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RESEARCH ARTICLE

Domestic tourist perceptions of social carrying capacity: implications for sustainable tourism management in Pangkor Island, Perak

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ABSTRACT

Although economically advantageous, tourism growth can present considerable challenges to local communities and natural environments if not properly managed. This study examines domestic tourists' perceptions of Social Carrying Capacity (SCC) on Pangkor Island, Perak, a well-known tourism destination in Malaysia. A quantitative approach was used to collect data from 92 domestic tourists through structured questionnaires and the People at One Time (PAOT) visual assessment method to assess perceived crowding during peak periods. Most respondents (84.8%) indicated that their visit was for holidays and leisure. Results demonstrate a moderate level of satisfaction with infrastructure, especially in transport services (mean = 3.27). However, concerns were identified regarding cleanliness (mean = 3.01), crowding (mean = 2.25), and interaction with local communities (mean = 2.29). Findings from the PAOT showed that moderate crowding levels were deemed acceptable, with 39.1% of the respondents selecting Image C and 37.0% selecting Image D. The study emphasises the necessity of ongoing monitoring and increased community engagement, despite current SCC indicators being within acceptable thresholds, to ensure a balance between tourism development and the quality of life for residents. The findings provide valuable insights for policymakers and tourism planners focused on sustainable destination management in coastal and island contexts.

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1. INTRODUCTION

Tourism is a highly dynamic and economically significant worldwide sector, making substantial contributions to national and local development. International tourist arrivals reached approximately 1.286 billion in 2023, representing a 34% increase from 2022, as reported by the United Nations World Tourism Organisation (UNWTO, 2024), nearing pre-pandemic levels. In early 2025, global arrivals increased by 5% relative to the same period in 2024, exceeding pre-COVID levels by 3% (UNWTO, 2025). In Malaysia, the tourism sector remains a significant economic contributor, with 20.14 million international arrivals resulting in RM71.3 billion in revenue in 2023 (Tourism Malaysia, 2024). Domestic tourism experienced a substantial recovery, with 260.1 million visitors in 2024, reflecting a 21.7% increase from the prior year, and total expenditure amounting to RM106 billion (DOSM, 2025).

Rapid growth in the tourism sector offers substantial economic benefits. However, it simultaneously poses serious environmental and socio-cultural challenges, particularly in ecologically fragile and socially vulnerable regions such as islands and coastal areas. When poorly managed, tourism can lead to significant ecological consequences, including waste accumulation, coastal erosion, water pollution, and the degradation of natural habitats (Segarra et al., 2024). These impacts are often magnified in small island destinations, where limited land and resources heighten the effects of overtourism. Additionally, unchecked tourism growth can disrupt local socio-cultural systems and diminish community well-being, leading to tensions between residents and visitors (Hanafiah, 2022)

Addressing these issues requires integrated sustainability strategies that balance economic gains with long-term environmental and social resilience. A sustainability-focused strategy for tourism development is crucial to effectively balance environmental protection, social well-being, and economic viability in addressing these challenges. The UNWTO (2023) highlights the significance of

integrated frameworks for ensuring long-term sustainability. Tourism Carrying Capacity (TCC) is a tool that delineates the maximum number of visitors a destination can accommodate without inflicting unacceptable environmental damage, diminishing visitor satisfaction, or negatively impacting host communities (UNWTO, 2021).

TCC is extensively utilised in diverse tourism contexts, such as protected areas, mountainous regions, heritage sites, and small islands, and is particularly pertinent for addressing issues related to crowding, infrastructure strain, and stakeholder disputes. Exceeding TCC frequently leads to diminished tourist satisfaction and heightened social and ecological tensions (Smith et al., 2023).

This research examines Social Carrying Capacity (SCC), one of the three main dimensions of Tourism Carrying Capacity (TCC), alongside environmental and economic factors. SCC denotes the level of tourism activity permissible without compromising residents' well-being or visitors' experiences. Saveriades (2000) defines SCC as comprising two interrelated components: the psychological threshold of the visitor, beyond which the experience declines, and the host community's tolerance for tourism, which, if exceeded, may lead to social friction. Effective management of social carrying capacity (SCC) is essential for the sustainability of tourism, especially in destinations facing increasing visitor volumes. Disregarding SCC thresholds jeopardises environmental sustainability and social cohesion, essential to tourism resilience.

Recent research highlights the importance of integrated, data-driven approaches for evaluating Social Carrying Capacity (SCC) in tourism destinations. Tokarchuk et al. (2020) introduced a quantitative framework that integrates resident satisfaction levels with tourist flow data to determine community tolerance thresholds, providing a replicable model for assessing social carrying capacity. Mota et al. (2021) investigated the Laurisilva UNESCO World Heritage site in Madeira. They determined that visitor satisfaction was notably affected by cleanliness, environmental quality, and trail maintenance, suggesting that these environmental factors may act as critical indicators of SCC thresholds in ecologically sensitive regions.

