The Use of Choice Modelling in Assessing Tourists Destinations:

A Case Study of Redang Marine Park (RMP) Malaysia

by

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ABSTRACT

This study employs the Choice Modelling (CM) Technique, in particular the Contingent Ranking (CR) method, to measure the economic value of the Redang Marine Park (RMP) system in Malaysia. The reason for using CR is to understand which islands in the RMP system the tourists prefer. Knowing the islands' ranking is crucial for the planning and development of this particular island as a tourism product and destination, and at the same time, for maintaining the islands' ecosystem as a protected area.

The study is divided into three major components. The first investigates destination choices amongst tourists. In this component, the attributes of interest include choices of island, types of accommodation available at the destination, facilities provided at the place of accommodation, distance of accommodation sites to the beach, and types of transportation used to reach the destination. These attributes are measured using the 3-day/2-night (3D2N) package prices offered as holiday packages to tourists.

The second component measures the importance of environmental attributes, namely the status of available fish and coral species, the numbers of nesting turtles and the degree of congestion that the tourists experience while participating in water activities such as snorkelling and diving. These attributes are measured through the conservation fees collected by the park authority from tourists visiting RMP.

The final part of this study is concerned with the members of local community on the island. Their perceptions towards tourism, their readiness to participate in tourism activities and their attitudes towards MP development are issues explored in this study.

A total of 189 local tourists and 94 foreign tourists were interviewed in this CR study, while 200 local residents were interviewed in the community study.

This study finds that, in terms of the choice of destination, different islands do matter and are statistically significant for both local and foreign tourists. In terms of overall ranking, both local and foreign tourists rank Kapas as their first choice, while Tenggol ranks last. The main attributes in the destination choice are statistically significant for local and foreign tourists, except for facilities provided at the sites of accommodation. WTP for almost all attributes concerned are higher for local tourists than for foreign ones, except for the reduction in distance between the accommodation sites and the beach. Specifically, the improvement in terms of types of accommodation ranges from RM113.33 to RM205.50 for local tourists and RM136.50 to RM169.71 for foreign tourists. WTP for improved travel time from the mainland to the island ranges from RM0.43 to RM1.75 for the domestic tourists, as opposed to the values given by foreign tourists, ranging from RM0.29 to RM1.50. WTP for the option of accommodation situated closer to beach areas ranges from RM3.14 to RM11.25 for local tourists. These values are lower than WTP given by foreign tourists, which range from RM10.55 to RM15.57. Further analyses on marginal WTP are also discussed.

Regarding environmental issues, this study finds that all attributes are statistically significant for both local and foreign tourists. The local tourists' WTP for changes in the number of fish and coral species ranges between RM4.31 to RM6.70, while foreign tourists' WTP ranges between RM3.50 to RM6.73. As for the number of nesting turtles, locals are willing to pay between RM3.78 and RM4.76 while foreign tourists are willing to pay between RM2.28 and RM4.14 for different attribute levels. Finally to avoid congestion while participating in the water activities, WTP by locals ranges between RM2.80 to RM13.37, and WTP amongst

foreign tourists ranges from RM1.99 to RM11.37. Similar to the destination choice, further analyses on marginal WTP are also discussed.

Regarding the local community, this study deduces that community members perceive the tourism industry positively and are willing to participate in tourism-related activities. However, they have some reservations surrounding the presence of tourists in their village, based on social and religious grounds. Their attitudes toward the development of the MP are also positive.

Finally this study highlights the economic potentials that players in the tourism industry may tap and capitalize upon, mainly through practising pricing mechanisms in selling and promoting holiday packages in RMP. To the park managers and local authorities, this study may suggest some guidelines for future development processes. Such processes should consider selective development as an option while safeguarding the natural beauty of RMP. The possibility of revising the current conservation fee to resemble tourists' WTP is also highlighted in this study. Finally, the study recommends the implementation of price discrimination and peak-load pricing in charging and collecting conservation fees as methods, not only for the purposes of increasing revenue but also for acting as tools to monitor and control the number of tourists to RMP.

Keywords: Economic Valuation, Stated Preferences Technique, Contingent Ranking Method, Ordinal Regression, Marine Parks, Sustainable Development.

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LIST OF ABBREVIATIONS

CE	Choice Experiment
CM	Choice Modelling
CNPPA	IUCN Commission on National Parks and Protected Areas
CR	Contingent Ranking Method
CVM	Contingent Valuation Method
DMPM	Department of Marine Park
DOE	Department of Environment
DOFM	Department of Fisheries Malaysia
DTRP	Department of Town and Rural Planning
FPA	Fisheries Prohibited Area
GLM	Generalized Linear Models
IUCN	The World Conservation Union
MOCAT	Ministry of Culture, Arts and Tourism Malaysia
MP	Marine Park
MPA	Marine Protected Area
PLUM	Polytomous Universal Model
RM	Ringgit Malaysia
RMP	Redang Marine Park
RMPc	Redang Marine Park Centre
RUM	Random Utility Model
RUT	Random Utility Theory
SEATRU	Sea Turtle Research Unit
TCM	Travel Cost Method
UNEP	United Nations Environment Programme
UNWTO	World Tourism Organization
WTP	Willingness to Pay

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Chapter 1: Introduction

1.0 Background

Tourism is the world's largest and most diverse industry. Many nations rely on this industry as a primary source for generating revenue, employment, economic growth and infrastructure development. Malaysia is not exempted from this trend. Tourism has become an important industry in Malaysia since 1980s (Kadir, 1995, 1997; Ministry of Culture, Arts and Tourism [MOCAT], 1996a; Tan, 1991). In 1985, income from the tourism industry was just RM1.73 billion. The income had increased to RM4.41 billion in 1990, and tourism became the third biggest contributor to foreign exchange earning, in the same year. The growth of the tourism industry was quite favourable and continued with an upward trend. In 2001, tourist arrivals increased to 12.7 million with a growth of 25% compared to 2000 (10.2 million) generating tourist receipts of RM24.2 billion. In 2002, Tourism Malaysia claimed that the industry was the second largest industry and provider of jobs in the country. In 2009 the industry kept on expanding with an upbeat trend. The tourist arrivals in that year had increased to 23.6 million with RM53.3 billion contribution to the nation (Tourism Malaysia, 2010).

Tourism in its simple term is travel for recreational, leisure or business purpose. The World Tourism Organization (UNWTO) definition of tourism as quoted in Goeldner, Ritchie and McIntosh (2000, p. 16) is: "Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes". While visitors are defined as "persons who travel to a country other then the one in which they generally reside for a period not exceeding 12 months, whose main purpose is other then the exercise of an activity remunerated from within the place visited". Furthermore, the term visitor can be subdivided into two categories:

- Same-day visitors – those who do not spend the night at the destination or the country visited.
- Tourists - those who stay at the destination or country for at least one night; for example, a visitor on a two-week vacation.

Thus, in this study, the terms visitors and tourists are used interchangeably while the same-day visitors represent the day trippers at the destination.

In short, tourism industry involves the production and consumption of a range of tangible and intangible resources which overlap with and connect to the daily lives of local communities (Swarbrooke, 1999; Tosun, 2002; Tosun and Timothy, 2003). It also includes the production and consumption of tourist experiences (Lawson, 1999; Packer and Ballantyne, 2002). At the same time it produces a range of intended and unintended consequences and effects that need to be critically examined and managed (Besculides, Lee and McCormick, 2002; Pizam, Milman and King, 1994). The development of tourism industry is desired by many countries because it is viewed as an industry that can be easily developed (Ayres, 2000; Mason and Cheyne, 2000; Sharpley, 2004). In other words, this industry requires mainly existing resources, or more specifically natural resources for example; mountains, forests, islands, beaches, etc. In tourism industry there is a number of tourism products developed on the basis of this notion. For instance nature tourism, ecotourism, island tourism, marine tourism, rural tourism and so forth.

In Malaysia, the development of tourism in a Marine Protected Area (MPA) and Marine Park (MP) have become one of the major interests to the country since Malaysia is blessed with many beautiful islands with beautiful sandy beaches, corals colonies and fish species (MOCAT, 1996a; Mohd Rusli, Alias and Shamsul, 2009). On one hand, the pristine condition of the protected area has become the magnet to attract visitors to consume and enjoy the natural resources. On the other hand, the core objective of conserving the protected area must be adhered to. Consequently, this has created a conflict of interest to the authority in balancing the market demand as well as protecting the environment. As mentioned in the previous paragraph, tourism industry may bring with it certain intended and unintended consequences and this is highly visible in the development of tourism industry in a protected area.

1.1 Issues Surrounding MPA and MP and Island Tourism in Malaysia

MPAs and MPs are concepts that are widely used internationally (Gubbay, 1995; Kelleher, 1999; Kenchington, 1990). MPAs have been used as a management tool to protect biodiversity, habitats, many populations of marine organisms, and ecological processes. In Malaysia the notion of MPA and MP took place in the early 1980s when the country started to realise that marine fishery resources had experienced a decline (Ch'ng, 1990; Department of Fisheries Malaysia [DOFM], 1996a; Lim, 1996; Ridwan and Syarifah, 1996). The establishment of the Fisheries Protected Areas (1983) marked the starting point of the establishment of MPs in Malaysia through the enactment of the *Fisheries Act 1985*. To date, water surrounding a total of 40 islands in Malaysia has been declared as MPs (Government of Malaysia, 1994). The principal goal of MPs is to provide a major form of habitat conservation and protection for the marine environment and resources. However, at the same time, the establishment of MPs also served as tourism destination for local and international visitors (Ch'ng, 1990; DOFM, 1996a, 2001). Detail development of MPAs and MPs in Malaysia is discussed in Chapter 2.

The attractions of MPs lie on the natural resources themselves: the coral reefs, fish species, mangroves, and coastal vegetation, beautiful beaches and clear waters, and the peaceful and harmonious condition of the islands (DOFM, 1996b). Apart from that, most of the MPs are famous for sea turtles' landing and nesting activities. Although these resources are renewable they are exhaustible to a certain point. Nonetheless, the combination of all these marine resources has become the main attraction among tourists (DOFM, 1996a; Gubbay, 1995; Kenchington, 1990; MOCAT, 1996a). As a result, the number of tourists has vastly increased each year. The increase in tourism activities furthermore, brings along development to cater tourists' needs, and at the same time creates some forms of tourism induced problems like pollution and degradation of marine ecosystems (Ahmad, Shamsul, Amizam and Siti, 2002; Coral Cay, 2000; Department of Town and Rural Planning [DTRP], 2003; Lim, 1996, Siti and Shaharuddin, 2001).

In Malaysia, issues surrounding MPs and island tourism development are rooted in their objective of establishment and management. The establishment of MPs is under the purview of the federal authority, and management is at the ministry level. However, the development

of the land area on the islands for tourism purposes are the concerned of state governments (Ch'ng, 1990; DOFM, 1996a, 2001; DTRP, 1997, 2003). To be more specific, the issues can be separated into two different aspects, development and conservation. There is no doubt that, both factors are related to each other.

In terms of conservation, there are several factors that need to be considered. First is the issue of the trade-off between conservation and development itself. The relationship demonstrates the complexity involved in managing the nature based tourism particularly the MPs and small islands. The economic potential in tourism sector sometime is overwhelming, but a well managed tourism development can be an ally of natural resource protection. However, previous studies reported that many of the tourism induced problems come from extreme and ill-considered development (Ahmad *et al*., 2002; Gubbay, 1995; Kenchington, 1990; Lim, 1996). Excessive development in the name of tourism industry can jeopardise nature and ecosystems; while total conservation can distort the development. Perhaps development and conservation should be looked as an inclusive package to make sure nature conservation and economic benefit can be achieved without compromising each other. Understanding tourists' behaviour is very important so that the development of these parks and islands will meet their needs and demands. However, planning and developing of these destinations should always have conservation in mind since the natural beauty and resources of the destinations are the reason why tourists visit these areas.

Another issue regarding conservation is funding. Since public sector funding comes from the same bucket of federal budgeting, competition between sectors exists and the allocation is usually depended on the objectives, priorities and trends set by the government. Although conservation is an important aspect in tourism, the priority given to it is highly dependent on the stability of the economy. However, conservation should not be treated this way especially when dealing with highly sensitive area such as the marine ecosystem. Therefore, to be less dependent on public allocation, the concept of self-financing could be one alternative solution. Since tourists are enjoying the natural beauty at a MP and they are actually consuming the goods and services provided by nature, therefore, the *user-pay principle* should be applied. By adopting this concept, we are introducing market mechanism to the non-market goods and services provided by the nature. In doing so, understanding the

willingness to pay (WTP) of visitors to the MP is crucial in order for the authority to set a proper pricing system that will help finance the management and conservation efforts.

Previous studies on MPs in Malaysia suggested that unfavourable impacts occur when there are excessive tourism arrivals and activities (Ahmad *et al*., 2000, 2001, 2002; Alias and Sazali, 2000; Mohd Rusli, Ahmad, Mohd Farid and Alias, 2007; Mohd Rusli *et al*., 2009; Yeo, 1998, 2004). In fact, despite the implementation of a *conservation fee*, tourists' arrivals continue to increase over time. Currently, MPs in Malaysia charge a minimum conservation fee based on an ad-hoc value without a proper investigation with regards to visitors' WTP. Furthermore, studies by Ahmad *et al*. (2002), Alias and Sazali (2000) and Yeo (1998, 2004) reveal that the current conservation fee is significantly lower than the maximum WTP by visitors to MPs. In fact, most of the studies stated above had recommended an increase in the conservation fee in order to control the number of visitors to MPs and subsequently reduce the detrimental impacts of tourism activities to natural resources. However, the conservation fee has not changed since its introduction. Most of the MPs especially in the Peninsular Malaysia are still charging the minimum price of RM5.00 per adult visitor (Government of Malaysia, 2003) which, as stated earlier, is considered to be too low when compared to the maximum WTP reported in most studies. In addition, the low conservation fee is only a small fraction of the total cost of visitation which is barely realised by visitors. Not only does the conservation fee not reflect the true WTP, but it also fails to capture the true economic benefit generated from the MP's activities (Ahmad *et al*., 2002; Alias and Sazali, 2000; Yeo, 1998, 2004). Apart from that, a low travelling cost incurs by visitors to MPs encourages high visitation rates. A high visitation rate will accelerate the environmental degradation if no proper action is taken to conserve these highly sensitive areas. Therefore it is crucial to understand the maximum WTP by visitors to MPs through the valuation process, since not only will it generate funds for conservation activities but it will also help regulate the number of visitations to the recreational areas.

1.2 Purpose of the Study

The purpose of this study is to answer several questions related to the choices made by visitors when choosing to visit an island and the evaluation of their maximum WTP for conservation purposes. In other words, what are the important attributes considered by tourists when choosing the Redang Marine Park (RMP) as their tourism destination. Apart from the above purpose, this study seeks to assess how the main environmental attributes that are of interest to the researcher will determine tourists' WTP for conservation purposes. Specifically the aims of this thesis are:

1) **To assess whether there is a specific ordering of tourists' preference amongst the island ranking, in order to plan for a proper development.**
2) **To assess the WTP for the environmental attributes of the RMP in order to derive an appropriate price for conservation.**
3) **To explore the local community perceptions' and attitudes' since they are one the major stakeholders in RMP. It is crucial to include them in the development process in order to make sure the sustainability of RMP as an island destination.**

In assessing and analysing these aims, this study lists several aims objectives below that are to be addressed:

Objective 1: to understand the development of a marine park in general

a) To understand the relationship between MP and MPA
b) To review Acts which directly and indirectly related to the establishment of MPs
c) To identify international organisations which are related to the sustainable development of MP

Objective 2: to study the development of a marine park in Malaysia

a) To study the objectives of establishing MPs in Malaysia
b) To review Acts which directly related to the establishment of MPs in Malaysia
c) To identify the authorities responsible for the development of MPs in Malaysia

Objective 3: to assess the importance of tourism attributes of a destination to tourists in the Redang Marine Park

a) To define tourism attributes
b) To study the characteristics of tourists in the RMP
c) To investigate what motivates them to visit the RMP
d) To understand the trade off that tourist made between the quality of services and the package prices
e) To understand the value of each of the tourism attributes, in order to find the relative importance of each of the attributes
f) To adopt a Contingent Ranking (CR) method in estimating the WTP
g) To understand whether any specific island in the RMP, which offers the same services, has an advantage over the others
h) To rank which island is preferred the most by the tourists based on the tourism attributes

Objective 4: to assess the importance of environmental attributes of a destination to tourists in the Redang Marine Park

a) To define environmental attributes
b) To understand the purpose of the current pricing practice (conservation fee)
c) To understand the trade off that tourist made between the environmental quality and conservation fee
d) To understand the value of each of the environmental attributes, in order to find the relative importance of each of the attributes
e) To adopt a CR method in estimating the WTP
f) To evaluate the current conservation fee

Objective 5: to understand the perceptions of local community towards the development of their island as tourism destination

a) To understand how members of the local community perceive their island as an MP
b) To study their opinions on the development of their island as a tourism destination
c) To investigate how members of the community have been included in a decision making process regarding the development of their island as tourism destination

d) To investigate how such development might benefit them
e) To explore any potential negative implications for local community

1.3 Significance of the Study

Attractions of MPs lie on the natural resources themselves while the issues surrounding MPs and island tourism are rooted in their main objectives and management practices. In short, it is the issue of conservation versus development.

This study uncovers and understands the nature and behaviour of tourists when consuming goods and services offered by MPs on the demand side. This understanding will help to form suitable action plans in line with the conservation purposes. In a way, a well planned development scheme can be structured so that the tourism activities can still be the major income generating activities without compromising the natural resources. The authority should be looking at a fully integrated planning framework within all key management aspects such as land use and development plans, biodiversity and conservation strategies and other sectoral plans.

In terms of supply side, this study explores the pricing practice in terms of holiday packages offered by the hotel industry in the MP. The study also helps to realise the potential economics benefit that can be tapped by the industry while offering the holiday packages suitable to the needs of the visitors.

In terms of nature conservation, the study explores the needs for a proper pricing practice in conservation. The availability of this information will help marine park authority to consider implementing a proper market pricing of non-market goods rather than just applying arbitrary pricing. Information revealed in the study will enrich the existing empirical knowledge in terms of variety of values gathered mainly from the valuation of MPs where not many researches are conducted in this field. In addition, the information will also act as a guideline to assists the authorities and decision makers in understanding the welfare measures such as tourism and conservation benefits. The information, moreover, is significant especially when considering the importance of the natural resources to meet developmental need and other

economic activities. By adopting the new price derived from such study will not only lead to the right direction of applying user-pays principle, but will also acknowledge the role and contribution of the environmental valuation. This will indeed become the basis in pricing other parks and natural resources in the country.

Since RMP has its own local community, the study also explores the willingness and readiness of the local community to get involve in the tourism activities which is hoped to be the vehicle for local development and in achieving sustainability within the RMP. The understanding of these aspects is crucial since the sustainability of the tourism industry highly dependent upon the local community's attitudes toward nature since they are one of the major stakeholders in RMP.

Finally, the study is a significant contribution to the non-market valuation literature in Malaysia mainly on Choice Modelling (CM). As of now, the application of CM in valuing natural resources for tourism and conservation purpose, particularly the MPs, is still limited and scarce. Conducting such stated preference study and applying the CR method in particular, will help the authorities, decision makers and practitioners to have a clearer insight of the main attributes of a MP which influence the tourists' destination choice and conservation activities.

1.4 Limitations of the Study

In carrying out the study, a number of limitations and constraints have been identified. The first hurdle is scarcity of local data and research materials especially in non-market valuation in general and MPs in particular, in Malaysia. Earlier studies mostly applied either Travel Cost Method (TCM) or Contingent Valuation Method (CVM). Some of the studies conducted valuations of land based recreational areas and only few concentrated on MPs and island tourism. Although studies adopting CM are taking momentum of late, those applying CR are very limited. To date only two studies adopting CR are available in Malaysia of which only Jamal and Norlida (2003) employed CR to value MP.

The second problem faced during the study is in the data collection phase. Since the study relies on primary data, the processes of collection need to be done at RMP itself, which resulted in two main constraints; time and money. The data collection was done in multiple stages, including the pilot survey, which were very costly and time consuming. Furthermore, in terms of timing, if the data collection for one season is missed, the researcher has to wait for another cycle, since RMP is closed during the monsoon season.

The final constraint is regarding the nature of RMP jurisdiction itself which includes many islands with multiple entry points. To have a comprehensive understanding, information gathering should include all possible islands and entry points, and the task was difficult to accomplish. Hence to overcome this issue, the data collection process was performed only at several selected destinations and common entry points.

1.5 Organisation of the Study

The study is presented in ten chapters and organised as follows:

Chapter One outlines the framework of the study. It outlines the research approach in the context of MPs and the potential issues and problems that need to be investigated. It also discusses the research purposes, aims and objectives, the research questions and the significance of the study. The chapter also outlines the organisation of the study.

Chapter Two presents the concept of MPs and the issues surrounding the development of MPs and conservation worldwide and in Malaysia. It starts with the concepts of marine conservation and MPAs by looking at the definitions and their objectives. Some historical backgrounds and the benefit of MPAs are discussed. The chapter continues with the discussion on the development of MPs in Malaysia with concentration given to the legal, administration and management aspects. Finally, the concept of ecotourism and its relationship within the context of MPs are examined.

Chapter Three reveals the information regarding the RMP which is the main location of the research. It begins with the presentation of a general profile of the island: geography, landscape, climate and topography. The chapter also discusses the establishment of RMP, the administrative structure of RMP and its community. In addition, RMP as a tourist destination is also discussed, including the arrival of tourists and the activities and facilities available. Finally, current issues regarding environmental quality and threats are also presented.

Chapter Four explores the concept of the non-market valuation. The first part of the chapter discusses the concept of economic value, while the second part touches on the available approaches to the economic valuation method, and the stated preference method is detailed in the third section of the chapter. The final part of the chapter presents some related studies employing the CR method as an evaluation technique in various fields.

Chapter Five outlines the Random Utility Theory (RUT) that is the foundation for CM. It discusses in detail the research methodology used in the study. The chapter proceeds with

the development of the CR method which is the main technique employed for valuation purposes in this study. The empirical specifications of the models used in the research are developed and presented. Finally, the chapter presents the background of the Ordinal Regression technique, specifically discussing the ***PLUM*** procedure in *SPSS* which is utilised for analysis purposes of the study.

Chapter Six discusses the data collection process used in the study. The chapter defines the population, sampling frame and technique of the study. Apart from that, the section regarding location of the study and survey modes are explained. The chapter also explains the experimental design conducted during the creation questionnaire. It is followed by the definition of the variables in the survey modes. The final part of the chapter presents the survey process that took place. In the end it presents the number of samples generated from the survey process which becomes the working sample for the analysis of the study.

Chapter Seven reports the CR study results. The chapter presents the whole analysis for local tourists visiting RMP. The chapter is separated into several sections. In the beginning, the profiles of the visitors are presented. The section also includes visitors' travel patterns, accommodation pattern, preferences and motives for visiting RMP and their attitude towards nature conservation. Some relationships among the variables of interest to the study are explored and reported. The second part of the chapter presents the result from the CR experiment. The section starts with an illustration of the ordinal regression used to determine the CR experiment using *SPSS PLUM* procedure. The CR results are presented in two separate sections; destination choice and the environmental features. In the CR section, several models are discussed and explored. Each analysis is followed by the determination of WTP for the attributes concerning for the valuation of both destination choice and environmental concern.

Chapter Eight follows a similar presentation as the previous chapter. It reports the complete analysis and results for the foreign tourists visiting RMP. The chapter is separated into several sections. In the beginning, the profiles of the visitors are presented. Following this section, travel pattern, accommodation pattern, preferences and motives and their attitude towards nature and conservation are also analysed. The second part of the chapter presents

the result from the CR experiment. The CR results are also presented in two separate sections namely the destination choice and environmental concern.

Chapter Nine is devoted to a specific study concerning the local community of Redang. The chapter begins with the report on the profile of the local community, followed by a discussion on the relationship between Redang community and RMP. The relationship between community and tourism, and their opinion regarding these matters were also discussed. Finally, this part looks into the attitude of the villagers on conservation and development of RMP as part of their community.

Chapter Ten summarises the major findings in the earlier analysis chapters (Chapter 7, 8 and 9), and comes up with several recommendations. The discussion is divided into two main sections, the valuation section and the local community study. The discussion on the valuation part is presented in two different subsections, namely the discussion on the destination choice and the environmental concern. In both sections some of the results comparing the local and the foreign tourists are highlighted. This is followed by a section discussing some insight findings in the local community study. Finally several recommendations are suggested. The recommendation part is organised in two main sections which are the recommendations to the industry players and the recommendations to the authorities involved.

Chapter 10: Conclusions

10.0 Introduction

This chapter begins with some discussions summing up the major findings in the analysis chapters (Chapters 7, 8 and 9), and comes up with several recommendations based on these findings. The discussions are divided into two main sections: a valuation section and a local community section. Discussions on the valuation part are presented in two different subsections, namely those about destination choice and about environmental concerns. In both sections, some of the results are highlighted, comparing local and foreign tourists. The chapter continues with a section discussing various insights about the study of the local community. Several recommendations for the industry and the authorities are also given. Finally, the study's contributions and limitations are highlighted, and these are followed by some concluding remarks.

