



Research article

Exploring local community perspectives on the development of river tourism along the Petagas-Putatan River in Sabah, Malaysia

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ABSTRACT

The research delves into the perceptions regarding the necessary assistance and support required for the development of river tourism along the Petagas-Putatan River. An exploratory qualitative with a total of four focus group discussions consisting of a total of 13 local communities, two local authorities and two local representatives of the district. Assurances needed include financial, tourism trainings related to river tourism and safety, planning and itineraries, customer services, marketing, and promotion. Tourist facilities - jetties, roads, sidewalks, parking lots and retail stalls for food, drinks and souvenirs are vital support for developing river tourism. The condition of the river and local communities' attitudes towards river cleanliness are the key issues. It contributes to the development of river tourism along river Petagas-Putatan, provide practical implications for river tourism development.

1. Introduction

The importance of rivers in providing water, sustenance, and serving as crucial transport routes while contributing to local economies is widely recognized. Additionally, their aesthetically pleasing natural environments have transformed them into attractive tourism destinations [1]. Indeed, rivers offer captivating landscapes, and their aesthetic allure significantly enriches tourism resources, providing ample opportunities for recreational activities. Acknowledged as essential components of landscapes, rivers carry substantial significance as origins of tourism attractions and recreational opportunities [2]. They stand out as prominent tourism resources, providing awe-inspiring settings, recreational prospects, and picturesque waterfront landscapes that evoke a profound sense of heritage and adventure connected to the environment [3]. Furthermore, river tourism represents a significant segment of global tourism consumption, encompassing a wide range of activities that stimulate local economies and generate economic benefits for residents. Typically, activities such as adventure water sports, white-water rafting, kayaking, boating, tubing, swimming, fishing, and cruising are not only appealing and enjoyable but also contribute to the economic and social progress of communities residing along rivers. As a result, river tourism emerges as a form of nature tourism and an alternative avenue for creating value-added opportunities and generating income within local communities [4]. Essentially, river tourism is deeply rooted in the principle of harmonious coexistence with nature, seamlessly blending with the surrounding environment. Yet, the success of river tourism hinges on various critical elements including the condition of the river, water levels, landscape features, surrounding environment, spatial management, location suitability, land use, and the array of recreational activities offered. This underscores the indispensable role of active engagement from both residents and authorities in fostering the development, conservation, and promotion of river tourism. In the

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intricate planning and development of river tourism, it is imperative not to underestimate the significance of providing essential tourist facilities, infrastructure, and indispensable assistance and support for the local community. Moreover, a crucial aspect involves fostering an awareness among communities regarding the significance of tourism activities centred around the river environment, along with elucidating the necessary measures to bolster such activities.

The development and promotion of river tourism foster economic growth have positive impacts on the social and cultural fabric of the surrounding environment. This is evident in numerous renowned rivers worldwide that significantly contribute to the economic and social well-being of residents, as well as the appeal of tourism attractions situated along riverbanks [5]. Examples include the iconic Mekong [6], Yangtze [7], Nile [8], Mississippi [9], and Amazon rivers [10], all of which have evolved into thriving river tourism destinations through active involvement of local communities, subsequently generating economic benefits and fostering social development. Consequently, the development of river tourism products emerges as a crucial focus area, emphasizing the need for comprehensive physical, social, and economic expansion [11]. Thus, efforts aimed at maintaining river cleanliness, preserving natural resources along riverbanks, and engaging local communities are paramount. It underscores the importance of affording ample opportunities for local residents to actively participate in shaping tourism initiatives [12]. Certainly, the potential for utilizing river resources to drive the growth of river tourism activities is substantial, all the while emphasizing the paramount importance of conserving and safeguarding rivers and their resources [13]. Despite this, there is a notable lack of recognition regarding the pivotal role's rivers play in tourism, including the participation of local stakeholders and the resultant economic advantages for the community. Indeed, the local community's views on tourism development are influenced by a range of factors, such as economic factors [14], socio-cultural influences [15], and environmental factors [16]. Vital to this endeavour is understanding the perceptions, roles, and active participation or engagement of these local communities [17], particularly in conserving and protecting the rivers, ensuring they remain clean and attractive sites. Accordingly, perception has a huge influence on how people choose, interpret the environment, and accept river tourism as recreational activity in a variety of ways, both positively and negatively [18].