Lin et al. (2023) found that in urban areas, perceived crowding in forest parks significantly reduced tourist satisfaction, with emotional responses as a partial mediator in this relationship. This finding points out the importance of psychological dimensions in SCC evaluations. Kalisch (2012) studied Germany's coastal national parks, highlighting a discrepancy between actual visitor numbers and perceived crowding. This suggests that individual background and activity type influence tourist tolerance. This underscores the necessity for adaptive visitor management strategies, such as temporal zoning and visitor segmentation.

Recent studies indicate significant variability in crowding perception influenced by demographic, behavioural, and motivational factors. In the Tatra Mountains case, Hibner et al. (2024) examined perceived crowding among protected-area visitors. Contrary to our earlier summary, their models did not find age or visitation frequency to be significant predictors of crowding tolerance. Their results underscore that socio-demographic variables may be weak determinants of crowding perceptions compared to situational or site-specific factors, reinforcing the need for context-sensitive SCC assessment. Gu et al. (2018) conducted a motivation-based segmentation of domestic visitors to the Changbai Mountain Biosphere Reserve. They identified distinct segments (e.g., nature appreciation, relaxation, social interaction) and showed that these segments differed in activity preferences and management expectations. The study does not analyse crowding thresholds. Our use of Gu et al. is therefore limited to the argument that heterogeneous motivations can shape visitors' experiences and expectations an important contextual consideration when interpreting SCC indicators such as perceived congestion. Carvache-Franco et al. (2021) identified that ecotourists in the Galápagos Islands displayed diverse levels of satisfaction and expectations, highlighting the necessity for tailored SCC management strategies. These studies collectively emphasise the necessity of a multidimensional, context-sensitive approach to SCC assessment. Integrating qualitative and quantitative methodologies, combined with community engagement and spatial analytics, strengthens SCC frameworks and promotes sustainable and inclusive tourism planning.

Pangkor Island, situated on the west coast of Peninsular Malaysia, serves as an appropriate subject for SCC assessment. The island has seen a steady increase in tourist arrivals, particularly on weekends and during school holidays, significantly altering its tourism landscape. The population rose from 12,999 in 2012 to an anticipated 17,000 in 2024 (DOSM, 2024). This popular destination comprises ten interconnected islands spanning 22 km², including Pangkor Laut, and experiences increasing pressure during peak seasons. Evaluating domestic tourists' perceptions of SCC is essential for formulating policies that promote visitor satisfaction and enhance community well-being.

While global studies have applied models such as PAOT and integrated visitor perceptions into carrying capacity evaluations, there is a paucity of empirical data concerning domestic tourists' experiences and perceptions of SCC in Malaysian island destinations. Pangkor Island, a rapidly

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developing tourist hotspot, lacks context-specific SCC assessments that could inform sustainable visitor management.

This study addresses this critical gap by offering a localised, data-driven assessment of SCC using a visual PAOT method and structured surveys, thereby contributing new insights into sustainable tourism planning and management in insular tourism environments.

Previous research on Pangkor Island, such as *"Social Carrying Capacity as a Planning Tool for Sustainable Tourism: A Case of Pangkor Island, Perak, Malaysia"* (Yusoh et al., 2023), primarily adopted a conceptual and planning-based perspective of SCC, focusing on strategic integration of social carrying capacity into sustainable tourism frameworks. The emphasis was largely on policy application and theoretical modelling, without empirical assessment from the visitor's perspective.

In contrast, the present study introduces a novel empirical approach that examines domestic tourists' perceptions and behavioural responses through quantitative data collected via the PAOT visual assessment and structured questionnaires. This enables the analysis of perceived crowding, satisfaction, and social tolerance, offering empirical evidence that complements and extends the conceptual foundation of Yusoh et al. (2023). Beyond Malaysia, Rusli, Avenzora and Sunarmin-to (2024) conducted an exploratory SCC study in the ecotourism development of Cirebon, Indonesia, focusing on social dynamics and local community interaction. Their research highlighted the significance of stakeholder inclusion and social equilibrium in maintaining tourism sustainability. However, their context was primarily community-oriented, whereas the present paper uniquely focuses on tourist-based empirical data and psychological indicators of social carrying capacity in a small island setting.

Consequently, this study not only bridges the theoretical and planning gap identified in Yusoh et al. (2023) but also extends the Southeast Asian SCC literature (e.g., Rusli et al., 2024) by providing a quantitative, visitor-centred analysis relevant to sustainable island destination management.