10.1 *Valuation results from contingent ranking*

This section highlights some of the notable points discussed earlier, mainly in Chapters 7 and 8, regarding the CR experiments conducted with local and foreign tourists. The comparison is made in order to further understand and differentiate the values given by the two groups on RMP.

10.1.1 *Destination choice*

In terms of choosing a holiday destination, the choice of different islands does appear to matter to both groups. From the CR experiment, both local and foreign tourists ranked Kapas as their most preferred destination, followed by Redang, Perhentian and Tenggol. As for foreign tourists, although most of the respondents were interviewed in Redang, they still ranked Kapas as their most preferred destination (see Table 7.26 - Chapter 7, and Table 8.26 - Chapter 8). Therefore, this study confirms that although experience and familiarity factors were eliminated, their choices were consistent with the information provided in the ranking experiment.

Table 10.1: WTP Comparison between Locals and Foreigners (Destination)

Variable	Model 1		Model 2		Model 3	
	Local	Foreign	Local	Foreign	Local	Foreign
Accom	138.00*	142.00*	113.33*	136.50*	205.50*	169.71*
Fac	6.29	6.78	6.67	7.50	12.00	14.43
Dist	3.14*	10.55*	7.33*	14.75*	11.25*	15.57*
Access	0.43*	0.89*	1.17*	1.50*	1.75*	0.29
Island			83.17*	40.88*		
Redang					446.00*	182.43*
Perhentian					476.50*	142.00*
Kapas					467.25*	272.24*
Tenggol					0.00	0.00

* Significant at 95% confidence level

In terms of each attribute for the holiday destinations, locals were willing to pay more than foreigners for most of the attributes, except for reductions in the distance to beach- fronts based on the basic models. The combined results are presented in Table 10.1. It is important to note that improvements in accommodation type comprise the main attribute emphasised by both groups. This is demonstrated in the CR results by the large amount of money allocated, as well as the tourists' willingness to pay. The WTP for the improvement in *Accom* ranges between RM113.33 and RM205.50 for locals; and between RM136.50 and RM169.71 for foreign tourists.

The second attribute is the location of the accommodation itself. Foreign tourists proved to be more concerned about this attribute. Having accommodation right at the beach-front and not having to walk far to the beach was more important to foreign tourists than to locals. Apparently, the distance to the beach-front is the major attribute for Kapas, where most of the accommodations are located on the beach-front. The WTP for improvement in *Dist* ranges between RM3.14 and RM11.25 for locals, and between RM10.55 and RM15.57 for foreign tourists.

As for accessibility of the destination, which was measured in terms of travelling time by boat, there was no significant difference between the two groups. However, the explanation for this attribute is quite subjective. This is because the value that people place on this attribute was based on the experiences they had during their particular boat ride. Those who experienced a smooth boat trip generally enjoyed the ride. Hence, they did not mind the longer trip. On the other hand, those who experienced rough and long rides thought

otherwise, and were willing to pay extra in order to shorten the boat ride. The WTP for improvement in *Access* ranges between RM0.43 and RM1.75 for the locals, and RM0.29 and RM1.50 for the foreign tourists for all models.

In terms of island choice, the locals were willing to pay more than the foreigners. The WTP for different island destinations with regard to Tenggol versus non-Tenggol for locals was RM83.17, and RM40.88 for the foreign tourists. However, not much may be concluded about the facilities provided at the accommodation sites, since the variable is not statistically significant in all models. After all, the main attraction to the island resorts consists of activities related to sand and sea. In fact, most divers preferred to use their own equipment rather than renting. Rentals were mainly concerned with providing snorkelling gear instead of diving equipment. More important was the provision of food and restaurant services, which tend to be the major concerns of all tourists after a long day at sea. Nevertheless, having the snorkelling and diving equipment for rent are an added advantage.

At a glance, the WTP for 3D2N package price was higher among locals than among foreigners. However, taking the actual average package price of RM314.14 paid by local tourists and RM639.81 by the foreign tourists, the results are able to explain the differences. The WTP values also reveal the implicit ranking of the destinations among tourists. The locals preferred Perhentian the most, followed by Kapas, Redang and Tenggol. This implicit ranking is not consistent with the actual ranking generated from the experiment. As for the foreign tourists, the implicit ranking based on the WTP values is consistent with the actual ranking generated from the experiment, as presented in Table 10.2.

Taking the actual average package price paid by both groups, and within the context of WTP defined in Chapter 4, it may be deduced that the WTP calculated in the models resembles extra consumer surplus enjoyed by the tourists. The difference between the maximum WTP and the actual payments is the consumer surplus enjoyed by tourists at the destination. This is because it is irrational to think that foreign tourists do not gain any consumer surplus from their visit, or by paying more than what they are willing to pay for.

Table 10.2: WTP and Ranking for 3D2N Package by Tourist Groups

	Local			Foreign		
	WTP	**Implicit Ranking**	**Actual Ranking**	**WTP**	**Implicit Ranking**	**Actual Ranking**
Redang	446.00	3	2	182.43	2	2
Perhentian	476.50	1	3	142.00	3	3
Kapas	467.25	2	1	272.24	1	1
Tenggol*	0*	4	4	0*	4	4
Avg. Actual Price	314.14			639.81		

* Tenggol taken as reference point

In addition to the WTP analysis above, marginal analysis was also conducted for the two groups. The results are reproduced in Table 10.3. For the 3D2N package price, taking Tenggol as the reference point, and with all other things equal (*ceteris paribus*), the results indicate that local tourists were willing to pay RM532.00 more for similar packages at Kapas, RM485.00 more at Redang and RM428.00 more at Perhentian. On the other hand, foreign tourists were willing to pay RM188.14 extra for similar packages at Kapas, RM170.14 more at Redang and RM144.57 more at Perhentian.

In terms of accommodation type, *ceteris paribus*, local tourists were willing to pay RM219.25 for improvements from budget type to 3-star hotels and RM395.75 for improvements from budget type to 4-star hotels. For the foreign tourists, the WTP for improvements in accommodation type from budget type to 3-star hotels was RM168.43, and RM326.00 for improvements from budget type to 4-star hotels.

As for hotel facilities, taking restaurants as the basic point, *ceteris paribus*, the foreign tourists were willing to pay RM56.86 for improvements in facilities that included some kind of entertainment. Other results for hotel facilities are not further discussed since they were not statistically significant.

Regarding the proximity to beach areas, with the beach location as the reference point, *ceteris paribus*, local tourists were willing to pay RM11.00 more to avoid a 5-minute walk. On the other hand, the WTP values were extremely high for foreign tourists. The marginal WTP to avoid a 5-minute walk was RM73.57, and to avoid a 10-minute walk was RM138.57.

Table 10.3: Marginal WTP by Tourist Groups (Destination)

	MWTP	
Variable	**Local**	**Foreign**
Redang	485.00*	170.14*
Perhentian	428.00*	144.57*
Kapas	532.00*	188.14*
Tenggol^		
4 stars Accommodation	395.75*	326.00*
3 stars Accommodation	219.25*	168.43*
Budget Accommodation^		
Restaurant/Entertainment/Sport	23.50	29.29
Restaurant/Entertainment	2.25	56.86*
Restaurant^		
10 minutes walk	117.25	138.57*
5 minutes walk	11.00*	73.57*
On the beach^		
20-minute boat trip	28.75	120.71*
30-minute boat trip	55.50	38.57
45-minute boat trip	75.75*	5.29
60-minute boat trip^		
90-minute boat trip	49.00	32.29
120-minute boat trip		

*Significant at 95% confidence level ^ Taken as reference point

Finally, regarding boat trips, with a one-hour boat ride as the reference point, and with all other things equal, local tourists were willing to pay RM75.75 to reduce their travelling time by 15 minutes, while foreign tourists were willing to pay up to RM120.71 for reducing their travel time from one hour to 20 minutes. However, the two results are not exactly comparable.

Thus, it is safe to conclude that for the destination choice, two major points may be noted. The first point regards the major attributes of concern to tourists on the island destinations, and the second point relates to the specific island destinations preferred by tourists in RMP. The major attributes of concern to tourists at RMP, regardless of whether they are locals or foreigners, are: accommodation type, distance of the accommodation to the beach, and travel time. With limited resources and the nature of the islands, nothing much can be done in terms of the distance between the accommodation and the beach-front. Naturally, the beach-front areas are among the first to be developed by the accommodation providers, as compared to the inland areas. However, improvements in accommodation types should be a major area of

concern for the providers since there are some amounts of consumer surplus potentially available to be tapped. The development of better types of accommodation, furthermore, would bring good returns on investments and at the same time would be able to fulfil the needs and requirements of the visitors.

In terms of specific island destinations in RMP, the actual ranking from the CR experiment demonstrates that Kapas is the most preferred destination, followed by Redang, Perhentian and Tenggol. The ranking results also support the attribute results, since all of the three major attributes concerned exist on Kapas. Having this information in mind, further development of new island destinations should be carefully considered by the public authorities and the private sector. Future development should be limited to the existing islands like Kapas and Redang, while leaving the other islands in their natural settings. By doing so, the negative impacts of development could be localised to the developed islands alone, while preserving the natural beauty of the other islands.

10.1.2 Environmental Concerns

The second component of the valuation concerns the value of the nonmarket goods of the environment and the natural beauty of RMP. This section discusses some of the notable points regarding the ranking experiments. Findings reveal that the WTP amongst the locals was higher than the foreigners' on all of the environmental attributes concerned. The combined results of WTP are reported in Table 10.4.

Table 10.4: WTP Comparison between Locals and Foreigners (Environment)

Variable	Model 1		Model 2 (with income-interaction)	
	Local	**Foreign**	**Local**	**Foreign**
Fish	4.95*	4.62*	5.04*	4.64*
Turtle	0.97*	0.58*	0.96*	0.51*
Congest	6.82*	5.84*	6.99*	5.80*
Total WTP	12.74	11.04	12.99	10.95

* Significant at 95% confidence level

Adding income-interaction effects only produces small changes in WTP for both types of visitors. However, there is a slight change in WTP for *Fish* and *Congest* amongst the locals. The values presented in Table 10.4 also explain the implicit ranking between the variables of interest in the study.

Even though fish and coral species are considered the main attractions and motivations for visiting RMP, results indicate that visitors most valued the ability to avoid congestion (*Congest*). In other words, when consuming natural resources such as RMP, they highly valued their space and their minimal contact with other visitors. On the other hand, despite the minimal probability of turtle sighting during their visits to RMP, visitors still considered the conservation of turtle nesting an important aspect. Thus, it may be concluded that the presence of crowding or congestion may influence tourists' levels of satisfaction with the natural beauty and resources of RMP.

Table 10.5: Marginal WTP by Tourist Groups (Environment)

	MWTP	
Variable	**Local**	**Foreign**
Decrease in Fish/Coral Species	6.70*	6.73*
Increase in Fish/Coral Species	4.31*	3.50*
Current Stage^		
Decrease in Turtle Nesting	3.78*	2.28*
Increase in Turtle Nesting	4.76*	4.14*
Current Stage^		
Congested	2.80*	1.99*
Very Congested	13.37*	11.37*
Current Stage^		

*Significant at 95% confidence level ^ Taken as reference point

In addition, the results of the marginal analysis further explain the situation above. In terms of the degree of congestion, visitors were willing to pay a small fraction to avoid a slight increase in the number of visitors. However, they were willing to pay higher amounts of money in order to avoid extreme conditions. From the findings, it may be deduced that visitors perceived the current number of visitors in RMP as acceptable. Nonetheless, the degree of congestion must be given extra attention since this figure influences visitors' satisfaction levels. The findings also reveal that visitors were satisfied with the current state of fish and coral species. However, they were willing to pay almost double to avoid reductions in the number of fish species and the deterioration of the coral colony. Finally, visitors were willing to pay more knowing that turtle habitats in RMP would be protected, which consequently would lead to higher numbers of turtles.

Taking sum of the parts as equal to the value of the whole, the total WTP ranged between RM12.74 and RM12.99 for local visitors, and between RM10.95 and RM11.04 for foreigners, between the two models presented in Table 10.4. The maximum WTP values for both groups were higher than the RM5.00 fee charged under the current conservation regulations. Therefore, the study concludes that the current pricing practice understates the RMP visitors' willingness to pay. It is important to note that some consumer surpluses have the potential to be tapped and turned into revenue for conservation purposes.

Table 10.6: Estimated Value based on Maximum WTP (Model 1)

Year	Local Visitors	Estimated Value (RM)	Foreign Visitors	Estimated Value (RM)	Total Value (RM)
2000	43390	552788.60	9244	102053.76	654842.36
2001	65539	834966.86	8041	88772.64	923739.50
2002	56263	716790.62	7563	83495.52	800286.14
2003	71654	912871.96	4565	50397.60	963269.56
2004	111225	1417006.50	31251	345011.04	1762017.54
2005	98863	1259514.62	24296	268227.84	1527742.46
2006	93546	1191776.04	41552	458734.08	1650510.12
2007	112844	1437632.56	38553	425625.12	1863257.68
2008	129532	1650237.68	22292	246103.68	1896341.36
2009	99434	1266789.16	70692	780439.68	2047228.84
2010	130174	1658416.76	86230	951979.20	2610395.96

Taking Model 1 as an example, the total value generated from the study, based on the maximum WTP for each group, is presented in Table 10.6. Averaging the aggregate estimated values for the last ten years (2001 – 2010) gives the value of RM1.60 million per year of benefits generated from conservation activities in RMP. However, by using the WTP values generated from Model 2, there is a slight increase in the estimated annual benefit to RM1.62 million.

10.2 Local Community

The findings of this study suggest that in developing RMP for tourism purposes, the authorities need to consider the perceptions of local communities. It is alarming to note that some members of this community were unaware of the exact status and jurisdiction of the MP. Many did not consider themselves part of the MP. In order to ensure that tourism activities at RMP are sustainable, the community should realise that they are part of the RMP. In fact, they should take pride in this status, and have the desire to preserve it for future generations and to be able to share the natural beauty with the visitors. Therefore,

information-sharing between the park authorities and the community regarding the purpose of RMP is essential.

Furthermore, the profile study revealed a profound change in economic activities, in which the establishment of RMP transformed the fishing community into a community actively involved in tourism-related industries. Although currently their involvement is mainly at lower income levels, it is hoped that further involvement, especially at managerial levels, will take place in the future. In addition, a positive trend involving the younger generation in tourism activities should be taken as an asset for the future development and progress of the tourism industry at RMP. However, as stated in Chapter 9, the level of education among the community is very low, as only about 30 percent of the current work force has completed secondary school. Therefore, any types of programmes and training should be compatible with their educational background.

Looking at the impacts of the tourism industry and the tourists' activities leads us to better understand the needs of the community. To the community, tourists are welcome to the islands to enjoy the natural beauty at the resort areas, but not within their villages. Respecting their wishes is essential in order to avoid potential tensions between tourists and members of the local community. Therefore, it is important to note that a comprehensive understanding of the wishes and expectations of local communities is paramount in ensuring that maximum benefits will be gained from tourism activities at RMP. More important is the recognition that there should be limits to the interactions between the community members and the tourists. In short, while tourists are welcome to their islands for holidays, visits to their villages are less desirable.

10.3 Recommendations of the Study

Based on the above discussions, this study proposes several recommendations for the tourism industry players, park managers and local authorities.

10.3.1 *Comprehensive pricing strategy*

The study recommends revisions in existing pricing strategies. Currently, tour operators and accommodation providers exercise peak-load prices in selling their holiday packages to tourists. However, through general observations, the variations in price during the peak period between June and August generally range between RM50.00 and RM75.00 above the non-peak period. Taking into consideration the large amount of consumer surpluses enjoyed by tourists, this study recommends that market players combine the current peak-load pricing mechanisms with price discrimination mechanisms to capture additional consumer surplus and enhance profits. More specifically, the study recommends the adoption of third-degree price discrimination, whereby prices are differentiated by different groups or market segments, as discussed in Chapter 2.

In the case of RMP, price discrimination strategies may be carried out in two distinct phases. The first phase is where the market is segmented into local and foreign markets. The marketing activities should continue focusing on selling and promoting lower price and budget packages to local tourists, and the more expensive and luxury packages to foreign tourists. Malaysia in general and the RMP in particular still prove to be *value for money* destinations for foreign tourists, since the packages are sold in Ringgit Malaysia. This, in the eye of the foreigners, is an attractive option. Apart from value for money, Malaysia is also blessed with peace and political stability, which may be considered strong pull factors in the choice of travel destination.

The second phase of the price discrimination may be pursued further within the local market itself. Realising that there has been a tremendous increase in the quality of life and economic conditions in Malaysia, it is to our advantage to consider local markets for upscale packages as well. This is because, having the WTP value of the locals in mind, it should be noted that the willingness to pay amongst the locals is as high as that amongst the foreign tourists, and

the range of consumer surpluses enjoyed by the locals are larger. Visitors among the local segments include:

- Young professionals with high incomes,
- Families,
- Senior citizens,
- Institutional/Corporate visitors.

These segments, furthermore, could be the basis of discrimination in charging package prices. In fact, these segments could be further divided into those visiting on weekends and those staying for more than two nights.

By incorporating new pricing strategies into traditional peak-loading pricing, the supply side of the market would be able to capture and convert more consumer surpluses to producer surpluses and realise additional profits in the tourism industry. Apart from this, the increase in prices would also act as market mechanisms in controlling, if not reducing, the number of visitors. The strategy, however, would not reduce the revenue of the suppliers, especially for products facing inelastic demand curves. In fact, higher prices would deter some visitors who would be less willing to pay or no longer willing to pay the new prices. In short, pricing mechanisms would also contribute towards safeguarding the natural settings.

10.3.2 *Revision of conservation fees and collection processes*

This study would like to recommend to the DMPM, which is responsible for the collection of conservation fees, a revision of the current fees. The findings reveal that both locals and foreign tourists would be more than willing to pay extra for the purposes of conservation. Since the conservation fee was first introduced in 1999, it is high time that this fee be revised. This study suggests doubling the fee to RM10.00 for adults and RM5.00 for children, senior citizens and school children. By doing so, the management would be able to double its revenue. The suggested rates are acceptable, considering the time frame and the consumer surplus. As for the value generated from this study, some consumer surpluses are still enjoyed by visitors. Furthermore, there are quite a number of recent valuation studies

regarding MPs, echoing the same concerns (Yeo, 1998, 2004; Alias and Shazali, 2000; Ahmad *et al*., 2002 and Mohd Rusli *et al*., 2007, 2008 and 2009).

The revision of the conservation fees is not a challenging point, since it is a matter of policy determined at the federal level. However, ensuring the collection process is a major issue. As noted earlier in the issues surrounding RMP, there exist multiple entry points to the MP. Apart from this, the numbers recorded are those who visit the MP centre *per se*. Hence, in reality, the revenue collected is less than what the RMP management is supposed to receive, since there are leakages in the process. Therefore, this study suggests two ways for improving the collection process, and at the same time capturing the true number of visitors to RMP.

- Collection at every embarkation point.

  The collection can be done immediately at each embarkation point rather than at the MP centre. However, adopting this method would require some additional investments from the authorities regarding three aspects:

  - Determining and limiting official embarkation points for tourism purposes,
  - Building ticketing centres at each identified embarkation point,
  - Hiring additional staff for collection and enforcement purposes.

- Collection by service providers.

  An alternative way would be to get full collaboration from all service providers, including tour operators, and transportation and accommodation sectors. The current coupon system could be modified and extended to these groups (Appendix I: Example of entry ticket or coupon). They, in fact, could act as collection agents. In addition, all agents should be registered and licensed. It could become the responsibility of these agents to record and issue coupons for the visitors. Weekly or monthly reporting and depositing of the collections could be adopted. Random auditing could be used to ensure compliance whilst a commission system could also be introduced as an incentive.

Revising the current conservation fees would not only increase revenues for conservation purposes, but it would also move closer towards introducing market mechanisms by applying the user-pays principle to non-market goods.

10.3.3 *Integrated planning and management framework*

The study also recommends a comprehensive revision of the laws and regulations pertaining to MP management. The definition of MP and the jurisdiction of the MP authorities, as mentioned in Chapter 2, explained the establishment of a split management between the state and federal governments. Obviously, state authorities favour developments that attract more tourists in order to generate income for the state. At the same time, concerns for conservation are shouldered by the park management, a federal agency. Consequently, these practices contradict each other, and create a flaw in management and legal processes. The problem, furthermore, is worsened by the current practice of local authorities approving development projects, and leaving the projects in the hands of private operators. Private operators are profit-oriented and will pursue their own short-term profit maximization goals without considering environmental or social costs.

That is why more comprehensive laws and regulations with regards to MP management are arguably required. Such regulations should incorporate not only marine ecosystems but also land resources, including private lands, state lands, tourists and residents of the islands. Central coordination is required to harmonise the interrelationship that exists between the agencies involved. For instance, the role of the DMPM should not be limited to the marine ecosystem alone, but be extended to foresee and coordinate, if not regulate and control, the inland development of all the islands in the MP system. It is hoped that the comprehensive laws and regulations could be turned into fully integrated planning and development frameworks to accommodate current and future needs and requirements.

In addition, the new framework should comprehensively incorporate all key management aspects, such as land use, rural development, tourism, education, transportation and licensing, waste management and pollution, and biodiversity and conservation. Therefore there is a need for clear policy statements that could provide a basis for development control, decision-

making, implementation and guidance for the authorities, practitioners and communities. It is essential that decision-making and planning processes be flexible so that they can be responsive to the changing circumstances caused by tourist activities. In achieving these objectives, a smart partnership could be developed between the park authorities, local authorities, private owners, local residents and researchers.

Regarding tourism management in RMP, a holistic approach could be employed so that tourism activities could still be the major income-generating activity without compromising natural resources or the well being of the community. Current practices in the development of hotels and resorts on the islands take place in a vigorous manner, and consequently negatively impact the marine ecosystem, as is the case with the problem of solid waste management and water contamination. Once an island is saturated and polluted, it becomes less desirable to tourists. As a result, travel middlemen introduce new island destinations to them. As more tourists visit these islands, they may require more support services. Looking at the potential of income generation, the local authorities may approve of new developments. Consequently, the decision may further contribute towards the destruction of the MP ecosystem, and thus violate the principle of sustainability (Barke and Towner, 2003: 171). If this kind of development trend continues, more and more islands will be destroyed in the name of tourism and development.

Having discussed the above issues, the recommendations also include several action plans:

- Development should be limited to existing destinations such as Kapas, Redang and Perhentian. The islands could act as hubs and provide accommodation services to tourists. By concentrating on the development of these islands, the authority could curb any future environmental damage to the other islands.
- In order for Kapas, Redang and Perhentian to become hubs, efficient and reliable modes of transportation would be required for the transport of tourists to other islands, or to diving and snorkelling sites. In this sense, any old converted fishing boat or privately owned speed-boat should be replaced or upgraded in order to reduce pollution.

- Grants should be made available in order to assist local boat owners to improve the quality of their boats and services.
- Diving sites should be identified and restricted. Since there are many popular diving and snorkelling sites within RMP, the authorities should select and open these sites in alternate seasons. This practice would ensure that the marine and coral lives at these sites would be sustainable.
- Adopting a proper waste management system. The ever-increasing number of tourists to RMP contributes directly to an increase in amounts of solid waste. Current practices of transporting the waste to the mainland are deemed to be impractical.

10.3.4 *Enhancing local community involvement*

The final recommendations concern the local community. Local community attitudes towards the MP, the tourism industry and tourists themselves, indicate positive sentiments. With this in mind, it is recommended that the authorities should come up with proper community development plans to further enrich communities with essential knowledge and skills. The role of education should be included in developing these strategies, in order to ensure comprehensive and effective participation by the locals in hosting the tourists. An informed, skilled and willing society would not only strengthen them economically but also sustain the industry and safeguard the environment for the future. However, for such an implementation to succeed, these strategies must be sensitive to the different social conditions and aspirations of each community.

For instance, in planning and implementing any policies or programmes, communities should be involved from the beginning. The dissemination of information to the communities through forums, meetings and direct engagements should always take place between the authorities and the local people. A good working relationship must be established in order to develop trust and commitment from the community. Hence, the community will be more involved and informed regarding the objectives of developing sustainable tourism destinations. This would ensure that high levels of involvement and participation from the local people would be achievable. In short, community understandings of their dependency

upon the tourist industry are vital so that the communities may play more effective roles as stakeholders, and hence ensure the sustainability of RMP.

In terms of the current resources, continuous hands-on trainings should be the main agenda, mainly for the younger generations. This is essential for increasing their skills so that they become more competent. Trainings should focus on technical skills, including tour guiding, boat operating, diving licenses, hospitality and culinary skills, and management skills. The trainings should be formulated and implemented in holistic ways. In addition, trainings should also focus on communication and language proficiency, mainly English and other related foreign languages, to further enrich them. This would enable them to compete with workers from the mainland and reduce the industry's dependency on external workers. In doing so, it is hoped that the young locals could have the opportunity to be elevated to managerial positions in the future.

