension. This pattern suggests that although tourists initially have diverse interests, they often prioritize visits to well-established or highly recommended attractions (Ni et al., 2022; Paulino et al., 2021). As a result, their motivation linked to activity dimensions carries less influence when it comes to widely recognized attractions.

"When it was time to choose, we ended up picking the popular spots because we felt we should not skip them." [R28].

"After looking at all the information, we decided on the places everyone talked about. They seemed like the best bet for a good time." [R40].

"We gathered a lot of information, but in the end, we chose the spots that everyone recommended. They just seem like the obvious choices for a memorable trip." (R52).

This observation highlights the crucial role of attractions in influencing travel patterns in Malaysia and guiding decision-making processes. Attractions, including sights, activities, and experiences, serve as key motivators for tourists to visit and explore a destination. Our findings align with the activity dimension of tourist motivation, showing that travel decisions depend not only on tourists' interest in activities but also on the compelling nature of unique and engaging attractions (Hardy, 2003; Mckercher & Prideaux, 2020; Paulino et al., 2021). These attractions are not merely passive landscape elements; rather, they actively guide tourists' itineraries and choices (Carneiro et al., 2018).

6. Discussion, implications and conclusions

6.1. Discussion of key findings

While self-drive tourism has gained attention in various contexts, significant gaps remain in fully understanding its complexities, particularly in developing countries with diverse geographical landscapes such as Malaysia. This study provides empirical insights into self-drive tourism in Peninsular Malaysia by (1) identifying and analyzing preferred routes and stopovers, (2) exploring tourists' push and pull motivational factors for undertaking self-drive trips, and (3) investigating the factors influencing their decision-making processes in trip planning and attraction selection.

A thorough understanding of these aspects is essential for rural and underdeveloped regions to develop effective strategies that promote self-drive tourism (Briedenhann & Wickens, 2004). Expanding this segment presents an opportunity to distribute economic benefits more equitably across these areas, reduce rural depopulation, and preserve traditional lifestyles and cultural landscapes (Alisa & Ridho, 2020; Carneiro et al., 2018; Cruz et al., 2022; Hardy, 2005; López-Sanz et al., 2021; Prideaux & Carson, 2003; Prideaux & McClymont, 2007; Smith, 2011).

This study identifies three key findings related to self-drive tourism in Peninsular Malaysia. First, **self-drive tourism in the region is characterized by structured route patterns**. Although often associated with spontaneity, our findings indicate that tourists tend to favor well-planned routes. Their travel behaviors align with regional tourism trends, following a clearly defined circular loop that includes multiple stopovers at various attractions before returning to the point of origin (Hardy, 2005; Lue et al., 1993). A common route begins in Kuala Lumpur, proceeds northward in a clockwise direction toward Royal Belum, continues eastward and then southward along Malaysia's east coast, and finally loops back either via Melaka or directly to Kuala Lumpur. This structured approach challenges the traditional assumption that self-drive tourism is highly unpredictable and instead reveals a clear

preference for circular itineraries with strategically selected stopovers (Qiu et al., 2018).

Secondly, the **combination of push and pull factors** influences tourist choices, shaped by experiential motivations, practical considerations, and the appeal of specific attractions. Experiential factors such as enjoyment, novelty, comfort, stimulation, and safety play a crucial role in travel decisions (Blomstervik et al., 2020; Chan & Baum, 2007). Peninsular Malaysia offers a variety of enriching experiences across urban, rural, and natural landscapes, along with culturally immersive encounters that align with the experiential preferences of this tourism segment. At the same time, functional aspects such as well-maintained roads, clear signage, service availability, access to healthcare, and safe and direct routes are equally important. These practical features help reduce risks and uncertainties during the trip. Attraction appeal also significantly influences decision-making, as tourists seek unique experiences, whether through outdoor adventures, cultural exploration, or culinary activities. However, a strong preference for well-known attractions often limits travel to lesser-visited areas.