1.1. River tourism in Malaysia

Malaysia, situated in Southeast Asia, is known for its diverse landscapes and cultures. Sabah, one of its thirteen states, is located on the northern part of the island of Borneo, as depicted in Fig. 1 below.

In Malaysia, river tourism is recognized as an emerging form of tourism with the potential to bring benefits to local communities [1]. However, the exploration and promotion of rivers as promising tourism assets have only recently gained attention in tourism studies [20]. There has been limited research focus on river tourism and the development of rivers as tourism products or attractions in Malaysia; and the involvement of local communities is notably scarce [8]. Only a few studies have been conducted in Malaysia, including those concentrating on river-based tourism in the states of Kelantan [1], Johor [16] and Sabah [21]. In Malaysia, despite the country's overarching potential to expand river tourism, many waterways across the region continue to be underutilized and undervalued. There is a notable lack of recognition regarding the pivotal role of local communities in fostering river tourism, compounded by a scarcity of exploration into the prospects of developing and promoting rivers as tourism magnets, particularly from the perspective of these communities.

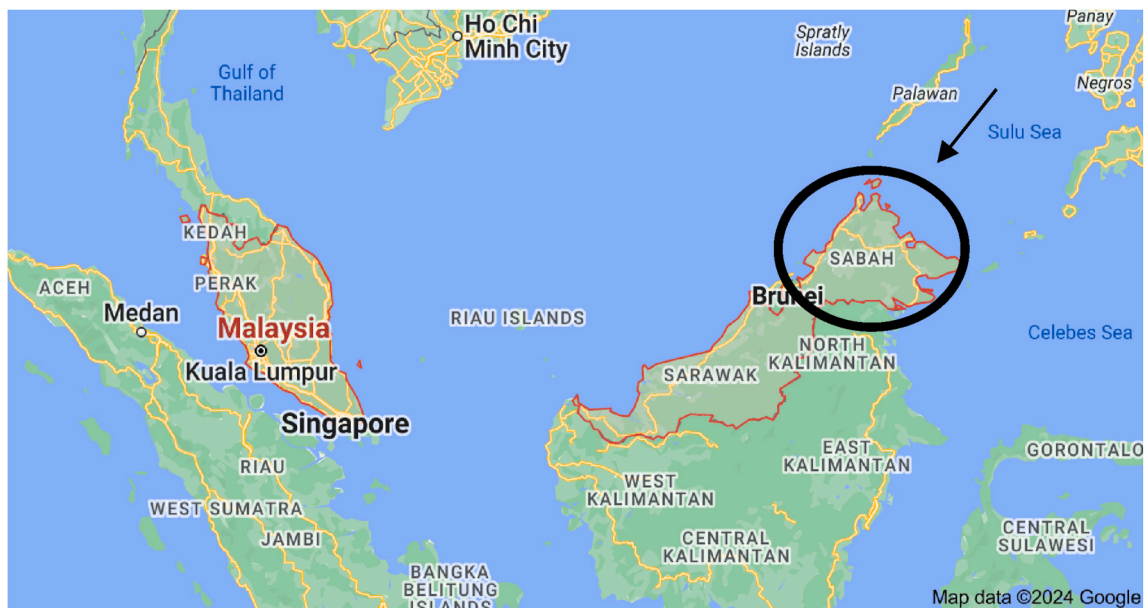


Fig. 1. Map of Sabah [19].