In addition, it is important to note that education must play a major role in making all parties realise and understand the delicate relationship between inland activities and underwater life and quality. This is because, without healthy coral reef colonies, abundant fish species, clean sandy beaches and clear water and pollution-free environments, there will be no tourists visiting the islands, and this would directly impact the economic well being of the community. Taking this into consideration, children of all ages should be encouraged to appreciate and learn about the uniqueness of the islands. They should be introduced to more experiential learning processes regarding the conservation and preservation of the coral reefs as well as their natural environment. This could be achieved by allowing schools to work together with hotels and the DMPM, for example by adopting a specific beach on their island for conservation purposes. Consequently, the process would heighten the young islanders' awareness about their natural heritage and at the same time, motivate them to value the issue of protecting and safeguarding their islands. In doing so, it is hoped that such programmes could produce young islanders who would be more appreciative and responsible towards their natural heritage.

Finally, it is hoped that the above recommendations could help achieve a more comprehensive development of RMP. Such development is in line with the concept of sustainability, which includes several fundamental themes: environment (including physical

and social aspects), quality, futurity and equity. An important point to emphasise is the need to realise that MPs and marine ecosystems are a shared responsibility.

10.4 Contribution towards Knowledge

The findings of this study demonstrate the complexity involved in managing ecotourism, particularly in the MPs and small islands. The economic potential of the tourism sector is sometimes overwhelming. However, many of tourism's problems have come from extreme and ill-considered developments. On the other hand, well-managed tourism may be an ally of natural resource protection. This study offers some insights regarding tourists' needs and requirements in choosing and visiting RMP, which may be used as guides towards understanding the demand side of the market. A suitable development process could be designed to fulfil these needs and requirements without compromising nature.

The valuation aspect of this study contributes to the exposure of potential economic benefits in the accommodation sector, where excesses in consumer surpluses still exist. In terms of conservation, the valuation helps realise the economic benefits enjoyed by tourists, which could be a measurement tool for policy makers and planners in allocating capital and human resources to safeguard and manage natural resources such as MPs. Meanwhile, the study also contributes to the understanding of maximum WTP placed by tourists in conserving MPs. Information revealed contributes to existing empirical knowledge, especially from the valuation of MPs' perspectives where research is still limited. These values may serve as guidelines to assist decision-makers in revising conservation fees so they will be more market-oriented. The community study fills gaps in the existing frameworks, making discussions on MPs more complete, to encompass the market, the authorities and the host communities. Finally, the study also contributes to the non-market valuation literature in Malaysia. This study is an addition to the limited number of current stated preference studies, using the CR method to value natural resources for tourism and conservation purposes, specifically in the MPs. The valuation practice will help the authorities, decision-makers and practitioners gain clearer insights and understandings into the main attributes influencing tourists' destination choices and conservation activities in MPs.

10.5 Concluding Remarks

This study has investigated choices made by tourists to visit RMP, and their maximum WTP for marine conservation. The important attributes considered by tourists when choosing RMP as their destination, and the main environmental attributes influencing WTP for conservation have been discussed at length. This study has also addressed issues regarding the development of MPs in Malaysia. The adoption of environmental valuation method, namely the CR, has revealed some interesting findings. Among these are the WTP by tourists and rankings made by tourists on the islands, as well as the environmental attributes crucial for conservation. In addition, this study has also explored certain issues related to local community members in RMP. The study has focused on the concerns of the local community, and their readiness and willingness to embark on the tourism sector as an alternative to their existing economic activities. Finally, by understanding the relationships amongst tourists, local community members and the authorities in RMP, the study highlights several recommendations in order to ensure the future sustainability of RMP. Since the marine ecosystem is a complex natural system, a holistic and comprehensive action encompassing both supply and demand sides should be considered. Apart from this, proactive and effective roles of related authorities and agencies, supported by clear and transparent legal aspects, would ensure clearer directions in the future planning, development and safeguarding of MPs. While all involved parties' attitudes towards the environment are important, positive understandings and attitudes towards nature conservation should be instilled and nurtured from childhood. After all, it is man who will shape the future of the environment.

Chapter 2: Marine Park and Conservation

2.0 Introduction

The overall aim of this chapter is to explain the relationship between Marine Protected Area (MPA) and Marine Park (MP). In the first part of the chapter based on the literature, different definitions and objectives of MPA and MP are presented. In the second part of the chapter, the development of MPs in Malaysia is presented. Following this, acts which are directly and indirectly concerned with the establishment of MPs in Malaysia are also presented. Apart from that the management and jurisdiction of MPs in Malaysia are clarified. The final part of the chapter briefly explains the general definition of ecotourism in Malaysia and how MPs fit into the framework.

2.1 Marine Conservation in General

The nature of the trans-boundary implications of marine activities and the importance of marine life make it crucial to protect the marine environment in general. Sustainable use of coastal resources requires that some coastal areas be retained in their natural state or as near to natural as possible. Therefore, safeguarding critical habitats for fish production, preserving genetic resources, protecting scenic and coastal areas, and enjoying natural heritage all may require the protective management of natural areas. With the sustainable use of resources foremost in mind, the policy of all nations should be to provide the necessary legal basis for managing important habitats and beneficial species.

In general, Kelleher and Kenchington (1992) summed up that there are three principal approaches to marine conservation, which are:

- *The regulation and management of individual marine activities.*
  Activities such as commercial fishing were regulated and managed by specialist agencies, with varying degrees of co-ordination of regulation between different agencies with little or no co-ordination with management of adjacent coastal lands.

- *The creation of small marine protected areas.*
  Providing special protection for particularly valuable areas within the broad areas, which were subject to regulation of the first type or, in some cases, to no

regulation. This is the most common application of the concept of MPAs. It is usually the first stage in marine conservation initiatives that go beyond fisheries restrictions that limit gear, catches and effort.

- *The establishment of a large, multiple-use protected area with an integrated management system.*
  Providing levels of protection varying throughout the area. Ideally this integration should extend to co-ordinated management of marine and terrestrial areas in the coastal zone and beyond.

The integrated multiple-use protected area approach, as discussed by Kelleher and Kenchington (1992), has the advantage that co-ordination of regulation of different human activities can be achieved when the overriding responsibility for management rests with one agency. However, in many circumstances, the complexity of boundaries and competition between governments and government agencies regarding jurisdictional responsibility can hinder this. Coordination of management in the marine environment is, in many ways, more important than it is in the terrestrial sphere. This is because the high degree of connectivity in the seas facilitates the transmission of substances and effects throughout the water column.

Currently, governments and marine management agencies are acknowledging the need for and the potential benefits of MPAs in the worldwide conservation of marine ecosystems. With increasing pressure on the marine environment, loss of habitats and declining fish stocks, the primary focus of MPAs is to conserve marine biological diversity. It is recognized that effective conservation of the marine environment can only be achieved by the creation of integrated management regimes, which deal with all human activities and their effects. These regimes will consist either of general regulation of human activities affecting the marine environment supplemented by the provision of special protection for particular areas - small MPAs, or of the creation of a much larger MPA with levels of protection varying within it according to a zoning plan.

2.2 Definition and Objectives of MPAs

MPAs have been used as a management tool to protect biodiversity, habitats, viable populations of marine organisms, and ecological processes. Scholars in general have been voicing their support for MPAs, especially in areas where other management tools have not proven to protect marine diversity and abundance (Silva, Gately and Desilvestre, 1986; Kelleher and Kenchington, 1992; Jones, 1994 and Gubbay, 1995). The World Conservation Union (IUCN) (1994) defines a Protected Area as "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means".

Sites which fit the definition are called by a variety of names such as "reserve", "sanctuaries", "parks" or some other title. To clarify the situation and help guide the protected area managers, IUCN, through its Commission on National Parks and Protected Areas, have identified six categories of protected area as listed in Table 2.1.

Specifically, from the Guidelines for Establishing Marine Protected Areas, the IUCN definition of a MPA is as below:

> Any area of the intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment. (Kelleher and Kenchington, 1992: 6).

In addition the primary goal of marine conservation and management of the MPA is:

> To provide the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas and through the management in accordance with the principles of the World Conservation Strategy of human activities that use or affect the marine environment (Kelleher and Kenchington, 1992: 6).

Table 2.1: Protected Area Categories as Defined by IUCN (1994)

CATEGORY	TYPES OF PROTECTED AREA
Category Ia	*Strict Nature Reserve: protected area managed mainly for science* Area possessing some outstanding or representative ecosystem, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring
Category Ib	*Wilderness Area: protected and manage mainly for wilderness protection* Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition
Category II	*National Park: protected area managed mainly for ecosystem protection and recreation* Natural area of land and /or sea, designated to (a) protect the ecological integrity of one or more ecosystem for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible
Category III	*National Monument: protected area managed mainly for conservation of specific natural features* Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance
Category IV	*Habitat/Species Management Area: protected area managed mainly for conservation through management intervention* Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species
Category V	*Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation* Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area
Category VI	*Managed resource protected Area; protected area managed mainly for sustainable use of natural resources* Area containing predominantly unmodified natural system, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs

There are many goals of establishing MPAs stated in the literature. Among the generally outlined objectives as compiled by Kelleher and Kenchington (1992) include:

- protecting unique and critical habitats and ecosystems
- conserving representative biodiversity, through representation of habitats or other
- appropriate surrogates
- protecting areas of high conservation value, including those containing high species diversity and centres of endemism
- protecting biologically productive areas
- protecting areas for the special needs of rare, threatened or depleted species, populations and communities
- protecting the geological sites
- conserving special groups of organisms such as migratory birds and whales
- conserving fish stocks for fisheries management purposes

Jones (1994) on the other hand, reviewed and synthesized the objectives and goals of establishing MPAs as listed in Table 2.2. However, it is important to note that, although the MPAs usually have the following attributes, in practice, the precise purposes for which protected areas are managed can differ greatly among sites.

Table 2.2: Objectives and Goals for Establishing MPAs as Expressed in the Literature (Jones, 1994)

Scientific	Economics
○ Maintain genetic / species diversity ○ Promote research ○ Education/ training areas ○ Conserve habitat and biota ○ Baseline monitoring areas ○ Protect rare/important species	○ Promote / control tourism / recreation ○ Promote sustainable development ○ Re-colonize exploited areas ○ Coastal protection ○ Alternative environmental economic arguments (i.e. indirect use values)
Cultural	**Ethical**
○ Aesthetic value ○ Protect historical/ cultural sites ○ Political reasons (i.e. internal / international commitments)	○ Intrinsic absolute value

2.3 Historical Perspective

Gubbay (1995) acknowledged the Fort Jefferson National Monument in Florida as the world's first MPA, which dates back to 1935. However, the consideration for the need to protect coastal and marine areas was only given serious attention in 1962, during the World Congress on National Parks. It was, in fact, the first international conservation meeting (Gubbay, 1995).

A series of long-running Third United Nations Conferences of the Law of the Sea between 1973 and 1977 took place to tackle the increasing technical capability to exploit mineral resources on or beneath the sea bed and to exploit fishery resources in deep waters. The outcome of this was to enable nations to take a number of measures, including those related to the regulation of fishing and the protection of living resources of the continental shelf, to a distance of 200 nautical miles from their national jurisdictional baseline. This provided a legal basis upon which measures for the establishment of MPAs and the conservation of marine resources could be developed for areas beyond territorial seas (Kelleher and Kenchington, 1992).

Increasing recognition and concern regarding the regional nature of the environmental problems of the marine living resources of the world led to the 1971 Convention on Wetlands of International Importance, especially as Waterfowl Habitat (known as the Ramsar Convention from its place of adoption in Iran) was developed and entered into force in 1975. The Ramsar Convention is designed to protect mainly wetlands. However, it also offers the opportunity to list areas of *"... marine water in the depth of which at the low tide does not exceeded six metres"*; which allows shallow reefs to be listed while the deeper areas are to be included as buffer zones (Well and Price, 1992) and Lim (1996).

In 1972, the Convention for the Protection of the World Cultural and Natural Heritage (known as the World Heritage Convention) and the Governing Council of the United Nations Environment Programme (UNEP) was developed. UNEP was given the task of reviewing the international situation in order to ensure that emerging environmental problems of wide international significance receive appropriate and adequate consideration by governments. UNEP established the Regional Seas Programme to address problems on a regional basis, by the establishment of Action Plans with a particular emphasis on the protection of marine living resources from pollution and over-exploitation.

The first such Action Plan was adopted for the Mediterranean in 1975 (Kelleher and Kenchington, 1992). Considerable progress took place over a decade to witness that 430 MPAs had been proclaimed by 69 nations with another 298 proposals under consideration in 1985, a tremendous improvement from the 118 MPAs in 27 nations in 1970. A total of 85 nations have proclaimed or are considering proclaiming MPAs as reported in Silva *et al*. (1986).

In 1982, the IUCN Commission on National Parks and Protected Areas (CNPPA) organised a series of workshops on the creation and management of marine and coastal protected areas. These were held as part of the 3rd World Congress on National Parks in Bali, Indonesia. An important outcome of these workshops was the publication by IUCN of *Marine and Coastal Protected Areas: A Guide for Planners and Managers.* That guide has been of great use in the development of marine and coastal protected areas around the world, with the incorporation of marine, coastal and freshwater sites into the worldwide network of protected areas (Kelleher and Kenchington, 1992).

Following the workshop, in 1987, two major publications were produced. The first report was published by the World Commission on Environment and Development (WCED) entitled *From One Earth to One World - Our Common Future.* The second report was produced by the General Assembly of the United Nations and known as the *Environmental Perspective to the Year 2000 and Beyond*. It was prepared by the Intercessional Intergovernmental Preparatory Committee of UNEP'S Governing Council and developed in tandem with the WCED report. These publications have highlighted the serious threats which confront marine areas around the world.

However, conservation efforts for the marine environment have lagged far behind those for the terrestrial environment, and an integrated approach to the management of the global marine ecosystem is yet to be implemented. As a result, many marine areas now face serious problems, including:

- stress from pollution
- degradation and depletion of resources, including species
- conflicting uses of resources; and
- damage and destruction of habitat (Kelleher and Kenchington, 1992).

In order to resolve the matters arising above, a resolution was passed in 1987 through the 4th World Wilderness Congress, where a policy framework for marine conservation was established. The *Guidelines for Establishing Marine Protected Areas* was published in 1992, to enable coordination of the international bodies such as IUCN, UNESCO, UNEP and others to foster initiatives in marine and estuarine protection and conservation, management at government and agency level and amongst non-government organization and individuals.

The Third Edition of *Marine and Coastal Protected Areas: A Guide for Planners and Managers* was published by IUCN in 2000 and highlights the new trend in MPA management. The emphasis is given to community participation mechanisms for protecting the marine environment. There have been major advances in the last two decades on the challenge of sustainability of MPAs through innovative financing mechanisms, partnerships with the private sector and non-government organisations (NGO), and collaborative management between government and coastal communities (Salm, Clark, and Siirila, 2000). These advances have brought along with them new approaches for MPA establishment and management that are more participatory, involving communities through interaction and collaboration rather than prescription. However, the issues pertaining to the MPAs are endless and tedious. Hence, it is urgent to consider the integrations and global partnerships due to the trans-boundary nature of the issues.

2.4 The Benefits of MPA

With regards to MPA, reserves and other protected areas have been the cornerstone of attempts to protect outstanding natural landscapes, plants and animals and to ensure public access to, and enjoyment of, these areas. Furthermore, these areas are conserving biological diversity, especially through maintaining habitat and ecological processes.

Many of the first MPAs were marine extensions of terrestrial protected areas with no particular attention to the management of the marine components. Since there have been a significant increase in awareness about the vulnerability of the marine environment and its invaluable resources, many of the international conferences and legal conventions highlighted and supported the need for management and protection of the marine

environment. There are now over 1,000 MPAs scattered across the planet, but these still cover less than 1 per cent of marine and estuarine waters (Kenchington, 1990).

MPAs not only have positive effects on the ecosystems but also species under protection and may have other benefits, including:

- improved fisheries stocks through the protection of habitats critical for commercially and recreationally important species
- storage of genetic diversity to surrounding areas
- sites for education
- increasing community awareness and understanding
- provision of scientific reference sites for research and long-term monitoring.

Significant economic benefits can also result from MPAs, including the creation of employment opportunities through the sustainable harvest of resources, and the business generated from recreation and tourism activities. However, because any benefits depend on the design of the MPA, its management objectives and the species and communities involved, not all MPAs will show all these benefits.

2.5 Tourism Development and Conservation Conflict

The establishment of MPA as a protector of the marine environment, mainly from a need to reduce fishing pressure, has sparked tourism activities. The reappearance of species absent from fishing grounds, together with an abundance of coral colonies, has led to marine parks (MPs) becoming a major attraction, not only the specialized tourists like divers and snorkelers but also general recreationists. But the ever increasing number of tourists, who enjoy the beauty of nature in MPA, has put pressure on the environment (Hardy and Beeton, 2001; Barke and Towner, 2003; Timothy and Boyd, 2003; Planter and Pina, 2005). As tourism develops, it brings with it recognizable physical, social and economic impacts.

Among the most important aspects of physical damage are the land clearance and deforestation for hotels and roads construction, the alteration of drainage and sewerage system as well as litter and pollution from the tourists. Some of these tourism development and conservation conflict can be witnessed in the area like the Zakynthos in Greece as described in Ryan (1991). According to Ryan (1991), the beach area in

Zakynthos was transformed from a comparatively under-developed area to a highly-developed area which forced the Greek authority to impose a ban on building in 1982. The unprecedented development for tourism purpose imposed a very high cost to the environment as well as the nesting turtle in the region.

On the other hand, several cases in Brazil have shown that an increasing demand for a scenic unexplored beach can generate a growing construction of hotels and houses at the sea side that can degenerate the primary environmental quality of the beach (de Oliveira, 2003). In turn this can result in a series of environmental problems, such as deforestation, air and water pollution and degradation of landscape. In some other cases, sedimentation due to increased human settlement in the coastal region, dredging and construction processes have killed portions of reefs of Florida, Guam, French Polynesia and Indonesia, while *sewage* discharged near reefs has killed coral in the U.S. Virgin Island and around the protected area of Coconut Island in Hawaii as well as some part of Florida as cited in Salm, Clark and Siirila (2000). The same issues are highlighted by many researchers, to name a few are White, Vogt and Arin (2000); Hall (2001); Arin and Kramer (2002).

Closer to this region, during the planning process of Bunaken National Park, Indonesia, several large-scale tourism developers approached local government with plans to develop major facilities on the islands within the park. They were eventually given a permit for an exclusive resort development within the park because there was a belief by the authority that the park was suitable for mass beach tourism development similar to that of Bali, despite of its limited size. Consequently, the construction of these facilities, although increase the tourism receipts, also distort the conservation process in the region (Salm, Clark and Siirila, 2000). Meanwhile, the coral surround Hon Mun Island in Vietnam also experiencing degradation and harmed by pollution due to over-exploitation by various activities to support tourism needs in the region. According to Nam and Son (2001), the destructive exploitation from shipping, usage of dynamite, coral harvesting and marine tourism has led to decrease in marine biodiversity in the area.

Finally the physical damage which occurs in MPA can also cause by negligence and irresponsible actions by visitors as well as communities. Litter such as food containers, broken bottles and empty can drinks can not only ruin the ambience of MPA and are expensive to clean up (Ryan, 1991; Timothy and Boyd, 2003). Another problem faced by authorities in MPA is the damages to the coral reef directly from tourism activities such

as boat anchoring, snorkelling and diving. Snorkelers and divers often stand on reef, walk over corals in the shallow water, and collect coral and shells for souvenirs (Salm, Clark and Siirila, 2000). The degradation of coral reefs lead to economics loss to the nearby communities as well as the global communities (Arin and Kramer, 2002). Such damages are irreversible, and can make the process of conservation much more difficult and costly.

In terms of social aspects, changes are mostly evident in the case of MPA with inhabitants. The development often change the way of life of local residents who has established their homes, and sometime their entire communities, within the designated area. Communities may have to find new jobs because the new regulations do not permit them to continue practicing their traditional jobs. For example, being forced to abandon fishing and having to take up tourism related jobs. Despite the drawback mentioned, the establishment of MPA is able to benefit the communities economically. As tourism activities flourish the management of MPA begins to realize the potential value that tourism has for local and national economies in terms of job creations, increase tax bases, more regional income and stimulating local entrepreneurial activities. Very often, therefore, economics is the underlying basis for conserving MPA (Salm, Clark and Siirila, 2000; UNEP, 2001; Spergel and Moye, 2004). Therefore, in can be deduced that conservation of MPA is paralleled with the development of tourism activities. If tourism is planned and managed efficiently and in a sustainable manner, it will become an agent for conservation at MPA provided that a proper visitor management is in place. Thus, a win-win situation can be achieved.

In achieving the balance between conservation and tourism related activities, the management of MPAs does come at a cost. According to Salm, Clark and Siirila (2000) even small MPAs with few staff require some funding per year in order to cover some of their operational costs. This has led to a realization that MPAs cannot be effectively managed without continuous financial support that is sustainable over a long term (Dharmaratne, Yee Sang, Walling, 2000; UNEP, 2001; Hearne and Salinas, 2002). Geoghagan (1994) and UNEP (2001) highlighted that, in the Wider Caribbean, several methods of financing mechanisms have been used for MPAs. Among others are direct government funding, international assistance, individual donations and trust funds. However, none of these mechanisms implement the principle that direct beneficiaries of the MPA should contribute to the operating cost. The principle that direct beneficiaries should contribute to the operating cost can be implemented by levying some charges or

conservation taxes to users which is most frequently referred to as ‘user fee’ (Green and Donnelly, 2003). For example, the Great Barrier Reef Marine Park implements the ‘environmental management charge’ to help finance the park’s operation. User fee can come in the forms of entrance fee, admission fee or conservation fee.

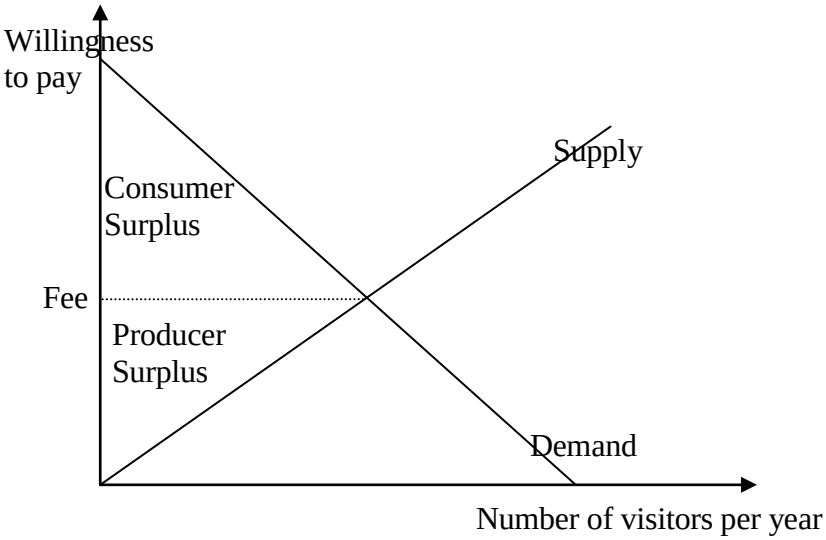
The literature summarised that many organizations and protected areas have begun charging visitors with a single type of user fee and gradually developed into a more diverse fee structure (Salm, Clark and Siirila, 2000; Green and Donnelly, 2003). This happens due to the fact that usually the willingness to pay for the user fee among the visitors is larger than the actual charge (Spergel and Moye, 2004). Apart from that the user fee is considered as a source of sustainable funding in the absent of government or public funding (Salm, Clark and Siirila, 2000). Given the limited availability of public funds, user fees for recreation in MPA generated from tourism activities are increasingly relevant source of funds to a park agency (Arin and Kramer, 2002; Togridou, Hovardas and Pantis, 2006; Asafu-Adjaye and Tapsuwan, 2008; Peters and Hawkins, 2009). In some cases, the implementation of user fee can also act as the mechanism to curb the number of visitors to a MP where excess demand exists. Examples of such strategy can be seen in Komodo National Park in Indonesia (Walpole, Goodwin and Ward, 2001), Mexico’s Marine Natural Areas (Planter and Pina, 2005), Bonaire National Marine Park in the Caribbean (Depondt and Green, 2006) and Mu Ko Similan Marine National Park in Thailand (Asafu Adjaye and Tapsuwan, 2008). The development of diverse user fee structure follows the pricing strategies that exist in the market. Among the most common pricing strategy employed is price discrimination (UNEP, 2001; Green and Donnelly, 2003).

2.5.1 *Pricing strategy - price discrimination and consumer surplus*

The basic objective of every pricing strategy by the producer is to capture as much consumer surplus as possible and convert it into additional profit to the supplier (Varian, 1992; Pindyck and Rubinfeld, 1995). Consumer surplus is the total benefit or value that visitors receive beyond what they pay to visit the MPA. Consumer surplus is measured by the area between the demand curve and price that visitors pay. It also measures the total net benefit that visitors gained from their visit to MPA. The opposite concept to consumer surplus is the producer surplus. Producer surplus is the total benefit or revenue that producers (park managements or authorities) received beyond what it costs to manage and run the MPA. Producer surplus is measured by the area between the supply curve and the

user fee (figure 2.1). Thus, in the context of the MPA, the producer surplus measures the total net benefit generated by either the park managements or authorities in providing and managing the MPAs as tourism products.