2. MATERIALS AND METHODS

This research implemented a quantitative survey method using a structured questionnaire to examine domestic tourists' perceptions of their tourism experience on Pangkor Island, specifically concentrating on indicators of social carrying capacity (SCC). Data was collected during public holidays (New Year, and Chinese New Year) and school break in Mac and June 2024, identified as peak seasons in Malaysia, when tourist volume is notably higher than usual. This period was selected to capture tourist perceptions under realistic and intensive use conditions, as increased visitor numbers affect satisfaction levels and perceptions of crowding.

A structured questionnaire was distributed to domestic tourists, featuring closed-ended items assessed via a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire evaluated multiple aspects of SCC, such as perceived congestion, cleanliness, infrastructure adequacy, and interactions with local residents. In addition to these insights, the People at One Time (PAOT) method was employed, facilitating a visual evaluation of crowding levels by selecting images that depict varying visitor densities.

Questionnaires were distributed to tourists on the ferry as tourists left from Pangkor Island. This method proved effective, enabling respondents to offer feedback grounded in a comprehensive and current tourism experience. Descriptive statistical analysis was utilised to summarise and interpret the response patterns obtained from the survey.

3. RESULT AND DISCUSSION

The research involved a total of 92 domestic tourists (Table 1). The largest respondents came from Perak (25.0%), followed by Kedah (18.5%) and Johor (14.1%), which can be attributed to the geographical positioning of Pangkor Island within Perak. The survey revealed a slight majority of female respondents at 52.2% compared to 47.8% for males, with the most prevalent age group being individuals aged 21–30 years, accounting for 42.4% of the total respondents. A significant portion of participants possessed higher education (59.8%), indicating the credibility of the survey responses.

Regarding visitation, 41.3% had made more than three visits, 33.7% were first-time visitors, and 25.0% had visited twice. The main reason for travel was leisure, representing 84.8%. In comparison, a smaller percentage travelled for business (5.4%), to visit relatives (3.3%), for religious reasons (1.1%), for healthcare (1.1%), or other purposes (4.3%), indicating a significant inclination towards domestic leisure travel.

3.1 Respondent Satisfaction Level

When determining the SCC in a tourism region, the level of satisfaction among tourists must be considered. This satisfaction will express the quality of travellers' experiences when visiting this location. This is consistent with Saveriades' (2000) definition of SCC, which states that the quality of an acceptable tourist experience before moving on to another location is a factor in defining the SCC. Three factors influence the satisfaction of these tourists (Table 2). The first component

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is tourists' satisfaction with the facilities on Pangkor Island. The second is about the number of tourist arrivals, and the third is about the local community's responses to their arrival on Pangkor Island.

Table 1: Demographic profile of respondents

	Frequency (n)	Percent (%)
State Of Origin		
Perlis	2	2.2
Kedah	17	18.5
Pulau Pinang	6	6.5
Perak	23	25.0
Selangor	12	13.0
Kuala Lumpur	3	3.3
Negeri Sembilan	3	3.3
Melaka	3	3.3
Johor	13	14.1
Pahang	1	1.1
Terengganu	2	2.2
Kelantan	7	7.6
Gender		
Man	44	47.8
Woman	48	52.2
Age		
Below 20 years old	31	33.7
21-30 years old	39	42.4
31-40 years old	13	14.1
41-50 years old	6	6.5
51 years old and above	3	3.3
Education Level		
Higher Education	55	59.8
Secondary Education	32	34.8
Primary Education	4	4.3
No Formal Education	1	1.1
Frequencies Of Visit		
First Time	31	33.7
Second Time	23	25.0
More than three times	38	41.3
Purpose Of Visit		
Holiday, recreation & Leisure	78	84.8
Visiting relatives/friends	3	3.3
Professional/business /	5	5.4
Health care	1	1.1
Religious Ceremony	1	1.1
Others	4	4.3
Total	92	100.0

The first component, tourists' satisfaction with facilities, shows moderate satisfaction levels (means 3.08–3.27), with the highest ratings for transport services and clean beaches, and the lowest for parking and public restrooms. Tourists reported the most excellent satisfaction with amenities, including trash cans (M = 3.27), clean beaches (M = 3.26), and marine life (M = 3.26). Transport services received a favourable score (M = 3.27), indicating sufficient infrastructure. The colour scale in Table 3 was applied using thresholds from Muzammil et al. (2016), where mean values above 3.27 are considered "excellent.". The findings are consistent with the findings from Telišman–Košuta and Ivandić (2021), who noted that access to clean and well-maintained environments significantly influences visitor satisfaction in coastal destinations.