1.2. An overview of river tourism in Sabah

Sabah, situated on the island of Borneo, is one of Malaysia's 13 states. It is renowned for its lush rainforests, pristine beaches, majestic mountains, and the myriad of rivers that elegantly wind through its diverse terrain [22,23]. Rivers make up an important geological landscape in Sabah. They harbor immense potential for development and promotion as prime destinations for river tourism, boasting diverse packages and ecotourism services. Along these waterways, local communities have ample opportunities to harness the natural beauty, fostering employment and revenue through a variety of recreational activities. However, its river tourism sector remains underdeveloped and lacking promotion. Despite the natural beauty of these waterways being largely unexplored and under-appreciated, there is significant untapped potential for Sabah's rivers to become appealing tourism destinations, particularly with increased involvement from the communities residing along these watercourses. The success of river-based tourism product development hinges on comprehensive physical, social, and economic expansion. Therefore, active participation and engagement of local communities with adequate assistance and supports play a crucial role in crafting river-based tourism attractions and activities into compelling tourism products. For example, the Klias River is the habitat of endangered species, pushing the river to be an excellent source of nature-based tourism; this subset of tourism has been rising in popularity, generating interest from travellers worldwide [24]. The Moyog River, characterized by its picturesque meandering course and turbid waters, interconnects with the Petagas-Putatan River [25]. The traditional river boat has potential to be promoted as a tourism activity along the Moyog River as shown in Fig. 2 below. The river is fringed by several villages and the villagers rely on the river for sustenance during the drier seasons. The potential promotion of the traditional river boat as a tourism activity along the Moyog River is supported by various studies. For example, research by Sattar (2022) highlights the cultural significance of traditional river activities in attracting tourists [26]. Additionally, Huang and Zhang (2022) discuss the economic benefits of river tourism for local communities, emphasizing the potential for generating income [27]. The Moyog River, flanked by several villages, serves as a vital resource for sustenance during drier seasons [25]. Therefore, leveraging its cultural and economic potential, the Moyog River has the opportunity to become a key river tourism destination, supporting the livelihoods of local riparian communities.

The Mandalipau White Water View and fish pond in Papar, Sabah represents a noteworthy example of community-based tourism, with local community members playing a significant role in its management. The primary emphasis of this community-based tourism center revolves around eco-tourism initiatives and river-based recreational activities. In recent years, rivers across Sabah have gained increasing recognition as valuable tourism assets. Notably, sites such as the Lower Kinabatangan River in Sandakan have become renowned for riverboat cruises (Fig. 3 below), offering tourists opportunities to observe wildlife along its banks. Similarly, rivers like the Kadamaian, Wariu, and Panataran in Kota Belud, as well as the Balaijong River and Gumagayo River Park in Kota Marudu, have emerged as destinations for various geotourism, river-based tourism, and recreational activities. These developments have had positive economic and social impacts on the local communities residing along these riverbanks.

The growth in rural tourism has allowed the local communities across Sabah to recognise the importance of the functionality and aesthetic values of the rivers within their district. Numerous rural tourism associations in the district, together with their members, have begun to transform rivers into tourist attractions and develop recreational activities. One of the iconic river attractions is called fish spa (locally known as Tagal shown in Fig. 4 below) available at numerous specifically designated rivers under the purview of local communities. Fish spas have been widely introduced and developed as rural river tourism attractions in numerous districts of Sabah, including Melangkap Tiang [28], Kota Belud and Kampung Marakau, Tagal Sungai Luant Baru, Sungai Tagal Kg and Singgaron in Ranau. The fish spa helps generate income and employment for the local communities.

Despite the natural abundance of these waterways, Sabah's river tourism sector remains largely untapped and insufficiently promoted. While the scenic allure of these rivers remains largely unexplored and underappreciated, there exists substantial untapped potential for them to emerge as compelling tourism destinations, especially with heightened involvement from the local communities dwelling along their banks. However, the assurance and prioritization of local community engagement in river tourism are



Fig. 2. Traditional river boat as river tourism activity.
(Source: Julinus - Sabah Tourism Board)



Fig. 3. Riverboat cruise along Kinabatangan River for wildlife viewing.



