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GIS SPATIAL ANALYSIS IN DETERMINING OF POTENTIAL SPOT TOURISM IN KARAMBUNAI, KOTA KINABALU, SABAH.

BY

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GIS spatial Analysis in determining of Potential Spot Tourism in Karambunai, Malaysia.

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Abstract: The tourism industry encompasses all activity that takes place within the visitor economy. The objective of this research is identifying the potential of undeveloped area using GIS analysis for nature tourism in Karambunai, analyzing GIS analysis locating the potential area for tourism and provide recommendations for the improvement of tourism in Sabah particularly Karambunai. In additions, Karambunai is one part of Kota Kinabalu Sabah that have potential to enhance for new spot tourism sector. And align with the technology now a days, using Geographical Information System (GIS) is the convenience way to find a new spot tourism area. The purpose of this research is to identify the new spot tourism in Karambunai, Kota Kinabalu, Sabah. With the support of 162 respondent of survey and hotspot analysis the new spot tourism will be determine. The finding shows that using Geographical Information System can be use as one of tools to boost up tourism sector by determine the new spot for tourism. Finally, it is can be proved in this research and support by survey of 162 respondent around Malaysia not specifically resident in Sabah.

Keywords: GIS, Spatial Analysis, Potential Hotspot and Tourism

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GIS SPATIAL ANALYSIS IN DETERMINING OF

POTENTIAL SPOT TOURISM IN

KARAMBUNAI, KOTA KINABALU, SABAH.

CHAPTER ONE (1)

Introduction

1.1 BACKGROUND

Tourism is an activity that cuts through traditional economies. It requires economic, social, cultural, and environmental inputs. In this context, it is often described as multi-faceted. The problem through describing tourism as an' industry' is that it does not have the usual formal production function, nor does it have a physically measurable output, unlike agriculture or beverages. There is no standard structure representing the industry in every region. For example, in France and Italy, restaurants and shopping facilities are major tourist attractions, not in Russia. Even the tourism industry's core components, such as accommodation and transport, can vary across countries. Many tourists in the UK use bed and breakfast in private houses; such facilities are not available in Thailand. Car ownership levels and developed road networks enable many tourists to use their cars or buses in Western Europe and the USA. Most visitors travel in India and Indonesia. In additions, few factors lead to the purpose of the visit. In fact, with help of Geographical Information System (GIS) can contributes in determine the potential location for tourism. A GIS is used to record, store, edit, evaluate, and reproduce spatial or geographic data. A GIS system uses layered data where each layer represents one type of spatial information, including a street layer, forest layer, layer of vegetation and more. All these layers are then combined to produce an interconnected layer with all data. It serves as a tool to analyse spatial data, and helps organizations develop decision - support systems. With numerous applications such as a Village Information System (VIS), Landslide hazard

mitigation and election mapping, GIS has gradually reshaped governance. Inevitably, GIS has also entered the tourism industry. A significant portion of all information about a nation, state or city is already accessible on the internet, easily accessible by tourists. But some drawbacks remain, as finding the most accurate data is still a herculean task. The large amount of data is not only challenging, but also time consuming. To solve these problems, the tourism industry applied GIS. In addition to providing information on tourist attractions, GIS is a database of geographical conditions, transportation, accommodation, ethnic populations and more. GIS provides thematic maps that can help tourists better understand their destination. As Sabah is one of the tourist attractions for nature-based tourism, the application of GIS is helpful for improve the tourism sector. In Sabah, the most attraction are Mount Kinabalu and the beauty of the island. There are 21 famous islands and based on JUPEM Sabah (2011) there are 394 official islands in Sabah territory. Based on the statistic of tourist that increase every year based on Sabah Tourism Board, it can ensure that Sabah has potential to improve in tourism sectors. With the use of Geographical Information System, it can help to enhance tourism sector in Sabah.

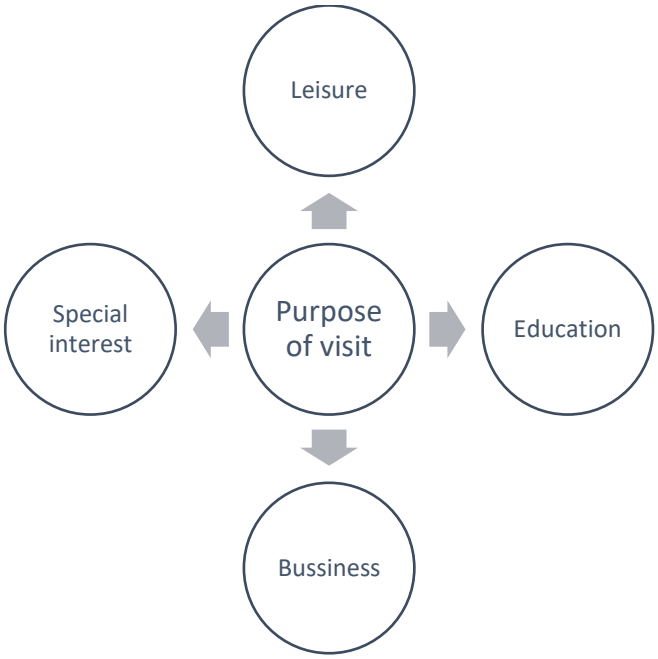


Diagram 1: Purpose of Visiting

Based on diagram 1, it shows that there are four purpose of visiting which is for leisure, special interest, business, and education.

1.2 PROBLEM STATEMENT

With the total area of 73904 km sq, Sabah consists of 27 districts, and there is a lot of places not yet been discovered. Based on Assistant Minister of Tourism, Culture, and the Environment, Assaffak Alian (2019) explain there are still many areas that have unexplored tourism attractions on the east coast. For example, Darvel Bay area in Lahad Datu rich of coral and marine life. As in Kota Kinabalu, the rapid development in Sabah, there are a lot of tourism attraction such as Tun Abdul Razak Island. In addition, Sabah in rank 6 of beautiful sunset in the world stated by (Kathleen Peddlcord, 2017). However, there is more area that not been discover such as Karambunai. Karambunai, the potential of tourism is high demand. There is one resort in Karambunai (Nexus Karambunai Resort) are fully book during the accessional period. The total area for Karambunai is 3835 acres, but only 424.9 acres occupied. Besides, within 3835 acres

there a primary school and residential settlement for support the basic need of the community in that area. The location of Karambunai is strategic to be as a nature-based tourism area because it faces the South China East. In fact, 3410.1 acres are undeveloped. Furthermore, majority of the tourist are only known Tanjung Aru and Teluk Likas as the best port for sight view sunset and experiences beaches in Kota Kinabalu. But, Karambunai also has suitable topography so be as new spot tourism area. Even thought, Karambunai has been categorize as tourism area but it only focusses on the Karambunai Nexus Resort. In truth, in 3410.1-acre undeveloped area, there are spot can be developed as new tourism area by using a Geographical Information System.

1.3 RESEARCH QUESTION

From the above statement, three (3) different question can be raised.

I. How does GIS analysis can assist the potential area of nature tourism?

II. What type of tourism category that can be developed based on the analysis?

III. What are the factor parameters can consider in determining a new potential area of nature tourism?

1.4 RESEARCH OBJECTIVES

Based on the research questions above, several objectives are formulated as follows:

- To identify the potential of undeveloped area using GIS analysis for nature tourism in Karambunai
- To analyze GIS analysis locating the potential area for tourism.
- To provide recommendations for the improvement of tourism in Sabah particularly Karambunai.

1.5 SCOPE / LIMITATION

This research is only limited to a case study in certain area of Kota Kinabalu, Sabah tourism sector and geographic information system. The data only applied using the geographic information system (GIS). The time given and selection of area are one of the limitations. In addition, Department Town and Country Planning in Kota Kinabalu Sabah did not give full corporation in giving any data for Karambunai. Also, throught out the period, there are Covid-19 pandemic occur in Malaysia and the government instruction for movement controlling order to reduce the infectious.

1.6 SIGNIFICANT OF STUDY

The findings of this study will rebound to the benefit of society considering that tourism plays an important role in developing a district. The greater demand for tourism sector with verity of tourism justifies the need for more effective, life changing approaches. Thus. This study is recommended for the local authority to expand their tourism area in Kota Kinabalu, Sabah using the GIS analysis.

1.7 THESIS STRUCTURE

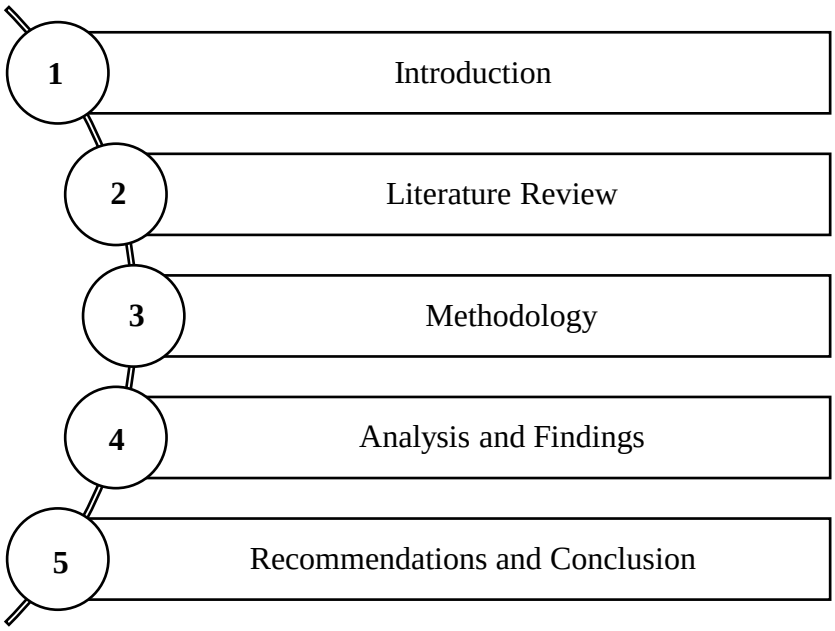


Diagram 2: Structure of the thesis

This thesis is the structure in the following manner. Chapter one sets the scene for the study by providing global and local context for the subject matters. Issues have been highlighted, and possible contribution has been anticipated. Additionally, research problems, objectives and question have been formulated to arrive at plausible conclusion and recommendation for the price correcting in the housing market.

This research is structured in such a manner,

i) Chapter one

Chapter one elaborates some of the proposals and recommendations derived from the study can further promote geographical information.

ii) Chapter two

Chapter two will elaborate on the literature, and reviews will be made of the previous studies pertinent to the research topics. In doing so, chapter two will highlight the main concepts and issues, extracting variables and methods best suited for the research undertakings, especially data collection and analysis.

iii) Chapter three

Chapter three will identify several possible methods to be adopted. This will assist with effective data collection and analysis. The development process of the database is also presented in writing statement and various map types

iv) Chapter four

The factors tested after the database completed will be described in chapter four. To ensure the database works, the database must be tested. All information collected in the form of mapping and written statement will be analyzed and handled with the GIS application or software.

v) Chapter five

Chapter five is the chapter represents the final chapter which contains recommendations and conclusions drawn from chapter one to four. This chapter should summarize all the findings and results of the research.

CHAPTER TWO (2)

Literature Review

2.1 INTRODUCTION

The previous chapter has elaborated on the problem issues, thereby raising a few questions needing responses. Objectives have been formulated to provide this answer.

This chapter will discuss the previous studies, contemporary literature and available secondary data that will be utilized to support and substantiate the problem statement, extracting the relevant variables knowledge in the related field selected.

The literature also reviewed for purposes differentiating school of thought as well as providing best practice examples from global cases and local contexts.

2.2 DEFINITION OF TOURISM

According to UNWTO (United Nation World Tourism Organization, IRTS 2008, 1.2) "tourism is a social, cultural and economic phenomenon which entails the movement of people to other countries or place outside their usual environment for personal or business/professional purposes". These people are referred as visitors and tourism has its activities to do with, some of which involve tourism expenses. They are either a tourist or an excursionist. Also, according to UNWTO (1993 RTS, p.112) "Tourism involves the practices of people travelling and living in areas outside their normal setting for not more than one year in a row for recreation, company and other purposes". In addition, someone who travels at least 80 km from his or her home for at least 24 hours, business or leisure or other reasons. There are three definitions of tourist stated by UNWTO (2008, p.68):

- Domestic – residents of a given country travelling only within that country
- Inbound – non-residents travelling in a given country
- Outbound – residents on one country travelling in another country

Due to the total size of the tourism sector, a common classification system can be useful in delving deeper into wide industry groups. The Canadian, United State and Mexican government create The North American Industry Classification System (NAICS) to ensure average analysis across the 3 countries. The tourism-related grouping created using NAICS are:

1. Accommodation
2. Food and beverage services (F & B)
3. Recreation and entertainment
4. Transportation
5. Travel services

Based on this industry group there are similarity of "labour process and inputs" used for each type of tourism related grouping. For example, the types of employees and resources required to run an accommodation business. Plus, tourism sector can generate income for an area. Based on economic analysis stated by UNWTO (2008, p. "tourism generates directly and indirectly to an increase in economic activity in the places visited (and beyond), mainly due to demand for goods and services that need to be produced and provided". It also illustrated that "in the economic analysis of tourism, one may distinguish between tourism's 'economic contribution' which refers to the direct effect of tourism and is measurable by means of the TSA, and tourism's 'economic impact'

which is a much broader concept encapsulating the direct, indirect and induced effects of tourism and which must be estimated by applying model". Economic impact studies concentrate on quantifying economic benefits that are net growth in tourism-related resident income, calculated in monetary terms, above and beyond the rates that would prevail in their models.

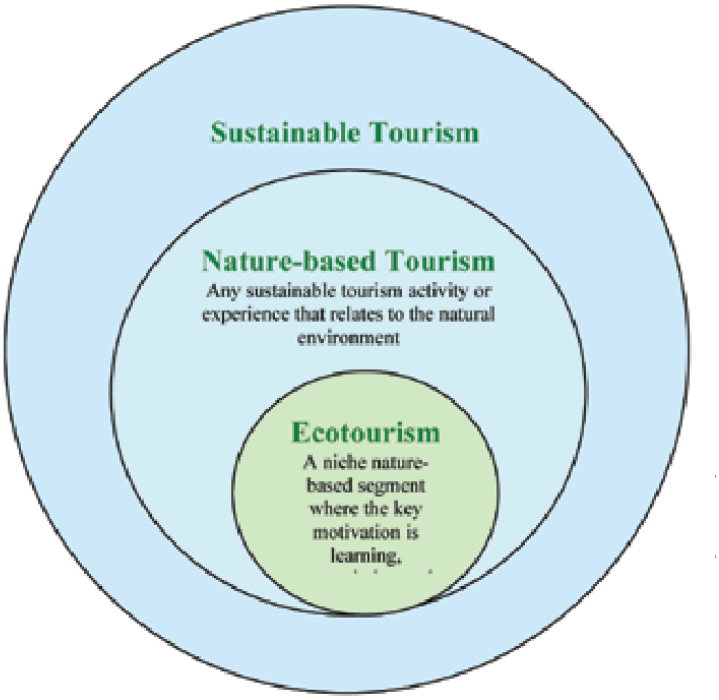
2.3 NATURE BASED- TOURISM

Various approaches to nature-based tourism and ecotourism take place in literature. Although some authors claim that nature-based tourism and ecotourism are a sign or of the same signification (McNeely and Thorsell, 1989), others find the scope of the study as a broad, inclusive concept for activities such as eco-tourism, adventure tourism, nature tourism, including resource consumption, nature conservation and culture. Although eco-tourism and naturalist tourism is different in terms of quality, the concept of ecotourism is a more responsible approach and has common areas with nature-based tourism (Buckley, 1994; Nyaupane, 2017). Because of these approaches, the meanings of natural tourism should be discussed.

The troubles and satisfactions of mass tourism have led to tourism forms like this appear, according to Eadington and Smith (1992), in coherence with economic, social, and shared values, which ensure that people, both locals and non-local individuals, share their experiences and experience. The sharpest of these types of tourism is nature tourism. (G. Laarman Jan and Durst Patric, 1987)on the other hand, say that nature-related travel is a type of tourism which combines education, leisure and mainly adventure. Besides these concepts, other scientists officialise their definitions of tourism-dependent on biodiversity with a view to the harm to nature. There are, therefore, in (Lucas, 1985)low environmental impacts but high social and economic

benefits of nature - based tourism. Cateret al. (2017) also emphasizes nature - based tourism in other types of tourism and their conceptual characteristics

Figure 1: Relationship of Sustainable, Nature- based and Eco- Tourism



Sources: Google

In nature tourism, besides influences in the natural environment, the attractions take shape with circumstances that support tourism in natural areas. However, the quality and quantity of support factors can vary, depending on tourists ' perceptions of wildlife and comforts. In other words, the driving factors stimulated by the attractive factors of nature can be various in their intrinsic motivating forces, the features of tempring factors. In natural tourism, therefore, the disparity between tourist motivations is completely shaped by the understanding of nature by tourists. This can be said at this stage that the values seen as motivations of most people are split into different typologies. (Kellert, 1984) integrates in this way the interests of individuals deciding their natural motivations:

Naturalist: a focus that finds the wild and open spaces equal.

Ecological: the issue that prioritizes nature as a wildlife habitat.

Humanity: Special attention and strong love are paid to individual animals, especially domestic animals.

Ethicist: the focus that concerns the treatment of animals.

Scientific: The first focus are biological attractions and physical attractions.

Esthetic: The priority are technical and symbolic elements.

Pragmatist: Primary emphasis is placed on impound and animal practical values. Ownership: priority where animals are primarily owned and controlled.

Negative: the goals are animal lack of desires, anxiety, and fear avoidance. The forms above have a huge effect on tourist activities.

According to (Metin, 2019) 'Nature-based tourism appears to be chosen by more and more people because of the reasons like personal pressure, the negativities at work life, a routine lifestyle, psychological pursuits, the psychosocial pressure and living their lives in big metropols away from nature.'