Parking received lower satisfaction scores (M = 3.08), followed by public restrooms (M = 3.10) and seating or picnic facilities (M = 3.16–3.19). Ongoing problems with parking and lavatory facilities persistently impact the whole experience. Hanafiah et al. (2019) performed a structural study demonstrating that infrastructure quality, including cleanliness and transit, significantly affects happiness and destination loyalty. The results reveal infrastructural inadequacies that, if neglected, may negatively impact the tourist experience. This tendency corresponds with issues observed in Indian coastal resorts, where insufficient investment in essential infrastructure has adversely affected visitor perceptions (Bardhan & Sarkar, 2024).

Regarding perceptions of crowding, the second component indicates an increasing discomfort among tourists about visitor numbers. The statement regarding the increase in tourist numbers received the lowest mean score (M = 2.25), followed by moderate concerns about safety in crowded spaces (M = 2.67) and the effect of visitor volume on holiday quality (M = 2.88). The findings from Hibner et al. (2024) indicate that overcrowding in protected natural areas, including the Tatra Mountains, substantially reduced visitor satisfaction. Research conducted in Italy's Asinara National Park indicates that perceived crowding negatively impacts tourist experiences and the value of the destination, especially during peak seasons (Meligi et al., 2021).

The international parallels underscore the necessity for Pangkor Island to implement visitor management strategies, such as temporal zoning or capacity limitations during peak demand periods. Tourist crowding is increasingly linked to reduced satisfaction and emotional discomfort. A multi-country study of overcrowded Mediterranean destinations found that perceived overcrowding and overtourism negatively impacted tourist satisfaction and their intention to return, with emotional responses (e.g. stress, avoidance) acting as mediators (Papadopoulou et al., 2022).

The third component, which examines interactions with local residents, demonstrates the lowest satisfaction levels, with mean scores between 2.23 and 2.26. Tourists reported unease concerning local acceptance, friendliness, and perceived safety throughout their visit. The findings underscore potential socio-cultural tensions and suggest that the host–guest relationship may be compromised. This trend corresponds with recent findings from Zadar, Croatia, where residents have expressed increasing dissatisfaction regarding the effects of tourism, such as overcrowding, traffic congestion, and escalating living costs (Miocic et al., 2023). In Nepal's Annapurna Conservation Area, Joshi and Dahal (2019) identified that locals reported satisfaction with tourism's development benefits but raised concerns over emerging

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crowding and cultural impacts, stressing the need for ongoing monitoring of SCC. The findings highlight the necessity of adopting community-based tourism strategies that promote local involvement, equitable distribution of benefits, and enhanced interactions between residents and tourists.

Table 2: Perceptions of Respondents Regarding SCC Indicators on Pangkor Island

	Means	SD	Colour
Component 1: Satisfaction with facilities			
Satisfaction with parking	3.0870	.94523	
Satisfaction with the bathroom/toilet	3.0978	.93831	
Satisfaction with the trash can	3.2609	1.00405	
Satisfaction Lack of rubbish	3.1630	.99755	
Satisfaction with the picnic table	3.2500	.90935	
Satisfaction with the beach bench	3.1957	.95203	
Satisfaction with information boards	3.1848	.95996	
Satisfaction with Coast Guard	3.2391	.96499	
Satisfaction with clean beaches	3.2609	.94775	
Satisfaction with reefs	3.2174	.94725	
Satisfaction with marine life	3.2609	.97066	
Satisfaction with transportation (taxis & ferries)	3.2717	1.02821	
Satisfaction with development	3.2174	.98143	
Component 2: Number of tourist arrivals			
There is an increasing number of tourists to Pangkor Island	2.2500	.93321	
You feel safe with a large number of tourists	2.6739	1.13009	
Tourist arrivals affect the quality of your holiday	2.8804	1.01464	
Component 3: Reception of local residents			
Tourist arrivals are well accepted by locals	2.2391	.86912	
You feel comfortable with the attitude of the locals	2.3261	.99569	
You feel safe during your holiday on Pangkor Island	2.2283	.91511	

Table 3: The scale determines the situation in Pangkor Island

Scale		*Colour*
Excellent	*> 3.27*	
Moderate	*>1.7 < 3.26*	
Poor	*<1.6*	

Source: Muzammil et al., 2016

Note: Threshold values and colour coding adapted from Muzammil et al. (2016), where mean scores >3.27 are considered "Excellent," 1.7–3.26 as "Moderate," and <1.6 as "Poor."

The data indicate that domestic tourists on Pangkor Island exhibit moderate satisfaction with basic infrastructure and environmental features; however, concerns regarding overcrowding and insufficient positive interaction with local residents are evident. If unaddressed, these issues may undermine the island's social carrying capacity. The findings necessitate focused policy interventions that emphasise infrastructure improvements, sustainable management of visitor flows, and increased community engagement in the tourism value chain to guarantee the long-term resilience and quality of the tourist experience.