Fig. 4. Fish Spa known as “ikan Jinak” in local language. These fishes are protected by local community along the river. Fish spa is well promoted as a river recreation activity at Melangkap River. (Source: Chan and Boniface, 2020)

conspicuously lacking in the planning and development processes, particularly concerning Sabah’s rivers in Malaysia.

This research endeavours to delve into the perspectives of local communities regarding the potential development of river tourism along the Petagas-Putatan River in Sabah, Malaysia as shown in Fig. 5 below. Specifically, it seeks to uncover the essential assistance and support systems and encountered challenges inherent in this pursuit. Moreover, it aims to unravel the unique issues and obstacles involved in transforming the Petagas-Putatan River into a sustainable river tourism destination. The research focuses on the assistance and support needed as well as issues faced in planning and development of river tourism along the Petagas-Putatan River. Through this investigation, the research endeavours to provide novel insights into the development of regional river tourism, presenting unique perspectives that set it apart from previous studies on similar topics. In essence, the Petagas-Putatan River has been identified as possessing the potential to be cultivated and promoted as a tourism attraction.

2. Study area: Petagas-Putatan River

The Petagas-Putatan River flows through the village of Petagas-Putatan in Putatan, Sabah. It connects to the Moyog River and the Putatan River in Penampang Sabah [29]. The Petagas-Putatan River is in the district of Putatan, which is about six km² from the city of Kota Kinabalu, capital of Sabah in the Borneo Island. The district was made into a small district in the Penampang area on March 18, 1997, and became a full district on March 1, 2007. According to the 2010 census, the population of Putatan is 55,864, with the Bajau ethnic group dominating the area [30]. The state government of Sabah recognizes the dire pollution of the river and endeavours to enhance its condition, with the goal of harnessing its potential as a key destination for river tourism and activities, thus bolstering the socio-economic well-being of local communities. The main cultural practices in Putatan encompass the traditions of the Bajau, Brunei, and Dusun ethnic groups, which have not yet been actively promoted as tourism attractions. The primary economic activities in the region revolve around fishing and agriculture, particularly rice cultivation. With natural scenery, cultural activities, and fishing sites, Petagas-Putatan River are suitable for offering river tourism activities, including river cruise tours along the river [29]. Fig. 5 below shows the main facilities and slope degree of the Petagas-Putatan River.