Thirdly, the **growing importance of pre-trip planning based on recommendations** significantly shapes self-drive tourism behavior. Although earlier research suggests that self-drive tourists value the freedom and independence to explore destinations on their own (Carson et al., 2011; Waleghwa, 2025; Hardy, 2005; Olsen, 2002; Prideaux & Carson, 2003, 2011; Schmallegger, 2011), our study indicates that their movements often follow a structured plan developed during the pre-trip phase. Recommendations from personal networks and digital platforms play a key role in influencing route selection (Carson & Waldhoer, 2011; Murphy et al., 2007; Wu et al., 2018), with many tourists following similar itineraries despite having different motivations. As a result, they decide on routes, stopovers, and attractions in advance based on the information they gather, along with the push and pull factors influencing their choices. This structured planning creates a paradox: tourists appear to exercise autonomy and spontaneity, yet operate within the constraints of pre-planned itineraries and pre-selected destinations. While earlier studies highlighted a strong focus on planning core elements such as routes and infrastructure (Becken & Wilson, 2007; Prideaux & McClymont, 2007), our findings extend this pattern to include the structured selection of attractions and activities. This difference may be attributed to tourists' unfamiliarity with Malaysia as a destination, which likely encourages more extensive pre-trip planning, especially among international visitors.

6.2. Implications for planners

To capitalize on these findings, tourism development strategies should recognize the importance of integrated regional planning to strengthen market pull and maximize the potential of self-drive tourism for rural revitalization through comprehensive tours (Ajala & Aliu, 2013; Alisa & Ridho, 2020; Smith, 2011). In Peninsular Malaysia, tourists tend to follow similar routes and visit well-known attractions, which leads to a disparity in appeal between the northern and southern regions. Planners should prioritize route diversification to promote a more balanced distribution of visitors. This approach requires coordinated planning, management, and marketing efforts among businesses, local communities, and public authorities along travel routes, especially in areas near key tourist stops, to enhance tourism products, services, and overall experiences (Meng & Hudson, 2016; Olsen, 2002; Paulino et al., 2021; Scott, 2002; Smith, 2011; Thompson & Prideaux, 2023). Based on this study's findings, the following strategies should be implemented in Peninsular Malaysia in a phased and interconnected manner, rather than in isolation:

Firstly, targeted marketing should focus on connecting overlooked attractions with tourist motivations. Understanding the reasons behind attraction choices is essential for regional tourism development strategies aimed at promoting lesser-visited areas in ways that align with tourists' interests (Morozov & Morozova, 2016). These

insights help explain why certain activities are more popular and how diversifying and promoting attractions in under-visited regions can reshape travel patterns. The contrast between tourists' desire for spontaneous experiences and their reliance on pre-planned itineraries presents an opportunity for tourism marketing. Customized campaigns should strike a balance between the appeal of well-established routes and the excitement of unexpected discoveries. This approach can enrich visitor experiences while reducing congestion at over-touristed sites.

Attractions in the southern region, which are often overlooked, may allow tourists to focus more on personal motivations rather than being influenced solely by recommendations. This highlights the need for marketing to emphasize the experiential qualities of lesser-known attractions and routes. Sensory-rich activities such as cultural workshops and eco-experiences can draw attention to hidden gems in Peninsular Malaysia and align with tourists' growing interest in authentic, immersive encounters (Agapito et al., 2013). Given the importance of culture, marketing and promotional efforts should also incorporate storytelling strategies to increase the emotional appeal of these locations, using digital tools to engage and attract potential visitors.

Secondly, leveraging digital platforms can influence tourists during the pre-trip planning stage. Decision-making during this phase presents a key opportunity to redistribute self-drive tourists across the region. Online recommendations play a crucial role in guiding these decisions and demonstrate the growing influence of digital technologies on travel behavior. Given their impact, targeted campaigns on digital platforms can guide tourists toward lesser-known destinations and, in doing so, support local businesses at various stopovers (Briedenhann & Wickens, 2004; Carson & Schmallegger, 2011; Cruz et al., 2022; Hardy, 2003; Meng & Hudson, 2016; Prideaux & Carson, 2011; Taylor & Carson, 2010; Vilar-Rodríguez & Vallejo-Pousada, 2021). To maximize this potential, tourism authorities should ensure that high-quality digital content, user-generated reviews, and accurate travel information are easily accessible through social media, influencer channels, and travel review websites.