Besides, (Priskin, 2001)stated that there are four categories of assessment in eximed the attractiveness for nature-based tourist. The following variables are included in this category:

Assessment category 1: Attractions

- Flora diversity (species diversity grade plant community)
- Natural diversity (landscape characteristics associated with diversity level)
- Recreation opportunity (activities related to recreational activities such as a bicycle, forest walk, swimming, hiking)
- Adventure opportunities (activities involving dangerous and risky driving experiences and various recreational activities)
- Bay or inland water mass (cape, lake or wetland protected by shoreline);
- Rocky coastline (rocky coastal strip cliffs, wave-cut platforms, etc.)
- Sandy beach (flat sandy shoreline, beach); Good landscapes (landscapes with a wide viewing area)
- Scientifically interesting places (rock outcrops, deep valleys, natural reserves with high biodiversity, etc.)
- Geological features (caves, large rocks, tops, limestone columns, etc.)

The second category deals with the usability evaluation. The variables in this group shall be treated as a road type and a vehicle type.

The third category covers the measurement of infrastructure support. The following are the variables for this category:

- Toilets (including all kinds of toilets, showers, changing rooms)
- Picnic tables (table with dining chairs)
- Seats/benches (such as simple park benches)
- Barbecue (eating places, fire-resistant areas)
- Dustbin (all types of waste disposal units, recycling stations)

- Access for the disabled (infrastructure elements designed for the disabled such as ramps)
- Shadow/shelter (Pavilion, shelter and shelter, planted trees)

The final category examines environmental quality deterioration. This dimension explored in terms of the environment.

2.4 HISTORY TOURISM SECTOR IN MALAYSIA

Malaysia has become one of the world's leading tourist destinations in recent years. The tourism sector is currently an essential contributor to the economy and is recognized as a significant source of foreign exchange earnings and catalyst for economic growth. It accounts for at least 8-10 % of GDP (Sivalingam, 2007). Tourism sectors and tourism-related industries created nearly two million jobs in 2011 (MoT, 2013). In terms of tourist arrivals, Malaysia was ranked 9th in 2009 with 23,6 million and 10th in 2012 with more than 25 million tourists. According to the Ministry of Tourism (MoT, 2013), Malaysia's major touristic markets were in 2012 the ASEAN neighbouring countries with the top countries Singapore (52%), Indonesia (9.52%), China with Hong Kong & Macau (6.23%) and Thailand and Brunei (5.05% and 5.03% respectively).In addition , Malaysia ranked fourth most competitive travel and tourism country in the world out of 133 countries surveyed (Wong, 2009).

In fact, Malaysia was one of the world's top ten tourist destinations for the first time in history in 2009. Malaysia could overcome the lack of consumer demand for global tourism during this difficult period of the world economic crisis and the H1N1 virus outbreak in this particular year. It was also noted in 2005 that tourism rose despite the tsunami that hit neighbouring Indonesia one year earlier. There has been a total of 23.6

million foreign tourists and more than RM53 billion, up 7.2 per cent in 2008. The positive performance contrasted with the government's projected 9 per cent decrease earlier this year. Monetary receipts have been steadily increasing as the number of tourists has risen. In 2012, the number of tourists grew to over 25 million, with sales of more than RM60 billion.

In 2019, based on Malaysia Tourism Statistics, there are 26.1 million of tourist arrival. Total expenditure is Rm 86,143.5 million (+ 24%). Most of the tourist average stay are 7.4 night (0.9 nights) for tourist arrival in 2019. In additions, Per Capita Expenditure are Rm 3,300.4 (+1.3%).

2.4.1 EXISTING TOURISM ACTIVITIES IN MALAYSIA

(Ferdous Alam et al., 2015) explained that 'lying just north of the equator, Malaysia is located south of Cambodia and Vietnam and north of Singapore and Indonesia'. More than 1,000 islands are part of Malaysia and some 38 are known as marine parks. Parts of primaeval rainforest with a spectacular variety of birds and wildlife are over 100 million years old. Malaysia has beautiful golden beaches, lush vegetation, mountains, and spectacular shopping centers with some fantastic hotels associated with them. That has made the country South East Asia's fastest - growing destination. The blend of the ancient and the ultra-modern makes Malaysia a fascinating place to visit, although low living costs and a huge selection of tourist options make it a perfect holiday destination.' Besides, Malaysia has a tropical climate all year round, with warm days and mild nights in all seasons. Furthermore, the country has a fascinating cultural mix with colourful festivals, unique arts and crafts, architecture, food and a range of forms of dance. It is ideally positioned to benefit from its increased interest in the tourist industry, in the field of ecotourism, as it has a wide range of natural and marine habitats. Thus,

Malaysian tourism is long - term prospects remain optimistic as a result of strong support from the government and a relatively strong and stable political situation (Malaysia Tourism Report, 2010).

Malaysia's tourism business has identified as a key in the service market. 11th MP will focus on capturing high - yield tourists to improve the economy's contribution. Domestic tourism will be harnessed to boost industry vibrancy further. The goal is to increase awareness by highlighting Malaysia 's uniqueness and strengths through targeted promotional activities. Tourist arrivals to Malaysia expected to grow at an average annual rate of 4% to 36 million by 2020. Receipts expect to grow at an average yearly rate of 13.6% to reach RM168 billion in 2020. The tourism industry will cumulatively have 2,34 million jobs through the 11th MP.

According to the World Tourism Organization, culture and heritage tourism can be defined as engaging tourists with global cultures including performing arts, rituals, crafts, and food. This form of tourism can generate positive dialog, understanding and instilling in communities a sense of nationalistic pride and, most importantly, a sustainable form of tourism ("Tourism and Intangible Cultural Heritage," 2017). With an indispensable multicultural heritage and culture, Malaysia has created a niche area in this aspect of tourism, supported by the highly successful "Malaysia Truly Asia" campaign launched in 1999 that managed to attract significantly local and foreign tourists by using integrated media outlets and international broadcasting networks.

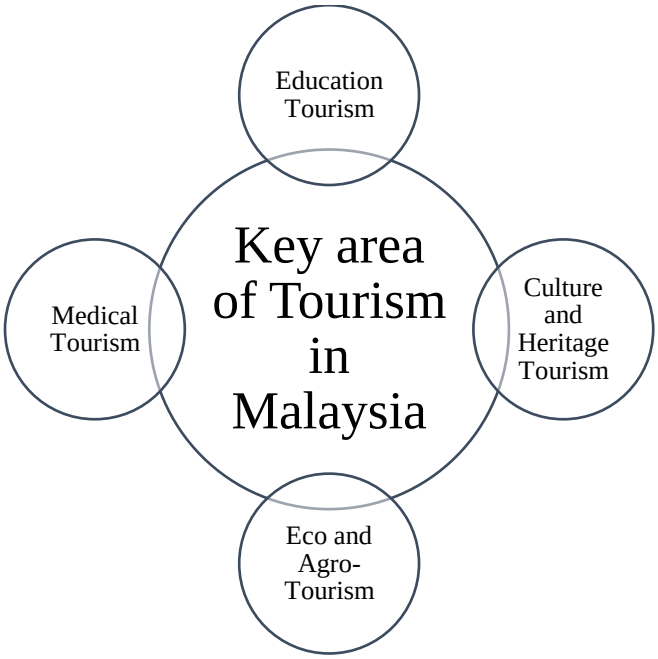


Diagram 3: Key Area of Tourism in Malaysia

Moreover, medical found to be a promising aspect of tourism in Malaysia. Medical tourism management is regulated by the Malaysian Healthcare Travel Council (MHTC), which supports a select group of private and corporate hospitals in Malaysia with the ability to draw medical tourists due to its internationally accredited comfortable facilities.

Besides, educational tourism plays a vital role in tourism. Malaysia was ranked 12th among UNESCO 's favourite higher education destinations in the world. Several reasons why Malaysia has become a popular higher education destination are the competition costs of higher education in public and private universities, the variety of courses available with English medium and cultural comfort, especially for students from the Middle East and China. It makes up the two largest groups of international students studying.

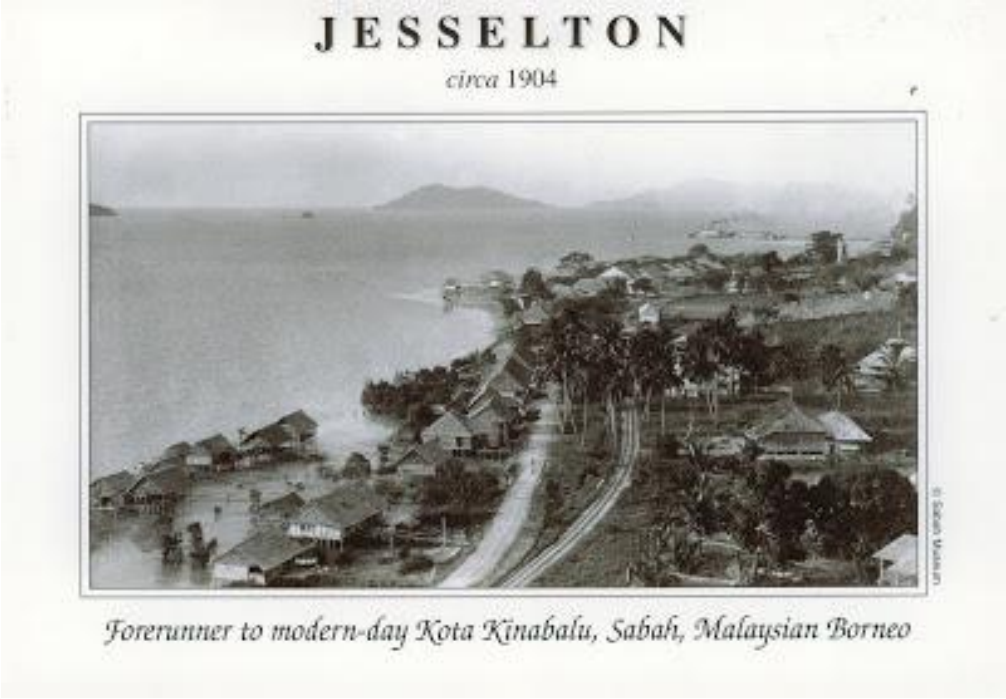
Finally, ecotourism can be defined as visiting natural areas that are relatively undisturbed with little or no impact on the environment. At the same time, revenue generation and agrotourism based on Malaysia's agricultural activities such as homestays, orchards, and animal farms. Also listed as one of the 12 most diverse countries in the world, Malaysia has a variety of natural landscapes and a variety of flora and fauna. National parks such as the one in Endau Rompin, Pahang and conservation parks throughout the country have been gazetted by the government, mainly concentrated in eastern Malaysia such as the Danum Valley Park in Sabah.

2.5 HISTORY DEVELOPMENT OF SABAH

Until joined the Malaysian Federation in 1963, Sabah was called North Borneo and in the 16th century the Sultanate of Brunéi was founded, while the north - east coast of the state was part of the Sultanate of Sulu based on the southern Philippine islands. The European began to appear in the middle of the 18th century, and the British manages to establish a trading post off the northern tip of Sabah in Pulau Balambangan. Nonetheless, it post could not be removed. In 1865 Claude Lee Moses was leased over North Borneo by the American Consul for Brunei. The rental was passed to an American company that tried to establish a post in Kimanis today. This was also a failure and was abandoned. The rental was then sold to Baron von Overbeck and then transferred to Alfred Dent who formed the British North Borneo Company for the establishment of the colony in 1882. First in the city of Kudat and then in Sandakan, the capital was formed. In 1888 North Borneo was a protectorate in the UK, but government and control of the colony remained in the Company's possession until the Japanese invaded the country in 1942. In additions, there were resistances to the rule of the company, including in the late 1890s Mat Salleh, and in the early 1900s the Muruts.

From 1942 to 1945, the Japanese occupation was harsh, as English, and Allied soldiers forced to perpetrate the infamous Death Marches by the Japanese people. In 1946, the British military administration became British Crown Colony when the Japanese surrendered. Jesselton was restored and chosen to replace Sandakan as the capital, now the Kota Kinabalu who had suffered the Allied bombing. The Federation of Malaysia, which was then known as Sabah, was established in North Borneo with Malaysia, Sarawak, and Singapore on 16 September 1963.

Figure 2: Formerly Jesselton now Kota Kinabalu



Source: Google

2.5.1 EXISTING TOURISM ACTIVITIES IN SABAH

Sabah, on the historic island of Borneo, is the easternmost and second-largest state in Malaysia. The tourist area has plenty to offer, ranging from the highest Gunung Kinderabalu, pristine national parks, exotic animals, including orangutans and

probosci's monkeys, Malaysia 's best dive and the top sprinkling beaches of the world. The region has plenty to offer. There also various historical sites and museums, heritage hikes, caves, river cruises, indigenous peoples ' vivid customs, and more. In fact, there is plenty of tourism in Sabah, for example-

- Mountains

In Sabah, there is famous mountain that be an attraction around the world. It is the highest mountain in Southeast Asia (between the Himalayas and New Guinea) and the 20th most prominent mountain in the world by topographic prominence.

- National parks, Wildlife and Nature

The Kinabalu National Park covers an area of 754 square meters. There are many other nature walks in the park that contain thousands of species of plants, orchids, butterflies, and birds. All those parks are well maintained and is a UNESCO World Heritage Site. Moreover, the Danum Valley Conservation Area is an unspoilt nature reserve that has gained attention from the world since visit of Prince William and Kate. In addition, in Maliau Basin Conservation Area, a state of 590 square meters, a similar environment can be found in the south of central Sabah and virgin forest. Then, Crocker Range National Park, a protected area named in 1984 for the protection of the area's biodiversity and the conservation of a large proportion of Sabah's fresh water.

Figure 3: Mount Kinabalu

Sources: Google

- Island and beaches

Sabah has some of the best diving locations in the world that Sipadan Island is ranked as top ten best dive destinations in the world. First, Tun Sakaran Marine Park (even known as Semporna Islands Park) is the largest marine park in Sabah and consists of eight islands, some of which are made up of extinct volcanoes. On the western coast of Sabah, the Mantanan Islands are an idyllic place for diving, snorkeling and beach sports. On the other hand, there are a number of other beaches and islands that are not traditionally dive sites, such as Berhala Island in Sandakan Bay, which has operated as a leper colony and prison camp, but today is popular with day trippers for the beach and rock climbing on its sheer pink cliffs. In Kota Kinablu itself, Tunku Abdul Rahman Marine Park consists of five magnificent islands near Kota Kinabalu. The five islands are Pulau Gaya, Pulau Sapi, Pulau Manukan, Pulau Mamutik and Pulau Sulug.

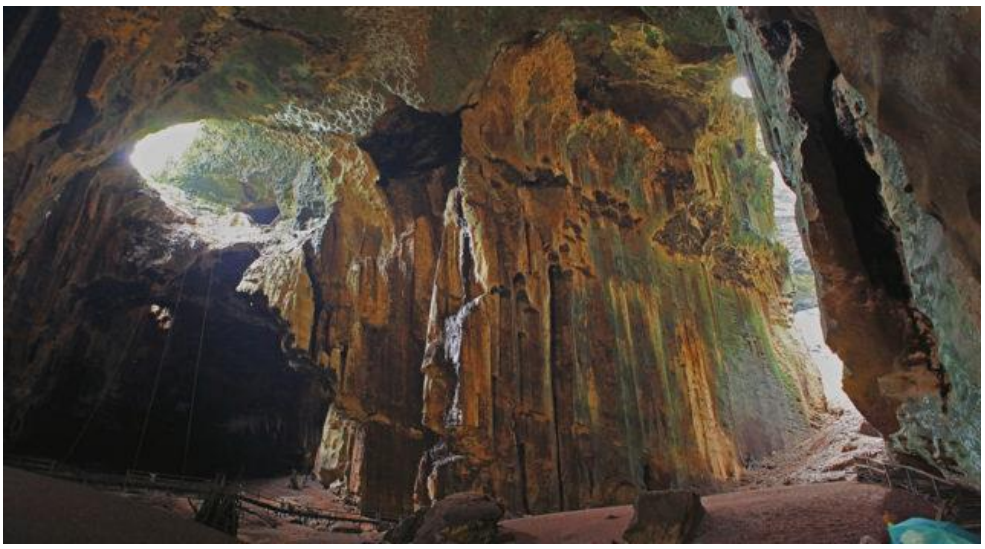
Figure 4: Sapi Island Kota Kinabalu

Sources: Google

- Caves

The Gomantong cave is recognised for its bravery in producing edible birds ' nests that ascend high up into the higher part of the cave to pick up the precious delicacy of the velvet. The nearby Baturong Caves there is a burial cave, and several ancient coffins have been found.

Figure 5: Gomantong Cave, Sabah



Source: Google

- Heritage, history, museums, and buildings

The Malaysian railway system and operator of the Sabah State Railway (SSR) operates in Sabah State Railway. In addition, Sabah has a museum known as the Sabah State Museum, the oldest museum in the country. Memorial in Tambunan is found elsewhere on the Sabah Mat Salleh Memorial. The Mat Salleh Memorial is the story of Mat Salleh, who led an uprising against Sabah's British rule.

Figure 6: Kundasang War Memorial, Sabah

Source: Google

- Local culture

Sabah is well developed, rich in local culture. In Sabah itself there are more than 36 groups with diverse dialects. For example, Kadazan Dusun, Murut, Sungei etc.

On the other hand, Ministry of Tourism, Culture and Environment, Sabah has developed and provide a policy and also guidelines for sustainable tourism development Sabah in

line with national policies. Provide input on suitability/appropriateness of tourism development project if it involves:

a. Application of state land, and appropriateness
b. Private land, to ensure it is in line with state policies, legal requirements, zoning, marketing, and promotional efforts

2.6 SABAH TOURISM PROMOTION CORPORATION ENACTMENT 1989

An Statute repealing and re-enacting the law relating to the creation of a Sabah Tourism Promotion Corporation and providing for matters incidental to it and relevant to it in order to make better arrangements concerning the Sabah Tourism Promotion Corporation's constitution, administration, procedure, functions and finances. This Enactment may be cited as the 1981 Sabah Tourism Promotion Corporation Enactment, which shall enter into force by a notice in the Gazette on such date as the Minister order.