Figure 2.1 Consumer and Producer Surpluses



Price discrimination is a practice of charging different prices to different consumers when consuming similar product. It is widely practiced in the context of natural resources in general and MPA specifically. However, this strategy requires certain conditions to ensure the success of its application. Among the conditions include the ability to identify and group visitors, and differentiate demand elasticity for different classes of visitors (Varian, 1992; Pindyck and Rubinfeld, 1995). Examples of visitors groups are foreign and local visitors, age groups (senior citizens and school children), and leisure and business groups. These different segments of visitors usually differ in their willingness to pay, as well as sensitivity to price changes. The sensitivity visits (demand) to price changes is the price elasticity of demand. When demand is inelastic, the percentage change in quantity demanded is less than the percentage change in price. Therefore, an increase in price will increase total revenue. On the other hand, if demand is elastic, the percentage change in quantity demanded is greater than the percentage change in price (Varian, 1992; Pindyck and Rubinfeld, 1995). This will result in total revenue decreasing in the event of price increase. Literature suggests that visitors to nature based attractions, such as MPA, are generally inelastic to price changes especially among the foreign visitors (Clarke and Ng, 1993; Timothy and Boyd, 2003; Gooroochurn and Sinclair, 2005; Planter and Pina, 2005; Edwards, 2009). In fact, by imposing price discrimination on the basis of

nationality this may somehow reduce the issue of a poor host country subsidising visitors from richer countries (Laarman and Gregersen, 1996; Alpizar, 2006).

Among the protected areas that are currently practicing a price discrimination strategy are the Costa Rica National Park which discriminates visitors by nationality as reported in Shultz, Pinazzo and Cifuentes (1998) and Alpizar (2006), by charging foreign visitors US$6.00 and the local residents US$1.00 per entry. Another example is the Bwindi Impenetrable National Park, Uganda which charge differently among the local citizens (US$15.00), Ugandan citizens (USD40.00), foreign residents (USD120.00) and foreign non-residents (USD150.00) for gorilla tracking in the park (Anderson *et al*., 2005).

As for the MPA, some examples of price discrimination in practice are highlighted. The Bonaire National Marine Park practices price discrimination between divers and non-divers as reported in Riley, Northrop and Esteban (2006) and Uyarra, Gill and Cote (2010). The Soufriere Marine Management Area of Saint Lucia practices price discrimination between daily users and annual pass holders (Siirila, 1996; Riley *et al.*, 2006). While the Mu Ko Similan Marine National Park practices price discrimination based on nationality (Asafu-Adjaye and Tapsuwan, 2008). The Cousin Island in the Republic of Seychelles also practices price discrimination based on nationality by charging foreign tourists US$20.00 per entry (Salm, Clark and Siirila, 2000).

2.6 Development of Marine Parks in Malaysia

2.6.1 *Fisheries prohibited area*

As stated in 2.2, sites which fit the definition of Protected Areas are also known as “reserve”, “sanctuaries”, “parks” or some other title. In Malaysia, the concept of MPA is commonly referred to as marine park (MP). It was in the early 1980s when the nation started to realise that marine fishery resources had experienced a decline. In order to enhance fishery resources, it was essential to protect the coral reef areas where various commercial fish species live, breed, and feed and grow (DOFM, 1996a). The reef areas are one of the critical habitats because they are exposed to various threats either naturally or caused by human activities. Following the first direction to establish MPs made by the Prime Minister, the water stretching 8 kilometres from the shore surrounding Pulau Redang in the State of Terengganu was declared a Fisheries Prohibited Area (FPA) in 1983.

Then in 1985, water stretching 3 kilometres from the shore surrounding 22 islands in the states of Kedah, Terangganu, Pahang and Johor were also made FPAs under the *Fisheries Act 1963* (DOFM, 1996a). The FPA was a temporary measure to protect the marine environment before the enactment of the *Fisheries Act 1985*.

2.6.2 *Marine park order*

In the *1985 Fisheries Act*, provisions concerning MPs were included and detailed under Division IX, Section 41-45 as summarized in Table 2.3. The *Fisheries Act 1985* is a Federal legislation relating to fisheries, including the conservation, management and development of maritime and estuarine fishing and fisheries in Malaysian fisheries water (DOFM, 1996a; MOCAT, 1996a). The legislation also covers matters relating to turtles and riverside fishing, which are subject to adoption by the State Legislature. These amendments to the *Fisheries Act 1963*, furthermore, were officially enforced in 1986. Finally, under the *Establishment of Marine Parks Malaysia Order 1994*, water stretching two nautical miles from the shore surrounding 38 islands in the States of Kedah, Terengganu, Pahang, Johor and the Federal Territory of Labuan have been legally declared as Marine Parks Malaysia under the provisions of section 41(1) of the *Fisheries Act 1985* (DOFM, 1996a). In addition, in 1998 the waters of two more islands in the State of Terengganu were declared MPs, which add up to 40 islands in total (DOFM, 2001).

Table 2.3: Fisheries Act 1985 – Relevant Sections

Section 41(1) of the Fisheries Act 1985 empowers the Minister of Agriculture to establish any area or part of an area in Malaysian fisheries waters as a marine park or marine reserve to protect aquatic flora fauna, preserve and manage the natural breeding ground and habitat of aquatic life (especially endangered species), allow for natural regeneration of aquatic life, promote scientific study and research, preserve and enhance pristine states and productivity, and regulate recreational and other activities.

Section 43(1) prohibits certain activities in marine parks. Such activities include: the discharge or deposition of any pollutant, and activities that may destroy aquatic life, and their natural breeding ground and habitats. In addition, permission is required before constructing any building or structure on or over any land or waters within a marine park.

Section 45(1) authorises the Minister of Agriculture to make regulations specifically or generally for the zoning, management, development, control and protection of marine parks.

In exercise of the powers conferred by subsection 41(1) of the Fisheries Act 1985, the Minister of Agriculture had made the Establishment of Marine Parks Malaysia Order 1994 which came into force in December 1994. Thirty-eight islands were gazetted as marine parks, thirty-five of which are in Peninsular Malaysia. These marine parks are managed by the Department of Fisheries, a federal agency in the Ministry of Agriculture.

2.7 Definition and Objectives of MPs

A marine park is an area of the sea zoned as a sanctuary for the coral reef community, which is considered as possibly the most productive ecosystem in the world, with its diversity of flora and fauna (Ridwan and Sharifah Nora, 1996: 12). Coral reefs are also important breeding and nursery grounds for many commercially important species of marine organisms and fishes. The boundary of a MP is defined and established "by a line linking all points 2 nautical miles from the shores (low water mark)" (Government of Malaysia, 1994: 2086; Ridwan and Sharifah Nora, 1996: 12) of the designated islands, meaning that the islands themselves come under local and state jurisdiction. However, the inter-departmental and inter-agencies coordination and cooperation at federal and state level are actively involved to ensure that the conservation and preservation of the MPs takes place.

The main objective of establishing MPs is to conserve and protect the marine ecosystem, especially coral reef areas, in order to ensure the fisheries and marine inshore resources are utilized in sustainable way. Furthermore the objectives cover the protection and management of marine natural ecosystems for the purpose of biodiversity research, education and sustainable development of recreational fishing and eco-tourism (DOFM, 1996).

The *Fisheries Act 1985*, as mentioned previously, specifically states that MPs are established in order to:

a) afford special protection on the aquatic flora and fauna of such area or part thereof and to protect, preserve and manage the natural breeding grounds and habitat or aquatic life, with particular regard to species of rare or endangered flora and fauna;
b) allow for the natural regeneration of aquatic life in such area or part thereof where such life has been depleted;
c) promote scientific study and research in respect of such area or part thereof;
d) preserve and enhance the pristine state and productivity of such area or part thereof; and
e) regulate recreational and other activities in such area or part thereof to avoid irreversible damage to its environment

The protection and conservation of the marine environment is significant in order that it remains undamaged for future generations and to inculcate public understanding,

appreciation and enjoyment of Malaysia's marine heritage (Ch'ng, 1990). Furthermore, the fisheries resources are managed, through the conservation of the biodiversity of the MP areas. In terms of knowledge extension, scientists are given the encouragement and opportunity to carry out research work on biodiversity, pharmaceutical purposes and others. In terms of tourism, the conservation of marine resources, especially coral reefs which are the main attraction of MPs, benefits visitors through recreational and educational opportunities. Finally, marine resources and biodiversity that are over-exploited and/or facing extinction, including turtles, marine mammals and some big shellfish, will be rejuvenated (DOFM, 2000).

2.8 MPs Administration and Management

In the early establishment period, the MPs were administered and managed by the Marine Park Section under the DOFM, a Federal agency in the Ministry of Agriculture. Management objectives, furthermore, have been drawn up for MPs in Malaysia (Ch'ng, 1990), which encompass resource protection, visitor management, interpretive management and research management.

For better administration and management purposes, the water surrounding the 40 islands are grouped into five MPs as presented in Map 2.1, namely:

1) *Pulau Payar Marine Park in Kedah - consists of 4 islands*
2) *Pulau Redang Marine Park in Terengganu - consists of 11 islands*
3) *Pulau Tioman Marine Park in Pahang - consists of 9 islands*
4) *Mersing Marine Park in Johor - consists of 13 islands*
5) *Labuan Marine Park in Labuan Federal Territory - consists of 3 islands*

Each MP has a centre that acts as a focal point for the administration and management of the area concerned. The MP centres are listed in Table 2.4. In addition to that, another MP centre was built in Pulau Perhentian which started operating in 2002 (DOFM, 2000). These MP centres also serve as the base for enforcement in the surrounding area of the MPs. In addition, the MP centres play crucial roles in educating and raising awareness concerning the marine environment and should form the basis of interpretive programmes aimed at the general public and islanders alike.

Map 2.1: Marine Parks of Malaysia

Source: DOFM, 2000

Table 2.4: Marine Park Centre

State	Location	Year Built	Year Operational
Kedah	Pulau Payar	1985	1988
Terengganu	Pulau Pinang (Pulau Redang)	1987	1990
Johor	Mersing	1992	1995
Pahang	Pulau Tioman	1992	1994

Source: DOFM, 1996

Under Section 41A - 41B of the Fisheries Act 1985 (amended in 1993), a National Advisory Council for Marine Parks and Marine Reserves was established. This Council is chaired by the Secretary General of the Ministry of Agriculture and its members are representatives from various sectors such as environmental and business NGOs, local universities, commercial firms, besides both Federal and State Government Officers.

The functions of the Council are:

(a) To determine the guideline for the implementation at the national level with respect to protection, conservation, utilization, control, management and progress of the marine park and marine reserve areas;

(b) To coordinate the development of any area of a marine park or marine reserve with the Federal Government and any related parties; and

(c) To give technical advice to the State Government with respect to any development project on any island which is situated in a marine park or marine reserve area.

The National Advisory Council is responsible in disseminating management guidelines, co-ordinating development at MPs and reserves between the Federal and States governments, and advising the relevant Ministers on the management guidelines and implementation of MPs and reserves (Ridwan and Sharifah Nora, 1996:17 and DOFM, 1996:10).

Due to the unique situation in Malaysia, where land matters are under the jurisdiction of the State Government, an important issue is to ensure that the development on the islands will not jeopardize the marine ecosystem. Furthermore, in order to guarantee development projects on land are environmentally friendly, the Council has requested each state with MPs to form its own committee to give advice to the State Government on matters which have impacts on the marine environment. By doing so, it is hoped that development projects on islands will be properly planned and managed and will not harm the marine environment (Aikanathan and Wong, 1994).

The DOFM was the agency responsible for the day-to-day management of the parks and implementation of the programmes agreed upon by the Advisory Council and the State Management Committee. The MP programme and development have been intensified with the cabinet approval to establish the Marine Parks and Marine Reserve Trust Fund in 1987. An initial allocation of RM10 million was granted in 1989 (DOFM, 1996:15). This account was set up for the purpose of receiving contributions and making payments connected with the activities of MPs and Marine Reserves. Among other activities involved with the allocation of the fund are the infrastructure development and implementation of the programme and administration, management, research and training, interpretation, publicity and education programmes. In 1996, the Trust Fund was granted an additional allocation of RM1.2 million (DOFM, 1996:16).

In 1998, the MP conservation fee was proposed and established. A trial collection was implemented at Payar Marine Park in January 1999. The complete implementation and enforcement of conservation fee for all MPs however took place officially after the enactment of Fees Order (Marine Park Malaysia) 2003 under the Fee Act 1951. The collected conservation fee is credited to the trust fund and is used for management purposes of the MP centres and to provide basic facilities for the tourists at the centres.

In 2004 the Marine Park Section was shifted from the Fisheries Department to a new management under the Ministry of Natural Resources and Environment (NRE). Although a new vision, mission, objectives and overall functions for MPs were established to comply with the new ministry's goals and objectives, the overall themes are still inline with the MPs establishment purposes stated under the *Fisheries Act 1985*.

In June 2006, the Malaysian Cabinet approved a memorandum presented by the NRE Minister on the formation of a department or new agency responsible to manage and administer MPAs especially the MP areas. Thus, in July 2007, the Department of Marine Park Malaysia (DMPM) was officially established (DMPM, 2010).

In line with the goals and objectives of the park, the DMPM must ensure the protection of sensitive habitats from damaging activities. This can be done by confining tourism development and activities to certain sites and, at the same time, prohibiting any incompatible activities elsewhere in MPs. Although the management of coral reef areas in MPs is a new concept in Malaysia, the efforts taken formerly by the DOFM and later by the DMPM as caretakers are notable. As such, staff recruitment and training are actively being carried out in order to achieve the goals and objectives of MPs. Formulation of MPs management and zoning plans are also a part of the important strategy.

The DMPM manages and administers all MPs based on the broad policy guidelines set out by the Advisory Council. The tasks are divided into six divisions which contain several sections. For instance, the monitoring of reef conditions and enforcement within the park area are done by the MP rangers under the Enforcement Section. Promoting conservation, education and awareness are done under the Education and Interpretation Section, while researches on MPs are mostly done by the Research Section with the help of scientists from local and foreign universities, as well as NGOs (DMPM, 2010). All of these consolidated

efforts are performed to ensure the sustainability of the marine resources while promoting ecotourism concept at a sensitive area.

2.9 Sustainable Tourism Development in MP

The concept of sustainable tourism arises from the mother concept of *sustainable development*. The term sustainable development is defined in the Brundtland Report (Our Common Future) (1988:43) as:

> …development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The report stresses the importance of integrating environmental protection and conservation values into the development process, as well as incorporating the well-being of present and future community of the area. The concept furthermore proposes some changes in the idea of 'development versus conservation' to 'development in harmony with the environment' (Godfrey, 1996:60). The term *sustainability*, is widely used to refer to the management and maintenance of ecological systems and resources, but it has also been applied to the economic, social, and even cultural spheres (Barke and Towner, 2003; McCool, 2001; Hall and Page, 2000). Today the concept of sustainability is widely applied on all development sectors including tourism. In fact, sustainable tourism development is seen as the one of the solutions to the current environment crisis (Burns and Holden, 1995:211) and reducing social, cultural and physical environmental impacts of tourism (Barke and Towner, 2003: 166). In addition, sustainable tourism development is compatible with the maintenance of essential biological diversity and natural resources. There are a number of specific terms used to describe tourism activity that relates to natural environment, for example ecotourism, nature tourism, alternative tourism and green tourism. This study however will focus on ecotourism and its development in MP.

Ecotourism in Malaysia has seen continued growth for the past decade. The concept of ecotourism is generally credited to Ceballos-Lascuráin, who defined ecotourism as: 'travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas' as cited in Blamey (2001: 5).

Another well known definition given by The Ecotourism Society in 1990, currently known as The International Ecotourism Society (TIES) is 'responsible travel to natural areas that conserves the environment and improves the well-being of local people' (TIES, 2005: 2). Apart from the definitions given above, Valentine (1993: 108) identifies various other definitions which are synonymously defined as nature-based tourism, environment-friendly tourism, and, alternative, responsible, ethical, sustainable, green and appropriate tourism. In line with Valentine (1993), Wight (1994) emphasizes that the common expectation from the ecotourism industry is that it provides an intimate and educational experience with the natural environment, as well as encouraging local participation in the conservation of biodiversity and at the same time supporting rural development.

In line with the definitions above, Richardson (1993) notes that ecotourism usually involves small numbers of people in a group, with a leader who is knowledgeable about the environment and cultures of the destination. Furthermore, according to Richardson, the per capita expenses of ecotourism trips are higher than the general mass tourism trips because of the small group sizes, remoteness of the places, additional equipment required, cost of transportation, and the need for an expert or specialist guide. In short, ecotourism can be regarded as an activity that:

- Contributes to biodiversity
- Requires the lowest possible consumption of non-renewable resources
- Involves responsible action on the part of tourists
- Includes an interpretation/learning experience
- Is delivered to small groups by small-scale businesses
- Stresses local ownership and business opportunities for local - particularly rural people
- Sustains the well-being of local people

Thus, it can be contended that all of the above definitions are similar in content. They imply generally that ecotourism is a complex phenomenon, involving the integration of many stakeholders including tourists, local community, public and private sectors.
In terms of Malaysia, the National Ecotourism Plan (NEP) of Malaysia adopts the definition of ecotourism from the IUCN's Ecotourism Programme as quoted in Ceballos-Lascuráin (1996, p. 20), which defines the term in Part 1 of the Plan as:

> environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features – both past and present) that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local population (MOCAT, 1996: 2).

The NEP recognises ecotourism as an important growth sector and has estimated that up to 10 percent of all future tourism products will be from this sector (MOCAT, 1996). The NEP consists of 25 aspects, which includes:

- Categorizing sites and activities
- Carrying capacity and limits of acceptable change
- Marine parks and island
- National parks and reserves
- Mangroves
- Use of local accommodation
- Accreditation of ecotourism products
- Visitors' roles and responsibilities, etc.

Based on the NEP, it is clear that the government has addressed and prioritised on the development of ecotourism on MPs and islands. It is clearly stated in the Part three of the guideline that all ecotourism activities in the MPs "must be managed and channelled so that it is not directly conflicted with the objectives of marine parks" (MOCAT, 1996: 19). This is due to the fact that MPs have been established primarily for the conservation of the natural environment and resources. With increasing demand from both local and foreign visitors and growing awareness by businesses for ecotourism settings, the importance of healthy MPAs and MPs cannot be understated.

There are positive and negative economic impacts on MPs from tourism. These impacts can cut across economic sectors and geographical areas. Among the typical impacts of tourism on MPs highlighted in the NEP are the deterioration of groundwater, increase in marine pollutants and damage to coral and marine life. It is hoped that ecotourism is able to minimize the impact on MPs. The impact, however minimal, must be recognized so that any ecotourism development is not only viable and feasible but also sustainable in the MP areas. Among the activities which may be permitted in the MPs, according to the guideline, are scuba-diving and snorkelling, swimming, photography and canoeing. On

the other hand, activities such as jet-skiing, power-boating, water-skiing and fishing should be totally prohibited. Finally, it is hoped that ecotourism in MPs is able to provide an opportunity for management authorities to create an awareness, understanding and appreciation of the marine environment and the need to protect and conserve it.

2.10 Conclusion

Generally the establishment of a MP, protected area or reserve shares the common objective of conserving and preserving the marine environment and resources. It is in tandem with the concept of ecotourism which ensures minimal impact and promotes conservation. However the establishment of a MP is not an easy task due to the trans-boundary nature of the area coupled with overlapping jurisdiction in management. Having these facts in mind, the goal can be achieved through proper planning and smart partnership inter-agencies enhanced by the legal system.

Chapter 3: Redang Marine Park

3.0 Introduction

This chapter is about the Redang Marine Park (RMP) which is the main location of the research. The aim of this chapter is to provide a general profile of the island: geography, landscape, climate and topography. The chapter also discusses the establishment of RMP, the administrative structure of RMP and the community. Following that, RMP as a tourist destination is also discussed, including the arrival of tourists and the activities and facilities available. Finally, current issues regarding environmental quality and threats are also presented.

3.1 Geography

RMP is located in the South China Sea off the East Coast of Peninsular Malaysia in the state of Terengganu (refer to Map 3.1). The group of islands are located within 5° 44' - 5° 50' North latitude and 102° 59' - 103° 5' East longitude (Ridwan and Sharifah Nora, 1996). It is located about 45 km (24.2 nautical miles) North Northeast of Kuala Terengganu, the state capital of Terengganu (Ridwan and Sharifah Nora, 1996). The Malay word ‘pulau’ means ‘island’, so it is more commonly referred to by the locals as Pulau Redang Marine Park. In this study the word island and ‘pulau’ is used interchangeably. Redang Archipelago, laying a little north of the Equator, is comprised of Pulau Redang, Pulau Lima, Pulau Paku Besar, Pulau Paku Kecil, Pulau Kerengga Kecil, Pulau Kerengga Besar, Pulau Ekor Tebu, Pulau Ling and Pulau Pinang (see Map 3.2 and 3.3).

Pulau Redang experiences a tropical climate and daily temperatures ranging from 22°C to 33°C, with May being the hottest month and January the coolest. Relative humidity ranges from 80 to 87 percent. The northeast monsoon brings heavy rain, strong winds and big waves between November and March, and rainfall can reach up to 615 mm in December as compared to 120 mm in April. In fact, average annual rainfall can reach up to 2500 mm. Thus, the nature of the climate has become the determinant factor for tourism activities in RMP**.** During the monsoon, sea conditions become rough with strong winds and waves can reach up to 4.8 metres. This is why most of the resorts are closed for

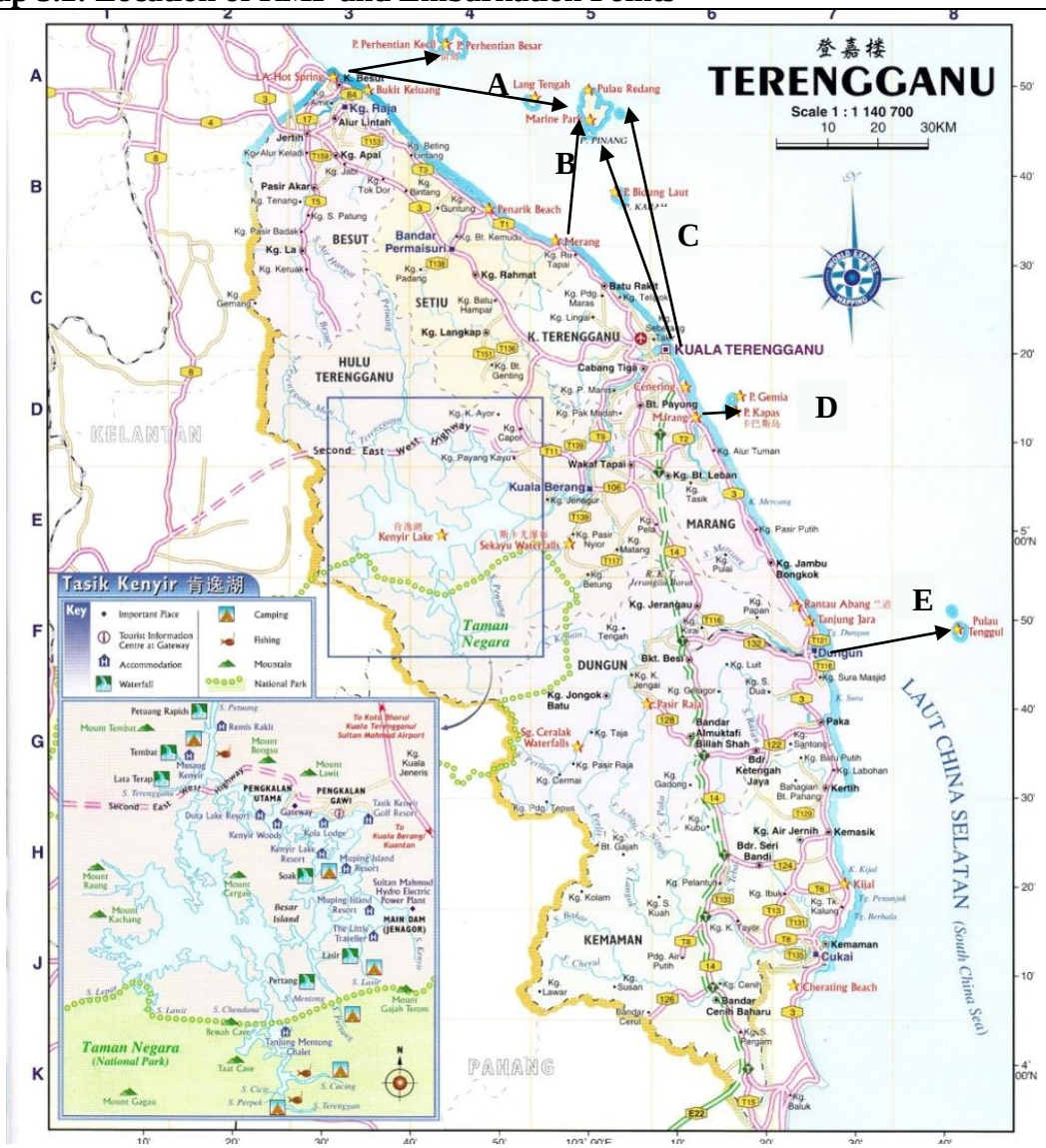
the monsoon from late October to early March. Many of the resorts owners will take this opportunity to carry out renovation or maintenance work. Meanwhile, the best time to visit RMP is from April to September, when the sea is generally calm and conditions are safe.