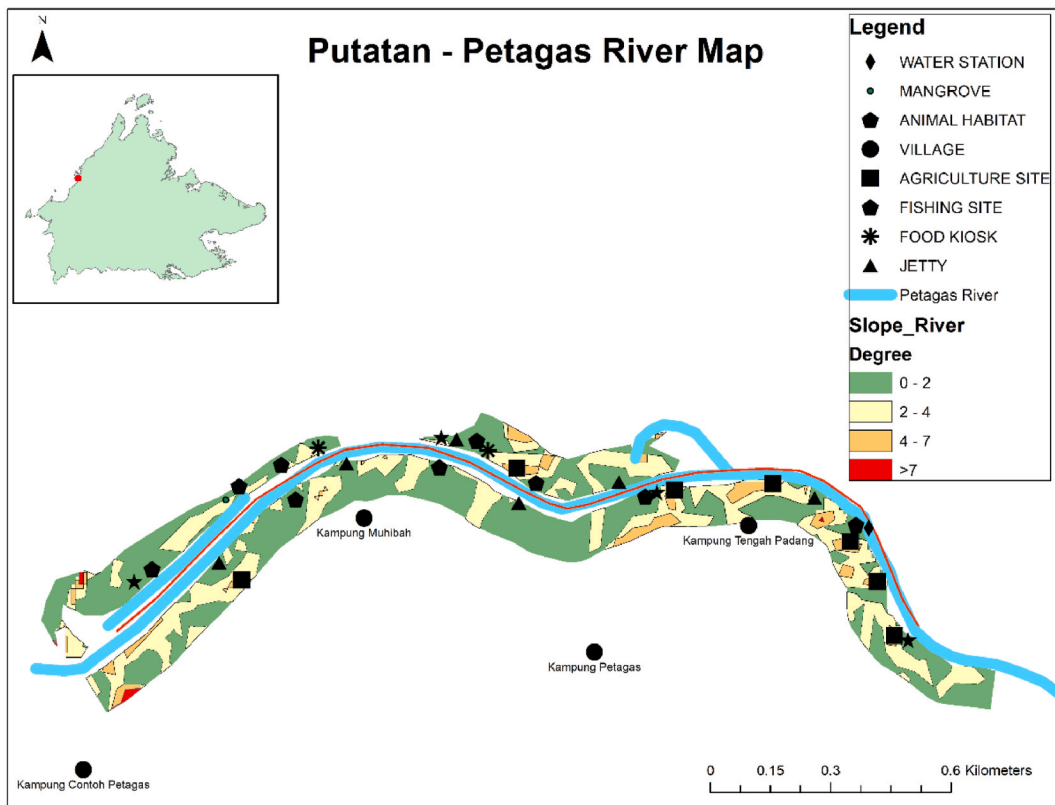


Fig. 5. Map of Petagas-Putatan river.

3. Data and method

An exploratory qualitative study was conducted with local communities using a focus group discussion method to gather empirical evidence. It explores the supporting facilities and assistance needed, as well as issues and challenges with developing and promoting the Petagas-Putatan River for river tourism, from the local communities' perspectives. Data collection was carried out at the Putatan District Hall on September 8, 2022. Researchers obtained permission from the district office to conduct the focus group discussions. The purpose of the group discussions was clearly communicated to all participants, and their consent was obtained beforehand.

A total of four focus group discussions (FGD) took place, consisting of a total of thirteen local communities, two local authorities and two local representatives of the district. Data saturation was achieved after conducting four focus group discussions with a total of 17 participants. The respondents were residents from the three villages – Kampung Petagas-Putatan Baru, Kampung Muhibbah and Kampung Petagas-Putatan – and officers from the District of Putatan. The sampling technique employed convenience sampling, where participants were selected based on their availability and accessibility. Specifically, respondents were chosen to represent each village situated along the Petagas-Putatan River. The recruitment process involved collaboration with the district officer, who facilitated the selection of participants. Key individuals such as village leaders and boatmen, who have a direct connection and extensive experience working along the river, were identified, and invited to participate in the study. This approach ensured various stakeholders with firsthand knowledge and involvement in river-related activities. Each focus group was facilitated with a researcher and one research assistant to tape the recording and take notes of the responses. The key questions asked were related to the perception of river tourism, the types of assistance and support needed, and the issues faced to develop and promote the Petagas-Putatan River as a tourism destination.

The duration of each FGD ranged from 60 to 90 min, depending on the depth of information shared by participants and the level of data saturation reached. All conversations were held in Malay, the participants' native language. Data collection was carried out using tape recording with consent from the respondents, as well as note taking. They were recorded, transcribed verbatim, and later translated into English by the researchers for thematic analysis. A member check was subsequently carried out by researchers to enhance the reliability of the identified themes. The data analysis identified the key themes: perception of river tourism, assistance and support and issues and challenges.

4. Data analysis and findings

4.1. Respondent Profile

A total of 17 respondents participated in the focus group discussions. The respondents are divided according to their villages. The categories of respondents included the village chief, boatmen, businessmen, retirees, district authorities and representatives of each village. A total of 15 males and 2 females participated in the focus group. In terms of education level, 6 respondents had a primary school education, and 11 had a secondary school education.

The respondents are well distributed, as indicated in [Table 1](#) below.

4.2. Local communities' perception of developing river tourism along the Petagas-Putatan River

Based on the analysis of responses from the focus group discussions as presented in [Table 2](#) below, all of the respondents agreed that the Petagas-Putatan River has potential to be developed with river tourism activities and the promotion of the local culture of the communities. Most of the respondents have a positive perception of developing river tourism because it may increase their income and improve the economic condition of the local people. The finding closely corroborates the results of a previous study [11]. It seems to suggest that developing river tourism brings economics, social culture and environment benefits to the local communities and improves the local economy. These are evidenced from the focus groups responses, as presented in [Table 2](#) below.