Thirdly, boosting word-of-mouth remains vital for diversifying tourist flows. Beyond official information and major communication channels, word-of-mouth remains a powerful tool for encouraging tourists to explore alternative routes. Promoting visitor engagement with lesser-known sites can organically generate interest and enhance destination visibility. This approach should involve creating positive visitor experiences and incentivizing the sharing of travel stories on social media (Wu et al., 2018; Xu et al., 2020). Loyalty programs and referral incentives could be introduced to reward travelers who promote alternative routes and destinations within their networks. Collaborations with travel influencers and local ambassadors can further amplify word-of-mouth marketing and help diversify tourism flows. These efforts can contribute to a more balanced distribution of tourism benefits and support economic growth in under-visited areas while easing congestion in over-touristed locations (Briedenhann & Wickens, 2004; MOTAC, 2019; Vilar-Rodríguez & Vallejo-Pousada, 2021).

Fourthly, encouraging local business participation can enrich the self-drive tourism experience. Tourists increasingly seek authentic experiences and culturally immersive encounters with locals that go beyond transactional interactions with hosts, making it essential to integrate local businesses into self-drive tourism strategies (Alisa & Ridho, 2020; Carneiro et al., 2018). Partnering with local eateries, artisans, and community-based tourism initiatives can enrich self-drive travel experiences by making them more meaningful and culturally engaging (Hardy, 2003; Meng & Hudson, 2016). These efforts should include strategies to involve local businesses and residents as tourism ambassadors to enhance the visibility of lesser-known attractions. Additionally, training programs and certification schemes that support local entrepreneurs in delivering tourism services can help improve service quality and build credibility.

Finally, improving infrastructure and safety is essential for supporting self-drive routes. Enhancing curated themed touring

routes and corridors in Peninsular Malaysia should go beyond simple promotion to include comprehensive planning for product development tailored to the self-drive tourism market (Briedenhann & Wickens, 2004; Carson & Cartan, 2011; Hardy, 2003; Olsen, 2002; Smith, 2011). Given the importance of functional aspects for self-drive tourists, such as well-maintained roads, clear signage, and access to healthcare, regions aiming to attract this segment must adopt a strategic approach to infrastructure and safety enhancements. This includes targeted investments along lesser-known routes in road maintenance, traffic signage, and rest areas to improve accessibility. Infrastructure planning should take into account the location of attractions to optimize the placement of amenities (Carson & Cartan, 2011; Dileep & Pagliara, 2023; Hardy, 2003; Scott, 2002; Smith, 2011). Visibility of attractions and basic services should be improved through road signage and the use of multilingual digital maps and smart travel apps, particularly to assist international tourists (Dileep & Pagliara, 2023; Paulino et al., 2025). In addition, developing secure parking areas and roadside assistance programs, especially in remote locations, is essential to increase traveler confidence. Investment should also prioritize access to emergency services and healthcare facilities to address safety concerns (Dileep & Pagliara, 2023; Paulino et al., 2025). Enhancements in these areas will improve the overall travel experience and encourage broader regional exploration, contributing to a more equitable distribution of tourism's economic benefits through diverse and alternative income sources (Hardy, 2003; Qiu et al., 2018).

6.3. Final remarks

This study contributes to the empirical understanding of self-drive tourism by examining movement patterns, motivations, and decision-making processes in Peninsular Malaysia. While grounded in the push/pull framework (Fakfare et al., 2024; Uysal et al., 2009), our findings extend its application by exploring the relationship between internal motivations (push factors) and external destination characteristics (pull factors). The results illustrate that self-drive tourists in Peninsular Malaysia travel following a "regional tour" pattern (Lue et al., 1993), and their choices are shaped by a dynamic relationship of personal motivations (e.g., autonomy, exploration) and the availability of diverse attractions, amenities, and information sources (Fakfare et al., 2024; Hardy & Gretzel, 2011; Mckercher & Prideaux, 2020; Uysal et al., 2009). These insights highlight how the interaction of push and pull factors manifests in this context and contribute to a better understanding of how tourists make decisions in self-drive tourism.