Pulau Redang is the biggest of all the islands in the RMP; it is about 7 km long and 6 km wide, and comprised of 2500 hectares in area. The highest point is Bukit Besar (359 metres). Pulau Redang is divided into two hilly ridges by the Redang River, which flows south. Several small streams also drain the island, but many are dry for most of the year. In general, about 16 percent of the island has been developed, mainly for settlement and tourism purposes (DTRP, 2003:6). The rest of the island is covered by hilly forest. The exposed coastline of Pulau Redang is dominated by rocky outcrop landscape with impressive cliffs and steep slopes. Extensive sandy beaches are mainly found on the eastern side of the island. Land use distribution is explained in Table 3.1.

Map 3.1: Location of RMP

Source: Redang Island Rendezvous (http://redang.i8.com/p00-home.htm)

Map 3.2: Location of RMP and Embarkation Points



Study Locations: Islands of the Redang Marine Parks System and the Embarkation Points.

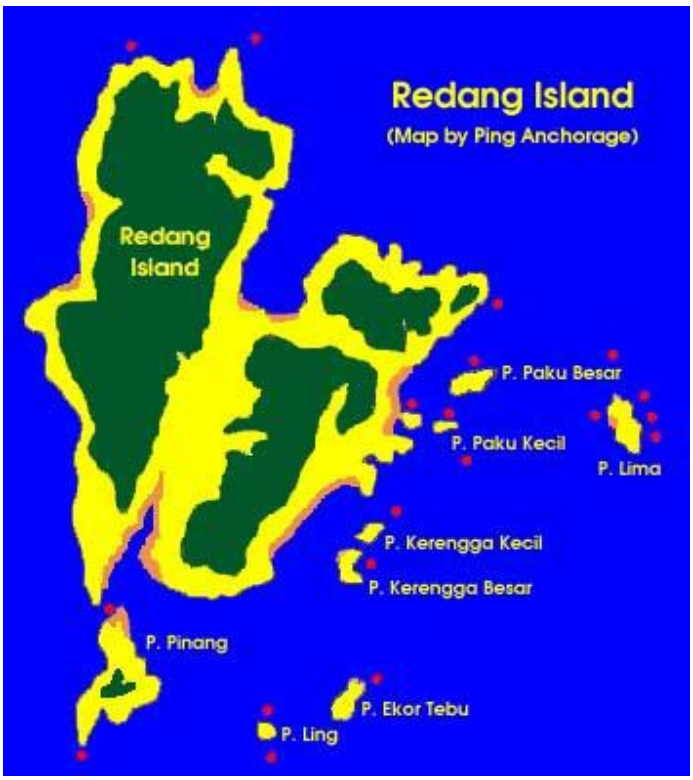
Location of Terengganu in the Peninsular Malaysia

<u>Embarkation Point</u>

A: From Kuala Besut to Perhentian or Redang
B: From Merang to Redang
C: From Kuala Terengganu and Chendering to Redang
D: From Marang to Kapas
E: From Kuala Dungun to Tenggol

Source: Map book of Malaysia

Map 3.3: Redang Island Archipelago



Source: Ping Anchorage
(http://www.pinganchorage.com.my/redang_island.htm)

Table 3.1: Land Use Distribution 2003

Land use	Area (hectares)	Percentage
Settlement Area including Public Facilities	42.00	1.68
Tourism Area including Resorts and Chalets	350.00	14.00
Forest Area including Hill Forest	2100.00	84.00
Others including Infrastructure and Roads	8.00	0.32
Total	2500.00	100.00

Source: DTRP (2003)

3.2 Establishment of RMP

Pulau Redang was first gazetted as a Fisheries Prohibited Area under Fisheries Regulation 1983 of the Fisheries Act 1963 (DOFM, 1996:7). When the Fisheries Act 1985 was formulated, the provision for the establishment, conservation and management of marine parks was incorporated. The provisions were detailed under Division IX, Section 41-45, as discussed in Chapter 2. On the 20th of October 1994, Pulau Redang Archipelago was officially gazetted as a Marine Park under the Establishment of Marine Parks Malaysia Order 1994 (First Schedule) of the Fisheries Act 1985 (Government of Malaysia, 1994).

Apart from Pulau Redang, the nearby islands of Pulau Pinang, Pulau Perhentian Besar, Pulau Perhentian Kecil, Pulau Lang Tengah, Pulau Susu Dara, Pulalu Lima and Pulau Ekor Tebu are also gazetted and protected as Marine Parks (Government of Malaysia, 1994: 2087). In addition to that, Pulau Kapas is included as a marine park under the second schedule of the same Order. In 1998 the waters of two more islands in the State of Terengganu were declared Marine Parks (DOFM, 2000). Consequently, these 11 islands of Terengganu are included under the RMP which is one of the five Marine Parks of Malaysia.

As noted earlier in Chapter 2 the islands are under both local and state jurisdiction while the waters surrounding the island are under federal jurisdiction. Hence, the integrated planning and management involve several agencies and departments at local, state and federal levels. However, the Department of Fisheries was given the responsibility of undertaking the protection of offshore islands and the surrounding marine waters.

In terms of the island management, prior to 1998 the development of Pulau Redang was under the Kuala Terengganu District and Land Office's jurisdiction, but later was handed over to the Kuala Terengganu Township Council. The Council is responsible for the island's physical development and other maintenance work, such as general area cleanliness and waste management. On the other hand, the Department of Town and Rural Planning (DTRP) is involved in the planning and development of the island. In general, the state and federal agencies involved in the socio-economy and physical developments in RMP are listed in Table 3.2.

Table 3.2: Government Agencies and Roles in Development of RMP

Agency	Role
Kuala Terengganu Land and District Office	Deal with land division and status as per National Land Ordinance
Department of Town and Rural Planning, Terengganu	Steer and monitor physical development of Redang Ensure Island Development Guideline and Planning Standard is followed Produce zoning plan Update information on physical develop for monitoring purposes
Terengganu Department of Environment	Approve EIA report Record and monitor the quality of; air, sea-water, underground-water and river Enhance public awareness on the environment
Terengganu Department of Fisheries	Plan for fishery zoning Control and monitor Marine Park area Enforce Marine Park Act and Regulation
Kuala Terengganu Township Council	Approve building plans General maintenance and waste management Local enforcement
Eastern Region Marine Department	Boat licensing Approve request for jetty construction
Terengganu Economic Planning Unit	Outline tourism plan Plan and implement tourism project
Terengganu Public Work Department	Plan and construct road
Terengganu Water Supply Department	Supply clean water
Sewerage Service Department	Identify standard for oxidation ponds Approve sewerage system plan
Fire and Safety Department	Approve building safety plan
National Power Company	Supply electricity
Malaysia Telecommunication Company	Supply land line telephone services

Source: DTRP (2003)

3.3 Local Community in Pulau Redang

The early settlers of Pulau Redang were believed to be the *Bugis* from *Celebes*, *Indonesia* (Ridwan and Syarifah Nora, 1996:18 and Redang Island Rendezvous, 2003). Many of them established their traditional fishing community at Telok Kalong in the main island of Pulau Redang but later moved south to a smaller island called Pulau Pinang. The migration was in response to the need of the islanders to shelter from the strong monsoon winds. Others settled in Pulau Perhentian, and in some of the smaller islands nearby.

By the early 1970s, there were about 120 families living in village houses on Pulau Pinang. When there was no flat land left for new homes, the Terengganu state government built for them a new village, which took the form of a water village – with houses on stilts in the Sungai Redang Estuary in 1976 (Ridwan and Syarifah Nora, 1996:18). By 1979, majority of the villagers from Pulau Pinang had moved to this new water village, while the rest moved to the mainland Terengganu (near Merang) where they have been given some land.

However, in 1996, the water village was demolished under a new resettlement scheme, and the villagers have built their current homeland in a new village at the Kampung Ulu Redang, in Pulau Redang, approximately 1.5 kilometres inland from the previous one. The resettlement was due to rapid economic growth in tourism industry. Since then, many have left the traditional fishing activities and moved into the growing tourism industry. Based on the Year 2000 Population Census, there are 1453 people inhabiting Pulau Redang where 99 percent (1444) of the population are the Malays (DTRP, 2003:6).

Table 3.3 provides some demographic information of the Pulau Redang population. Of the total number of 1453, 54 percent are males and 46 percent are females, and 56 percent of the population are categorized as "economically active group". The majority of them earn less than RM1000.00[1] per month (DTRP, 2003:8). Meanwhile almost 40 percent of the population fall in the prime schooling age indicating that there will be more demand for classrooms and public facilities.

[1] RM1000.00 per month ≅ £140.00 in 2004 and ≅ £200.00 in 2011.
(£1.00 = RM7.20, Euro 1.00 = RM4.96, US$1.00 = RM3.80 in June 2004;
£1.00 = RM4.98, Euro 1.00 = RM4.43, US$1.00 = RM3.03 in June 2011)

Table 3.3: Population and Income

	Number	Percentage
Gender • Male • Female	 788 665	 54 46
Total	1453	100
Age • 0 to 14 years • 15 to 54 years • 55 years and above	 584 815 54	 40 56 4
Total	1453	100
Income • RM250 to 500 • RM501 to RM750 • RM751 to RM1000 • Above RM1000		 53 27 13 7
Total		100

Source: DTRP (2003)

3.4 Infrastructure

Basic infrastructure is provided by the government and is concentrated at the settlement area of Kampung Ulu Redang. There is one primary school, a mosque, a public clinic, a police station, a community centre and a postal service. Apart from that, there also exists an additional clinic run by the Berjaya Redang Resort in Pulau Redang. Meanwhile, the Terengganu Water Supply Company (SATU), through undersea piping from the mainland, supplies some 150,000 gallons of water per day to the settlement and Berjaya Redang Resort (DTRP, 2003:10). Additional water supply is either from the river or an underground source. These two water supplies are the main source for other resorts and chalets at Pulau Redang.

Despite the increase in local population and tourists' arrivals, there are still no central septic tank systems on the island. Houses and resorts are mainly equipped with individual septic tanks. Therefore, the effectiveness of eliminating underground water contamination from sewage is totally dependant on the commitment of individuals and resort operators. However, to make sure that the seawater surrounding the island is safe and not

contaminated, the water quality is constantly monitored by the Department of Environment (DOE) (DTRP, 2003:10).

The Kuala Terengganu Township Council manages solid waste disposal. The task of disposing of solid waste is contracted to a small local company. The solid waste is collected from the chalets and resorts, transported to the mainland by boats and disposed at the central skip disposal area at Merang and Chendering (DTRP, 2003:10).

In terms of electricity, the National Power Company (TNB) supplies the settlement and Berjaya Redang Resort. Other areas get their electricity using private generators. The Malaysia Telecommunication Company (STM) provides some public telephone kiosks in the settlement area. Apart from that, most of the areas benefit from the complete coverage of the cellular phone network. However, television reception is still quite poor in most of the areas, giving the option of subscribing to the satellite systems like ASTRO[2] to most of the resort operators (DTRP, 2003:11).

There are four-embarkation points on the mainland that provide sea transport services to Kuala Sungai Redang jetty. The range of services varies from large passenger ferries to speedboats. Those embarkation points are Merang, Kuala Terengganu, Chendering and Kuala Besut. Merang is the main embarkation point, where the trip takes about 30 to 45 minutes using speedboat. Apart from boat services, a long-stay car park and toilet facilities are available at Merang. From Kuala Terengganu, a ferry service operates from the main port of Jeti Syahbandar. The ferry trip takes about 1 to 1.5 hours. Alternatively, speedboat services are available from the fishing jetty of Chendering or Kuala Besut (DTRP, 2003: 9). In addition to the sea transport services, accessibility to Pulau Redang is improved with the completion of a new airstrip. The 1.1 kilometre airstrip begins its operation in February 2004. It can accommodate small shuttles and 'Fokker' size aircraft. In the meantime, there are 3 jetties at Pulau Redang. Two are located at the main island, at Kuala Redang and Telok Kalong Besar. The third jetty is at Pulau Pinang, which is the entry point to the Redang Marine Park Centre.

[2] The brand name of the Malaysian direct broadcast satellite pay television service. It transmits digital satellite television and radio to households in Malaysia.

In terms of a road system, there is only one main road available, a-4 kilometres stretch from the Kuala Redang jetty to the settlement area and Berjaya Redang Resort (DTRP, 2003: 10). However, there is no provision of public transport on the island. Villagers either use their own means of transport, mainly motorcycles, or get a ride from the bus or van services provided by Berjaya Redang Resort, used to transport the resort's visitors to and from the jetty.

3.5 Natural Resources of RMP

What is so special about Redang that makes it one of the best destinations in Malaysia? The truth is that Redang is blessed with richness in its resources. Redang has some beautiful stretches of coast, with white sandy beaches mainly located at Pasir Panjang, Teluk Dalam and Teluk Kalong. Seawater quality surrounding the island is clean and crystal clear with the right temperature, ranging from 27 ° to 31.5 ° C. Furthermore, the shallow, less than 20 metres deep, clear waters are conducive to coral reef development and the healthy growth of marine life. Hence, the abundance of stock and diverse ecology of the coral reefs has made the area suitable for snorkelling and scuba-diving. Teluk Kalong Kecil and the east of Pulau Pinang and Pulau Kerengga Besar, where water conditions are calmer, since they are not exposed to rough sea conditions, are among the popular dive sites in Redang (DTRP, 2003: 12-13).

In general, Internet and printed advertisements claim that Redang has over 1000 species of fish and 500 species of coral (DOFM, 1996; DTRP, 2003; Redang Island Rendezvous, 2003 and Ping Anchorage, 2003). However, a recent survey funded by UNDP in 2000 recorded that there were only 209 species of fish and 149 species of coral (Coral Cay, 2000: 12 and 14). There are 55 genera with over 100 species of hard coral; the most common growth forms found are *branching, columnar, tabulate, massive, encrusting, foliaceous* and *mushroom-like* corals (Ridwan and Syarifah Nora, 1996: 68). Different variation in growth forms occurs between and within coral species depending on the location, mainly based on the depth, current, wave and lighting conditions. There also exist some species of soft coral such as *Sarcophyton spp., Lobophytum spp.,* and *Sinularia spp.,* and gorgonians such as sea fans and sea whips (Ridwan and Syarifah Nora, 1996: 73-74).

Other than the diversity of corals described above, there are at least 57 species of marine algae found in Redang seawater (Ridwan and Syarifah Nora, 1996:58). Redang is also rich in some other invertebrates such as tubeworms, crustaceans, sea anemones, sea urchins, sea cucumbers and giant clams. In terms of fish, not only is Redang a treasure-trove of reef fish species like the butterfly and angel fish, it is also rich in demersal (bottom-living) species such as snapper and emperor fish and pelagic (open sea-living) species like tuna and barracuda (Ridwan and Syarifah Nora, 1996). Other sea mammals such as dolphins and migratory whale sharks can sometimes be spotted in the Redang seawater. Nevertheless, the diversity of the coral and fish species is rich and unique by itself.

There are several dive sites around Redang worth mentioning. Diving enthusiasts and underwater photographers will definitely be entranced by the sights of the islands, which are ranked among the best coral reefs in the world (Tourism Malaysia, 2002). Among the attractions at the more than twenty different diving spots, are shipwrecks near Pulau Pinang, the black coral garden as well as the mysterious submerged chamber, both located in the vicinity of Pulau Lima. Another attraction is the Big Mount, a completely submerged seamount, located about 50 metres towards the northern tip of Pulau Lima. With the shallowest portion of the reef at 20 metres, here the divers have the opportunity to observe not only macro life forms but the possibility of encountering the huge whale sharks, making the site highly-rated by divers (Tourism Malaysia, 2001:12). Another interesting site is the Mini Mount situated about 100 metres east of Pulau Kerengga Besar and in between Kerengga Kecil. With the deepest portion about 20 metres, the faces of the boulders are carpeted with a variety of soft corals, tubastrea corals, sea squirts, sponges and stinging hydroids (Tourism Malaysia, 2001:13). Redang waters also contain two historic shipwrecks. Both of the shipwrecks, the H.M.S Prince of Wales and the H.M.S. Repulse, sank near Redang at the beginning of the Japanese occupation of Malaya (former name of Malaysia) during World War II.

Another marine creature, which is unique to Redang, is the turtle. In general, 4 out of 7 species of marine turtle in the world still land and lay their eggs on Malaysian beaches. The beach of Terengganu used to be the host for the Leatherback turtles to lay their eggs. However, the number dropped dramatically from 2000 nesting in the 1950s to 10 nesting in the year 2000 (SEATRU, 2003). The scenario with the Leatherback species is due to

many factors, for example, disturbances to the habitat and nesting area. Redang, on the other hand, is still one of the favourite nesting grounds for the Green and Hawksbill turtles, mainly at the Pasir Cagar Hutang, Pasir Mak Kepit and Pasir Mak Simpan. For instance, out of 1647 green turtles landing in Terengganu in 1990, 735 landings were made on Redang (Ridwan and Syarifah Nora, 1996: 102). To ensure the continuing existence of the endangered marine life, a research unit called SEATRU was set up at Pasir Cagar Hutang. SEATRU is the Sea Turtle Research Unit of the Faculty of Science and Technology, University College Terengganu-UPM (UCT). The unit began research on the leatherback turtles of Rantau Abang in 1984. SEATRU has since developed into a multi-disciplinary programme aimed at studying all aspects of the biology and ecology of sea turtles, threats to their survival, and how they can be managed in order to restore the various species to a stable population level (SEATRU, 2003).

Not to underestimate, the tropical forest of Redang also houses a diverse number of animals from monkeys to birds and from snakes to lizards and gecko (Ridwan and Syarifah Nora, 1996: 46). Although it is still under-utilised, the forest is suitable for jungle trekking and animal and bird watching. The existence of the hilly and steep rock formation and caves also houses some species of birds. One species, which is so special to the local people, is the swiftlet whose nest is edible and expensively traded in the market place. The existence of all these richness in resources creates the panoramic view of peace and tranquillity that enables Redang Island to be listed as a choice of destination to the tourist, be it local or foreign, for recreation and relaxation.

3.6 Tourism at RMP

Due to its uniqueness highlighted in section 3.5, RMP manages to draw attention among the tourists from the region and internationally. However, since none of the Marine Parks in Malaysia puts a limit on the number of visitors, the tourist arrivals at RMP keep on increasing. Fortunately, the visiting period to RMP is governed by the monsoon season that acts as a natural shut-down period for the island. However, due to heavy marketing and promotion locally and abroad, RMP witnesses a high influx of tourists. In fact, the number of visitors has multiplied, from 707 in 1990 to 216404 in 2010, as shown in Table 3.4 (DMPM, 2011).

Although the recorded numbers are very high, there is a possibility of underestimating the total. The numbers recorded represented visitors who visit The Marine Park Centre while they are at RMP. Those who choose not to visit the centre are excluded from the statistics. This is due to the fact that RMP is comprised of a larger area under the management centre of Pulau Pinang. Redang itself has more than one entry point. To complicate further the situation in RMP, the park itself as a whole has many entry point, particularly, if other islands such as Perhentian, Kapas and Tenggol are considered. Therefore, managing the tourists' arrival is one aspect that needs further coordination between the park management and the tour operators. Without a close consolidation between the two parties the real visitor numbers are unknown. The situation therefore, will not be able to help all the related parties in understanding the real demand for RMP. Consequently, the number of tourists will keep on being underestimated.

Table 3.4: Number of Visitors to RMP (1990-2010)

Year	Number of Local Visitors	Number of Foreign Visitors	Total Visitors
1990	577	130	707
1991	3938	787	4725
1992	4930	1131	6061
1993	6413	1235	7648
1994	6379	1970	8349
1995	18690	4035	22725
1996	26988	7755	34743
1997	30258	5940	36198
1998	30274	7282	37556
1999	39449	7559	47008
2000	43390	9244	52634
2001	65539	8041	73580
2002	56263	7563	63826
2003	71654	4565	76219
2004	111225	31251	142476
2005	98863	24296	123159
2006	93546	41552	135098
2007	112844	38553	151397
2008	129532	22292	151824
2009	99434	70692	170126
2010	130174	86230	216404

Sources: DMPM (2011)

It is estimated that the visitors to RMP comprise 5 percent of the total tourists to the entire state of Terengganu and 17 percent of the tourists to Kuala Terengganu. It is also estimated that 84 percent of the total visitors to RMP are local while the remainder are

foreigners mainly from Japan, Singapore, the United States and United Kingdom (DTRP, 2003:13).

Due to the ever increasing number of tourists, the demand for accommodation and basic amenities is also increasing. There are 17 resorts and chalets offering a total of 1053 rooms in Redang (DTRP, 2003: 14). Compared to the year 1996 when there were only 400 rooms available at Redang (DTRP, 1997: 16), the growth to the accommodation facilities is at the rate of 163 percent over the 7-year period.

Based on the data in Table 3.5, almost 53 percent (9) of resorts are located at Pasir Panjang which has the longest stretch of sandy beach area. In total Pasir Panjang alone offers up to 58 percent of the total number of rooms at Redang. According to DTRP (2003), the number of rooms available is more than enough to support the tourist demand at Redang and is thus not recommended to any further construction of a new resort. Table 3.6 illustrates how the DTRP concludes its claim.

Table 3.5: Number of Room and Location in RMP

Location	Number of Chalet/Resort	Number of Room	Number of Building	Number of Visitor (Year 2002)
Teluk Dalam	1	252	32	18306
Pasir Panjang	9	609	130#	42219
Teluk Kalong Kecil	3	63	11	4500
Teluk Kalong Besar	3	40	4	n.a
Tanjung Teluk Siang	1	99	N.A	NA
Total	**17**	**1053**	**177**	**64425**

Source: DTRP (2003)
- Not including the under construction building of Laguna Resort
N.A - Not available – Temporary Shut Down n.a - Not available

Table 3.6: Demand for Rooms (2002)

Total number of visitor (2002)	Average visitors per month for 8 month period excluding 4 months of monsoon season	Average visitors per day (Based on 30 days per month)	Average rooms needed per day (Based on sharing twin room)
64425	8053	268	134

Source: DTRP (2003:15)

In terms of human resources, the 17 resorts employ a total of 547 workers. About 16 percent of the workers are involved at management level. The remaining of 84 percent are general and unskilled workers. It is estimated that 75 percent of the work force are males and 25 percent are female (DTRP, 2003:14).

From the demand side, RMP offers a wide range of activities to the tourists. DTRP (2003:15) has identified the six most preferred tourist activities while at RMP. The list of activities is illustrated in Table 3.7. Broadly, the activities are divided into two categories: sea-based activities and land-based activities. The sea-based activities are commonly highlighted in the media and synonymous to island tourism. On the other hand, the land-based activities are being under promoted by the media.

Table 3.7: Six Most Preferred Tourist Activities

Rank	**Activities**
First	Resting
Second	Snorkelling
Third	Scuba-diving
Fourth	Swimming
Fifth	Sun-bathing
Sixth	Reading

Source: DTRP (2003:15)

3.7 Environmental Quality and Threats

In general the environmental quality at RMP currently is in a satisfactory condition. Specifically, the environmental quality refers to the level of air and underground water pollution, level of beach erosion, quality of sandy areas and beach cleanliness, and seawater and marine life. DTRP (2003:16) claims the air quality is good since no major source of air pollution exists on the island except for the use of individual generators. In the meantime, the groundwater quality is clean and drinkable (DTRP, 2003:16).

In terms of seawater DTRP (2003: 24) asserted that the quality is still good. It is crucial to note that coral reefs are very sensitive to water quality. Too much organic matter and nutrients will create widespread growth of algal blooms that can smother corals, blocking out space and sunlight required for their survival. Too much sediment in the water also has the same effect of blocking sunlight from reaching the corals and smothering the polyps when the sediment settles on them. Without sunlight, the algae present in coral

tissue cannot photosynthesise food, and the coral polyps will die. Hence, seawater quality must be constant at a very high standard of cleanliness.

Even though tourism activity contributes positively to the local economy, it is also plausible to note that mass development brings some negative implications for the environment. Among the types of pollution concerned, for instance, are seawater pollution, the destruction of coral reefs and depletion of marine life, underground water pollution, and river pollution. Below are some of the impacts of mass tourism activity and development currently present at RMP, as reported by DTRP (2003: 23-27):

- **Seawater pollution**

  There have been some traces of oil and grease in the seawater surrounding RMP. These elements of pollution originate from boat engines and electricity generators. Due to the growing energy needs, more and more fuel is required to be shipped to the island. Hence, it has greatly contributed to the seawater pollution through the increased risk of spillage. Apart from oil and grease, the improper sewage system in the settlement area and hotel industry also contributes a lot to the Redang seawater pollution. 'Sullage', wastewater from kitchen and bath areas, was not properly channelled into a waste treatment system by many of the small resort operators.

- **Destruction of coral reefs and marine life**

  Most human-induced threats cause long-term stress to reefs. For instance threats caused by tourist activities include coral breakage due to irresponsible divers or snorkelers breaking coral by standing on them or kicking them with fins. Other human-induced threats are mainly caused by the industry which relates to tourism activities at Redang, such as sewage discharges and sedimentation from land clearance for construction of new resorts. When water containing these elements reaches the coral reefs, the long-term exposure to these conditions weakens the reef and they are unable to recover, causing eventual destruction. Control measures must therefore include proper treatment of all sewage and wastewater, and proper control of run-off using drains and silt-traps.