2.7 SABAH DEVELOPMENT CORRIDOR (SEDIA)

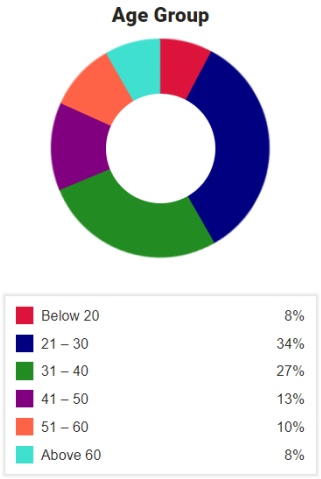
In SEDIA its reported that the strategy under the development of tourism is to target high yield visitors and long stays. The goal is to make Sabah one of the world's liveliest locations. The SDC also aims to improve Sabah's position as a top eco - adventure destination as well as a lifestyle high end destination with luxury villas and signature resorts. One of the aims is to encourage investors to anchor new Sabah tourism signature products and activities such as wellness centres, sailing events and regatta. SEDIA also publishes a roadmap and vision for establishing Sabah as a place for the group to live.

2.8 SABAH TOURISM BOARD STATISTIC

Based on Sabah Tourism Board statistic, the demographic profile category into 7 group such as age group, gender, purpose of visit, travel arrangement, visitors, occupation, and accommodation.

- Age

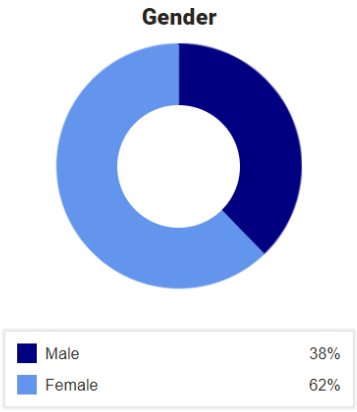
Pie Chart 1: Age Group Distribution



Sources: Sabah Tourism Board

Based on the age group above, age between 21- 30 are the highest percentage with 34%. It shown that between the age are the time of productivity for human. And below 20 and above 60 are the lowest percentage which are equally 8%. It it because the ability of their body system is limited.

- Gender



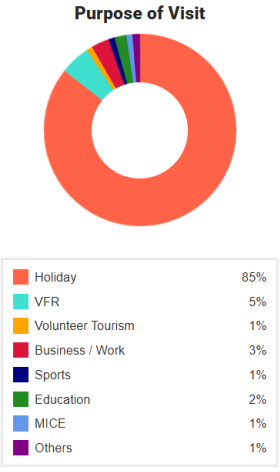
Pie Chart 2:Gender Distribution

Sources: Sabah Tourism Board

The pie chart show that the most gender travel to Sabah are female. Explain by Sonia Khan "Over the years, travel for leisure (a sphere considered important by both genders, for individual well-being and existence) has seen a significant increase of female participation". In addition, on modern era female are more freedom to make their own decision.

- Purpose of visit

Pie Chart 3:Purpose of Visit

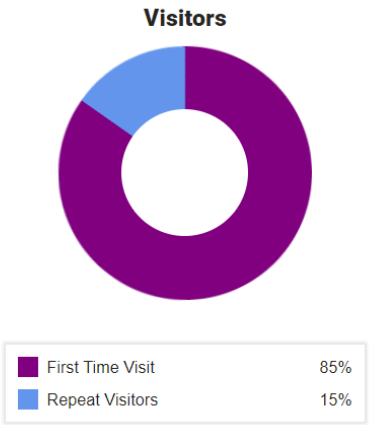


Sources: Sabah Tourism Board

The Sabah Tourism Board divided the purpose of visit into 8 group which is for holiday, VFR (Visit Friend and Relative), volunteer tourism, business / work, sports, education, MICE (Meeting, Incentives, Conferencing, Exhibition) and others. It shown that the purpose of visit to Sabah are holiday because of the verity tourism in Kota Kinablu. It supports by the research from Velan Kunjuraman and Rosazman Hussin (2015) "majority of the respondents have good satisfaction towards tourism activities and facilities in the island (Pulau Memutik, Kota Kinablu) except beach volleyball and jet-ski activities as well as telecommunications and toilet facilities".

- Visitors

Pie Chart 4: The Frequency of Visitors



Sources: Sabah Tourism Board

The pie chart show that most people went to Sabah are the first-time visit. It the highest percentage 85% and 15% are for the repeat visitors that went to Sabah more the one time. The first-time visit is because they want to experience of the topography and culture of each of the districts. Sabah well known of multi culture with more than 30 culture such as Kadazan Dusun, SINO, Murut and Bajau in Sabah with different

language. Also. Sabah have the highest mountain in Malay Archipelago and as well as Malaysia which is Mount Kinabalu with height of 4096 m. It attracts most of hikers around the worlds.

Thus, based from the pie chart 1, 2, 3 and 4 it can be ensuring that Sabah are one of state that attract tourist and can boost up economy of the country.

2.9 GEOGRAPHIC INFORMATION SYSTEM (GIS)

Geographic information system is "a set of computer hardware, software, geographic data and users which is designed to enable efficient collection, storage, organization, manipulation, analysis and display of spatial geographic and all the other information system of interest to the user" (Durdev, 2000) Geographic Information Systems (GIS) is a rapidly expanding field that enables applications to be developed in combination with other media that manage and use geographic information. GIS is used in the tourism industry to provide:

- Digital map basis for printed maps
- Digital files for mapping the Internet
- Digital Mobile Mapping Files
- Attractions map
- Interactive mapping website

The GIS technology offers great opportunities to use maps to create modern tourism applications. Its technology integrates common operations on the database, such as query, with the unique advantages of map visualization and geographical analysis. The implementation of tourism data and GIS data is a tough task for the tourism industry today.

In addition, (Maguire, 1991) stated that

> the GIS field is further characterized by a great diversity of applications. GIS are integrating system which bring together ideas developed in many areas including the fields of agriculture, botany, computing, economics, mathematics, photogrammetry, surveying, zoology, and geography.

In other hand, (Dennison Parker, 1988) explained "GIS is an information which stores, analyses, and displays both spatial and non-spatial data". Based on the statement stated by Parker, GIS is powerful tools that can run many data in short of time. Based on Dueker (1979),

> GIS is a special case of information systems where the databased consist of observations on spatially distributed features, activities, or events, which are definable as points, libes, or area. A GIS manipulates data about these point, lines, and area to retrieve data for ad hoc queries and analyze.

Also, GIS is a program with most data spatially indexed and a collection of procedures to address spatial entity queries in the database. Next, (Ozernoy et al., 1981) interpret GIS is an automated set of functions that provides professionals with advanced capabilities for the storage, retrieval, manipulation, and display of geographically located data.

There are few GIS forms categorized according to the presented application region. Based on (Maguire, 1991) there are alternative name for GIS such as

- Cadastral Information System
- Image based Information System
- Land Data System

- Land Information System
- Geographically Referenced Information System
- Natural Resources Management Information System
- Market Resource Management Information System
- Multipurpose Cadastre
- Planning Information System
- Property Information System
- Soil Information System
- Spatial Information Syatem
- Spatial Decision Support System
- Urban Information System

Moreover, explain by Caitlin Dempsey (1999), A geographic information system (GIS) is a system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data. Geography is the key word for this technology-this means that some of the details is spatial. In other terms, details that is related to places on earth in some way. This data is normally combined with tabular data known as attribute data. Details on attributes can generally be defined as additional information on each of the spatial features. The schools would be one example of this. The Schools ' actual location is the spatial data. Other data such as the name of the school, the level of education taught, the student capacity would make up the data about the attribute. The combination of these two types of data enables GIS to be so powerful a problem - solving instrument in spatial analysis. There is more to GIS than just applications. Individuals and methods are combined

with geospatial software and tools to facilitate spatial analysis, manage large datasets, and view map / graphic information.

How GIS is used

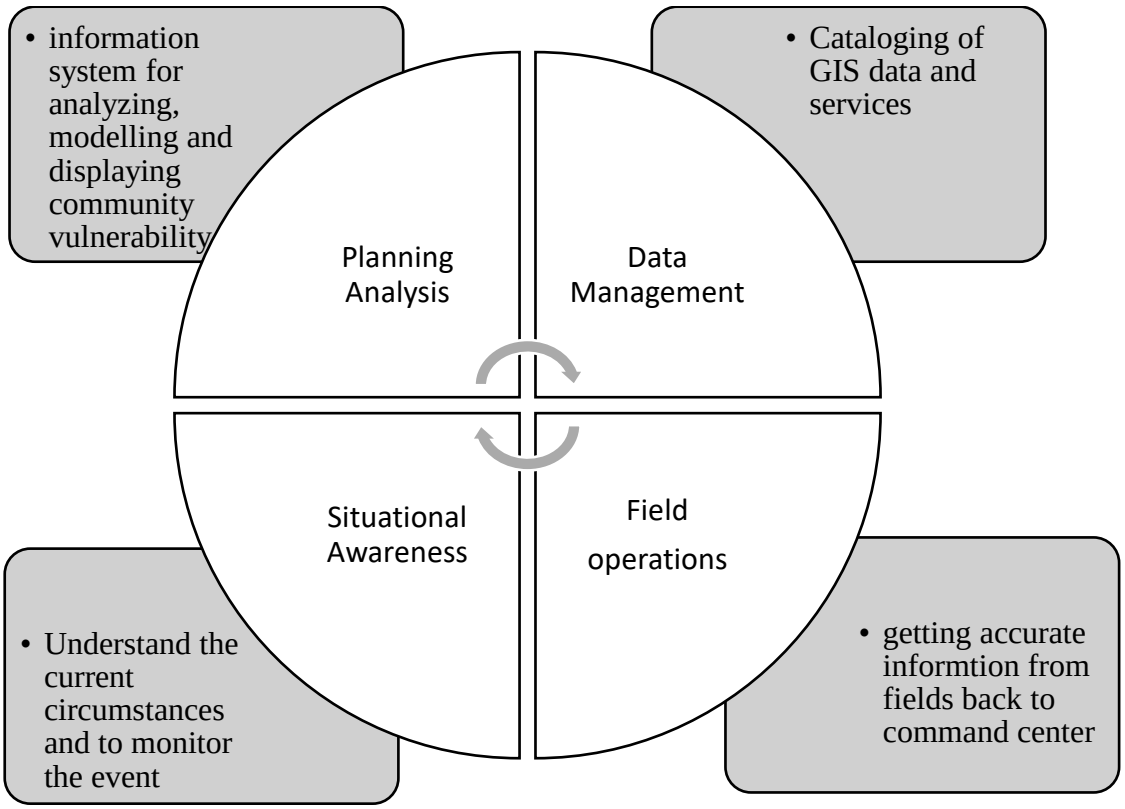


Diagram 4: The use of GIS

By using geographic information system (GIS) more tourist area can be discovered. A geographic information system (GIS) is a framework for gathering, managing, and analyzing data. GIS has been commonly used in different fields such as tourism activities enabling people from different countries and cultures to interact with each other. (Turk et al., 1969)

2.10 THE USED OF GIS IN DETERMINE POTENTIAL OR TOURISM AREA

Few authors run an analysis to determine potential or tourism area using GIS. One of the authors is Verka & Angeline on their research on The Application of GIS and its Component in Tourism. According to (Jovanović & Njeguš, 2008)stated that

> "Since the success of any tourism business is determined by tourism planning, tourism development and research and tourism marketing, the first thing we review in this article is GIS application for tourism planning. Geographic Information Systems (GIS) is a rapidly expanding field enabling the development of applications that manage and use geographic information in combination with other media. In the tourism industry, GIS is used to provide: a digital map base for printed maps, digital files for Internet mapping, digital files for mobile mapping, attractions map and website with interactive mapping GIS technology offers great opportunities for the development of modern tourism applications using maps. This technology integrates common database operations such as query with the unique visualization and geographic analysis benefits offered by maps. The integration of tourism data and GIS data is a big challenge for the tourism industry today."

Next, the same author in a different article 'The Use of GIS in Tourism Supply and WEB Portal Development.' stated that "The use of GIS in the realization of primary goals of the tourism supply is reflected in the following: (1) Providing information about the geographical position of the tourist destination, accommodation facilities, services and enterprises; (2) Creating and presenting market identity and originality of one's own brand. This provides market recognition of destinations and increases, modifies,

and improves the range of facilities and services. Visualization of tourism contents and facilities enables a better understanding of the products on offer and strengthens the confidence of customers and increases the consistency of supply. The geographical context of contemporary tourist products is located on the interactive tourist maps that support the analysis of spatial and non-spatial information necessary for planning vacations and making decisions about travel. The Internet maps and multimedia GIS databases that contain tourist information are the tools for attracting the attention of local and foreign tourists and other stakeholders in the tourism industry that could contribute to the overall business and economic development of a region, country and local community."

In the context to identify the potential area in Karambunai the application of GIS is used.

2.11 GEOGRAPHICAL INFORMATION SYSTEM (GIS) AND TOURISM

With the enormous development of information technology and their important role in the tourism industry, both IT and the tourism industry are two powerful tools for the economic growth of a country. Most tourist information is distributed via various websites, which because of the wider tourism information is more difficult to use. Therefore, the use of maps to efficiently present the information is a better solution to this problem. For tourists wishing to visit these places, tourism is significant between close and far places and maps. (Fajuyigbe et al., 2007) explain, however, that a map has several problems in the traditional form. For example, maps are static, making them difficult to keep up to date and expensive. Furthermore, the map is frequently complex, and people cannot always extract specific data of interest.

In additions, GIS links spatial data with somaticized information. It combines database operations with the benefits of geographical analysis offered by maps. Ake (2001) provides another definition of GIS which explains the properties of GIS and its analytical functions.

Table 1: GIS and analytic functions

Properties of GIS		GIS Analytical Functions
A process	A system for capturing, storing, checking, manipulating, analyzing and displaying data, which are spatially referenced to the earth.	Presentation and thematic mapping Data query Spatial query Database integration Route finding
A toolbox	Containing tools for collecting, storing, retrieving, transforming, and displaying spatial data	
A database	Spatially referenced entities	Point in polygon analysis Overlays Buffering Visualisation and 3D modelling
An application	Cadastral information system, marketing information system, planning information system, etc,	
A decision support system	Integrating spatial data within a problem-solving environment	

Sources: Ake, (2001)

According to (Shyti, 2012), 'GIS minimises the difficulties in the use of maps, graphical tourist guides etc. So, providing a perfect combination between scientific methods and practical and visual work we may declare that GIS is practically a revolution for the

humanity. It helps people to save money and time, and easily find the most updated information'.

Explain by (Turk et al., 1969), 'Tourism has been one of the crucial industries in the world due to being source of income. It also enables people from different cultures to interact with each other.' Consequently, each country must be aware of tourism and make effective use of GIS geared towards tourism. To make them known all over the world, each country should advertise its history, architectural features of the buildings. In a query, these details can be obtained by forming a spatial connection with GIS' he added,' GIS design and selection for tourism and systems design help users provide optimum tourism planning. In addition, users appear to be saving time via GIS design. GIS will continue to be increasingly important in future.

In the 1991 space analysis Beery used a sector of the Virgin Islands as an example, according to (Farsari & Poulicos, 2002). He was able to define conservation areas, environmental research, residential and recreation development using different models, while one model was used to resolve competitive conflicts. Tremblay (2005) states that a large amount of surveys and studies on the potential and development of GIS applications for tourist marketing and IT applications related to mass tourism could be found on the basis of research into literature in the field of tourism, even in the 1990s. (Wei, 2012) considers that the development of tourism information technology lags the level of general development of tourism. At the moment, the major applications of GIS in tourism were the inventory, management of spaces for tourism, evaluation of visitor effects, assessment of conflicts between recreational-environment mapping, creation of and decision - making support for the tourist information system.

According to (Cvetković & Jovanović, 2016), ‘most of the applications of GIS in tourism were related to the inventory of recreational capacity, management of the use of space for tourism, visitor impact assessment, an assessment of the conflict between the recreation and the environment, mapping, creation of tourist information management systems and systems to help with decision-making. In tourism, the use of GIS is different on the side of the tourist offer and tourist demand. The side of the tourist offer mainly uses all these aspects of the use of GIS. The side of the tourist demand is using GIS technology that is installed by the tourist offer. It can be concluded that the side of the tourist offer is the provider and at the same time a user of GIS (bidirectional/two-way relationship), while tourist demand appears as one of the users (unidirectional/one-way relationship).’

2.12 RELATIONSHIP GIS – MCDM (MULTIPLE CHOICE DECISION MAKING) IN TOURISM

GIS has long been used to support decisions, mainly in the design, comparison, and space analysis of maps. This capacity can be further improved through the integration of GIS with MCDM models, creating an SDSS to enable decision-makers to easily access GIS procedures and to evaluate the performance of the different MCDM technologies. It can also assess the importance of the criteria selected. In GIS, MCDM models were increasingly used as a useful methodology for supporting spatial decision - making in land-use related problems over the last five years. Several approaches to the integration of GIS with the MCDM models were developed: from simple combination based on the loosely coupled interaction of one or more MCDM models with GIS models, to tightly integrated systems, with MCDM models integrating GIS

(Carver, 1991);(Jose & Duckstein Lucien, 1993);(P. Jankowski & Richard, 1994);(Piotr Jankowski, 1995) (Janssen & Rietveld, 1990);(Eastman et al., 1995)

According to (Abed et al., 2011)'Taking benefit of Geographic Information System (GIS) as a tool in combination with geographical information technology (GIT) equips the spatial decision support systems (SDSS) inappropriate destination selection of Coastal Tourism.' GIS provided with information gained through Fuzzy logic, Simple Additive Weighting (SAW) and Analytical Hierarchy Process (AHP) was used worldwide for destination selection.

Besides, explain by (Zhang & Yang, 2008) 'It is a convenience to assess tourism development potential by using overlay analysis of GIS. However, overlay analysis has limitations because of the method itself. Firstly, it cannot reflect the different importance extent among factors while these factors make different contributions to tourism development. To find location of tourism development areas, contributions of different factors to tourism development should be considered. Secondly, overlay analysis of GIS only finds all suitable (places may be developed for tourism) places while the suitable ranking cannot be obtained while the suitable ranking is vital for tourism development along with time series. It is necessary to study tourism development potential ranking with specific decision objective.'

To conclude majority of the authors agreed that the used of GIS in determine the new potential are relevant align with the technology nowadays.

2.13 SUMMARY

This chapter had provided some of the available and relevant literature with regard of data needed to analyse new potential area in Karambunai using GIS. This chapter also discussed on definition of tourism, definition of GIS, History of Malaysia and Sabah, the relationship between GIS and determine potential area also the relationship between GIS and MCDM in determine the new potential area in Karambunai, Sabah. The next chapter will discuss on the study methodology of this research.