4.3. Types and assistance needed for developing river tourism

The findings from focus group responses regarding assistance and support can be categorized into four groups, encompassing the types of training, assistance, support, and facilities required. Additionally, the discussions shed light on the encountered issues and challenges in the planning and development of river tourism. These categories are outlined in [Table 3](#) below. Many of the respondents indicated their interest in river tourism. Interestingly, none of them is currently involved in river tourism activities, apart from fishing as a livelihood. While the respondents lived along and near the river, most have not really managed to get involved in river tourism activities for several reasons. This is attributed to their lack of knowledge about tourism and of technical skills for developing, planning, and organizing river tourism. Various training programs pertaining to river tourism have emerged from the focus group responses, as outlined in [Table 3](#) below. These training initiatives are considered essential for augmenting the knowledge and skills of the local community in managing river tourism along the Petagas-Putatan River.

The empirical findings underscore the urgent necessity for a variety of training programs aimed at bolstering the development of river tourism, as delineated in [Table 3](#). These programs seek to enrich the tourism knowledge and technical competencies of local communities, who currently lack sufficient understanding and skills in these areas. Respondents highlighted the importance of acquiring knowledge in basic tourism and safety, along with skills such as customer service, basic English communication, tour planning, itinerary creation, sales and promotion, cooking classes, and local crafts, all integral to river tourism activities. Intriguingly, local authorities deem knowledge in ecotourism, riverboat cruises, and homestays as essential components.

In essence, these are critical knowledge and skills necessary to facilitate local participation in river tourism activities. Additionally, respondents identified a spectrum of assistance and support required for the advancement of river tourism, encompassing financial aid, enhancements to infrastructure and facilities such as roads, jetties, and signage, as well as the provision of safety equipment and requisite permits and licenses. These are perceived as vital forms of support and infrastructure essential for fostering the development of river tourism along the Petagas-Putatan River.

Table 1

Participant categorization for focus group discussions.

Participants	N	Age (years old)	Gender	Education level	Location
Heads of Villages	2	60–70	Male	Secondary school	Kampung Petagas Baru 1&2
Boatmen	6	20–40	Male	Primary school	Jeti Pasir Putih, Kampung Muhibbah
Villagers of Muhibbah	5	30–60	Male	Secondary school	Kampung Muhibbah
Local Authority	4	30–40	2 Males, 2 Females	Secondary school	Kampung Muhibbah, Kampung petagas, UPPM N23 Petagas
Focus groups	Categories and numbers of respondents				
Kampung Petagas-Putatan Baru	Head of village: 1 Local resident (retired): 1 Boatman: 1 District representatives: 2 District authorities: 2				
Kampung Petagas-Putatan	Residents: 2 Boatmen: 3				
Kampung Muhibbah	Head of village: 1 Boatmen: 2 Businessmen: 2 Total: 17 respondents				

Table 2
Perceptions of local communities on river tourism.

Focus group	Responses from the focus groups	Themes
Kampung Petagas-Putatan Baru	Generate income and jobs. Opportunities to promote recreation activities -fishing, river boat cruises. Positive impacts on local economy and communities	Economics benefits Recreation activities Environmental benefits
Kampung Petagas-Putatan	Improve the cleanliness and environment of the river Create jobs and incomes. Enhance local economy and development.	Economics benefits Social culture benefits
Kampung Muhibbah	Opportunities to promote local culture and food Extra incomes for the local people Create more small business opportunities. Improve river environment and facilities such as jetties along the river	Economics benefits Environment benefits

Table 3
Findings on categories of training, assistance or support needed and issues and challenges from focus group responses.