- **Underground water pollution**

  Although the underground water at Redang is considered safe to drink, the level of nitrogen nitrate and phosphate, which is caused by the improper sewage system, in the underground water is slightly high at the moment (DTRP, 2003:26). There is concern that in the future the quality of underground water will no longer be good and safe to drink due to the presence of other elements such as chloride, sulphate and dissolved solids. Therefore, since the underground water is the major source of drinking water for most of the resorts and chalets, it is crucial to monitor and maintain its quality.

- **River pollution**

  DTRP (2003:27) claims that river water quality at Redang is currently slightly polluted with oil and grease, suspended solids and *eschericia coli* (*e-coli*). The pollution is mainly caused by the blockage in the drainage system at the settlement of Ulu Redang and some construction workers' temporary quarters at construction sites. The scenario is worsened by the construction of the airstrip. In order to build the airstrip, mangroves were sacrificed for the development. Consequently the construction process causes silting in the Teluk Siang area. The muddy water flowed into the seawater as far as Pinang Island.

Apart from on going monitoring by the DTRP, the DOE also has long conducted the monitoring process of water quality. Apart from chemical analysis, traces of oil and grease, suspended solids and *e-coli* are being monitored and recorded constantly. Table 3.8 describes the water quality at Redang from 1991 to 2000 as recorded and monitored by the DOE. It can be confirmed that all types of pollutants seriously pollute the water near the settlement areas.

Table 3.8: Redang Water Quality (1991-2000)

Location	Parameter	1991	1993	1995	1997	1999	2000
Kuala Sungai Redang	Oil & Grease (mg/l)	3.00	3.00	4.20	2.40	2.00	2.10
	Suspended Solids (mg/l)	465.00	78.00	234.00	125.00	110.00	54.00
	e-coli (MPN/100ml)	4351.00	3553.00	0.00	0.00	0.00	5420.00
Sungai Redang	Oil & Grease (mg/l)	3.40	4.00	4.20	0.60	2.00	3.80
	Suspended Solids (mg/l)	4.10	79.00	205.00	-	111.00	47.00
	e-coli (MPN/100ml)	5445.00	826.00	0.00	5.00	0.00	2400.00
Hulu Sungai Redang	Oil & Grease (mg/l)	2.20	2.60	2.50	2.10	2.00	3.70
	Suspended Solids (mg/l)	251.00	61.00	80.00	-	101.00	31.00
	e-coli (MPN/100ml)	2311.00	4797.00	7900.00	79.00	0.00	5420.00
Teluk Siang	Oil & Grease (mg/l)	2.30	2.80	1.90	1.10	2.00	3.00
	Suspended Solids (mg/l)	401.00	90.00	202.00	112.00	45.00	97.00
	e-coli (MPN/100ml)	240.00	457.00	0.00	5.00	0.00	2400.00
Teluk Dalam	Oil & Grease (mg/l)	3.30	1.90	1.30	2.10	2.90	2.80
	Suspended Solids (mg/l)	479.00	85.00	220.00	134.00	123.00	45.00
	e-coli (MPN/100ml)	11.00	31.33	0.00	0.00	0.00	2400.00
Teluk Kalong Kecil	Oil & Grease (mg/l)	-	-	2.00	1.80	2.00	3.90
	Suspended Solids (mg/l)	-	-	243.00	141.00	92.00	73.00
	e-coli (MPN/100ml)	-	-	0.00	0.00	0.00	5.00
Pasir Panjang	Oil & Grease (mg/l)	-	-	2.10	3.10	2.00	3.10
	Suspended Solids (mg/l)	-	-	246.00	103.00	64.00	80.00
	e-coli (MPN/100ml)	-	-	8.00	0.00	0.00	2.00

DOE Standard: Oil & Grease (mg/l): > 0 (polluted)
Suspended Solids (mg/l): > 50 (polluted)
e-coli (MPN/100ml): > 100 (polluted)

Source: DOE Terengganu as reported in DTRP (2003: Table 12)

3.8 Current Issues in RMP

In general the development in RMP is still integral with the island strategic planning, where development is only limited to tourism related development at the tourism zone. However through observation and experience some issues need to be highlighted. Among others are the conservation fee, physical development and basic infrastructure like the road system and public transport, and waste management system.

It is important to note that it is costly to maintain a fragile ecosystem like a marine park. However, not having any limit to the number of visitors to RMP creates pressure on the natural beauty of the island. With the limited funds and competition for allocation of federal grants, the marine park management started to apply the users-pay principle in terms of "conservation fees" in January 1999 (Siti Aznor and Shaharuddin, 2001). Currently, a levy of RM5.00 for adults and RM2.50 for children and senior citizens is charged for entry to all marine parks in the country (DMPM, 2010). Not only it is able to generate some income for the authority, the conservation fee is expected to act as a mechanism to reduce the pressure from the high influx of tourists to the marine park in general.

Having said that, however, several studies indicate that the current levy charged as the entrance fee to marine parks is too low compared to the willingness to pay among the tourists as suggested in Yeo (1998, 2004) and Ahmad Mahdzan *et al*. (2002: 110). The conservation fee imposed is able to fulfil one of its purposes - to generate income - but it is still questionable in meeting the second goal of conservation and deterrence, to help curb the growing number of visitors. It is crucial in the economic perspective, to understand the value of RMP and willingness to pay (WTP) among the visitors to preserve and conserve the natural state and beauty of the island. In fact, by understanding WTP will also help management in setting up the proper pricing rather than just using an ad-hoc value.

In managing the number of tourists to RMP with multiple entry points, special attention needs to be given to incorporate all tourists to RMP as a whole rather than just those who visit the marine park centre, as practised currently. This can only be done through a wider coordination of different parties and agencies from the tour operators to state and

federal agencies. This, however, may involve some amendments to the current statute and empowerment to different agencies.

On the development of tourism facilities, concern gained momentum about the new resort on Redang Island which contradicts to the fact that the existing numbers of rooms available at Redang are sufficient to cater for the tourist demand. On the development of the infrastructure, a lot more planning has to be done, and consideration given, to portray RMP as a tourist destination. However, all types of development need to have conservation and preservation in mind. Among other basic infrastructures to be considered, planned and developed properly, are the main jetties on the mainland and at the RMP gateways. Solid waste disposal and management system is another aspect requiring thinking and planning. The high influx of tourists to Redang contributes a lot to the volume of solid waste and 'sullage' to be disposed off.

Given all the scenarios and background it could be contended that RMP, like any other natural resources, is facing trade-off issues between development and conservation. On one hand, development is needed to fulfil the demand side of the tourism industry; on the other hand, the high pressures from the tourists influx and improper planning and development will impose severe impacts on such an ecologically rich and sensitive area. In fact, all aspects of coordination and integration in planning, development and management of the area need to be re-visited and revised before it is too late. Taking into account sustainable development and smart partnership among all parties involved in supplying and consuming RMP as a natural good is crucial to ensure RMP's future as an ecologically rich area.

3.9 Conclusion

Successful management of the RMP depends to a large extent on the users, which include local community and visitors, to voluntarily adopting a code of behaviour that is compatible with the regulations, zoning and management plans for the park. Any attempt to enforce legislation without seeking and encouraging the cooperation of the users would require an almost impossibly high level of surveillance and resources. Such measures would not be cost-effective, nor would they produce a genuine desire among the users, particularly the local community, to care for the natural heritage. Of most importance is the realisation that the marine ecosystem is important to all of the parties in various ways. Hence, it is imperative that the RMP be managed in an integrated manner (sea and land) and it is absolutely crucial that users render their close cooperation in order for the marine parks to achieve their goals.

Chapter 4: Valuation of Non-Market Goods

4.0 Introduction

The common practice of economic impact studies 'typically neglect to quantify the benefits from the preservation activities' (Wong, 1997). Among the consequences are under estimation of the true benefit of the environment and failure to capture the true value of the resources. Having these in minds, a more comprehensive study is needed to capture and quantify the benefit or cost of the preservation activities. This can be done through the economics valuation techniques. Apart from that, the economic valuation techniques can ensure that the linkages between environment and economics are recognized. The first part of this chapter discusses the concept of the economic value, while the second part explains the available approaches to the economic valuation techniques and the Stated Preference (SP) method is detailed in the third section of the chapter. The following part presents some related studies employing the Contingent Ranking (CR) method in various fields. The final part justifies the application of CR for this study.

4.1 The Need for Environmental Valuation

The development of ecotourism sites such as in MPs incurs a lot of financial costs. Such examples are the construction and maintenance of the infrastructure, park management, administration and enforcement, and other operational costs. However, there are many other costs in ecotourism that are difficult to assess in monetary terms, particularly ecological and social impacts. In terms of negative ecological impacts, examples include changes in animal behaviour and degradation of natural resources. In terms of negative social impacts, examples include changes in perceptions and attitudes. In many instances, the taxpayers are indirectly responsible for paying for the management and administration of the ecotourism destination, while the local residents adjacent to an ecotourism site may have to bear the cost of inflation. Therefore, to be less dependent on taxpayers, the concept of self-financing as introduced in Chapter 1 could be one of the solutions. In other words the application user-pay principle through the implementation of the entrance fees seems to be plausible to help finance the management and conservation efforts.

However, entrance fees for protected areas in general, and MPs specifically, are minimal or non-existent. Most of the environmental goods, when not appropriately priced, may lead to several implications. Undercharging may lead to low revenues for the park authority and over-consumption of the services by the users. Thus the revenue is often insufficient to cover the most basic costs of operations, for example, the enforcement from encroachment and maintenance of facilities. These may lead to the degradation of the site, which in turn may reduce the quality of the site. Consequently, visitors may refuse to visit the park, which can cause a sudden drop in the park's overall revenue and, thus, discourage further investment. In contrast, overcharging may reduce visiting rate to the area which limits the growth of the ecotourism industry as well as reducing visitors' net economic benefit. Thus it is crucial to understand the value of the environmental goods, such as MP, to the visitors in order to exercise the correct pricing level for the entrance fee.

4.2 Economic Value

Economic value refers to how much people value particular goods and services. In other words it is the monetary measure of the wellbeing associated with the change in the provision of some good or services. On the other hand, economic valuation refers to the assessment of monetary values for non-market goods and services (Bateman *et al*., 2002). It involves pricing the natural resources by putting monetary values on them through valuation exercises. Formally economic valuation is defined by Barbier, Acreman and Knowler (1997) as "the attempt to assign quantitative values to the goods and services provided by environmental resources, whether or not market prices area available to assist us". The monetary values are based on human preference measures in terms of willingness-to-pay (WTP) or willingness-to-accept (WTA). WTP is defined as the monetary measures of the value of obtaining environmental gain or avoiding a loss while, WTA is defined as the monetary measures of the value forgoing an environmental gain or allowing loss (Bateman *et al*., 2002). For simplicity, the following discussion will concentrate on the WTP value only. In order to derive economic values, it is crucial to understand the relationship of the environmental and human interactions.

Furthermore, by measuring consumers' preference, the researcher will be able to quantify the WTP for both public and private aspects of life. WTP has a formal relationship with demand curve. Demand curve shows the relationship between the quantities of a good that consumers are willing to buy and the price of the good. Furthermore, consumer surplus is defined as the difference between what a consumer is willing to pay for a good and the amount actually paid (actual price paid) i.e. the benefit generates from consuming such good. Therefore, total or maximum WTP can be defined as the addition of market price and the amount of consumer's surplus (Bateman *et al*., 2002; Goodstein, 2008; Pindyck and Rubinfeld, 2009; Tietenberg and Lewis, 2009). However in order to understand the benefit gains by a consumer, it is crucial to understand the concept of Total Economic Value (TEV).

The TEV concept is an important component of economic valuation. It is a framework used to identify and estimate the monetary value of all economic benefits of society. As defined in Bateman *et al*. (2002), TEV of an environmental resource is made up of:

i) **Use values**

The use value is the value placed on a resource by users of that resource. It consists of the following:

- *Direct use values*

  The values directly related to the use of the environmental goods, either for commercial or recreation purposes. For example, people visiting a national park derive recreation and education benefits from the experience. Environmental resources may also provide pleasure through books, magazines, photographs or films.

- *Indirect Use Values*

  These refer to benefits that people derive indirectly from environmental goods and services. The values arise when individuals benefit from the ecosystem functions supported by the resource rather than actually using it. For example, forest preservation may have an indirect impact on watershed protection and soil quality.

- *Option Values*

  The values people place on having the option to use a resource in the future, even if they are not currently using it. This refers to the value of securing a possible future use of the resource. In fact, by conserving the environment, one is retaining the possibility of using it at some point in the future.

ii) **Non-use values**

The value placed on a resource by people who are not current users of that resource and who do not intend to use the resource themselves. The value, furthermore, include benefits that are totally unrelated to any personal use of the environmental commodity. People may value environmental resources for a number of reasons without ever using or visiting them. The non-use values are made up of:

- *Altruistic values*

  Altruism is the desire to secure an enhancement of the wellbeing of others. Altruistic economic value is the willingness to pay on the part of individual A to ensure that individual B secures some gain in wellbeing.

- *Existence values*

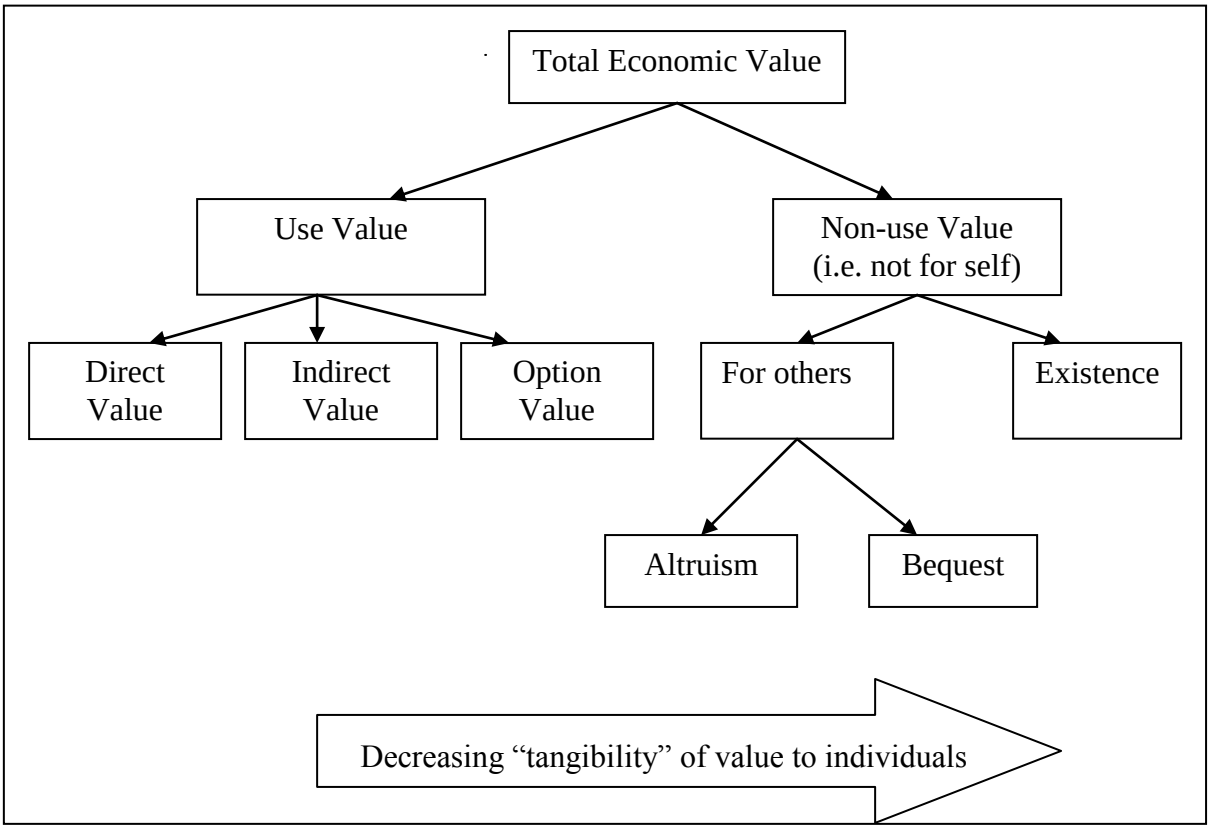
  The value people put on the existence of a resource, even when they have no intention of ever using the resource. This refers to the benefit from the knowledge that our environment is being conserved.

- *Bequest values*

  Measures people's willingness to pay to ensure that future generations will be able to use the resource in the future. This refers to the benefit accrued from the desire to conserve environmental goods for future generations.

Figure 4.1 shows the components of TEV of environmental resources. In general, use values are comparatively easy to estimate. However, as option values and non-use values are intangible in nature, these values become increasingly difficult to estimate.

Figure 4.1: Total Economic Value



Adopted from Bateman *et al*. (2002)

Meanwhile, Table 4.1 presents some examples of the types of value and components for Coastal and Marine Resources, which include beaches, coral reefs, sea grass and seaweeds, as well as mangroves and mudflats. Specifically to this study, the component of interest is the direct use value generated from tourism and recreational services at a MP. The economic impact of tourism in general, and MPs specifically, is measured in terms of the tourists' overall spending on accommodation, food, travel souvenirs and other expenditure, and this can be estimated by multiplying the total number of visitors per day by the average tourist spending per day. Having said that, however, more important is the concept of total economic benefits of tourism that is equivalent to the aggregate WTP of the eco-tourists to visit at any site. The question is how to calculate the WTP? This is explained in the following section.

Table 4.1: Types of Values of Coastal and Marine Resources

Value category	Resources and Service Function	Examples
Use Value – Direct Use	Raw Material Non-timber Products Medicine Fisheries Recreation/Tourism Research Shipping Lanes	Trees for charcoal, poles Fish, prawns, mud crab, cockles, gastropods, sea cucumber Ecotourism, sport fishing, snorkelling, diving
Use Value – Indirect Use	Gas regulation: regulation of atmospheric chemical composition Climate regulation: regulation of global temperature, precipitation and other biological mediated climatic process at global or local levels Shoreline Protection Carbon Sequestration Nursery role/ Habitat Feeding grounds of birds	Carbon dioxide and oxygen balance Greenhouse gas regulation Wave protection, storm protection, flood control, drought recovery and other aspect of habitat response to environmental variability mainly controlled by vegetation structure
Option Value	Potential benefits from the direct and indirect use of an environmental goods Biodiversity	Potential visit to a natural area; Biodiversity; conserved habitats
Non-use Value	Existence value: value from knowledge of continued existence Bequest value: use and non – use value of environmental legacy accruing to a person from knowing that the good will be available in its current condition for future generations.	Habitats, species, genetic ecosystem, prevention of irreversible damage to habitat

Source: Lipton *et al*. (1995) as cited in DANIDA (2005).

4.3 Approaches to Valuation

Before embarking on any environmental valuation studies it is crucial to understand the possible approaches available in order to choose an appropriate valuation technique. The approach to obtain monetary valuation estimates for environmental resources can be broadly divided into two main groups. The first approach values a commodity *via* a demand curve and able to provide welfare measures. While the second approach do not refer to the demand curve and therefore fail to provide 'true' valuation information and welfare measures (Turner, Pearce, and Bateman, 1994).

The non-demand curve approaches which are based on cost have usually been used by policy-makers to assess the cost of environmental impact and hence to determine the policy response. The methods include among others, *Production (or Opportunity) Cost Approach*, *Dose Response Method*, *Preventive Expenditure Approach* and *Replacement Cost Approach*.

The demand curve approaches can be categorized into *Stated Preference (SP) Technique* and *Revealed Preference (RP) Technique*. The major differences between the two techniques are the data origin and collection method. The RP data are obtained from the past behaviour of the consumers and the technique infers WTP from data on actual or observed behaviour or from the market data. The SP data however are collected through a survey. In other words, SP technique refers to any questionnaire-based techniques which seek to discover individuals' preferences. SP technique becomes necessary when the WTP information that is needed cannot be inferred from market or obviously due to the absence of any market at all such as in the case of public goods or the environment.

The two components of the RP technique are the *Hedonic Pricing Method (HPM)* and the *Travel Cost Method (TCM)*. The HPM attempts to evaluate environmental services by looking at how their presence can directly affect certain market prices. The HPM is most commonly used in the property market by looking at the existence of an environmental quality affecting house prices. On the other hand, the TCM can be used to estimate the demand curves for recreation sites and thereby infer the value for the sites. Since one of the objectives in this study is looking at the multi-attributes of the MP, the HPM and TCM are not suitable to be employed. Although these methods seem relatively to be straight forward,

there are numerous problems with the methods in practice. To name a few, problem related to multiple visit journeys, substitute sites and non-paying visitors are among the problems in TCM (Turner *et al*., 1994; Garrod and Willis, 1999). On the other hand, problem such as measurement error, user unfriendliness and market segmentation usually relate to HPM (Hanley and Spash, 1994; Garrod and Willis, 1999). Although there are some studies (e.g. Brown Jr. and Mendelsohn, 1984; Englin and Mendelsohn, 1991) employed the Hedonic Travel Cost Method (HTCM) which is the combination of the two above methods, the technique is cumbersome to be applied (Smith and Kaoru, 1987; Garrod and Willis, 1999). Having said this, other valuation technique which is the SP technique is explored. Details about the technique are explained further in the next section.

4.4 Stated Preference Techniques

Over the years, a range of SP techniques have been developed for eliciting consumers' preferences and measuring WTP for goods and services. All techniques involve asking respondents to consider one or more hypothetical options and express their preference through surveys. Basically, SP techniques elicit WTP directly by asking questions in the forms of 'How much are you willing to pay?' or 'Are you willing to pay *x* amount of money?' or by asking respondents to express preferences across some set of alternatives.

Generally the SP family can be separated into two: the *Contingent Valuation Method (CVM)* and *Choice Modelling (CM)* (Bateman *et al*. (2002). This is illustrated in Figure 4.2. The term CVM is derived from the nature of the method where responses are sought from individuals upon their actions *contingent* on the occurrence of a specific hypothetical scenario (Mitchell and Carson, 1989; Hanemann, 1994). For example individuals are asked the maximum WTP to visit a MP *contingent* upon a conservation fee being introduced (Hanley and Spash, 1994; Garrod and Willis, 1999). On the other hand, CM approaches describe the environmental good in terms of its attributes or characteristics and their levels (Bennett and Blamey, 2001; Bateman *et al*., 2002). It may be used to determine which attributes are significant determinants of value; their implied ranking; the value of changing them; and the TEV of a resource or good. The obvious difference between these two

techniques is the way the goods are treated (Louviere, Hensher, and Swait, 2000; Bennett and Adamowicz, 2001; Bateman *et al*., 2002).

CM has many benefits compared to CVM at least in two major issues. First, CM describes an asset in terms of its attributes and the levels that this takes while CVM mainly deals with a single good as a whole. Having this property, CM is capable of measuring the value of multiple attributes good. By employing CM, we can avoid series of multiple CV studies needed in valuing multiple attributes good. On the other hand, by summing up the value of attributes concerned, CM is also capable of valuing the good as a whole (Bateman *et al*., 2002; Hanley, Mourato and Wright, 2001).