3.2 Situation in Pangkor Island

Researchers utilised the Image Capture Technology (ICT) approach, initially devised by Szuter et al. (2011), to evaluate the social carrying capacity (SCC) of Pangkor Island. This method involved presenting respondents with a series of images (refer to Fig. 1) illustrating varying levels of visitor crowding at the tourist destination, and they were asked to pick the image that most accurately reflected their evaluation of the congestion condition. This visual assessment method corresponds with the People At One Time (PAOT) approach established by Manning et al. (2002), enabling the evaluation of crowding through respondents' perceptions and evaluation of acceptable visitor levels.

Researchers applied the Image Capture Technology (ICT) method, which uses visual stimuli for determining perceived crowding situations, in accordance with the People At One Time (PAOT) framework. This methodology improves the assessment of social carrying capacity (SCC) by asking respondents to choose photos that best represent their experience of crowding at tourist destinations. Visual methods have demonstrated efficacy in identifying crowding thresholds across various visitor demographics and spatial environments (Yoon et al., 2024). The images used in this study were digitally modified to represent realistic visitor volumes on Pangkor Island, providing a grounded evaluation of user comfort levels across different crowd conditions. These strategies consider emotional and psychological responses—such as discomfort or perceived safety—that standard surveys may overlook (Enseñat-Soberanis et al., 2021). This enhanced methodology is particularly beneficial in ecologically confined locations, where topographical differences and seasonal congestion heighten the necessity for precise SCC assessments. Furthermore, the visual PAOT method enables managers to formulate evidence-based spatial planning strategies—such as zoning or timed entry—to maintain visitor pleasure while alleviating ecological pressure (Cribbs et al., 2019).

The images included in the study were sourced from genuine pictures of Pangkor Island and digitally altered with photo-editing software to replicate varying crowd levels. This technique provides a more sophisticated and contextually pertinent evaluation of SCC, especially in settings characterised by intricate spatial dynamics like elevation and diverse topography. Previous studies by Manning (1999), Manning et al. (2002), and Needham et al. (2008) have highlighted the limitations of relying solely on closed-ended survey questions for SCC estimation. These scholars argue that closed-ended methods can produce unrealistic or ambiguous results, especially in topographically diverse settings. Consequently, this study integrates the PAOT

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approach as a complementary tool to enhance the accuracy and validity of SCC assessments on Pangkor Island.

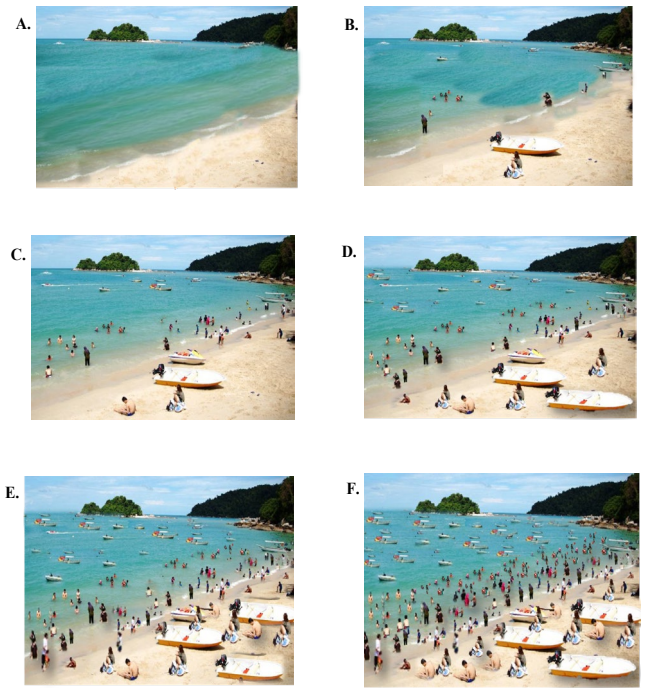

Figure 1: Image options to illustrate the congestion at Pangkor Island

An analysis of the respondents' perceptions of crowding on Pangkor Island, as presented in Table 4, reveals a clear preference among domestic tourists for moderate-density scenarios. The most frequently selected image to represent the actual crowding condition was Image C, chosen by 39.1% of respondents, followed closely by Image D at 37.0%. In contrast, Image A, which depicted a minimally crowded environment, was selected by only 2.2% of participants. These findings indicate that tourists generally perceive the island as experiencing manageable levels of visitor density, suggesting that the current social carrying capacity has not been exceeded.