CHAPTER THREE (3)

Research Methodology

3.1 INTRODUCTION

This chapter emphasizes and enlightens the study area for the research. The background of the study area is presented in the form of a written statement. In this chapter also will discuss the existing condition of the study area.

3.2 STUDY AREA BACKGROUND

The study area is located at west coast division with latitude DMS of 6°7'12.35"N and longitude DMS 116°7'16.37"E. The total area of Karambunai is 579.6 hectares. With the population of 3320 people, the area provides primary school (Sekolah Kebangsaan Pengirin Siti Hafsah Karambunai) and Rural clinic Krambunai to adequate the need of the community. Karambunai also attracts the local community by hiking activity at Bukit Merah Karambunai. It took 44 minutes (30 km) estimated to reach Karambunai from the city of Kota Kinabalu. Besides, it only can be accessed by private transport due to the weakness of public transport planning in Kota Kinabalu Sabah. The total area of occupied is only 442.9 acre, and the remaining are only covered by bushes. In the Sabah Structure Plan 2030, Karambunai is one of agenda under Greater Kota Kinabalu to build a new resort apart from the former resort (Nexus Karambunai Resort) but based on the observations there is no constructions begin in that area.

3.3 DATA COLLECTION

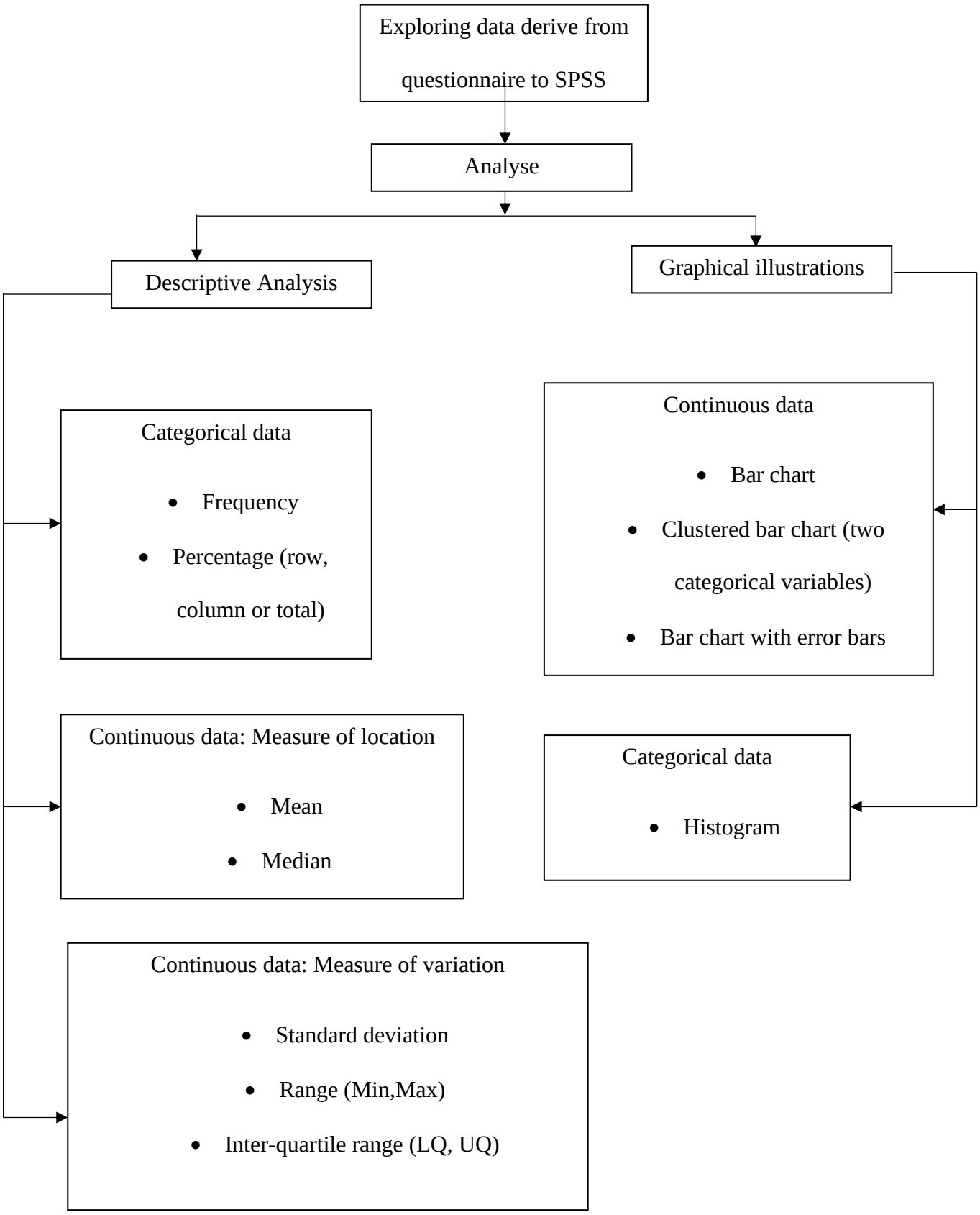
3.3.1 PRIMARY DATA: QUESTIONAAIRE SURVEY

A survey is a method of analysis used to gather data from a predefined group of respondents to obtain information and insights into various topics of interest. A formal survey list is prepared. In general, a non-disguised approach is used. The method of collecting survey data are by questionnaire. Illustrated by (Nigel et al., 2000),'Questionnaires are a useful option to consider when conducting a postal survey. They can be cheaper than personal interviewing and quicker if the sample is large and widely dispersed.

The survey consist of ten (10) question include name, gender, age, address, frequency to Karambunai, accessibility to Karambunai, attraction in Karambunai, facilities in Karambunai, opinion about tourism in Karambunai, ability to develop tourism in international level, barrier occur in site, suggest Karambunai future tourism and respondent opinion to coming back to Karambunai. The respondent consists of 162 people, not only Sabahan but all Malaysian. The method that being used is online survey. An online survey is a questionnaire that the target audience can complete over the Internet. Online surveys are usually created as Web forms with a database to store the answers and statistical software to provide analytics. Apart from online survey, simple random sampling was applied, the Simple Random Sampling method is one of the best probability sampling techniques which helps to save time and resources. It is a reliable method of obtaining information where each member of a population is randomly chosen, by chance only. Every person has the same probability of being selected as a part of a sample.

All the questions above are analysed in SPSS as illustrated in the diagram below.

Diagram 5: SPSS method



3.3.2 PRIMARY DATA: ON-SITE OBSERVATIONS

On-site observations are considered as the most effective tools with the researcher, where the analyst goes to the site and observes the functioning of the system. As an observer, an analyst can gain first-hand knowledge of the activities, operations, and processes of the on-site system, hence the role of an analyst is that of an information seeker. This information is very important as it is impartial and has been taken directly by the analystThis perspective also sheds some light on the system 's real advances from what has already been published, so the analyst gets closer to the model. This approach is also time - consuming, and the analyst should not jump to conclusions or draw inferences from small observation samples. Rather the analyst should be more careful in collecting the information. Nevertheless, this approach is less effective in learning about people's perceptions, emotions, and motivations.

Figure 7: Karambunai Beach

Sources: On-site Observation

3.3.3 SECONDARY DATA: GEOGRAPHICAL INFORMATION SYSTEM (GIS)

Also known as GIS, Geographic Information Systems refers to the toolkit or software that equips individuals to manage and visualize spatial data so that trends, patterns and relationships can be analyzed. In summary, GIS is more than just visualization, and includes three components:

1) Spatial data management: Spatial and non - spatial data processing

2) Visualisation of the map data , for example

3) Data analysis as for locations, trends , and patterns.

In addition to urban planning and geography, GIS has been widely applied across different industries and subject areas including social sciences, epidemiology, health , education, conservation, business, as well as security and risk assessment. As long as there is a position (e.g. address), data of any kind can be analyzed using GIS tools for patterns, some of the examples include:

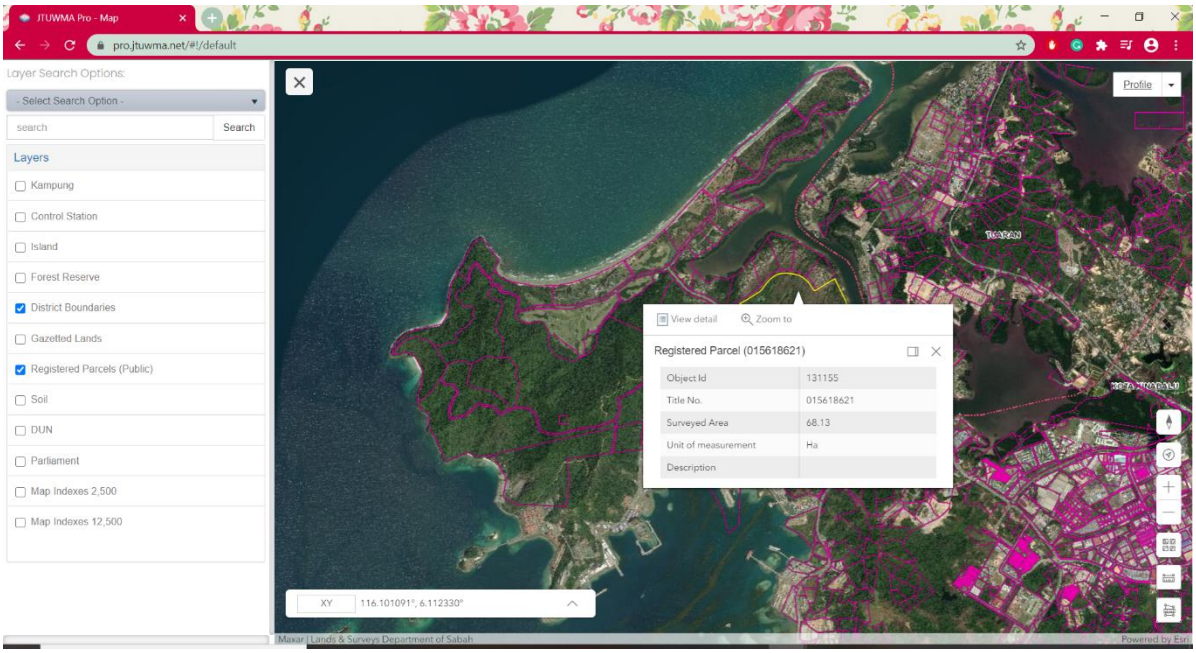
- Tracking outbreaks and clusters of diseases based on occurrences
- School sites and costs for intangible assets
- Locations for new retail projects close infrastructure
- Biomass of endangered species and topographical sightings

3.3.4 SECONDARY DATA: COLLECTION SECONDARY DATA ON ARCGIS WEB APPLICATION SOFTWARE

ArcGIS is a geographic information system (GIS) for map and geographic information operations. It is used to build and use maps, to collect geographic data, to analyze mapped information, to exchange and discover geographic information, to use maps and geographic information in a range of applications and to manage geographic information in a database. The program provides an infrastructure to make maps and geographical information accessible across an agency, across a society and freely on the Web.

In this research the data regarding to Karambunai site such as size of area, soil type, topography and existing landuse are taken from Jabatan Tanah dan Ukur (JTUWMA) through the ArcGIS web Application Software. The data are being used as a attribute layer in Map info.

Figure 8:: Data from JTUWMA through ArcGIS Web Application



Sources: Jabatan Tanah dan Ukur (JTUWMA)

3.4 ANALYSIS

MapInfo Pro is a software product produced by Pitney Bowes Software for desktop geographic information system mapping and location analysis. In order to disclosed relationships, patterns and trends, MapInfo Pro allows users to visualize, analyze, edit, interpret, understand and output data.The used of Map info in this study are to analysis the area for Karambunai in carry out the new spot nature tourism in Karambunai.

In Mapinfo, data are being processed to identify the new potential area using the hotspot analysis. The flowchart below illustrates the analysis in Map Info.

Diagram 6: Hotspot Analysis Flowchart

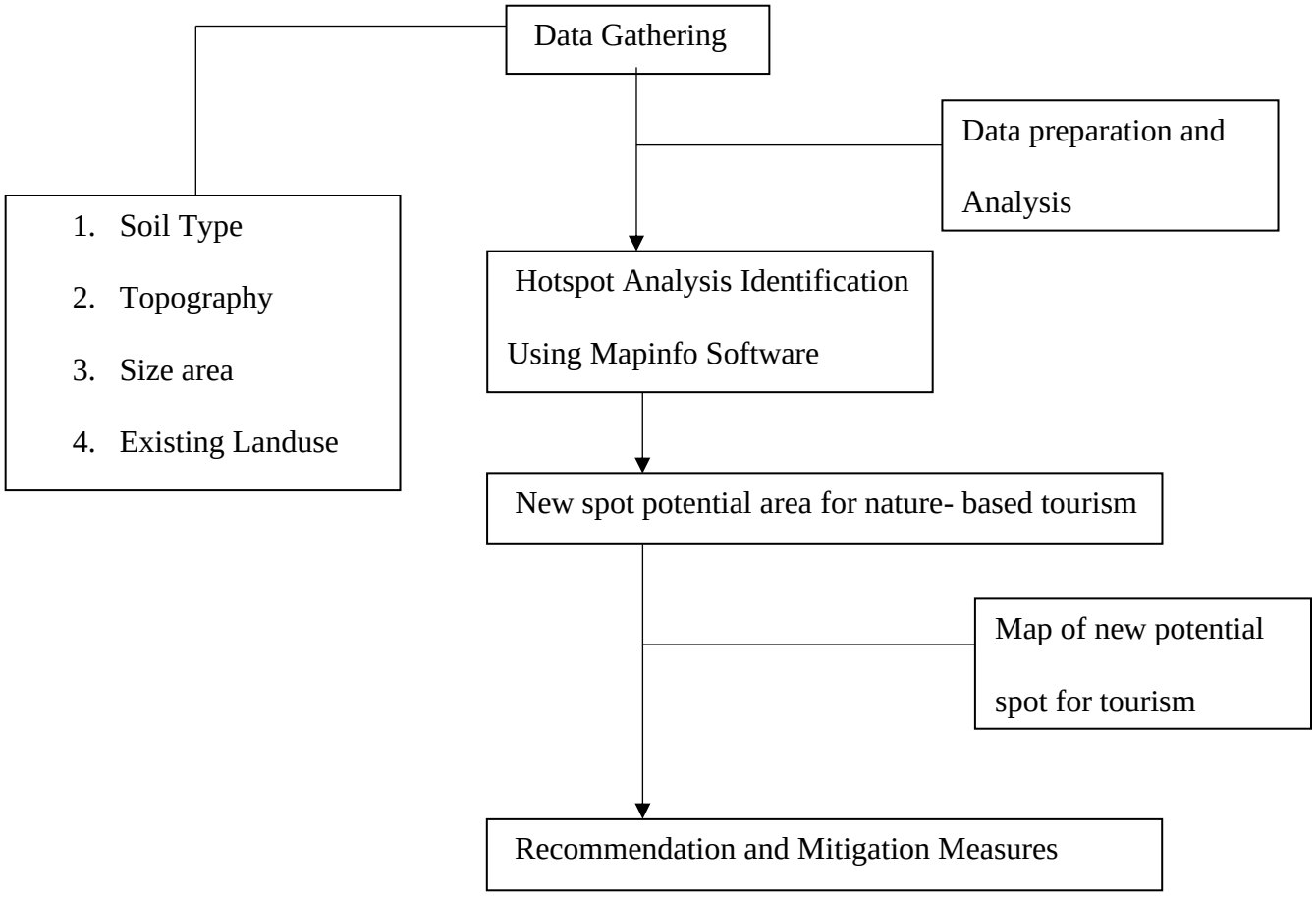
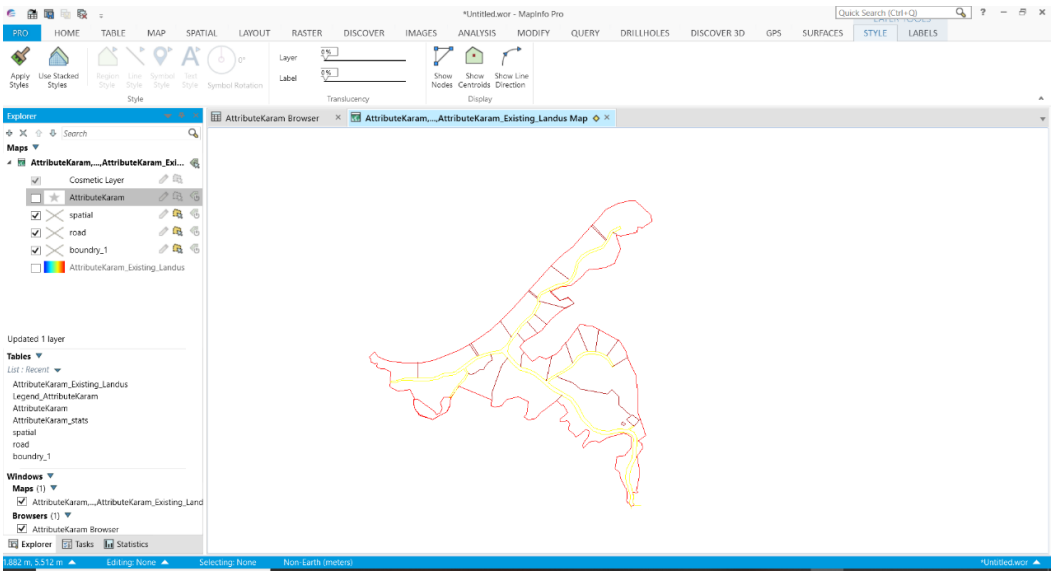