Regarding decision-making processes, this study challenges previous findings that emphasize the spontaneous nature of self-drive tourists. Instead, it shows that self-drive tourists in Peninsular Malaysia tend to limit spontaneity by planning within pre-selected routes and stops during the trip preparation phase. These findings are made possible by the study's comprehensive approach, which takes into account movement patterns, psychological motivations, and practical decision-making. This allows us to expand existing theoretical models of tourist behavior by incorporating the unique aspects of self-drive tourism, based on empirical evidence from Peninsular Malaysia. The resulting framework offers new insights into push-pull dynamics and may lead to a re-evaluation of existing theories or the development of new models that better explain self-drive tourist behavior (Øgaard et al., 2019).

Moreover, our study stands apart from much of the previous research on self-drive tourism, which has predominantly relied on quantitative methods (Lenggogeni & Syafrizal, 2023; Qiu et al., 2018). Through the use of qualitative methods, our study explores the motivations, preferences, and behaviors of self-drive tourists in Peninsular Malaysia in greater depth and captures nuances that quantitative studies often overlook (Øgaard et al., 2019).

Practically, this study offers valuable insights for tourism stakeholders. The growing importance of self-drive tourism in Malaysia presents an opportunity to develop a more inclusive tourism strategy that

supports rural economies while addressing longstanding challenges such as uneven tourism distribution (Hardy, 2003). Past initiatives, like the fly-drive programs under the 8th Malaysia Plan (RM8), fell short due to a limited understanding of self-drive tourists' behaviors and preferences. This study helps bridge that gap by offering critical insights into multidimensional tourist motivations, decision-making processes, and route preferences, and it offers an empirical foundation for demand-driven policy development. As such, it guides tourism planners in tailoring marketing strategies, infrastructure investments, and stakeholder collaborations to enhance the role of self-drive tourism in Malaysia's economic and cultural landscape. These insights align with Malaysia's National Tourism Policy, which recognizes self-drive tourism as a high-value sector requiring strategic intervention to improve visitor experiences and support rural revitalization.

6.4. Limitations and future research

While this study provides meaningful insights into self-drive tourism in Peninsular Malaysia, several limitations suggest avenues for future research.

First, the findings reveal increased pre-trip planning compared to previous studies. Further research should investigate the drivers behind this trend and use sequential analysis to understand why some respondents were misinformed despite detailed planning. Second, given the influence of digital word-of-mouth, future studies should examine how digital platforms and peer recommendations shape tourist behavior. Special focus should be placed on how tourists balance following recommendations with their personal preferences when selecting routes and attractions. Content analysis of digital travel platforms and user-generated reviews could deepen this understanding (Becken & Wilson, 2007).

Third, segmentation analysis clarifies how different self-drive tourist profiles (e.g., solo travelers vs. families, first-time vs. repeat visitors) affect planning intensity, risk tolerance, and destination preferences, helping to tailor strategies to diverse needs. Additionally, ongoing shifts in travel behavior, including heightened safety concerns (Ji, Yu, Chen, Li, & Ge, 2022) and rising demand for real-time health and safety information (Alhemimah, 2023), may continue to influence self-drive tourism. Considering the constant evolution of both tourism industry and consumer behaviors, how tourists engage with destinations and plan their journeys may also change. While the core motivations for self-drive tourism may remain, stakeholders and product development need an ongoing adaptation to meet changing traveler expectations (Paulino et al., 2021).

Fifth, future research should address the sustainability challenges associated with self-drive tourism. While it supports rural economies, increased vehicle-based travel may contribute to environmental issues such as traffic congestion, pollution, and strain on natural resources (Paulino et al., 2025; Waleghwa, 2025). Similarly, future studies should address the sustainability along the routes throughout local communities (Cruz et al., 2022).

Lastly, the rise of digitalization presents opportunities for co-creating smart rural destinations (Buonincontri & Micera, 2016). Future studies should explore how digital innovations can enhance the self-drive experience while supporting rural tourism development.

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CRedit authorship contribution statement

Nadzirah Hosen: Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Isabel Paulino:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization. **Amran Hamzah:** Writing – review & editing, Validation, Supervision, Conceptualization.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used Quillbot and ChatGPT to improve language and readability. All content was subsequently reviewed and edited by the authors, who take full responsibility for the final version.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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