When assessing comfort levels associated with these crowding scenarios, Image C again emerged as the most favourable, with 45.7% of respondents indicating that this level of crowding provided a comfortable recreational experience. Comparatively, Images B and D received significantly fewer comfort-related responses (19.6% each), while Image A, despite its low crowding depiction, was considered comfortable by just 12.0% of respondents. This suggests that extremely low-density environments are not necessarily perceived as ideal, and that a certain degree of social interaction or vibrancy may enhance the tourist experience. These preferences are consistent with international findings in recreational settings. For instance, a recent study in the Tatra Mountains in Poland found that visitors expressed the highest satisfaction with moderately crowded environments, while both extreme solitude and overtourism were linked to decreased emotional well-being and lower destination loyalty (Hibner et al., 2024).

Similar trends have been observed in protected areas such as Asinara National Park in Italy, where tourists reported diminished enjoyment in highly crowded conditions, but also identified moderate visitor presence as contributing positively to the destination's atmosphere and sense of safety (Meligi et al., 2021). Furthermore, these findings support the utility of the People At One Time (PAOT) methodology, which allows for a more intuitive and context-sensitive assessment of acceptable visitor thresholds by leveraging visual stimuli rather than relying solely on closed-ended survey formats. Previous research has demonstrated that PAOT-based assessments yield more accurate and reliable crowding evaluations, particularly in spatially dynamic settings such as coastal or mountainous environments (Joshi & Dahal, 2019).

In conclusion, the data indicate that domestic tourists on Pangkor Island are largely comfortable with moderate crowding levels, and that current visitor densities fall within socially acceptable limits. The application of PAOT methodology in this context not only enhances the precision of crowding assessments but also provides valuable insights for destination managers seeking to balance visitor satisfaction with sustainable tourism practices.

Table 4: Crowding & Conditions that provide comfort in Pangkor Island

Image	The situation of Crowding in Pangkor Island		Conditions that provide comfort while on Pangkor Island	
	Frequency	Percent	Frequency	Percent
A	2	2.2	11	12.0
B	11	12.0	18	19.6
C	36	39.1	42	45.7
D	34	37.0	18	19.6
E	3	3.3	2	2.2
F	6	6.5	1	1.1
Total	92	100.0	92	100.0

4. CONCLUSION

This study examined domestic tourists' perceptions of Social Carrying Capacity (SCC) on Pangkor Island, focusing on four dimensions: perceived congestion, cleanliness, infrastructure adequacy, and interactions with residents. The findings reveal that while tourists were moderately satisfied with infrastructure, particularly transport services, there were persistent concerns regarding cleanliness, perceived crowding, and host-guest interactions. The PAOT assessment further indicated that visitors generally considered moderate levels of crowding acceptable, suggesting that Pangkor has not yet exceeded its SCC threshold. Nevertheless, these emerging issues highlight the need for proactive planning, continuous monitoring, and stronger community engagement to safeguard both visitor

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satisfaction and local well-being.

This study advances the theoretical and empirical discourse on Social Carrying Capacity (SCC) within the context of sustainable island tourism. While *Yusoh et al.* (2023) conceptualised SCC as a strategic planning instrument for sustainable tourism development, this research elevates the discussion by offering an empirical validation through quantitative assessment of domestic tourists' perceptions, using the PAOT visual method and structured behavioural indicators. The approach not only transforms SCC from a theoretical construct into a measurable, perception-based framework, but also enhances its applicability for destination governance.

In comparison, *Rusli et al.* (2024) explored SCC through the lens of community social dynamics in Indonesian ecotourism, underscoring the importance of local participation in maintaining social equilibrium. The present study extends this perspective by integrating the psychological and experiential dimensions of tourists, revealing how perceptions of crowding, satisfaction, and social tolerance shape the limits of tourism growth. Collectively, this research contributes a novel empirical framework that unites theoretical, behavioural, and managerial dimensions of SCC, establishing a new regional reference point for sustainable tourism governance in Southeast Asia.

From a policy perspective, the results provide valuable insights for destination managers and local authorities. Investments in basic infrastructure, improved waste management, and structured visitor flow strategies such as temporal zoning or visitor caps during peak seasons will be crucial to maintaining Pangkor's long-term sustainability as a coastal and island destination. Strengthening resident involvement through community-based tourism initiatives can also enhance host–guest relations and ensure more equitable benefit distribution.

At the same time, this study has limitations that should be acknowledged. The findings are based on a relatively small, non-representative sample of 92 respondents, collected using convenience sampling during peak periods. While this approach provides an important exploratory perspective, it limits the generalisability of the results. Furthermore, the analysis relied only on descriptive statistics, which are useful for identifying patterns but do not allow for testing relationships between variables. Future research should employ more advanced methods, such as regression or structural equation modelling, to examine how demographic attributes (e.g., age, gender, education level, frequency of visits) influence satisfaction with infrastructure, cleanliness, congestion, and host–guest interactions.