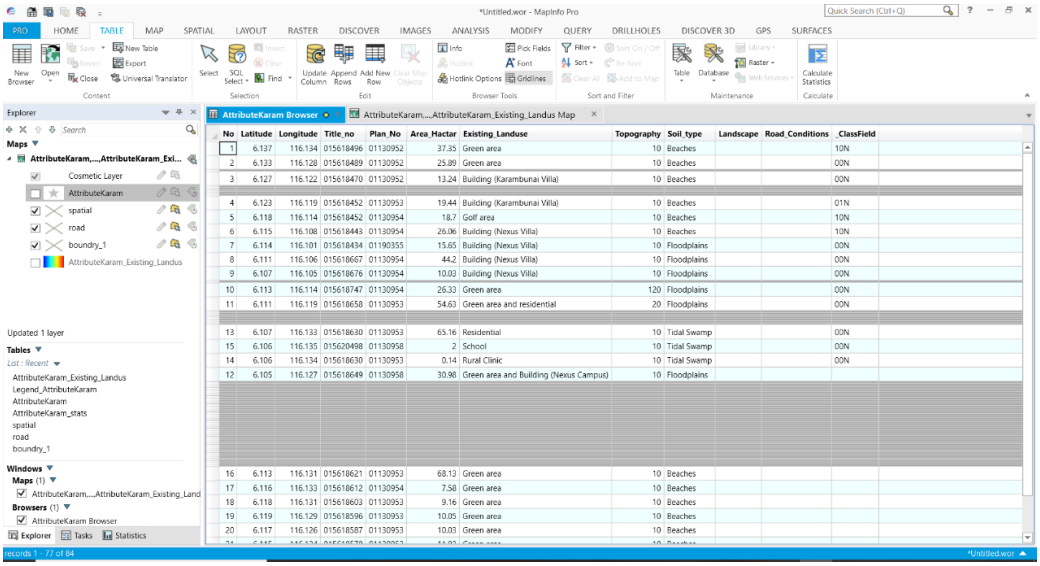
Figure 9: Site of Karambunai



Sources: Mapinfo

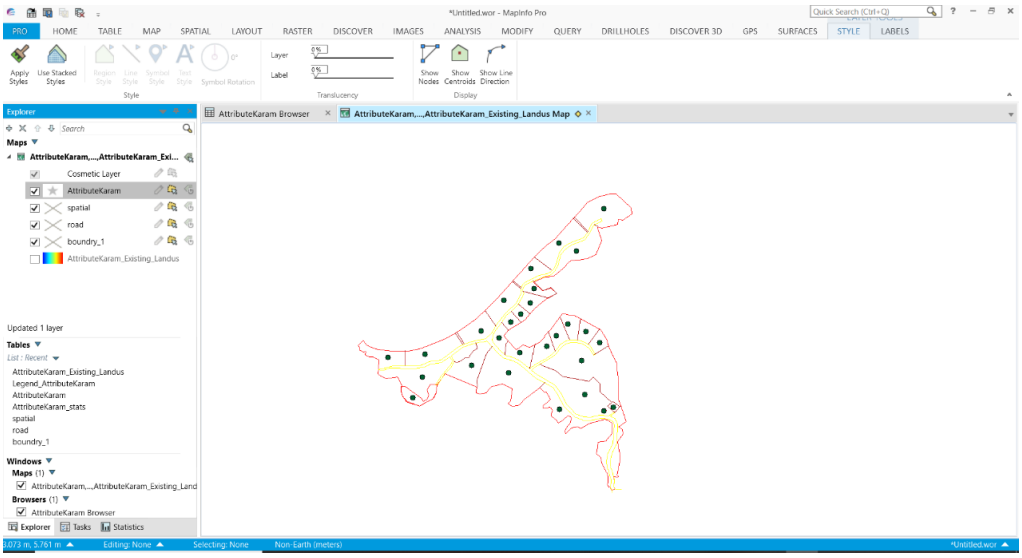
Figure 8 define the table in map info. The table must be separated according to characteristics to differentiate the layer. Add another table that include the data about the site. The data obtained from Jabatan Tanah Ukur. It consists of latitude, longitude, title no, plan no, area, existing landuse, topography and soil type.

Figure 10: Attributes Layer



When the table are fill up with the information as shown in figure 9, create point in each partial to key in the data.

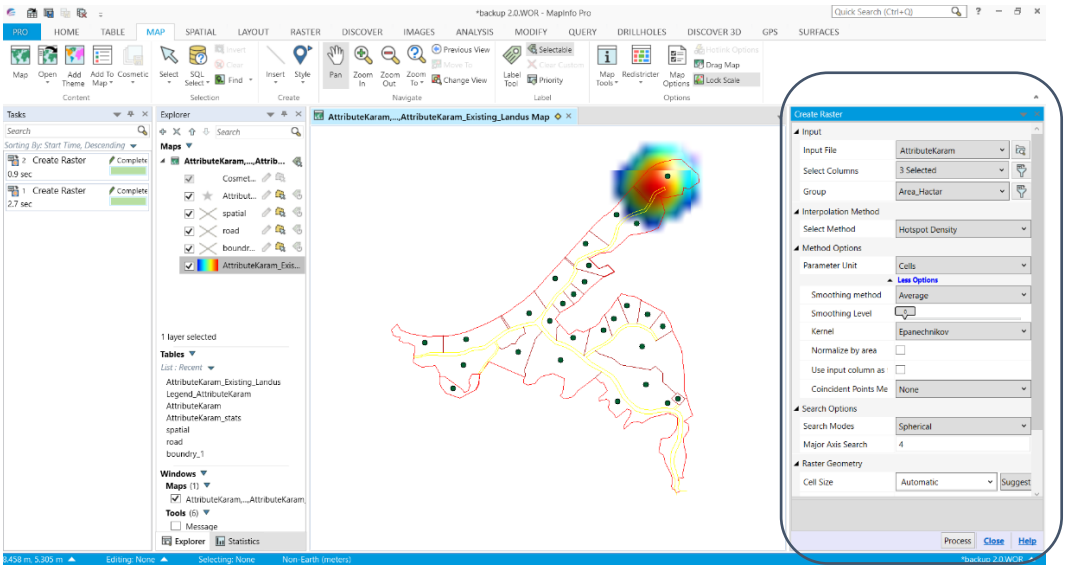
Figure 11: Point created to put data



Sources: Mapinfo

All the data key in can be display in information icon. After running the hotspot analysis, the potential area parameter chooses by the existing land use, topography, soil type and area.

Figure 12: Create Raster



Based on figure 11, before running the hotspot analysis there are several data that need to choose such as input data, interpolation method, method options, search options and raster geometry. Input data is important to ensure the output are relevant. In this study area there are four element that been chosen to identify the new tourism spot: the topography level, existing land use, soil types and the size of each spatial.

3.5 MULTI CRITERIA DECISION MAKING (MCDM)

MCDM is an administrative research sub-discipline that accurately assesses multiple conflicting criteria in decision-making. Besides, it is concerned with the structuring and resolution of decision-making and planning of multi-criteria problems. The goal is to help decision-makers facing issues of this kind. Typically, there is no unique optimal solution to such issues, and to differentiate between solutions, it is necessary to use the preferences of decision-makers. There is several software of MCDM such as Aggregated Indices Randomization Method (AIRM), Analytic hierarchy process (AHP) and Analytic network process (ANP). In this study, AHP being used to calculate the weighting.

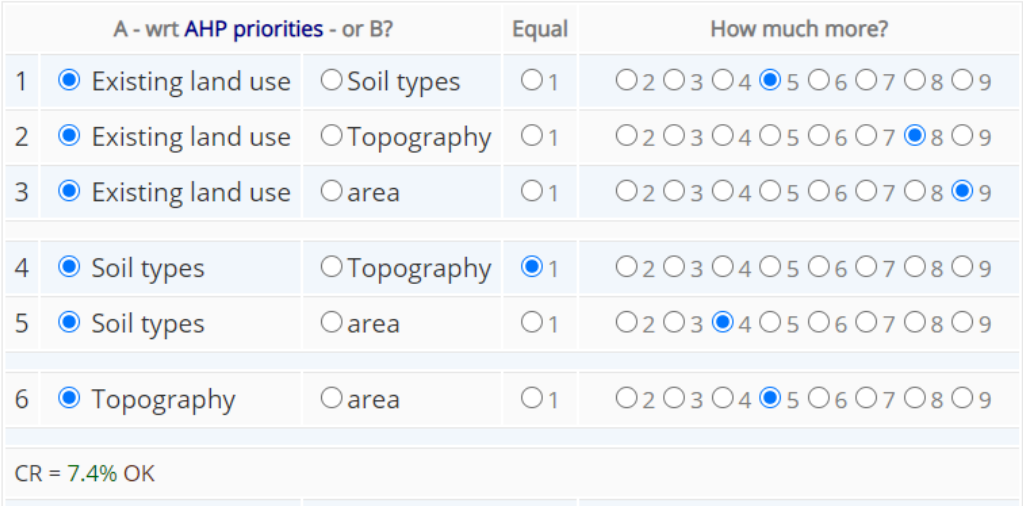
Analysis Hirerchy Priority (Pairwise Comparison)

The formula for independent comparison numbers is k(k-1)/2, where k is the number of conditions. If we were to have three conditions, this would work as 3(3-1)/2= 3, and these pairs are Gap 1 versus Gap 2, Gap 1 versus Gap 3, and Gap 2 versus Grp3. Note that the reference is to pairwise "independent" comparisons. That is because the contrast of Gap 1 vs. Gap 2 is the same as the comparison of Gap 2 vs. Gap 1.

Table 2: Continuous Rating Scale Used for the Pair Wise Comparison of Factors in the MCDM

1/9	1/7	1/5	1/3	1	3	5	7	9
extremely	very	strongly	moderately	Equally important	moderately	Strongly	very	extremely
Less important				More important				

Figure 13: AHP priorities calculation



Sources: AHP calculation website

Based on figure 11, there is three-component that comparing which is existing land use, soil type, topography, and size of the area. The reason to choose only three components is that based on the dimensions of Nature-Based Tourism by Valentien (1992) stated in the table below.

Table 3: Dimension of Nature based- tourism

Experience	Style	Location
○ **Nature Dependency (dependent enhances)** ○ **The intensity of interaction (dedicated, casual)** ○ Social sensitivity (intra group Dynamics) ○ Duration	○ **Level of infrastructure support (field, base)** ○ Group size and type ○ Culture interaction factor ○ Willingness to pay ○ Length of visit	○ Accessibility (remoteness) ○ Development contribution (city, village) ○ **Ownership (private, government)** ○ **Fragility (sustainable, capacity)**

Sources: Valentina 1992

3.6 PARAMETER IN IDENTIFY NEW SPOT NATURE TOURISM IN KARAMBUNAI

There are four factor that being taken account to search new potential area in Karambunai. The factors are the topography, environmental factor, general landscape appearance, and accessibility.

This parameter being used as a guideline to analyse the survey form and as a support evidence to the new potential tourim-based area in Karambunai apart from the GIS.

3.6.1 Topography

Topography is important to ensure that the area is suitable for accessibility to the tourism area.

Table 4:The terrain classification for topography.

Terrain	Slope (%)	Elevation (m)
Flat	0-2	<7
Flat to undulating	3-7	7-25
Undulating	8-13	25-75
Undulating to hilly	14 – 20	75 - 200
Hilly	21 – 55	200 - 500
Steep mountains	>55	>500

Sources: Guideline Classes of Topography

3.6.2 Environmental Factor

Good climate

Good climate for any touristic destination is among the most significant attraction features. A relaxing climate with warmth and plenty of sunshine attracts tourists from the tropical and colder regions. For instance, most of the U.S. and U.K. sea-side resorts are on a warmer southeast. People from summer regions, on the other hand, migrate to cooler regions in search of cold fresh environment pleasure.

Beautiful Scenery

Tourism booms with beautiful sceneries at picnic spots. For instance, points for sunrise and sunset. Sunset and sunrise are not equal in each of area. Factor that influencing beautiful sunset and sunrise are air quality and clouds.

Air Quality

Higher air pollution does not create great sunsets. In reality, haze and other large particles in the air are invisible rather than enhancing the colors of the sky. In additions, clean air is the main ingredient for a lovely summer sunrise and sunset in contaminated areas rather than crisp oranges and reds.

Table 5: Air Pollution Index

Air Pollution Index	Status
0 - 50	Good (Clear sky)
51 - 100	Moderate (Clear sky)
101 - 200	Unhealthy (Greyish)
201 - 300	Very unhealthy (Greyish and orange)
>300	Hazardous (Red)

Sources: API

Clouds

When something large and fluffy is found in the sky to absorb and reflect its wavelengths, solar rays are most easily appreciated. The clouds can be the canvas on which the colors of nature are painted at the right density. Obviously, if the clouds are too dense, it will not move through them with ample light, and the cloud becomes dark and silent. Generally, the most beautiful sunrises and sunsets are observed in the presence of clouds between 5 and 12 kilometres above sea level. Clouds also the chance to appreciate color long after the sun has dipped below the horizon. Even after the sun has set it still show red light that reflects down from high altitude clouds (Cirrus and Altocumulus in particular).

3.6.3 General landscape appearance

Table 6: General Landscape Appearance

A wild, totally natural site of landscape	1 – 2 (Totally natural)
A very natural site or landscape/ seascape. Modifications are semi-permenant, small/minor and restricted to a few dispersed activity area	3 – 4 (Very natural)
A somewhat natural appearing site or landscape/ seascape. Natural elements just dominate over other elements in the landscape/ seascape	5 – 6 (Somewhat natural)
Managed parkland with small to large areas of open space. Built structure and other modification to the natural landscape/ seascape	7 – 9 (Not natural)

Sources: Principle of Landscape Design

3.6.4 Accessibility

Out of all the socio-economic factors, accessibility is the most important. All tourist centres, such as roads , railways, air and water, must be easily accessible via various modes of transport.The road condition requirement is based on Inventory Based Rating (IBR) System stated by Timothy Colling, John Kiefer, and Pete Torola.

Road Condition

Table 7: Road Conditions

Road Condition	Structural adequacy:	Drainage Adequacy:	Surface width
Good	No rutting (>1 in [2.54cm]) or major potholes (>3 ft [0.9cm]) or has >8 in (20 cm) of good gravel	>2 ft (61 cm) difference in elevation between ditch flow line / level of standing water and top edge of shoulder; no secondary ditches.	>22 ft (6.7 m)
Fair	Limited rutting (>1 in [2.54cm]) and/or major potholes (>3 ft [0.9m]) Requiring emergency maintenance during wet periods or has 4-7 in (10 – 18 cm) of good gravel	0.5 – 2 ft (15 – 61 cm) different in elevation between ditch flow in line/level of standing water and top edge of shoulder or >2 ft (61 cm) with secondary ditches	16 21 ft (4.9 – 6.4 m)
Poor	Rutting (>1 in [2.54cm]) and/or major potholes (>3 ft [0.9m]) requiring emergency maintenance	<0.5 ft (15 cm) difference elevation between ditch flow line/level of standing water and top edge of	<15 ft (4.6m)

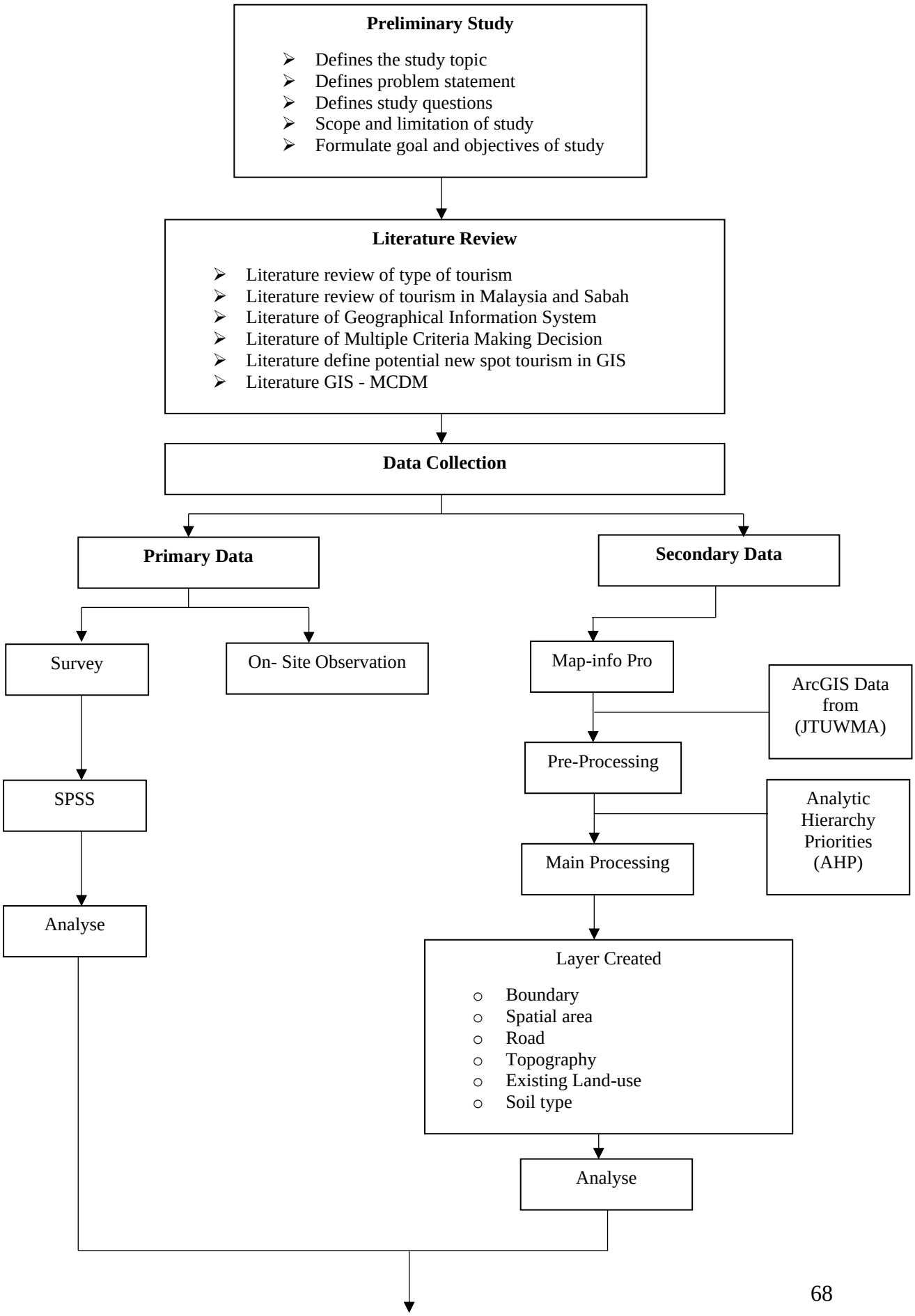
	throughout the year or has <4 in (10 cm) of good gravel	shoulder, secondary ditches may/may not be present	