Focus Group and responses	Petagas-Putatan Baru village	Petagas-Putatan village	Muhibbah village	Local authorities
Types of training	Introduction to tourism Customer service Communication skills	Safety promotion Customer service training English communication skills Tour planning and itineraries Cooking class for local food	English communication skills Local crafts and traditional music Tourism job opportunities for local youth	Tourism Sales and promotion Ecotourism Homestay Riverboat cruise Local food and local crafts
Types of assistance	Financial assistance for organizing activities. Support from local authorities.	Financial assistance	Financial assistance	Financial assistance to small operators
Infrastructure and facilities support	Signboards for safety information Signboards for different villages Proper and safe sidewalks Street lighting Jetty	Safety equipment – lifejacket Permit for riverboat cruise. Tour guide services	Parking space for tourists Repair of the existing jetty Add new jetties. Build retail stalls for tourism products River environment Marketing and promotion of river tourism	Improve road access and parking space. Cleanliness of the river
Issues faced	Lack of budget Safety equipment – lack of lifejackets	Cleanliness of river	River environment Marketing and promotion of river tourism	Problem of local community Development sites No streetlights
Challenges	Changes in politics and not being able to carry out related programs and activities	Unpredictable weather and water level	Condition of river pollution	Cooperation amongst the different agencies to address safety issues

Several challenges emerged from the focus group discussions, notably river pollution, inadequate budget allocation for river activities, and the lack of safety equipment for river tourism. Issues such as cooperation among different agencies, community attitudes toward river cleanliness, and the unpredictability of weather and water levels were also identified as key challenges facing local communities. Addressing issues related to river cleanliness and safety is crucial for promoting river tourism, as highlighted by respondents who identified river water pollution and community attitudes toward river conservation as significant challenges in the development of the Petagas-Putatan River as a tourism site.

In short, the findings underscore the importance of equipping local communities with the necessary skills, providing financial assistance, and improving infrastructure and facilities to support the development of river tourism along the Petagas-Putatan River. Thus, it is crucial in the planning and development of river tourism not to overlook the importance of providing essential tourist facilities, infrastructure, and vital assistance and support for the local community. Additionally, a pivotal aspect entails raising awareness among communities about the significance of tourism activities centred around the river environment, while also elucidating the necessary measures to enhance and sustain such activities.

Fostering an understanding of the importance of river-based tourism activities and the requisite support systems is essential for enhancing community awareness and competence in effectively managing sustainable river tourism initiatives. This can be accomplished through tailored training initiatives and support services. As local communities frequently interact directly with tourists, alongside tour operators, their role is pivotal. Hence, implementing tourism education and awareness programs becomes imperative to ensure these local communities grasp their roles and contributions in sustaining river tourism activities. Equipping them with pertinent knowledge and skills through tailored training programs and workshops is indispensable for the sustainable operation of tourism development projects.

Nevertheless, the interconnectedness of rivers and stakeholders' positions presents both challenges and opportunities in the realm of river tourism development. Undoubtedly, the advancement and promotion of river tourism exert substantial social and cultural

influences on stakeholders. For river tourists, pivotal attractions hinge on criteria such as physical features, natural resources, and the social environment [31]. Consequently, ensuring the cleanliness of the river and the preservation of natural resources emerge as critical imperatives. Thus, other stakeholders must share the significance and potential of the river, especially the local communities who live along the river. Residents play a pivotal role as primary stakeholders in the development of river tourism, and the perceptions, acceptance, and support of local communities are integral. Their involvement is crucial for securing the economic, social, cultural, commercial, and environmental sustainability of river-based tourism [1]. However, numerous tourism projects have overlooked the inclusion of local communities, with their perspectives frequently disregarded from the outset [32,33].