In addition, this study only captures the perspectives of tourists and does not incorporate those of local residents, whose tolerance levels form a crucial dimension of SCC. Including residents' perspectives through interviews, focus groups, or community-based surveys would provide a more holistic assessment. Finally, while the PAOT visual method was effective in gauging tourists' perceptions of crowding, additional approaches such as GIS-based spatial analysis, mobile tracking data, or participatory stakeholder workshops could yield richer and more objective insights.

In conclusion, Pangkor Island remains within acceptable SCC limits, but warning signs are already evident. Unless addressed, issues related to cleanliness, congestion, and social interaction may undermine both the visitor experience and community quality of life. Sustaining Pangkor's tourism future requires integrated management that combines infrastructure improvements, visitor regulation, and active community participation, supported by ongoing research that deepens the assessment of SCC in Malaysian island destinations.

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REFERENCES

Bardhan, S., & Sarkar, S. (2024). Optimising tourist flows through operative carrying capacity assessment: The case of Bakkhali coastal tourism, W.B., India. *Sustainable Social Development.* https://doi.org/10.54517/ssd.v2i3.2550.

Carvache-Franco, M., Carvache-Franco, W., & Manner-Baldeon, F. (2021). Market segmentation based on ecotourism motivations in marine protected areas and national parks in the Galápagos Islands, Ecuador. *Journal of Coastal Research, 37*(3), 620–633. https://doi.org/10.2112/JCOASTRES-D-20-00076.1

Cribbs, T. W., Sharp, R. L., & Brownlee, M. T. J. (2019). Evaluating the influence of photo order on park visitors' perceptions of crowding at Buffalo National River. *Leisure Sciences*, *44*(5), 634–652. https://doi.org/10.1080/01490400.2019.1655685

Department of Statistics Malaysia (DOSM). (2025). *Domestic Tourism Survey Report 2024*. Putrajaya, Malaysia. https://www.dosm.gov.my

Enseñat-Soberanis, F., Blanco-Gregory, R., & Mondragón-Mejía, J. (2021). Using indicators and standards to manage visitor experiences in water-based tourism. In *Managing visitor experiences in nature-based tourism*. https://doi.org/10.1079/9781789245714.0014

Gu, X., Lewis, B. J., Niu, L., Yu, D., Zhou, L., Zhou, W., Gong, Z., Tai, Z., & Dai, L. (2018). Segmentation by domestic visitor motivation: Changbai Mountain Biosphere Reserve, China. *Journal of Mountain Science, 15*, 1711–1727. https://doi.org/10.1007/s11629-017-4708-1

Hanafiah, M. (2022). FRAMING THE FUTURE AGENDA OF BLUE TOURISM IN SUSTAINABLE COASTAL TOURISM DESTINATIONS. *Tourism and hospitality management.* https://doi.org/10.20867/thm.28.2.6.

Hanafiah, M., Jasmi, A., Razali, A., & Sulaiman, M. (2019). THE STRUCTURAL RELATIONSHIPS OF EXPERIENCE QUALITY, TOURIST SATISFACTION AND DESTINATION LOYALTY: THE CASE OF PANGKOR ISLAND, MALAYSIA. *Journal of Nusantara Studies (JONUS)*. https://doi.org/10.24200/JONUS.VOL4ISS1PP186-210.

Hibner, J., Zięba, A., Filar, B., & Taczanowska, K. (2024). Visitors' perception of crowding: A case study from the Tatra Mountains. *Prace Geograficzne*. https://doi.org/10.4467/20833113PG.23.018.19205

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Joshi, S., & Dahal, R. (2019). Relationship between Social Carrying Capacity and Tourism Carrying Capacity: A Case of Annapurna Conservation Area, Nepal. *Journal of Tourism and Hospitality Education*. https://doi.org/10.3126/JTHE.V9I0.23677.

Kalisch, D. Relevance of crowding effects in a coastal National Park in Germany: results from a case study on Hamburger Hallig. J Coast Conserv 16, 531–541 (2012). https://doi.org/10.1007/s11852-012-0195-2

Lin, M., Feng, X., Yu, S., & Wang, Y. (2023). The Role of the Mechanisms of Adjustment in Moderating the Relationship between Perceived Crowding and Satisfaction in Urban Forest Parks. *Forests*. https://doi.org/10.3390/f14081538.

Meligi, A., Carboni, D., & Garau, G. (2021). Perceived crowding and physical distance rules: a national account perspective. *National Accounting Review*. https://doi.org/10.3934/nar.2021017.