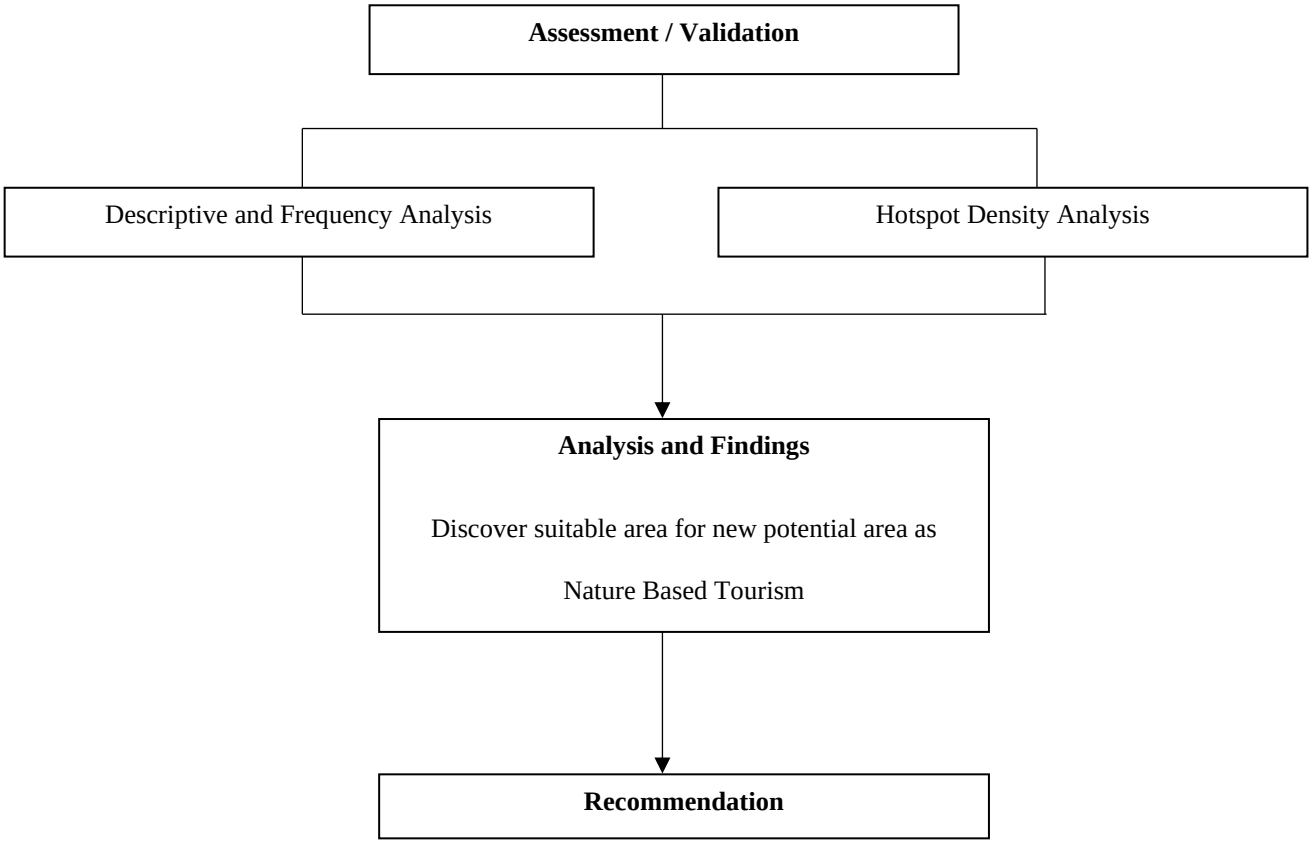
Sources: Road infrastructure

3.7 SUMMARY

This chapter emphasizes the method that being used to run the process from SPSS and Mapinfo to identify the new potential area for nature-based tourism in Karambunai. Besides all the process are illustrated in the methodology flowchart.

Flowchart of Methodology




Assessment / Validation
Descriptive and Frequency Analysis
Hotspot Density Analysis
Analysis and Findings
Discover suitable area for new potential area as
Nature Based Tourism
Recommendation

CHAPTER FOUR

Analysis and Findings

4.1 INTRODUCTION

This chapter highlight on the analysis and findings of the study, which is including the overall recommendations and conclusion. Besides, this chapter shows that the effectiveness of the objective of the study. The data required for the analysis were obtained from analysis from SPSS and Map Info. Data will be presented in Karambunai, Kota Kinabalu, based on certain criteria.

4.2 ANALYSIS AND FINDINGS

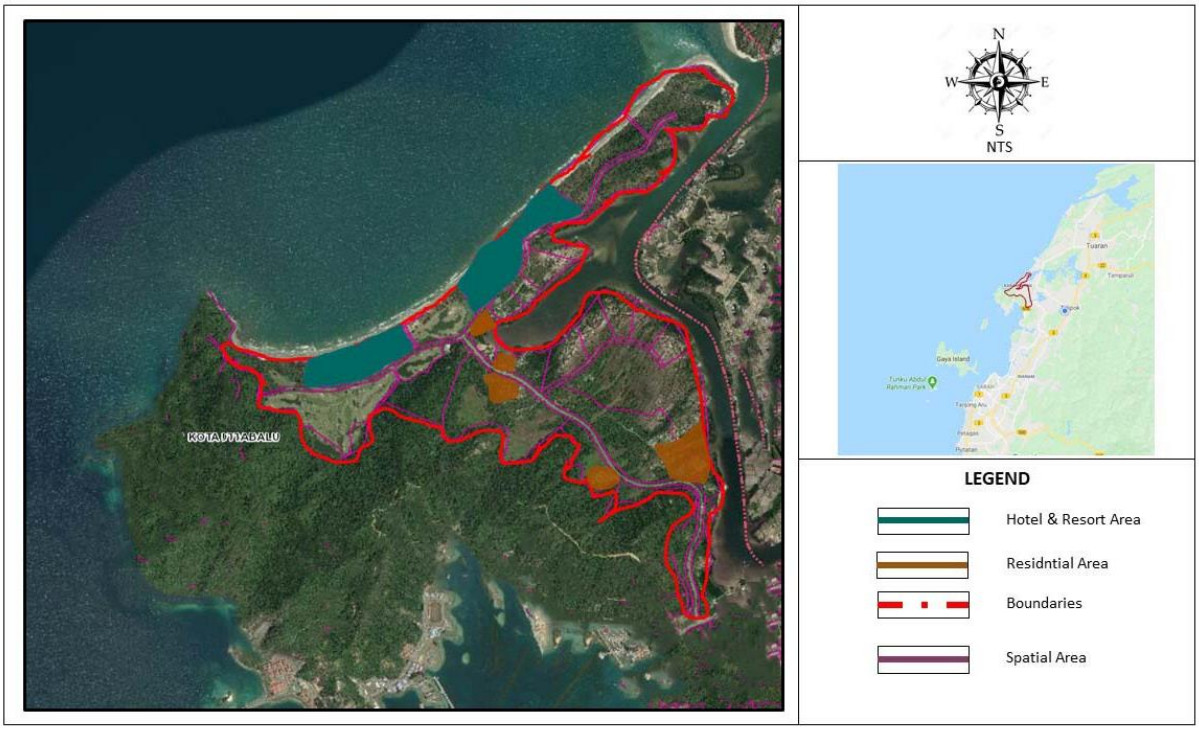
Throughout the process for determining the new spot tourism area in Karambunai, it will be described by two methods that emphasized the study objective that has been formed in chapter one.

1. To identify the potential of an undeveloped area using GIS analysis for nature tourism in Karambunai
2. To analyze GIS analysis locating the potential area for tourism.
3. To recommend GIS in town planning for the tourism sector to attract and improve local and international tourist.

There are a few analysis methods that being gone through out the process. For the first objective is to identify the potential of undeveloped area using GIS analysis for nature tourism in Karambunai. This is requiring gathering all the information including site observations regarding to the area. Based on the data give, some of the area had been develop for resort and residential area. Total of 579.6 hectare about 373.4 hectare are develop and 205.3 hectare are undeveloped. Even the area is cover with resort,

residential, school and clinic but along the way are still a lot of green area. Infact, natural tourism itself is any form of tourism that relies on experiences that are directly linked to natural attractions, including ecotourism, adventure tourism, extractive tourism, wildlife tourism and nature retreats it is shown in figure 14.

Figure 14: Map of Development Area



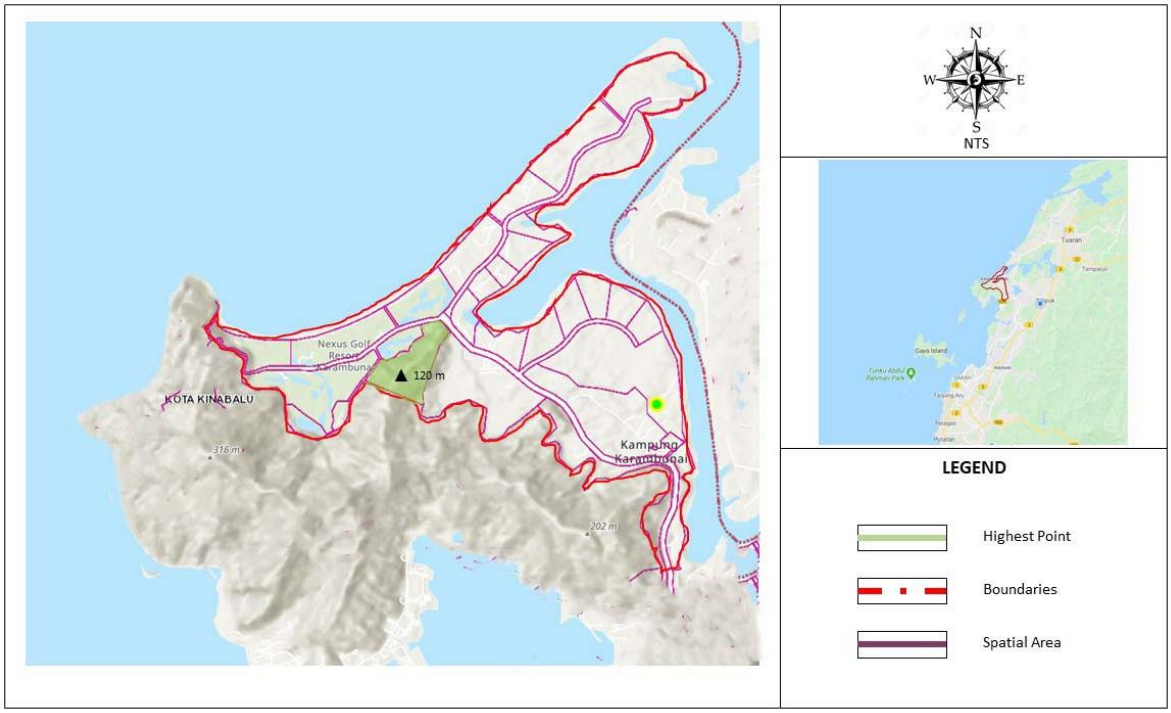
Based on the figure 14 also, the locations shown that the area is surround by nature and most of the area are undeveloped. In related to the site, west part of Karambunai are facing South China Sea and on the east part there are bay and a river flow from the South China Sea. In fact, there are different between seas and oceans. As far as geography is concerned, the seas are smaller than the oceans and are typically situated where the land and the ocean meet. Usually, the seas are partially surrounded by shore. Seas are located on the margins of the ocean and are partially surrounded by shore. The seas are smaller than the seas and are usually found where the land and the water meet. In fact, one of the criteria of nature-based tourism are to preserve the nature while

enjoying the beauty of it. The nature has their own natural attractions. Natural attractions are geological or biological features that are of special interest to the tourism industry. Globally, there are numerous types of natural attractions – no two natural attractions are the same as the particular environmental forces of the local world have influenced them. Apart of the undeveloped area, topography is also one of the reasons to take as nature tourism because the highest point in particular area can be as adventure tourism for certain people.

4.2.1.1 Topography

In Karambunai, most of the area are flat because of the structure of topography attached with beaches. The highest point in Karambunai are 120 m

Figure 15: Map of Highest Point in Karambunai



But, adjoining site of Karambunai, there is a hill that are popular around the local. It was called as Bukit Merah. Even though the hill is not included in Karambunai boundry

but the only main entrance to the hills are from Karambunai site. That is why it was called Bukit Merah Karambunai. It is a 1.6 kilometer loop trail and elevation about 114 m for hiking and walking.

Figure 16: Map of Bukit Merah Trail

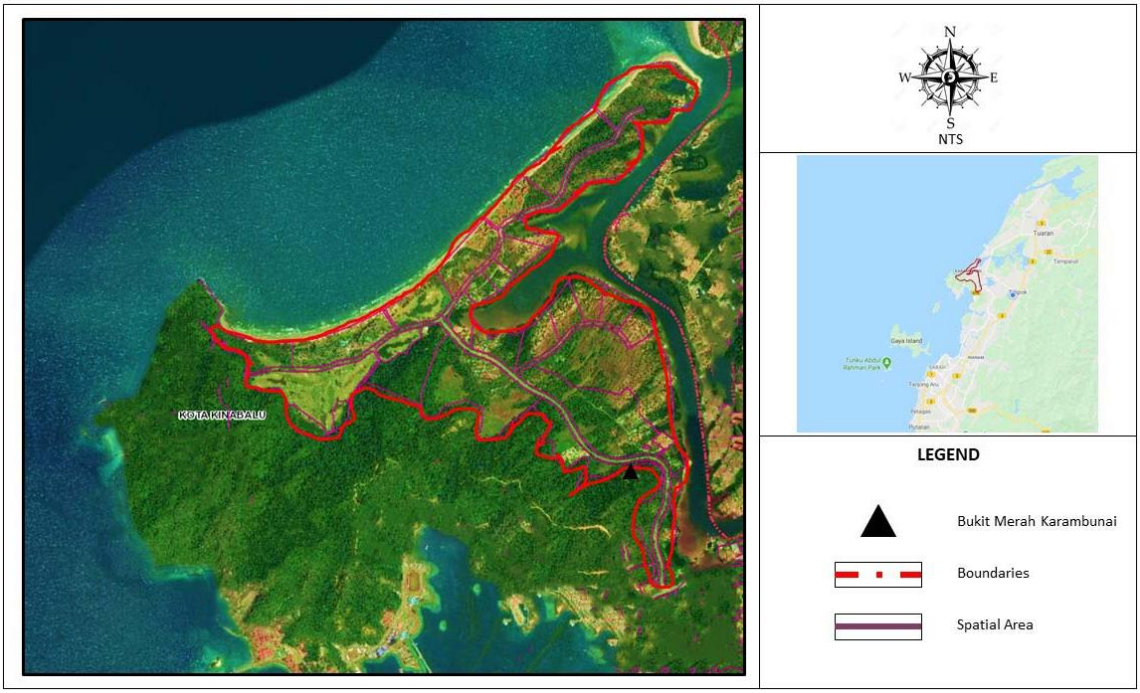


Figure 17: Illustrated Trail in Bukit Merah

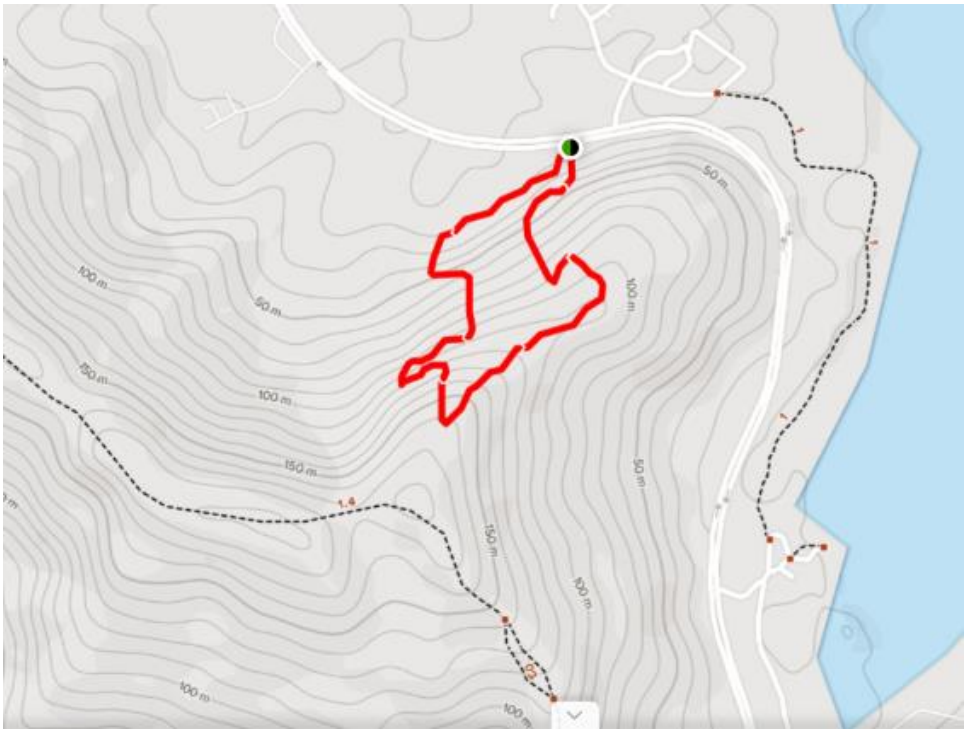
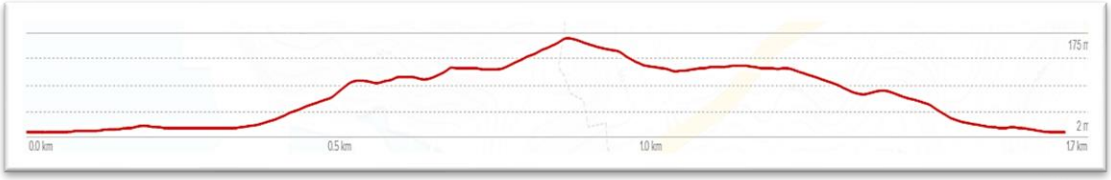


Figure 18: Elevations in Bukit Merah Trails



The figure 17 and 18 illustrated the trail of Bukit Merah Karambunai. As the figure above the topography of the slope can defined as convex slope which is the slope is very steep at the foot, and it tends to be gentle towards the top. The contour lines are also unevenly spaced, but there is a pattern that is just the opposite of the concave slope diagram. At the lower level the distance of consecutive contours is smaller than at the higher level. It shown that the highest peak is 150m. At beginning of the trail are quite steep, but it goes to gradual slope towards the highest peak. The trails are suitable for tourist more on an adventure while enjoying nature. There are two sceneries at the highest peak.