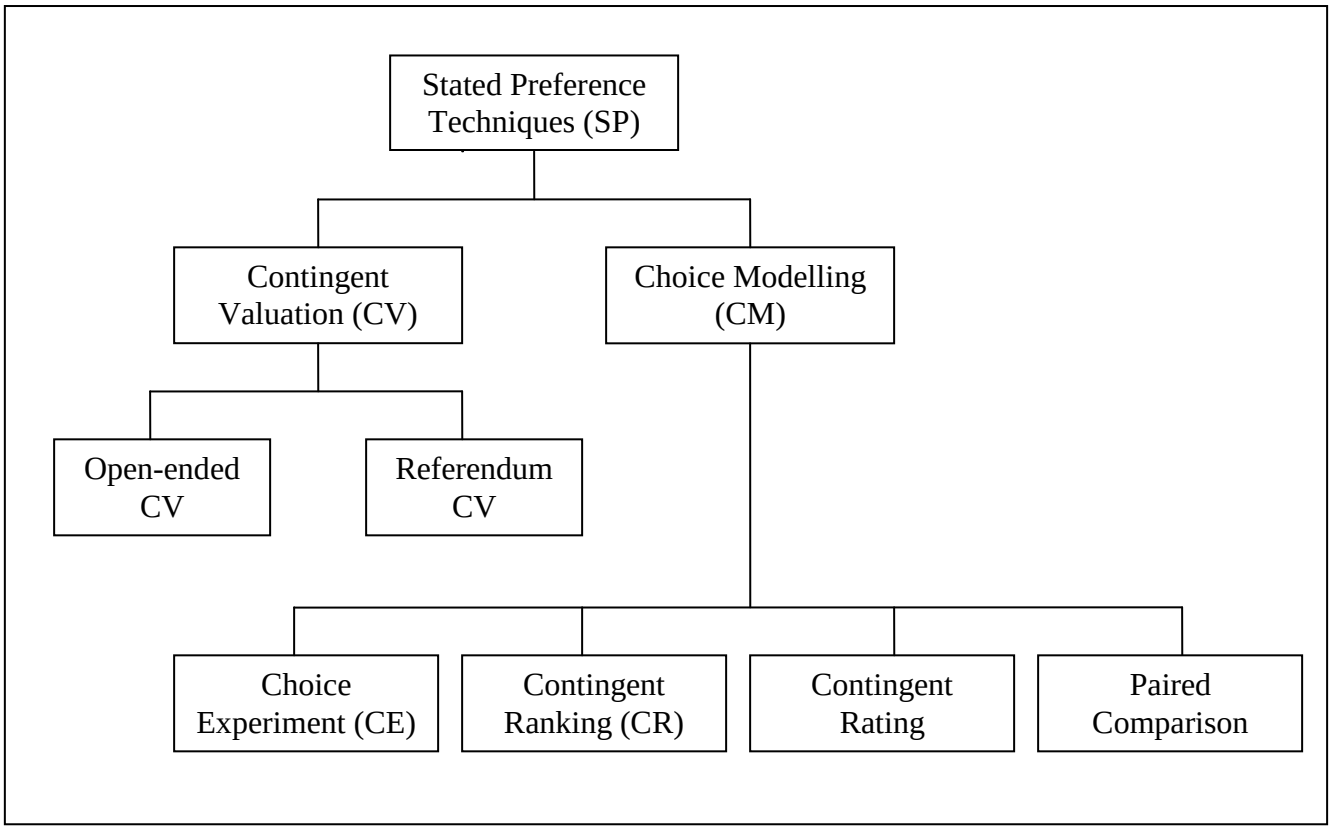
Second, CM is able to avoid some difficulties in answering CV questions. Since there is an absence in the market for environmental and natural goods, people are having the problem in putting the value for these goods. There are tendency of having biases in answering CV question since people are directly asked to put the price of the good (Diamond and Hausman, 1994). For instance, one of the biases is tendency of the respondent to have a strategic behaviour in answering CV question where by it can be minimised by using the CM method (Bateman *et al*., 2002; Riera and Penin, 1997). Strategic behaviour happens when respondents strategically assign a WTP value other than real value. Rather than asking the respondents to state the value directly as practised in CV, price is given as one of the attributes to the respondent to consider when making decision in the CM method, which then able to avoid the bias (Adamowicz, Boxall, Williams and Louviere, 1998; Bennett and Blamey, 2001). This is also being supported by Smith and Desvousges (1986) who found that respondents are more accurate in ordering their choices rather than in assigning a particular value. Having realizing the potential problems in the CVM, the study will further explore the CM method in the SP family.

The CM family consists of four methods which are *Choice Experiment*, *Contingent Ranking*, *Contingent Rating* and *Paired Comparison*. In Choice Experiment, respondents are presented with a series of alternatives and asked to choose the one they most prefer. In Contingent Ranking respondents are required to rank a set of alternative options. Each alternative is characterised by a number of attributes, which are offered at different levels across options.

Respondents are then asked to rank the option according to their preferences. In Contingent Rating on the other hand, respondents are presented with a number of scenarios and are asked to rate them individually on a semantic or numeric scale. Finally, in Paired Comparison, respondents are presented with two objects simultaneously and asked to select one according to some criteria. They may also be asked to indicate the strength of their preference in a numeric or semantic scale (Bateman *et al*., 2002).

Following the argument made by Bateman *et al*. (2002), it can be attested that only Choice Experiment and Contingent Ranking are consistent with the welfare economic theory. This is because they allow the status quo option to be incorporated in the choice set presented to the respondents. Since one of the objectives in this study is to measure the welfare benefits derive from visiting the island destination, it is crucial to have the techniques that are consistent with the welfare theory. Therefore, the Contingent Rating and Paired Comparison are not appropriate in this case. Between Choice Experiment and Contingent Ranking, the later is more suitable since the main objective of this study is to explore and understand the rank made by tourists to several island destinations. Since destination ranking is crucial in this study, the respondents need to carefully rank among the destinations. This can be done by using CR format as they are forced to make distinct choices and order all choices without using ties as argued by Boyle, Homes, Teisl and Roe (2001).

Figure 4.2: The Family of Stated Preference Techniques



Adopted from Bateman *et al*. (2002)

4.5 Some Related Studies using Contingent Ranking (CR)

In resource economics literature, the CR method is used to estimate the value for environmental amenities and other non-market goods and services. Respondents rank these alternatives to maximise their utility or to minimise cost. There is always a trade-off between the quality of goods or services and the price. The CR approach provides the basis for computing this trade-off (Garrod and Willis, 1997).

CR has been successfully utilised for the valuation of varieties of goods. These include the demand for electric cars (Beggs, Cardell, and Hausman, 1981), water quality improvement (Desvousges, Smith and McGivney, 1983), river water quality improvement (Smith and Desvousges, 1986), diesel fuel odour reduction (Lareau and Rae, 1989), the environmental health and employment effects of energy programmes (Johnson and Desvousges, 1997), air quality valuation (Riera and Penin, 1997), biodiversity conservation (Garrod and Willis, 1997), amenity loss estimates for recreational users (Garrod and Willis, 1998), estimating the impacts of pesticide use in the UK (Foster and Mourato, 2000), valuing households'

willingness to pay for different kerbside (curb-side, roadside) trash-separation services (Caplan, Grijalva and Jakus, 2002), atmospheric pollution reduction (Ortuzar and Rodriguez, 2002) and preferences for fresh eco-labelled seafood (Johnston and Roheim, 2006).

4.6 Applications of CR in Malaysia

There have been very few published works on environmental valuation involving Malaysian cases. To estimate the benefit of nature-based recreation, most studies have applied the TCM (Ahmad, 1994; Willis, Garrod and Chee, 1996; Jamal and Redzuan, 1998; Jamal, 2000(a) and Raziah, 2003) or CVM (Nik Mustapha, 1993, 1995; Jamal, 2000(b) and Ahmad *et. al* 2002). In terms of valuing marine environment and coastal recreations, most of the undertaken studies employed the CVM. This includes Yeo (1998, 2004) on the recreational benefit of Pulau Payar; Alias and Shazali (2000) on Manukan Island Sabah; Ahmad *et al*. (2000 (a) (b), 2002) on conservation fees among the local and foreign to Payar Marine Park and Siti Aznor (2009) on willingness to pay for an entrance fee to the marine parks.

The application of CR, however, is considered rare. To date there have been only two studies utilizing CR in particular to estimate entrance fees in Malaysia. The first is the study by Jamal and Shahariah (2004) to estimate the economic benefits of forest recreational attributes at three forest areas in Selangor. The survey was administered to 187 visitors. The study found that respondents derived substantially high positive utility from attributes such as night camp, eco-challenge, jungle trekking and night walk at the park. Net benefits ranging from RM12.96 to RM17.83 were generated from the three forest areas. The authors suggested that the current pricing practice should be revised upward. The study however was not related to MP and marine environment.

The only study which applies CR to values MP was done by Jamal and Norlida (2003) to estimate the entrance fee level for Malaysia Marine Parks from a demand perspective. In the study 282 visitors to Tioman were interviewed. Among the attributes concerned are the intensity of physical development, jungle trekking, snorkelling, landscape uniqueness, beach recreation and the existence of traditional settlement on the island. The estimated net economic benefit of about RM44.00 was generated from the experiment which is significantly above the current fee of RM5.00 charged to visitors. A revised increase fee of

RM11.00 is suggested by the authors to generate extra income to the authority while at the same time allowing some net benefits left to the visitors. Although the study attempted to measure recreational benefits as a basis to estimate admission fees, it looks at three different islands located in three different MP systems.

In contrast to Jamal and Norlida (2003), this study attempts to identify the importance of each island in the same MP system as tourism destination. In particular, the study compares the importance of several islands in the RMP system through the ranking given by visitors. Based on the discussion, it is safe to conclude that CR method is the most suitable technique since the method is not only capable of calculating the WTP, but also able to explicitly determine the rank of these islands.

4.7 Conclusion

The chapter addressed the need for a comprehensive study in valuing the non-market goods. In valuing the non-market goods in particular the environment, economic valuation techniques are commonly used. The techniques recognize the link between environment and economic values. The chapter followed with the discussions regarding the needs for environmental valuation and the concept of the economic values. It then followed with the discussions of the available approaches in the economic valuation techniques. Along with the general discussions, the SP techniques were discussed in detail. Finally, the chapter presented some related studies employing the CR method which justify the use of CR as the method to be employed in this study. The theoretical and methodological aspects of CR will be discussed in detail in the next chapter.

Chapter 5: Contingent Ranking – Theory and Methodology

5.0 Introduction

The aim of this chapter is to outline the underpinning theories for Contingent Ranking (CR), the Theory of Value and the Random Utility Theory (RUT). It proceeds with the development of the CR method which is the main technique employed for valuation purposes in this study. It continues with some discussions regarding the issues in CR. The empirical specifications of the models used in this research are developed and presented. Finally the chapter presents the background of the Ordinal Regression technique, mainly discussing the PLUM procedure in SPSS which is utilized to analyze CR data in this study.

5.1 Theories in Contingent Ranking

Contingent Ranking (CR) was originally developed by marketing practitioners to isolate the value of individual product attributes or performances in hypothetical situations where these attributes, or combinations of these attributes, are not available in the market (Foster and Mourato, 2000). As it name implies, respondents are asked to rank their choices completely rather than just choose the one that they most prefer (Lareau and Rae, 1989). In other words, CR surveys ask individuals to compare and rank alternate programme outcomes with various characteristics and these ranks are ordered based on their preferences.

The theoretical foundation of choice modelling including CR is based on the Theory of Value and the probabilistic choice theory, the Random Utility Theory (RUT). The Theory of Value explains that consumers' utilities are actually based on the characteristics or attributes (or a combination of the attributes) of goods rather the goods itself (Lancaster, 1966). This is parallel with the CR technique where the respondents are required to rank a set of alternatives where the alternatives are established based on the combination of the attributes.

In terms of RUT, the theory allows researcher to elicit preferences for complex multidimensional goods, from which a model of preferences can be estimated. RUT is based on the hypothesis that individuals make choices based on the attributes of alternatives (i.e. an

objective component) along with some degree of randomness (i.e. a random component) (Garrod and Willis, 1999).

The theory, furthermore, was used as a basis for the development of Random Utility Models (RUMs) by Marshack in 1960, and Block and Marshack in 1960 (Batley, 2008). A new approach to RUMs, however, was developed by McFadden (1974). Many researchers employ the model in their CR study to mention a few Beggs *et al*. (1981), Desvouges *et al*. (1983), Lareau and Rae (1989), Garrod and Willis (1997), Foster and Mourato (2000) and Caplan *et al*. (2002).

Basically, the RUMs assume that an individual's utility from any given alternative is specified as a linear function of characteristics of the individual and the attributes of the alternative and the error term. By assuming each individual faces a choice set C which consists of i alternatives (i = 1,…, n), the utility derived by the individual can be expressed as:

$$U_i = V_i + \varepsilon_i \qquad (1)$$

where V_i is the observable or deterministic component and ε_i is the unobservable or the random component of the total utility. Although both terms are known to the individual, the ε_i are unobservable to the researcher and are thus considered as random variables. Facing several alternatives within a choice set, an individual will choose the alternatives that yield the highest utility. Therefore, the probability of an individual choosing the alternative i, P(i), among the set of alternatives can be stated as:

$$\begin{aligned} P(i) &= P\,(U_i > U_j) \\ &= P\,\{(V_i + \varepsilon_i) > (V_j + \varepsilon_j)\} \\ &= P\,\{(V_i - V_j) > (\varepsilon_j - \varepsilon_i)\}, \qquad \forall\ i \neq j \end{aligned} \qquad (2)$$

The deterministic component of the utility, V_i, is assumed to have the linear form of

$$V_i = \beta_1 + \beta_2 x_{i2} + \beta_3 x_{i3} + \beta_4 x_{i4} + \ldots + \beta_n x_{in} \qquad (3)$$

The utility function, Vi, can be considered as an individual's indirect utility function with the variables included in the x_{in} being the specific attributes in question and the coefficients β_i represent the relative importance attached to each attribute. Usually, price is included in the variables list for the WTP calculation. This will be explained further in the following section. If the error term, ε_j is independently and identically distributed (iid) with a Weibull distribution, it can be shown that probability of choosing alternative i is shown in equation 4 (McFadden, 1974):

$$P(i) = \frac{e^{\beta, Xi}}{\sum_{i=1}^{n} e^{\beta, Xi}} \qquad (4)$$

The above form of random utility is referred to as the Multinomial Logit (MNL) model which gives the probability of one particular option being chosen as the most preferred among a set of alternatives. The MNL model can be estimated through maximum likelihood (ML).

The RUM as discussed earlier provides the theory framework for analysing the data in CR exercise. The generalization of the model was proposed by Beggs *et al*. (1981) known as the rank-order logit model which capable in using all of the information where alternatives are fully ranked by respondents (Bateman *et al*., 2002). According to Garrod and Willis (1999), the model, was also independently formulated in marketing by Chapman and Staelin (1982) and known as the exploded logit model, which based on the ranking theorem of Luce and Suppes (1965). However, most of the applications of CR in the literature follow the methodology developed by Beggs *et al*. (1981) as stated in Garrod and Willis (1999: 212).

To understand further, we can illustrate the model derived by Beggs *et al*. (1981). The authors make use of the basic property of the conditional distribution of the extreme random variable where the probability distribution of the preferred option is independent of the ordering of the less favoured alternatives. Basically, information on the first choice by respondent i, indicates that the utility generated from the first alternative exceeds the utility from the remaining alternatives in the choice set. Given that, the probability model based on

the understanding of the ordering indicates that the probability that the respondent's utility for that particular alternatives exceeds for all other alternatives. The probability for a complete ordering can be written as:

$$P\ (U_{i1} > U_{i2} > U_{i3} > \ldots > U_{iH}) \qquad (5)$$

When the distribution function is assumed to be logistic, the probability of a particular ranking of alternatives being made by individual i is given as:

$$P\ (U_{i1} > U_{i2} > \ldots > U_{iH}) = \prod_{h=1}^{H} [e^{V_h} / \sum_{g=h}^{H} e^{V_{gi}}\ ] \qquad (6)$$

As explained before, ML estimation procedures can be used to estimate the unknown parameters of the deterministic portion of the utility function V_{ij}. While the estimated coefficients of V_{ij} are constant across the sample, indirect utility varies because the parameters of the function vary across respondents.

The basic model of CR developed by Beggs *et al*. (1981) was extended by Lareau and Rae (1989) in their study concerning the preference for diesel odour reduction. They used the estimators generated in the above procedure to derive expressions to show the trade-off between the attribute levels and income. They assumed the indirect utility function to be in the following form:

$$V = \alpha e + \mu c \qquad (7)$$

Where c is the cost or price variable associated with different environmental quality states, while e is the number of weekly exposures to diesel odour. With the assumption of a one unit decrease in e and holding the utility constant, the change in cost relative to the change in environment, $\Delta c/\Delta e$, is the ratio of $-\alpha/\mu$. Since α is *a priori* assumed to be positive and μ is assumed to be negative, the ratio of the two coefficients is expected to be negative. Therefore a more substantial environmental improvement should lead to a positive WTP.

Lareau and Rae (1989) also introduced a more complex specification for V involving income and multiple interactions of socioeconomics and demographic variables with both the environmental and cost variables:

$$V = \alpha e + \mu c + \theta[c/I] + \Sigma\, \tau_i e\, S_i + \Sigma\, \tau_j c\, S_j \qquad (8)$$

Where I is the household income, and S_i and S_j are socioeconomic and demographic variables that interact with e and c, respectively. This yields a more complex formula of the benefit estimate where the WTP, $\Delta c/\Delta e$, is:

$$\Delta c/\Delta e = -\,(\alpha + \Sigma\, \tau_i e\, S_i\,) / (\mu + \theta/I + \Sigma\, \tau_j\, S_j) \qquad (9)$$

Where a unit increase in environmental quality is being measured then this expression can be used directly to estimate the marginal WTP/income trade-off as a compensating surplus measure.

5.2 Some Issues in Contingent Ranking

In conducting a CR study, it follows the standard choice modelling design stages. The stages start with the selection of the attributes, the assignments of the levels, the choice of the experimental design, the construction of the choice set and the choice of the measurement procedures (Bateman et al., 2002).

One of the issues in CR, mainly in choosing the experimental design, is how to determine the number of alternatives to be presented to the respondents. Determining the alternatives or profiles in CR is usually done using experimental design. Experimental design can be in the form of *full factorial* or *fractional factorial* design. The full factorial design can be derived using the formula of L^A, where L is the number of levels and A is the number of alternatives. For instance, an environmental resource defined by 4 attributes with 3 levels of each attributes can produce 81 alternatives or profiles (e.g. 3 x 3 x 3 x 3 = 81).

However, presenting this full factorial design to the respondents is not advisable and proven to be burdensome. This is due to the high cognitive burden on respondents and could produce unreliable answers (Hensher, 2006). To overcome this problem, researchers (e.g. Foster and Mourato, 2000), opt to employing the fractional factorial designs to reduce the number of profiles. One of the advantages of this design is that it has the property of *orthogonality* which ensures that each alternative has no correlation among each others. This is known as the *orthogonal design*. However, this design only considers the *main-effect* without taking into account the *interaction effect*. The main effects are defined as the responses generated when moving from one level of a given attribute to the next, whilst holding the level of the other entire attributes constant (Garrod and Willis, 1999). On the other hand, the interaction effects refer to a situation where the effect of particular attributes is dependent on other attribute levels in the design (Bateman *et al*., 2002). This fractional factorial design can be generated in several ways, among others is by using the data management command in SPSS, known as **ORTHOPLAN** procedure.

Having identified the alternative using the fractional factorial design, the next issue need to be considered is how to group the alternatives in constructing the choice or ranking set. This was usually done randomly (Willis and Garrod, 1997; Foster and Mourato, 2000). The following issue is regarding the number of alternative set to be presented to the respondents. Smith and Desvousges (1986) found that ranking sets containing more than eight alternatives becomes cognitively unfeasible for respondents, and that the best results are obtained when ranking sets are limited to between four and six alternatives. While, Garrod and Willis (1997) in their study valuing non-use benefits of enhancing forest biodiversity on government forestland in the United Kingdom asked respondents to compare the four different combinations of forest management standards.

Before proceeding with the choice of measurement procedure, it is crucial to determine the sample size. In choosing an optimal sample size, Bateman *et al.* (2002:107) noted three factors for consideration:

1) The smallest subgroup within the sample for which estimates are needed

2) The precision with which estimates are needed – how much sampling error can be tolerated
3) How much variation there is in the target population with respect to the characteristic of interest

The more variation in the population will require a larger sample size. A large sample size on the other hand will be very costly to generate. Considering the fact that a smaller sample size can be employed in a repeated choices study, the technique presented by Louviere, Hensher and Swait (2000) is considered. Although it is unlikely that the repeated choices from the same respondent are independents, *practice has shown that a well-designed choice task that encourages respondents to view each choice scenario as unrelated to the previous one will yield parameter vectors that are proportional to those derived from models estimated on single choice from each respondent* (Louviere *et al*., 2000: 263).

Table 5.1: Choice Probability Estimation

P	Minimum number of choices required	Minimum number of respondents (for r = 8)	Minimum number of respondents (for r = 4)
0.10	3457	432	864
0.20	1537	192	384
0.30	896	112	224
0.40	576	72	144
0.50	384	48	96
0.60	256	32	64
0.70	165	21	42
0.80	96	12	24

Adopted from Table 9.2 of Louviere *et al*. (2000: 264)

Table 5.1 is an adaptation of Table 9.2 in Louviere *et al*. (2000: 264) which was produced by them to estimate the choice probability for several *p* values in the real market situation with a relative accuracy of 10 percent of *p* with probability of 0.95 ($\alpha = 0.95$) and requires each respondent to evaluate eight replications using the following formula:

$$n \geq q / rpa^2 [\Phi^{-1} (1 + a)/ 2)]^2 \qquad (10)$$

where *a* is the percentage of the true proportion, *p* is the true value, *q* is 1- *p* and *r* is the replication, $\Phi^{-1}(.)$ is the inverse cumulative normal distribution function. The number can be used as a guideline to determine the sample size needed for any valuation study.

Table 5.2: Survey Modes – Strengths and Weaknesses

Type	Strengths	Weaknesses
1) Self-administered • **Household** • **Street** • **On-site**	- complete at respondents own convenience - less interview bias	- must work-out on how to collect the complete questionnaire. Either by mail or person - no control of who complete the survey - low response rate - low data reliability - non-response error
• **Mail surveys**	- cheap - complete at respondents own convenience - no interview bias - easier to answer sensitive questions	- no control of who completes the survey - low response rate - low data reliability - non-response error
2) Telephone interviews	- need not be near sample - no interview bias - respondents more relax, willing to discuss - cheaper and faster when compares with the other two types	- limited to people with telephone - can't reach people with unlisted numbers - chances of people to hang up phone is high - answering machine - cost depends on the length and area covered - questionnaire or measurement constraints
3) Face-to face interviews • **Household** • **Street** • **On-site**	- high response rate - fewer incomplete questionnaire - effective on a complex set of questionnaire - able to detect and clarify problem	- costly - time consuming - additional interviewers may be necessary - additional cost - need training, coordination and control over interviewers
4) Mixed modes: • **Drop off survey (mail + face-to face)** • **Mail + telephone surveys**	-initial personal contact -complete at respondents own convenience	-survey may be lost in interval - share some limitation of mail surveys -relatively expensive

Source: Bateman et al. (2002), Babbie (1998) and Punch (1998).

As the sample size is determined, the next issue is how to collect data from the respondents. There are various ways in collecting the data. It can be done with the standard survey modes either self-administered modes or interviews (Bateman *et al*., 2002). To mention a few, the self-completion mode through mail surveys such as in Johnston and Roheim (2006), telephone interviews (Caplan *et al*., 2002), face-to-face interviews in Garrod and Willis (1997) and Foster and Maurato (1997, 2000), and mixed modes in Willis and Garrod (1997) and Powe, Garrod and McMahon (2005). The strengths and weaknesses of the survey modes are summarized in Table 5.2.

Having discussed the possible ways for data collection, however, the most suitable approach in collecting information from respondents in any SP approaches such as CR, as asserted by National Oceanic and Atmospheric Administration (NOAA) panel report, is through face-to-face interview (Portney, 1994).

5.3 Empirical Specification

This study employs CR, to assess the importance of various attributes of destinations to tourists in the RMP. In the absent of any proxy markets for the natural beauty of MPs, CR method is more suitable to be employed. Considering that this study is focusing on four islands, namely Redang, Perhentian, Kapas and Tenggol, CR is viewed to be more favourable as compared to the other methods.

This study uses the methodology developed by Beggs *et al*. (1981) and Larue and Rae (1989) as presented in the earlier section. The study involves two stages, namely a survey to elicit responses for a set of options and the econometric analysis to estimate a utility model, whereby the WTP estimates are derived. The basic model consisted of the dependent variable, the rank, and the independent variables consisted of several selected attributes at different levels. The extended model tried to incorporate interaction between attributes and several socio-demographic variables which possibly have some statistical influence over the probability of making the ranking. Meanwhile, the destination choice and the environmental concern, were analyzed separately in two different CR analyses.

5.3.1 *Destination choice*

For the destination choice, five main linear models were estimated. Model 1 is the main effect model where the variables employed were the five main attributes. Utility in these models are defined in the following paragraph. For discussion purposes, elaborations were made for Model 1 for calculating WTP from the model coefficients. Table 5.3 defines the variables used in the models. It also illustrates the expected sign of each coefficient for each parameter estimate.

Table 5.3: Main Variables Definition (Destination Choice)

Name	Definition	Attribute Levels	Expected Coef. Sign
Accom	Type of accommodation	Budget chalet 3 stars 4 stars	+
Fac	Hotel facilities	Restaurant Only (R), Restaurant and Entertainment (R, E), Restaurant, Entertainment and Sport Snorkelling and Scuba diving (R, E, S)	+
Dist	Distance from beach	On-beach 5-minute walk 10-minute walk	-
Access	Accessibility from main land	20, 30, 45, 60, 90, 120 minutes of boat ride	-
Price	Packages Price (3Days/2Nights per person)	RM300, RM400, RM500, RM600, RM700, RM800	-

Model 1: $V = \beta_1 Accom + \beta_2 Fac + \beta_3 Dist + \beta_4 Access + \beta_5 Price$ (11)

The model coefficients β_i represent the relative importance attached to each attribute in determining a respondent's ranking. Strictly speaking, they can be interpreted as the marginal utility/disutility associated with one unit change in any of the attributes as shown below.

$$\delta V/ \delta Accom = \beta_1 \quad (11a)$$

$$\delta V/ \delta Fac = \beta_2 \quad (11b)$$

$$\delta V/ \delta Dist = \beta_3 \quad (11c)$$

$$\delta V/ \delta Access = \beta_4 \quad (11d)$$

$$\delta V/ \delta Price = \beta_5 \quad (11e)$$

The WTP for each attribute is defined as the marginal rate of substitution between each attribute and the price variable where:

$$WTP_{Accom} = (\delta V/ \delta Accom) / (\delta V/ \delta Price) = - \beta_1 / \beta_5 \quad (12a)$$

$$WTP_{Fac} = (\delta V/ \delta Fac) / (\delta V/ \delta Price) = - \beta_2 / \beta_5 \quad (12b)$$

$$WTP_{Dist} = (\delta V/ \delta Dist) / (\delta V/ \delta Price) = - \beta_3 / \beta_5 \quad (12c)$$

$$WTP_{Access} = (\delta V/ \delta Access) / (\delta V/ \delta Price) = - \beta_4 / \beta_5 \quad (12d)$$

Model 2 expands Model 1 by introducing island as an attribute rather than an alternative as it is in Model 1.