5. Conclusion and contributions

The research seems to suggest that the Petagas-Putatan River has the potential to be developed as a river tourism site that can offer several river tourism and recreation activities. River boat trips, sunset cruises, fishing, kayaking, rafting and local culture and food are some of the tourist recreation activities that can be introduced to the Petagas-Putatan River. River tourism activities have a positive impact on the socioeconomic aspects of the local communities residing along the river. Nonetheless, the research indicates the necessity for various critical assistance, supports and the resolution of issues to facilitate the development of river tourism activities. These encompass financial assistance and local communities should be exposed to and understand the tourism industry and the basic skills required for organizing and operating these river tourism activities. Consequently, the recommendation is for basic tourist training, including safety, to be presented to the local community. More importantly, adequate tourism facilities, such as a pier, road access and sidewalks, are critical to the development of river tourism along the Petagas-Putatan River.

For the development of river tourism along the Petagas-Putatan River, several key recommendations emerge from the identified needs and challenges. Firstly, comprehensive skills training and capacity-building programs should be implemented to equip local communities with the necessary knowledge and competencies essential for active participation in tourism activities. Financial assistance and support mechanisms are crucial to facilitate the initiation and sustainability of tourism ventures, necessitating grants and incentives for infrastructure development, marketing endeavors, and small business initiatives related to tourism. Infrastructure improvement is paramount to enhance accessibility, safety, and overall visitor experience along the river, calling for upgrades to roads, jetties, parking facilities, signage, lighting, and other amenities.

Environmental conservation efforts must be prioritised through the implementation of strict regulations to address river pollution and promote conservation initiatives, safeguarding the natural beauty and integrity of the river ecosystem. Community engagement and empowerment are fundamental, requiring active involvement in decision-making processes and tourism planning initiatives, ensuring local voices are heard and interests represented. Promotion and marketing campaigns should be targeted to showcase the unique attractions and cultural heritage of the Petagas-Putatan River region, raising awareness and attracting visitors to the destination.

Collaboration and partnerships among government agencies, non-profit organisations, businesses, and community stakeholders are essential to leverage resources, expertise, and networks for sustainable tourism development. Finally, monitoring and evaluation mechanisms should be established to assess the effectiveness and impact of tourism initiatives, ensuring goals are met while minimising negative impacts. Through the implementation of these recommendations, stakeholders can collectively unlock the full potential of river tourism, fostering economic growth, cultural preservation, environmental stewardship, and community empowerment in the region.

The findings of the paper are useful to the Putatan District Office and tourism planner in three ways. This research offers important insights useful for the planning and development of river tourism for Petagas-Putatan River and other rivers. The findings can help stakeholders better understand the dimensions of river tourism planning and requirements and how river tourism can be developed and benefit local communities. It suggests the need to expand the support for developing river tourism, to motivate the local community to take care of the river and participate in related river tourism activities and to increase the economic, social, and cultural benefits of the residents along the Petagas-Putatan River. With these benefits, the local community will be encouraged to conserve and preserve the Petagas-Putatan River as an alternative source to develop the local economy.

The qualitative research approach utilized in this study gathered rich insights from participants. However, the absence of quantitative data may limit the breadth and depth of the findings, potentially restricting the comprehensiveness of the study's conclusions and hindering the ability to make statistically supported claims. Future research could enhance understanding by incorporating quantitative analyses to complement the qualitative findings, thereby providing a more robust assessment of the factors influencing river tourism in the studied areas.

Ethics declarations

Review and/or approval by an ethics committee was not required for this study because it does not involve biological resources or local traditional knowledge. The study focuses solely on the perceptions of local communities regarding river tourism and does not include any sensitive information. We adhered to ethical considerations for our research participants by explaining the purpose and content of the study to them and conducting the interviews with their informed consent.

Data availability statement

The data associated with this study has not been uploaded into a publicly available repository. However, the data of this study are

available from the corresponding author upon reasonable request.

CRedit authorship contribution statement

Jennifer Kim Lian Chan: Writing – review & editing, Writing – original draft, Project administration, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Kai Xin Tay:** Writing – review & editing, Methodology, Formal analysis, Data curation, Conceptualization. **Ing Grace Phang:** Supervision, Methodology, Investigation, Data curation, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Jennifer Kim Lian Chan, the corresponding author is an associate editor of Heliyon. If there are other authors, they 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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