Figure 19: First Scenery in Bukit Merah, Karambunai

The scenery of north part Bukit Merah Karambunai.

Figure 20: Second Scenery in Bukit Merah Karambunai

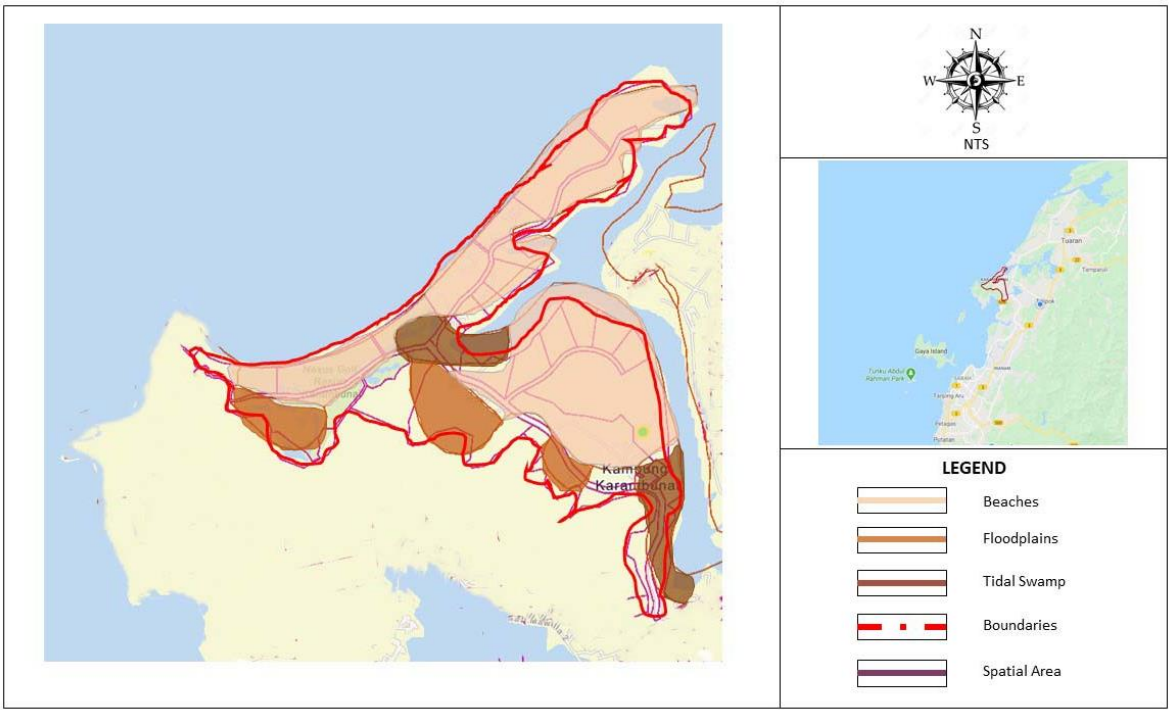
The scenery of west part Bukit Merah Karambunai.

The scenery form north part of Karambunai are more towards beach scenery, while the west part is more into development of adjacent land use and development area.

4.2.1.2 Soil Types

Concerning the geological topography, in soil science, a type of soil is a taxonomic unit. All soils which share some set of well - defined properties form a distinctive kind of land. Soil type is a technical term for soil classification, the science concerned with the systematic soil categorization. Each soil in the world belongs to a given type of soil. In Karambunai, there is three (3) type of soil exist: - beaches, tidal swamp, and floodplains.

Figure 21: Map Type of Soils in Karambunai



Beach type of soil is more known as sandy soil. It is composed of small, weathered rock particles. Sandy soils are one of the weakest soil types for growing plants because they have deficient nutrients and poor water-holding, which makes it difficult for the roots of the plant to absorb water. Such soil type is perfect for the drainage system. Sandy

soil is formed through the breakdown or fragmentation of rocks such as granite, calcareous and quartz. In this area, sandy soil covers the vast space, which is 4.1 hectare.

Thus, the second largest in the Karambunai are floodplain soil. Floodplains usually contain unconsolidated sediments which often extend below the stream bed. These are sand, gravel, loam, silt, or clay accumulations, and are most essential aquifers; the water is drawn from them being pre-filtered as opposed to the river water. As located in the map of soils type floodplains soil are 0.92 hectares.

Moreover, a tidal swamp soil is only 0.72 hectare. A tidal swamp (also known as a form of "tidal wetland") is a marsh located along rivers, coasts, and estuaries that floods and drains the surrounding bay, shore, or ocean through tidal movement.

4.2.1.3 Landscape and Road Conditions

Follow by the next parameter of choosing the potential of new nature tourism area are the landscape and conditions of the road. During the site observation, along the way, there are soft scape plantations, but it looks like there are not taking care of by the management.

Figure 22: Landscape in Karambunai

Apart from the landscaping, the main entrance is also being built archway.

Figure 23: Archway at Main Entrance in Karambunai

For conditions of roads in karambunai, it is not well maintained because there is a lot of hole along the streets.

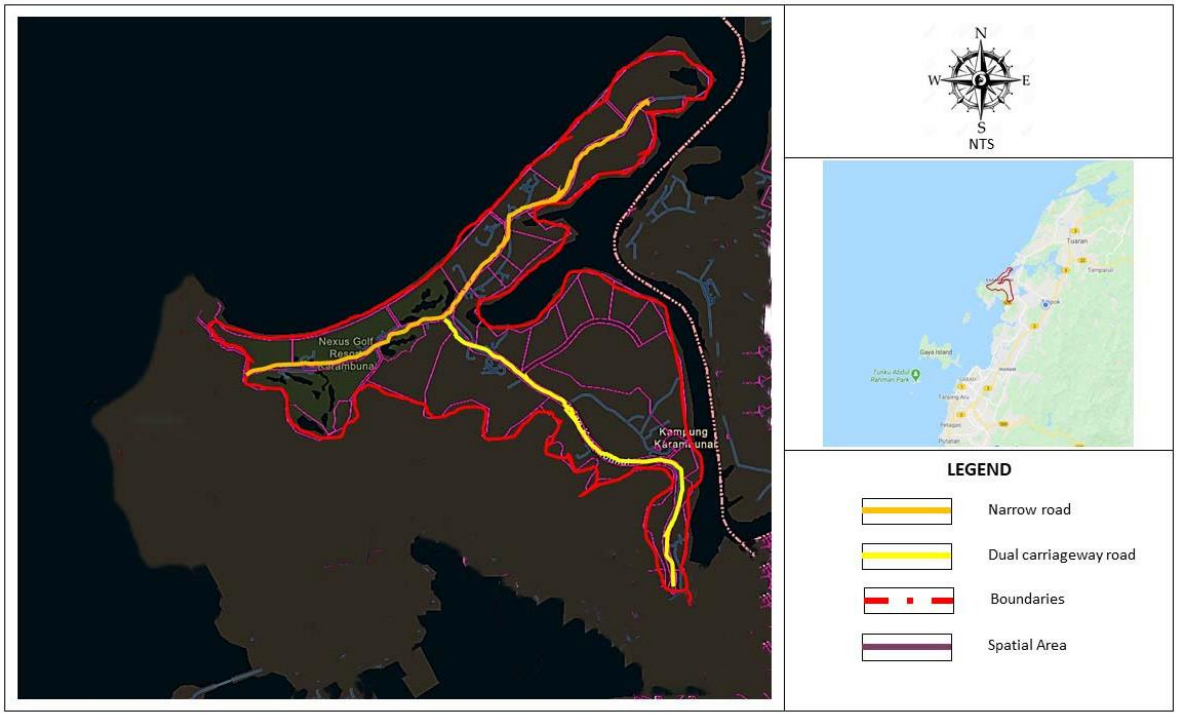
Figure 24: Road Conditions in Karambunai

Also, the road becoming narrow when reach towards the end of the roads and less lighting compare to the main entrance road which have dual carriageway.

Figure 25: Road Condition in Karambunai

As shown in map figure 26, the dual carriageway is only from main entrance towards three junctions. And, there are least of number lighting toward narrow road. This can be dangerous for those people going to Karambunai at night.

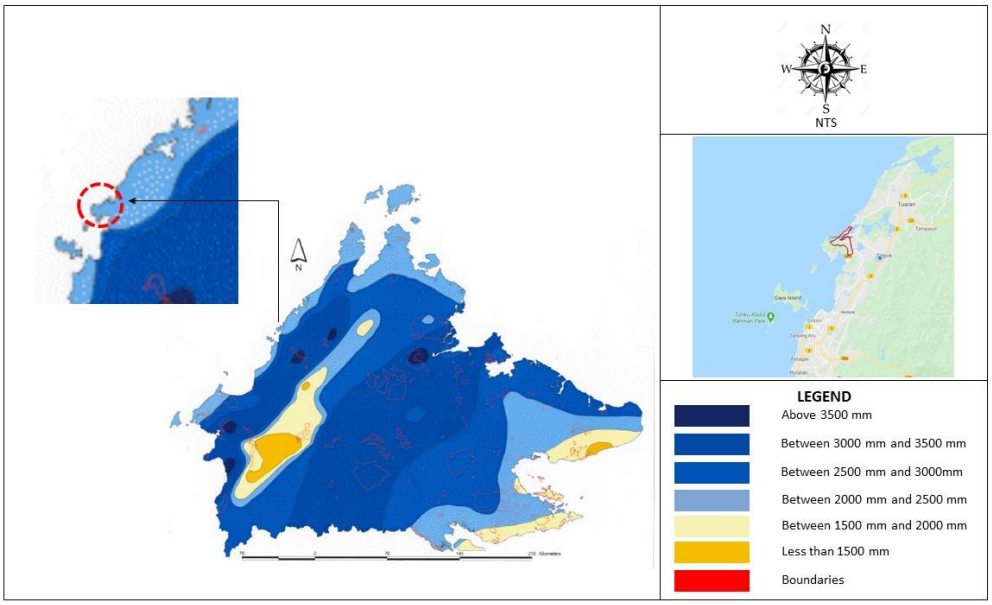
Figure 26: Map of Different Road in Karambunai



4.2.1.4 Rainfall Average

Moreover, in line with the attributes of nature tourism, the weather also one of the essential characteristics that support nature-based tourism in Karambunai. According to CAIMSS (Conversation Area Information and Monitoring System Sabah), rainfall in Karambunai is between 2000 mm and 2500 mm.

Figure 27: Rainfall Average in Karambunai



As the station for rainfall Karambunai nearest are located at Tuaran Agr. Stn stated that mean annual rainfall (mm) are 2140 mm. The timing of the dry month is February. March and April, in contrast, the peak timing for rain are Jun and October. Even though in Karambunai site have floodplain area but until now the area never hit by the flood.

Follow with the second objective, which is to analyse GIS analysis locating the potential area for tourism. Throughout the process, GIS analysis being done in Map info and MCDM (Multiple Criteria Decision Method) by conduct a survey toward local people. There are a few questions provided to gather opinion data from the local people and international tourist, such as gender, age, address, etc. There are 162 responded to the survey about Karambunai. There are few analyses that is run to get a reasonable result.

4.2.1.5 FREQUENCY AND DESCRIPTIVE ANALYSIS

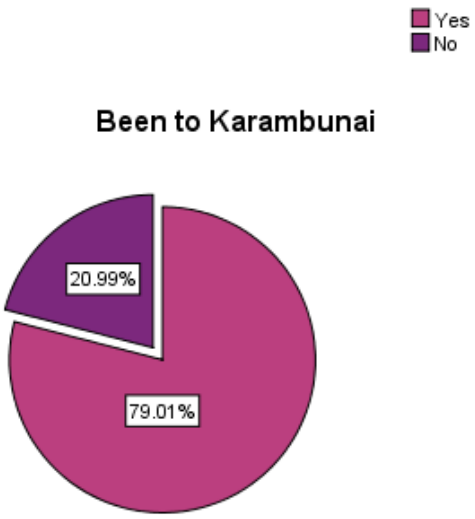
The first analysis is frequency analysis. Frequency analysis is a descriptive statistical approach that displays the number of occurrences of each answer selected by the respondents. This frequency analysis is run to see how many females and male going to Karambunai. Also, the frequency they have been to Karambunai.

Table 8: Frequency to Karambunai between Gender

		Frequency	Percent
Valid	Females	118	72.8
	Males	44	27.2
	Total	162	100.0

Based on the table, it shows that females are likely to go to Karambunai rather than Males. Females obtains 72.8% while males only 27.2%.

Pie Chart 5: Respondent been to Karambunai



From the 162 respondent 79% stated that they already been to Karambunai and only 34% never been to Karambunai. Clearly that Karambunai is a well-known place throughout Malaysia.

Table 9: Descriptive Statistics

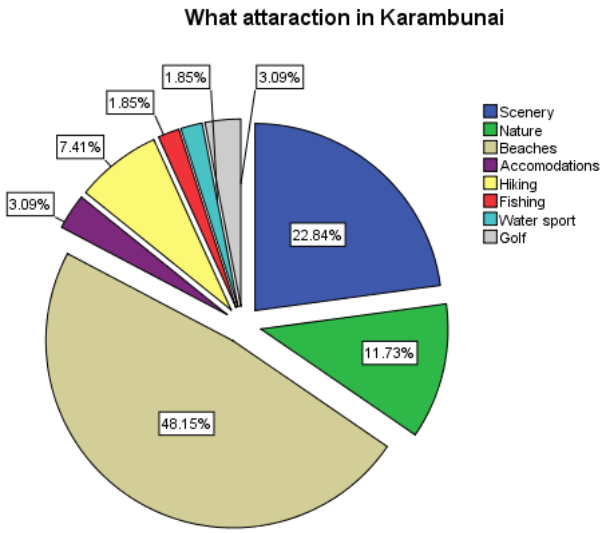
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Been to Karambunai	162	1	2	1.21	.408
Frequency to karambunai	162	1	3	1.94	.633
Valid N (listwise)	162				

Moreover, as shown in the table, tourist been to Karambunai maximum two times while the mean frequency for each tourist is 1.94.

Subsequently, according to tourist opinion, they agree that Karambunai more likely becomes a beautiful place to attract with nature.

Pie Chart 6: Attraction in Karambunai



The pie chart shows that 48.15 per cent believe they attract the beach with its attractiveness. Follow by 22.84% for scenery and 11.73% for nature. It shows that the area surrounded by a beautiful view.

Even if, Karambunai has well known among the tourist, but there also have there on the barrier. Among 162 respondents there stated that there is difficulty to go the site.

Table 10: Percentage Mode of Transport to Karambunai

		Frequency	Per cent
Valid	Private Transport	121	74.7
	Public Transport	1	.6
	E-hailing	4	2.5
	Others	36	22.2
	Total	162	100.0

In relation to the table, it shows that about 74.7% are using private transport to the site and only 0.6% using public transport. It is because based on-site observations, none of the public transport entering the site and there is no bus stop even there in a residential area in the site. Other transport more probably using a bicycle or walking respond by the local residents.

In additions, experienced by the tourist, only 32.1% stated that barriers occur while staying in Karambunai. One of their reason is because of the lighting along the road during the night. And another 67.9% do not have any barriers. As well as the facilities, only 24% tourist felt the facilities in Karambunai are not functioning well

Table 11: Barries occur in Karambunai

Barries occur in Karambunai

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	52	32.1	32.1	32.1
	No	110	67.9	67.9	100.0
	Total	162	100.0	100.0	

Table 12: The facilities function

Is the facilities function

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	138	85.2	85.2	85.2
	No	24	14.8	14.8	100.0
	Total	162	100.0	100.0	

4.3 ANALYTIC HIERARCHY PRIORITIES (AHP) COMPARE WISE

Figure 29: Result of AHP

Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Cat		Priority	Rank	(+)	(-)
1	Existing land use	68.1%	1	27.8%	27.8%
2	Soil types	13.9%	2	1.7%	1.7%
3	Topography	13.7%	3	5.1%	5.1%
4	area	4.3%	4	2.0%	2.0%

Number of comparisons = 6
Consistency Ratio CR = 7.4%

Sources: AHP calculation website

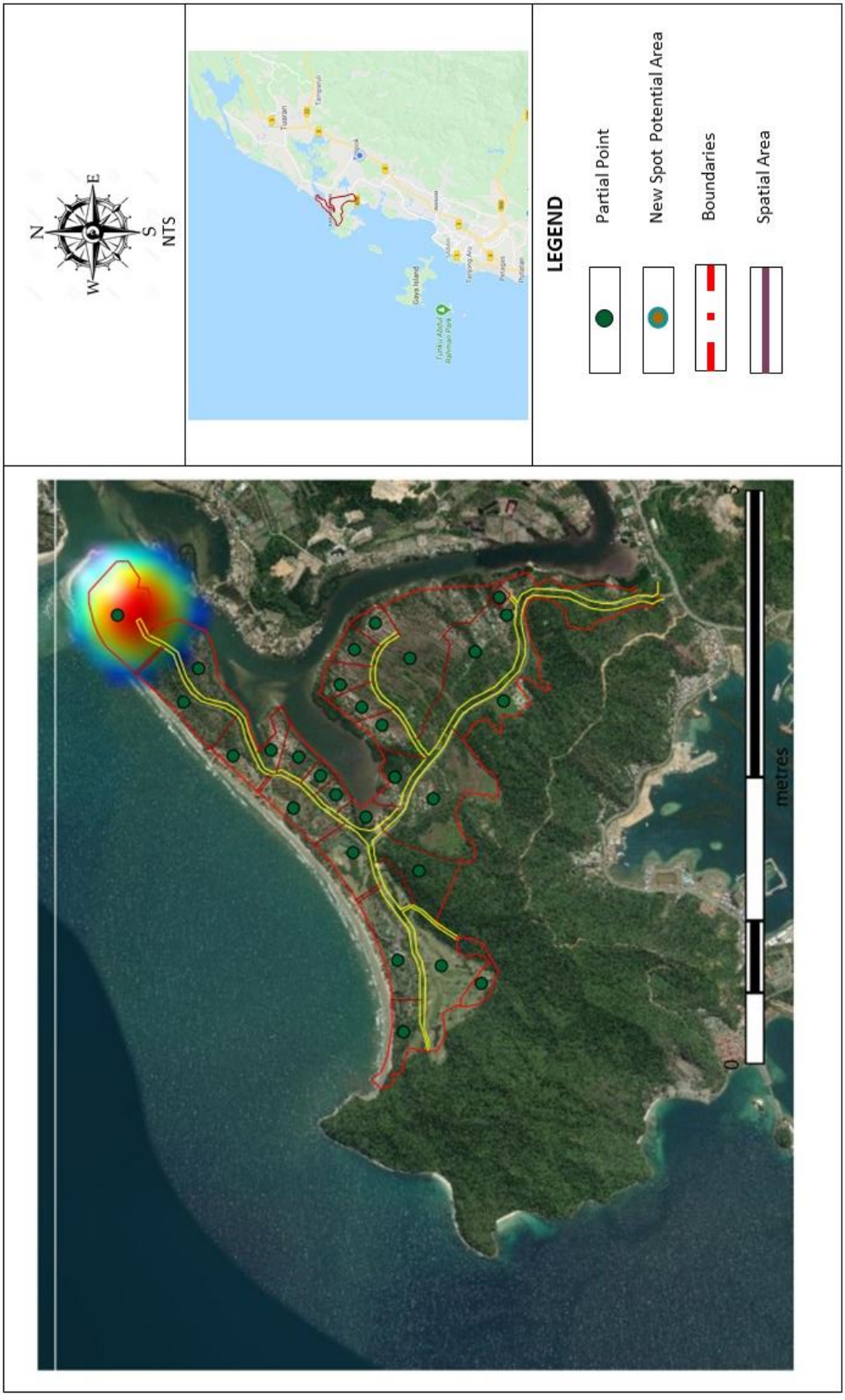
There is four-component that was comparing which is existing land use, soil type, topography, and size of the area. The result of the comparison is being shown in figure 29. As it runs the process, existing land use is being chosen of the highest-ranking, it is because this research is to find a new spot potential area to develop as nature-based tourism. The second rank is soil types. In Karambunai there is three types of soil which is beaches soil, tidal swamp and floodplains. Based on the survey, most of the respondents stated that Karambunai is suitable to develop as beach tourism.