Miocic, B. K., Klarin, T., & Vidic, G. (2023). HOW DOES TOURISM AFFECT THE RESIDENTS` LIFE? THE CASE FROM ZADAR (CROATIA). *Tourism in South East Europe . . ./Tourism in Southern and Eastern Europe*, 215–230. https://doi.org/10.20867/tosee.07.15

Mota, L. S., Franco, M., & Santos, R. (2021). Social carrying capacity in island destinations: Interpreting visitors' opinions in Madeira Island. *European Journal of Tourism, Hospitality and Recreation, 11*(3), 253–266. https://doi.org/10.2478/ejthr-2021-0023

Papadopoulou, N., Ribeiro, M., & Prayag, G. (2022). Psychological Determinants of Tourist Satisfaction and Destination Loyalty: The Influence of Perceived Overcrowding and Overtourism. *Journal of Travel Research*, 62, 644–662. https://doi.org/10.1177/00472875221089049.

Rusli, M., Avenzora, R., Sunarmin-to, T., & Malihah, E. (2024). *Measuring tourism social carrying capacity: An exploratory study of social dynamics in ecotourism development of Cirebon*. *Journal of Environmental Management & Tourism, 15*(1), 209-225. https://doi.org/10.14505/jemt.v15.1(73).17

Szuster, B. W., Needham, M. D., & McClure, B. P. (2011). Scuba Diver Perceptions and evaluations of crowding underwater. *Tourism in Marine Environments*, *7*(3), 153–165. https://doi.org/10.3727/154427311x13195453162778

Segarra, E., Guapi, F., Brito, L., & López, C. (2024). The Impact of Tourism on Islands: A Sustainability and Conservation Analysis. *Green World Journal*. https://doi.org/10.53313/gwj72147.

Smith, T. F., Elrick-Barr, C. E., Thomsen, D. C., Celliers, L., & Le Tissier, M. (2023). Impacts of tourism on coastal areas. *Cambridge Prisms: Coastal Futures*, *1*, e5. doi:10.1017/cft.2022.5

Telišman–Košuta, N., & Ivandić, N. (2021). Collaborative Destination Management Based on Carrying Capacity Assessment from Resident and Visitor Perspectives: A Case Study of Crikvenica-Vinodol Riviera, Croatia. , 175-192. https://doi.org/10.1007/978-3-030-69193-6_9.

Tokarchuk, Oksana & Gabriele, Roberto & Maurer, Oswin. (2020). Estimating tourism social carrying capacity. Annals of Tourism Research. 86. 102971. 10.1016/j.annals.2020.102971.

Tourism Malaysia. (2024). *Tourism Performance Report 2023*. Putrajaya, Malaysia: Ministry of Tourism, Arts and Culture Malaysia. https://www.tourism.gov.my

United Nations World Tourism Organization (UNWTO). (2021). *Tourism and Sustainable Development Goals – Journey to 2030*. Madrid, Spain: UNWTO. https://www.unwto.org

United Nations World Tourism Organization (UNWTO). (2023). *World Tourism Barometer (Vol. 21, Issue 1)*. Madrid, Spain: UNWTO. https://www.unwto.org

United Nations World Tourism Organization (UNWTO). (2024). *International Tourism Highlights 2024 Edition*. Madrid, Spain: UNWTO. https://www.unwto.org

United Nations World Tourism Organization (UNWTO). (2025). *World Tourism Barometer Early 2025 Update*. Madrid, Spain: UNWTO. https://www.unwto.org

Yoon, T. K., Myeong, J. Y., Lee, Y., Choi, Y. E., Lee, S., Lee, S., & Byun, C. (2024). Are you okay with overtourism in forests? Path between crowding perception, satisfaction, and management action of trail visitors in South Korea. *Forest Policy and Economics*. https://doi.org/10.1016/j.forpol.2024.103184

Yusoh, M., Mapjabil, J., Hanafi, N., Abdullah, A., & Muhammad, Z. (2020). An Investigation of the Supply Chain Strategy for Social Carrying Capacity: A Study of Pangkor Island, Perak, Malaysia. *International Journal of Supply Chain Management*, 9, 676-686.

Yusoh, M. P., Abdul Latip, N., Hanafi, N., Hua, A. K., Zakaria, Z., & Mohamad Ridzuan, M. I. (2023). SOCIAL CARRYING CAPACITY AS A PLANNING TOOL FOR SUSTAINABLE TOURISM: A CASE OF PANGKOR ISLAND, PERAK, MALAYSIA. *PLANNING MALAYSIA*, *21*(28). https://doi.org/10.21837/pm.v21i28.1329

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