The third rank is topography. The topography is important to align the beach tourism in the area because most of the beach area a flat. And the last rank is the size of the area. Size of the area is not important among the four components.

4.4 HOTSPOT ANALYSIS

Aside from the descriptive and frequency analysis, hotspot density analysis also being conduct using Mapinfo software. Hotspot analysis is spatial analysis and mapping technique that aims to identify clustering of spatial phenomena. These spatial phenomena are shown as points on a map and refer to the positions of events or objects. The Hotspot method is also a technique that measures sample proximity (or density) in a certain region. The value of each raster cell in the output is an estimate of the sample frequency or density within the distance of that cell. In this analysis also Kernel Density Estimation (KDE) was involved. KDE model generates Z scores and P values (using data from Getis-Ord Gi *). For a case, a high Z score and a small P value indicate a significant hotspot while a low negative Z score and a small P value indicate a significant cold spot. The higher the Z score (or lower), the more pronounced the clustering and vice versa. Therefore, the kernel density calculates a "magnitude per search radius" from a point that uses a kernel function to suit a smoothly tapered surface at each point. The kernel estimation function determines the value for each grid node. The kernel function works on a distance - based function like the opposite distance approach, which is usually used by the search radius. The density method supports simple frequencies, such as: unified, triangle, epanechnikov, quartic, triple, gaussian and cosine; or a variety of kernel density measurers The method of estimating kernel density is commonly used in numerous disciplines primarily in crime hotspot mapping health research, injury prevention, distribution of biodiversity, weather pattern risk assessment management.

Figure 28: New Spot Nature- Based tourism in Karambunai



After running the hotspot analysis figure 30 shows the result that being produces. It proved the new potential area that can be developed as a nature tourism spot in Karambunai. It is because of the place are more strategic than the other area by considering more aspect.

4.5 SUMMARY

This chapter has portrayed the analysis and findings of the study in detail the study's research categorized into the analysis of qualitative and quantitative data. The study's results classified into the qualitative and quantitative analysis of data. The results were expressed through relevant charts and tables to show the relationship between various aspects of the data acquired. The analysis began with the area spatial in Map Info as the primary analysis and supported by a questionnaire survey analysis of the study. Data obtained from the Jabatan Tanah dan Ukur and constructed in the table of MapInfo. Thus, the data for the survey were analyzed using SPSS to identify the relationships between variables. A summary of findings explained at the end of this chapter. This chapter has found out that the best spatial to develop as a new tourism area is at the edge of the area. It is due to the locations and the structure of topography in that area. The survey shows that 48.1% accepted that Karambunai is more important for the beach, 37% for the scenery, 19% for wildlife, 12% for hiking and 16% for others. In short, this chapter has identified each of the components of the questionnaire and interviews.

CHAPTER FIVE

Recommendations and Conclusion

5.1 INTRODUCTIONS

This chapter summarizes the findings of the research which sets to investigate and evaluate the suitability the potential area to be as a new spot of nature tourism. In line with the findings of the study, several recommendations will be outlined. They will be focusing on the measures to enhance the degree of participation of the local tourist and result provided by Map Info. All recommendations aim to explore the potential area in Karambunai, Kota Kinabalu Sabah, not only for boost up the tourism sector in Kota Kinabalu, but also a source of references and strategics to be learnt for the local authorities in Malaysia.

5.2 KEY FINDINGS

There are several key findings to recapture the analysis and conclusions in Chapter 4;

5.2.1 SITE PREFERENCE FACTOR

Several factors are taking account of the selected site for new nature-based tourism. The first factor is the current land use. As being observed, the site is not 100% undeveloped area. There are about 373.4 developed area and remaining 205.3 undeveloped area. The developed area is including the Karambunai Resort, Karambunai Camp, residential area, clinic and school.

Next, the topography of the site is mostly flat, but there is spatial of an area about 26.33-hectare are the highest point, and it located longitude 116.104572°, latitude 6.107296°. The highest point in this area is not suitable to be as a new potential area in Karambunai because of the type of soils and the topography. The type of soil in that area are floodplains.

In fact, apart from floodplains soil, sandy and tidal swamp are also existing in Karambunai site. But the sandy soils are cover almost 4.1 hectare, floodplains 0.92 hectare and tidal 0.72 hectares. Among these 3 types of soil, the best for being as nature-based tourism are beaches or sandy soil. It is because of some international tourist is awe to make their skin become tan. But for the local tourist or residents, it more on enjoying the view as it can help to reduces stress. Also, Beaches shield residents living near the ocean by acting as a buffer against the strong winds and waves of severe storms or rough seas.

Landscape and road conditions are also being value to ensure the new potential area for nature tourism. As Karambunai Resort well known among some group people there are

soft scape structure along the main road. Besides, there also build archway to feel a sense of welcoming.

The Sense of Space brings together space and body to demonstrate that space is a fluid, meaning-loaded place that represents the distinctive character of human embodiment in the full range of its moving, visual, cognitive, verbal, developmental and social capacities. Besides, the term sense of place has been variously used. It is a complex, multidimensional concept used to describe the people-space relationship. It is a trait that some geographic locations have, and some don't, while it's a feeling or impression held by people (not by the place itself). This is often used about those features that make a place special or unique, as well as those that foster a sense of authentic human connection and belonging. Others, including geographer Yi-Fu Tuan, pointed to non-"positive "senses of location, such as fear. Some students and educators engage in" place-based education "to improve their" sense(s) of place "and generally use different aspects of the site as educational tools. The concept used in urban and rural studies of the place - making and place - making of communities in their communities or their homelands.

The conditions of road in the site are not in good terms. It is because of many holes that occur along the way. Some of the local residents stated that it is because of heavy vehicle in out from the area. Clearly, accessibility is one of the important criteria to develop or discover a new potential nature area. The carriageway of the road is also unproportionate. There is dual carriageway from the main entrance towards the three junctions. After the intersections, the road becomes narrow and only a single lane with a width of 2.24 meter. It can only fit two vehicles sedan type.

The facilities in Karambunai only cater to the Karambunai Resort. Apart from the area, there are no facilities available since the area are permanent resident live in Karambunai area. Indeed, the road lighting is also not enough to cater to all the area. The only area that provided road light is along the main road. It is dangerous for a tourist coming at night.

Public transport is also one of the issues to be tackle. Based on the resulting questionnaire, 74.4% stated they were using private transportation, 22.2 % for other that are a class by carpooling, bicycle, or walking. 2.5% by e-hailing and only 0.6% are using public transportation. The reality in Sabah, there are lacking the public transportation system. None of the bus stop provided in Karambunai, it is the main reasons why public transportation is rarely used in Sabah, especially in Karambunai site.

5.2.2 RESPONDENT OPINION TOWARD TOURISM IN KARAMBUNAI

All the respondent is from entire Malaysia, including peninsular and west Malaysia that have been to Karambunai. 78% set out that Karambunai attractive by the beach. 37% for scenery, 19 % for nature, 12% for hiking, accommodations, and golf 10% and fishing and water sport are 6%.

It can be concluded that Karambunai is suitable to be as nature-based tourism. In truth, Kota Kinabalu sunset has to be awarded as a top 8 sunset by the Huffington Post's list in 2014.

In addition, 97.5% respondent stated that Karambunai have the potential to develop as a nature-based tourism, and only 2.5% are unagreed to develop Karambunai as nature-

based tourism due to their distance and facilities. The location of Karambunai is far from the city. It takes about 32 minutes for 26.5 kilometres. Moreover, 63% voted Karambunai can develop as beach tourism, 42% for adventure tourism and culture tourism and 15% for sports tourism.

Since Karambunai can be as adventure tourism due to their topography near to Bukit Merah Karambunai but the beach tourism has the most voted because the area is attached with south china sea and the three a is a bay. The geological structure is not straight, but it is the concave shore which is more attractive. Since the shape is like an island, the tourist can experience and enjoy the shore form beginning until the end of the shore without any obstacle.

Comparatively, 83% agreed that tourism help to develop the local economy. 30% agreed that tourism creates many jobs and income for local residents. 17% tourism preserves and develops local culture. Tourism helps to boot international culture exchange and enhance the quality of local businesses get the same 11% and another 10% votes tourism can increase the knowledge of local residents. Without a doubt, there are estimated about 11.82 hectares of local resident in Karambunai. Since the Karambunai Resort being built it boost up the state and economy of local residents.

5.3 RECOMMADATIONS

5.3.1 RECOMMADATIONS FOR SABAH'S TOURISM SECTOR.

One of the significant issues that have been existing since the past decade are the outsider perceptions toward Sabah. Some people still thinking that Sabah development is left behind, but the reality is Kota Kinabalu are the same level as an urban area in Kuala Lumpur. Some of them assume that Sabah did have any road and transportation system. Even though Sabah's did not have railways due to the topography and proper public transport, the development is still can define as develop state compare to other countries in peninsular Malaysia. It shows that some people have third class mentality regarding these issues. Also, they think people in Sabah are still live on trees and go to other places by boat. Undeniable there is some part of Sabah that again using the boat to cross the river. It is because of un proper planning in Sabah. Plainly, until this time, there is no guideline provided by the local authority to plan Sabah. Besides, peninsular Malaysia has different law from Sabah and Sarawak. Peninsular Malaysia uses the Town and Country planning Act 172, while Sabah uses Land Ordinance Sabah Cap 68.

Correspondingly, in Sabah, most tourism operators operate as small businesses. Tourists in the region receive and provide tourist-related services. Over the last decades, their operations and growth have been considered stable and productive. Nevertheless, since 2010, the pace of development in the tourism sector in Sabah has not balanced the fast-growing number of tourists arriving. The Government has acknowledged these problems and has continued to contribute to the development of the tourism sector by upgrading facilities such as airport expansion in major tourist cities and towns; assisting tourism operators in the development of new attractive tour packages; enhancing the professional knowledge and skills of industry participants, providing training in tourism

and courses in tourism. However, revenue growth in the industry has remained negative since 2013, with a total of 33 tourism operators shutting down their business since 2015. It is known that there may be issues that tourism operators will face and need to address on their own.

There are currently 125 registered tourism operators in Sabah, situated in five major cities of Sabah, namely Kota Kinabalu, Kudat, Sandakan, Semporna and Labuan. Kota Kinabalu is Sabah's capital city. It is a coastal town located at the bottom of the South China Sea on Borneo Island. The Kinabalu National Park, Mount Kinabalu, which gave the city its name, was declared a World Heritage Site in 2000. Besides that, there are many other tourist attractions in and around the city that make it a major tourist destination.

On the other hand, Kudat is a town located at the northernmost point of Borneo Island. It discovered 190 kilometres north of Kota Kinabalu, about three hours' drive from Kota Kinabalu. The tourism industry here benefits from the leisurely lifestyle and charming community of native peoples, as well as fresh seafood. Sandakan located on the northeast coast of Borneo Island. The city is famous for its history, culture, wildlife conservation centre, natural caves and beautiful islands in the region. Semporna is on the east coast of Sabah. The nearby small islands make it one of the most famous diving destinations in the world, such as Sipadan Island.

Based on the issued stated, it shows that most of the tourism is affected by specific problems. To overcome the issue, the local authority should try to help the domestic tourism and avoid any of the political issues.

5.3.2 ACTIVE PARTICIPATION FROM LOCAL AUTHORITIES

The active participation from local authorities is needed in tourism sector for not only Karambunai but the whole Sabah area. It is because of local authorities have power to boost up the tourism sector in certain area. Now Covid-19 has hit all over the world, all sector especially tourism, has hard time to recovering. Sabah state has recommended to cut off the price for almost tourism activities so that the tourism can recover and raise economy sector. It a good decision made by local authorities to improve tourism sector. A financial allocation of RM22mil has been earmarked for reviving the tourism sector. According to Star Plus news (21 June 2020), Deputy Chief Minister of Sabah, Christian Liew, stated that of the sum, RM10mil will be used to upgrade tourism infrastructure, RM7mil for offsetting the 50% discount on entrance fees to tourist attractions and the remaining RM5mil is meant to finance the local hotel industry's promotion incentives. It the good strategic to build up the tourism sector in Sabah.

5.3.3 EFFICIENCY OF PUBLIC TRANSPORT

The main issues that need to be tackled by the local authority are the public transport in Sabah not only in Karambunai. Local authority requires to replan the public transportations planning to ensure that all public transport is being covered all-around residential area in Karambunai and all entire Sabah. Therefore, the location and proper design of the bus stop are considered.

The main public transport in Sabah are buses, and mainly it is estimated that about 2,500 pirate taxis operate in the Sabah state in various districts. Some of the pirate taxi drivers provide necessary services from small towns to villages that are currently not provided with an adequate public transport system. There are plans by the State Commercial Vehicle Licensing Board (CVLB) to offer public service vehicle licenses to qualified

pirate taxis in a bid to regularize the service and to raise the standard and reliability of the service provision. While taxi service is provided, most people prefer busses because of the cost. Indeed, nowadays e-hailing are being imposed, and the taxi usage is less responsive. It is the right decision if the price of a taxi can be reduced so that the economy for driver taxi can boost up like before.

Thus, some part of Karambunai is not enough streetlight. It can be dangerous for people and tourist go there. It is not only applicable to Karambunai site, but most of the street in Sabah are dim.

In a nutshell, the local authority needs to plan more systematic planning to align with the National Physical Plan.

5.4 SUMMARY

To sum up, this method of determining new potential tourism can be used in other location that need to be develop. It can be one of main attraction in the area. In additions, this method is only using survey and Geographical Information System to determine the potential location. It is a good to used more than one software and details site analysis to ensure the potential of the area to boost up to be world tourism attractions.

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APPENDIX

The survey of citizen perception on Karambunai, Sabah

My name is Ariffah Binti Ahliun final year student from International Islamic University Malaysia (IIUM). I am running a research to study the factors influencing the new spot tourism in Karambunai, Kota Kinabalu Sabah. The topic is a vital aspect in our life, and as such we think that it is important focus for the future development and quality of life improvements.

* Required

1. Name: *

2. Age: *

3. From: *

4. Sex: *

Mark only one oval.

- ◯ Male
- ◯ Female

5. Have you been to Karambunai, Sabah? *

Mark only one oval.

- ◯ Yes
- ◯ No

6. Frequency to Karambunai?

Mark only one oval.

- ◯ Never
- ◯ 1 - 3 times
- ◯ 4 or more

7. Accessibility to Karambunai?

Mark only one oval.

- ◯ Private Transportation
- ◯ Public Transportation
- ◯ E - hailing
- ◯ Other: _____

8. What are the attraction in Karambunai?

Mark only one oval.

- ◯ Scenery
- ◯ Beaches
- ◯ Nature
- ◯ Accomodations
- ◯ Recreation
- ◯ Hiking
- ◯ Fishing
- ◯ Water sport
- ◯ Golf
- ◯ Other: _____

Karambunai (sources : Youtube)

http://youtube.com/watch?v=ZWWzsrmgMsc

9. Are the tourism facilities in Karambunai are sufficient and well function?

Mark only one oval.

- Yes
- No

10. What is your opinion about tourism in Karambunai? *

Mark only one oval.

- Tourism helps to develop local economy
- Tourism helps to boot international cultural exchange
- Tourism creates a large number of jobs and income for local residents
- Tourism preserves and develops local culture
- Tourism enhances the quality of local businesses
- Tourism increases the knowledge of local residents
- Other: ______________

11. Do you think Karambunai has the ability to develop tourism in international level? *

Mark only one oval.

- Yes
- No

12. Do you encounter any barriers when engaging in tourism activities in Karambunai area?

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ If yes, state a reason
- ◯ Other: _____

13. Suggestion to develop Karambunai in future as *

Mark only one oval.

- ◯ Culture tourism
- ◯ Adventure tourism
- ◯ Beach tourism
- ◯ Sport tourism
- ◯ Other: _____

14. Do you think you will visit Karambunai again?

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

15. How did you hear about Karambunai?

Mark only one oval.

- ◯ Recommended by friends or relatives
- ◯ Tourism trade fair
- ◯ Internet
- ◯ Travel agency
- ◯ Other: _____

Site Visit