Model 2: $V = \beta_1 Island + \beta_2 Accom + \beta_3 Fac + \beta_4 Dist + \beta_5 Access + \beta_6 Price \quad (13)$

Model 3 further expands Model 2 by introducing the island name as a factor of the attributes. Introducing a specific island name as a factor of an attribute enables us to understand the importance of the particular island in the ranking decision.

Model 3: $V = \beta_1 Redang + \beta_2 Perhentian + \beta_3 Kapas + \beta_4 Accom + \beta_5 Fac + \beta_6 Dist + \beta_7 Access + \beta_8 Price \quad (14)$

A limitation of the main effects models given above is that they do not allow preferences to vary across individuals in accordance with socio-economic characteristics. This can be corrected by interacting the attributes with socio-economic characteristics. According to Greene (1989) the individual specific variable must be entered in the utility function in interaction form with attributes that change across the alternatives to be ranked. A natural interaction to include is the division of price by income variable to obtain a variable which captures price as a proportion of income (Beggs *et al.*, 1981; Lareau and Rae, 1985 and Garrod and Willis, 1997).

Model 4: $V = \beta_1 Redang + \beta_2 Perhentian + \beta_3 Kapas + \beta_4 Accom + \beta_5 Fac + \beta_6 Dist + \beta_7 Access + \beta_8 Price + \beta_9 Price/Income \quad (15)$

$$\delta V/ \delta Price = \beta_8 + \beta_9 /Income \quad (15a)$$

Model 5 (Socio Interaction):

$$
\begin{aligned}
V = \; & \beta_1 \text{Redang} + \beta_2 \text{Perhentian} + \beta_3 \text{Kapas} + \beta_4 \text{Accom} + \beta_5 \text{Fac} \\
& + \beta_6 \text{Dist} + \beta_7 \text{Access} + \beta_8 \text{Price} + \beta_9 \text{Price/Income} + \beta_{10} \text{Gender} \\
& + \beta_{11} \text{Gender*Accom} + \beta_{12} \text{Gender*Fac} + \beta_{13} \text{Gender*Dist} \\
& + \beta_{14} \text{Gender*Access} + \beta_{15} \text{Gender*Price} + \beta_{16} \text{AgeGp} \\
& + \beta_{17} \text{AgeGp*Accom} + \beta_{18} \text{AgeGp*Fac} + \beta_{19} \text{AgeGp*Dist} \\
& + \beta_{20} \text{AgeGp*Access} + \beta_{21} \text{AgeGp*Price} + \beta_{22} \text{Edu} + \beta_{23} \text{Edu*Accom} \\
& + \beta_{24} \text{Edu*Fac} + \beta_{25} \text{Edu*Dist} + \beta_{26} \text{Edu*Access} + \beta_{27} \text{Edu*Price} \\
& + \beta_{28} \text{Visit} + \beta_{29} \text{Visit*Accom} + \beta_{30} \text{Visit*Fac} + \beta_{31} \text{Visit*Dist} \\
& + \beta_{32} \text{Visit*Access} + \beta_{33} \text{Visit*Price} + \beta_{34} \text{Member} + \beta_{35} \text{Member*Accom} \\
& + \beta_{36} \text{Member*Fac} + \beta_{37} \text{Member*Dist} + \beta_{38} \text{Member*Access} \\
& + \beta_{39} \text{Member*Price} \qquad (16)
\end{aligned}
$$

Model 4 expands the previous model by introducing income interaction with price in order to capture price as a proportion of income. In the specification given in Equation (15), the marginal utility associated with the price is a function of household income as shown in equation (15a). Average monthly household income is used to calculate the value. Whatever the chosen specification, the WTP for each attribute is defined as the marginal rate of substitution between these attributes and the price variable, and the marginal utility associated with the price is shown in Equation (15a).

Meanwhile, Model 5 looks into the interaction between the main attributes and other socio-economic backgrounds that have the possibility of influencing tourism demand. The variables concerned are gender, age group, education level and visit pattern, and membership of conservation group. Model 5 looks into the overall effect of the interaction between the main attributes and all socio-economic backgrounds. Finally Model 6 is the reduced form of Model 5 which only includes the significant interaction among the attributes.

5.3.2 *Environmental concerns*

For the environmental concern, three main linear models were estimated. Model 1 is the main effect model where the variables employed were the four main attributes. Utility in these models were defined in the following paragraph. Table 5.4 defines the variables used in the models. It also illustrates the expected sign of each coefficient for each parameter estimate.

Table 5.4: Main Variables Definition (Environmental Concerns)

Name	Definition	Attribute Levels	Expected Sign of Coef.
Fish	Fish and coral species	Current status Increase with sustainable management practice Decrease with further development	+
Turtle	Green turtle nesting	Current status Increase with more conservation practice Decrease as further habitat destroyed	+
Congest	Beach and snorkelling area congestion	Current status Congested with increase in demand Very congested with excessive demand	-
Fee	Conservation fee	Current Fee (RM5.00) Increase to RM10.00 Increase to RM15.00	-

The environmental concern model, like the destination choice, consists of three main models. The first model is the basic main effect model, Model 2 includes the income interaction effect, and Model 3 incorporates the socio-economic interaction effect. Specific models are illustrated below and the WTP for each attribute is calculated similar to the above method.

Model 1: $V = \beta_1 Fish + \beta_2 Turtle + \beta_3 Congest + \beta_4 Fee$ (17)

Similarly the WTP for each attribute is defined as the marginal rate of substitution between each attribute and the price (fee) variable where:

$$WTP_{Fish} = (\delta V/ \delta Fish) / (\delta V/ \delta Fee) = - \beta_1 / \beta_4 \quad (17a)$$

$$WTP_{Turtle} = (\delta V/ \delta Turtle) / (\delta V/ \delta Fee) = - \beta_2 / \beta_4 \quad (17b)$$

$$WTP_{Congest} = (\delta V/ \delta Congest) / (\delta V/ \delta Fee) = - \beta_3 / \beta_4 \quad (17c)$$

Model 2: $V = \beta_1 Fish + \beta_2 Turtle + \beta_3 Congest + \beta_4 Fee + \beta_5 Fee/Income$ (18)

$$\delta V/ \delta Fee = \beta_4 + \beta_5 /Income \quad (18a)$$

Model 3 (Socio Interaction):

$$\begin{aligned} V = \; & \beta_1 Fish + \beta_2 Turtle + \beta_3 Congest + \beta_4 Fee + \beta_5 Fee/Income \\ & + \beta_6 Gender + \beta_7 Gender*Fish + \beta_8 Gender*Turtle + \beta_9 Gender*Congest \\ & + \beta_{10} Gender*Fee + \beta_{11} AgeGp + \beta_{12} AgeGp*Fish + \beta_{13} AgeGp*Turtle \\ & + \beta_{14} AgeGp*Congest + \beta_{15} AgeGp*Fee + \beta_{16} Edu + \beta_{17} Edu*Fish \\ & + \beta_{18} Edu*Turtle + \beta_{19} Edu*Congest + \beta_{20} Visit + \beta_{21} Visit*Fish \\ & + \beta_{22} Visit*Turtle + \beta_{23} Visit*Congest + \beta_{24} Visit*Fee + \beta_{25} Member \\ & + \beta_{26} Member*Fish + \beta_{27} Member*Turtle + \beta_{28} Member*Congest \\ & + \beta_{29} Member*Fee \end{aligned} \quad (19)$$

5.4 Analyzing CR Data

Ordinal type of CR data can be analysed using ordinal regression employing **PLUM** (Polytomous Universal Model) procedures in SPSS. This section presents the PLUM procedure as explained in the SPSS user manual (1999). The ordinal regression is used to model the dependence of a polytomous ordinal response on a set of predictors, which can be factors or covariates. The design of ordinal regression used in SPSS PLUM is based on the methodology of McCullagh (1980). The PLUM procedure is based on the Generalized Linear Models (GLM) and the basic form of a generalized linear model is shown in the following equation.

$$link(\gamma_{ij}) = \theta_j - [\beta_1 x_{i1} + \ldots + \beta_p x_{ip}] \quad (20)$$

where link ( ) is the link function

γ_{ij} is the cumulative probability of the j^{th} category for the i^{th} case
θ_j is the threshold for the j^{th} category
p is the number of regression coefficients
$\beta_1 \ldots \beta_p$ are regression coefficients
$x_{i1} \ldots x_{ip}$ are values of the predictors for the i_{th} case
SPSS Manual (1999: 244)

There are several important aspects to be given special attention in the equation.

- The model is based on the notion that there is some latent continuous outcome variable. The ordinal outcome variable arises from arranging the continuous variables into *j* ordered groups. θj is the threshold values that estimate the cut-off values of the categories.
- The thresholds, θj or constants in the model, depend only on which category's probability is being predicted. Values of the predictor or the independent variables, however do not affect this part of the model.
- The prediction part of the model, $[\beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_{ip}]$, depends only on the predictors and is independent of the outcome category.
- The model predicts a function rather than predicting the actual cumulative probabilities. This function is called the link function. The form of the link function is chosen based on the problem under consideration when building the model.

There are three major components in an ordinal regression model. The components are location component, scale component and link function. The location component of the model, $[\beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_{ip}]$, consists of the coefficients and predictor variables. It uses the predictor variables to calculate predicted probabilities of membership in the categories for each case. The scale component is an optional modification to the basic model to account for differences in variability for different values of the predictor variables. The model with a scale component follows the form shown in this equation:

$$\text{link}(\gamma_{ij}) = \frac{\theta_j - [\beta_1 x_{i1} + \ldots + \beta_p x_{ip}]}{\exp(\tau_1 z_{i1} + \ldots + \tau_m z_{im})} \qquad (21)$$

where

$\tau_1 \ldots \tau_m$ are the scale component coefficients
$z_{i1} \ldots z_{im}$ are scale components predictors (a subset of the x's)
(SPSS Manual, 1999: 245)

The link function is a transformation of the cumulative probabilities that allows estimation of the model. Five link functions are available in the ordinal regression procedure and are summarized in Table 5.5. There are several decisions to be considered when constructing an initial ordinal regression model. Among the points to consider are:

1) Identify the ordinal outcome variable.
2) Decide which predictors to use for the location component of the model.
3) Decide whether or not to use a scale component. If scale component is considered, the predictors also need to be decided.
4) Finally, decide which link function best fits the research question and the structure of the data.

Table 5.5: Link Function in PLUM Procedure

Function	**Form**	**Typical Application**
Logit	$\log (\gamma / 1 - \gamma)$	Evenly distributed categories
Complementary log-log	$\log (-\log(1 - \gamma))$	Higher categories more probable
Negative log-log	$-\log (-\log (\gamma))$	Lower categories more probable
Probit	$\theta^{-1} (\gamma)$	Latent variable is normally distributed
Cauchit (inverse Cauchy)	$\tan (\prod(\gamma - 0.5))$	Latent variable has many extreme values

SPSS Manual (1999: 246)

The SPSS PLUM procedure assumes the data for the dependent variable to be ordinal. It can however take the form of a numeric or string. The ordering of the data is determined by sorting the values of the dependent variable in ascending order where the lowest value defines the first category. Factor variables are assumed to be categorical while the covariate variables or the independent variables must be numeric. Two assumptions made under the PLUM procedure are:

1) Only one response variable is allowed, and it must be specified.
2) For each distinct pattern of values across the independent variables, the responses are assumed to be independent multinomial variables (SPSS, 1999: 64).

5.5 Conclusion

This chapter outlines the foundation of CR which is the Theory of Values and the Random Utility Theory. It then follows with the development of the CR which is the main technique employed for valuation purposes in this study. The empirical specifications of the models used in this study are developed and presented. Finally, the background of the Ordinal Regression technique, specifically the PLUM procedure in SPSS, which is used to analyse CR data, is discussed. Next chapter will discuss in detail the survey process that took place in conducting this study.

Chapter 6: Sampling, Questionnaire Design and Surveys

6.0 Introduction

The aim of this chapter is to define the population and discuss the sampling frame. Apart from that, the section regarding location of the study and survey modes are explained. The second part of the chapter explains the experimental design conducted during the questionnaire design of the study. It is followed by the definition of the variables in the survey modes. The final part presents the survey process that took place. In the end the chapter presents the number of samples generated from the survey process which becomes the working sample for the analysis of the study.

6.1 Population and Sample

The following sections present the population and sampling frame of the study. The population is based on the number of tourists visiting RMP while the sample is drawn from the tourists visiting RMP during the data collection period. The generation of the sample follows what has been suggested by Louviere *et al*., 2000.

6.1.1 *Population*

This study intended to measure the benefit to tourists generated from the recreational services of RMP. Therefore, the survey population consisted of all tourists who visited the RMP. Bateman *et al*. (2002: 91) suggested four factors to be considered when determining user and non-user populations. Those factors are:

1) Uniqueness or substitutability of the good or service in question
2) Familiarity of respondents with the good or service
3) Scale of the change in question; and
4) Context in which the valuation results will be used (related to the payment vehicle)

This study adopted two of the factors recommended by Bateman. The two factors are familiarity and factor related to payment vehicle. This decision was made due to the fact that

this study focuses on the satisfaction of tourists with the services as well as the effect of increases in package price and conservation fee. In addition, the tourist population can further be separated into two different groups, mainly local and foreign visitors. Based on the data available on the number of visitors to RMP as presented in Table 3.4 of Chapter 3, the visitors were comprised of an average of 85 percent local tourists and 15 percent foreign tourists.

6.1.2 *Sample*

In order to make the survey manageable, the sample size for this study was decided to be 10 percent of the average monthly visitors to RMP in the last 10 years (1993-2002). The total number of visitors for the 10 year period is 380,527 with an annual average of 38,053. The average monthly number of visitors for that period is 3,171 resulting in a 317 target sample to be surveyed. Taking into consideration the local and foreign visitor proportions, the target samples are 269 (85%) of local and 48 (15%) foreign tourists. These numbers are considered reasonable since this study uses CR, where each respondent is asked to complete several replications of the CR exercises. Having said that however, based on a second note from Bateman, the sample size for foreign tourists will be increased in order to obtained a more reliable estimate. Further discussion about the available data produced from the CR exercise will be elaborated at greater length in section 6.2. The sample however cannot be considered random because the interviewers were free to conduct the interviews with any volunteers from the potential tourists at the intercept points at RMP. Hence the sampling strategy is more towards a convenience sample.

6.1.3 *Location*

Three major locations were identified for conducting the survey. Those locations were in Redang Marine Park Centre (RMPc) at Pinang Island, Redang Island and Kapas Island. The rationales behind the selection of locations were several:

i) Visitors to RMP usually took a package holiday which included a snorkelling trip at the RMPc

ii) Full range of accommodation can be found in Redang Island at two main beaches, namely Pasir Panjang and Teluk Dalam.

iii) Kapas Island is mainly popular with local tourists and day-trippers due to its proximity to the mainland.

Apart from those locations, intercept surveys were conducted at two main jetties to Redang and Kapas. The intercept surveys were conducted at Marang jetty, the embarkation point to Kapas Island; and Kuala Terengganu and Merang jetties, the embarkation points to Redang Island. The intercepts survey, however, were conducted with the returning tourists to capture their real experiences of the destinations that they had just visited.

6.1.4 *Survey modes*

After considering the strengths and weaknesses of the survey modes as discussed in Table 5.2 of Chapter 5, this study employs standard survey modes for data collection purposes. More specifically, this study used two types of survey mode, self-administered and face-to-face interview. The self-administered questionnaire survey was employed for the pilot study which was conducted mainly at the RMPc. The face-to-face interview was used for the full and intercept surveys. This is done after taking into consideration the data quality and problem faced in the pilot survey although it is costly.

6.2 Questionnaire Design

The research instrument in this study was the questionnaire. The questionnaire was developed based on an extensive literature review, detailed discussion with the key contact person, Mr. Abdul Rahim Gor Yaman[1], who was also the Head of Redang Marine Park Division of the Fisheries Department and further discussion and input with the supervisor. As a result of the discussions, four islands, as well as the attributes, were suggested. Those islands were Redang, Perhentian, Kapas and Tenggol which are all located in the same MP system, the RMP. Suggestions made were based on the popularity of those islands as a tourist destination and the closest similarity and substitutability among these islands. The attributes were mainly separated into two different components, namely the accommodation component and the environment component.

In this study, CR exercise was employed to investigate the tourists' WTP for:

1) The levels of accommodation services available at four major islands in RMP.
2) The levels of environment attributes generally available in RMP.

The choice sets consisted of several attributes regarding accommodation services and environment attributes at different levels. For the accommodation component five attributes were considered. The attributes are:

a) accommodation types
b) facilities offered by the accommodation providers
c) distance of the accommodations from the beach
d) accessibility factor from jetty to accommodation areas
e) package prices

[1] Currently he is the Director of Licensing and Enforcement Division, DMPM.

As for the environment component, the four attributes considered were:

a) fish and coral species
b) number of green turtles nesting per year
c) absence of beach and snorkelling congestion
d) conservation fee

Each of the attributes above was then assigned with several levels to reflect the current situation on the particular island in the RMP and possible changes between improvements and deteriorations of the attributes concerned. The package prices are the range of current prices including the peak-load prices[2] currently practice by most of the accommodation providers observed in these islands. Having said that however, the only exception was with respect to the conservation fees where RM10.00 and RM15.00 were the hypothetically proposed conservation fees against the current practice of RM5.00. Detail of the attributes and levels are described in Tables 6.1 and 6.2.

For the accommodation component, three attributes, which are the accommodation type, accommodation facilities and proximity to the beach, consisted of 3 levels while the accessibility and package price comprised six different levels. Based on the *complete factorial design,* it would possible to generate 3 x 3 x 3 x 6 x 6 = 972 possible sets of alternatives or profiles. As for the environment component, four attributes with three different levels, would make it possible to generate 3 x 3 x 3 x 3 = 81 sets of alternatives. Clearly it would not be possible to ask respondents to consider simultaneously such a huge number of alternatives.

[2] June to August is considered as the peak period.

Table 6.1: Destination Attributes and Levels

	LEVEL			
ATTRIBUTE	**Redang**	**Perhentian**	**Kapas**	**Tenggol**
Accommodation type	4 stars 3 stars Budget chalet	3 stars Budget chalet		
Accommodation facilities	Restaurant (R) Restaurant and Entertainment (R, E) Restaurant, Entertainment and Sport Snorkelling and Scuba diving (R, E, S)			
Proximity to beach	On-beach 10-minute walk		On-beach 5-minute walk	
Accessibility	30 min 45 min 60 min	90 min 120 min	20 min 30 min	45 min 60 min
Package Price (3D/2N per person)	RM300 RM400 RM500 RM600 RM700 RM800	RM300 RM400 RM600	RM300 RM400	RM400 RM500 RM600 RM700 RM800

Table 6.2: Environment Attributes and Levels

ATTRIBUTE	**LEVEL**
Fish species and coral species	Currently recorded 209 fish and 149 coral species Increases with sustainable management practices Decreases with further development
Green Turtle nesting	Current average of 2945 nesting per year Increases with more conservation practices Decreases as further habitats destroyed
Beach and snorkelling congestion	Current stage Congested with increase in demand Very congested with excessive demand
Conservation fee	Currently RM5.00 Increase to RM10.00 Increase to RM15.00

The *fractional factorial design*s obtained from the **ORTHOPLAN** procedure in SPSS consisting of 27 alternative sets were generated from the accommodation component, while 9 alternative sets were produced for the environment attributes set. The combinations of randomly chosen alternatives of the two blocks were then presented to respondents in the form of the choice cards.

As for the accommodation choice cards, one alternative set was repeated to make a total of 28 alternatives available to choose from. The 28 alternatives were then divided into 7 questionnaire sets, with each set consisting of 4 randomly chosen choice cards. In other words, each respondent was presented with 4 randomly chosen choice cards throughout the interview session.

Table 6.3: Example of Destination Choice Card

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	3 stars	3 stars	Budget type
Accommodation facilities	Restaurant and Entertainment	Restaurant	Restaurant and Entertainment	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	5 minutes walk
Accessibility from the mainland (boat ride)	60 minutes	120 minutes	20 minutes	45 minutes
Package price	RM400	RM600	RM400	RM600
RANK	1	3	2	4

Please check (✓) here if you prefer **NONE** of the above. ☐

Meanwhile, all of the 9 environment alternatives were presented to the respondent in 3 different sets of choice card. To be consistent with the welfare theory, an 'opt-out' option is given in the destination choice while status quo condition is presented under the 'Island 1' in the environment choice to avoid forcing the respondents with their ranking. The examples of choice cards for both blocks are illustrated in Tables 6.3 and 6.4.

Table 6.4: Example of Environment Choice Card

ENVIRONMENTAL SITUATION 2				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Current	Current	Decrease
Green turtle nesting	Current average of 2,945 nesting per year	Increase	Current	Increase
Beach & snorkelling congestion	Current stage	Congested	Current Stage	Very congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM15.00
RANK	1	2	3	4

Due to the fact that every single individual was requested to repeat 4 replications of CR exercises of accommodation ranking and 3 replications of CR exercises of environmental ranking, the target sample size of 317 would expected to generate a total of 4,304 (269 x 16) and 3,228 (269 x 12) data points or observations for the local respondents and 768 (48 x 16) and 576 (48 x 12) observation for the foreign respondents, for both accommodation and environmental ranking respectively. The targeted sample size comfortably exceeded the number suggested by Bateman *et al*. (2002). Furthermore, the targeted sample also exceeded the minimum number required to estimate a choice probability for 30 percent of the real market situation with a relative accuracy of 10 percent at 95 percent confidence level, following Louviere *et al*. (2000) as discussed in Chapter 5 (Table 5.1).

6.2.1 *Validity*

Validity refers to the degree to which a study measures the intended quantity (Bateman *et al*., 2002: 296). Two different aspects of validity issue are of concern in this study particularly the face/content validity and the construct validity. The face/content validity is whether the survey instrument presents the 'correct' goods in a proper manner that is likely to be understandable to respondents who come from different backgrounds, while construct validity is an assessment of whether the measurement is related in particular ways to other indicators of what should be measured (Bateman *et al*., 2002). To achieve content validity, Davis and Consenza (1988) suggested the following procedures:

1) Conduct an exhaustive search of literature for all possible items to be included in the scale
2) Solicit expert opinions on the inclusion of items
3) Pre-test the scale on a set of respondents similar to the population to be studied
4) Modify as necessary

In order to obtain a reasonable degree of content validity, the following phases were carried out:

Phase 1: Involved a thorough review of the literature to determine the appropriate concepts to be included and the design of the conceptual framework which serves as a plan of how the researcher proposed to undertake the research based on the set-up objectives. The researcher also had a series of detailed discussions through electronic-mail with the Head of Redang Marine Park Division of the Fisheries Department prior to the questionnaire formulation.

Phase 2: Initial construction of the survey questionnaire. Comments on the research instruments were solicited from fellow post-graduate students in the Architecture, Planning and Landscape Department and fellow Malaysians, particularly post-graduate students, at University of Newcastle who were familiar with RMP. The researcher was thankful to those who had checked on the operationalisation part of the survey, the clarity of the questions and the appropriateness of the proposed variables and scale. The questionnaire was finally submitted to the supervisor for further comments and approval.

Phase 3: Pre-test of the survey questionnaire. A pilot study was conducted during the initial 2 weeks of the first data collection period (June-July 2003). The pilot study was conducted at the RMPc with the help from the park rangers who were responsible for distributing and collecting the self-administered version of the questionnaires.

6.2.2 *Reliability*

Reliability refers to the degree of replicability of a measurement (Bateman *et al*., 2002: 296) or in simple terms, Punch (1998: 98) described it basically means consistency. According to Punch (1998) the two main aspects of reliability are "consistency over time (or stability) and internal consistency". Stability over time can be assessed by the test-retest technique, administering the same instrument at two points in time while the internal consistency reliability is more towards assessing to what extent items in the multi-items measurement scale are working in the same direction. Punch (1998) mentioned the three best known ways to assess the internal consistency, namely the split-half techniques, the Kuder-Richardson formulas, and coefficient alpha. However this study is unable to assess the stability over time since it requires administering the same measurement scale to the same set of respondents at two different times. Therefore, the tests of reliability in this study were conducted by focusing on assessing the internal consistency. Using the SPSS test of internal consistency, the *Cronbach-Alpha* (α) technique was tested on the service and environmental quality items measurement and the attitudinal statements about conservation (Cronk, 2004, Coakes and Steed, 2001).

Cronbach's α is a lower bound for the true reliability of the survey. Reliability can be defined as the proportion of the variability in the responses to the survey that is the result of differences in the respondents. Answers to a reliable survey differ because respondents do have different opinions and not because the survey is confusing or due to other multiple interpretations. The computation of *Cronbach's* α is based on the number of items on the survey (k) and the ratio of the average inter-item covariance to the average item variance using the formula:

$$\alpha = \frac{k\ (\text{avg}\ (\text{cov} / \text{var}))}{1 + (k-1)\ (\text{avg}\ (\text{cov} / \text{var}))}$$ (Coakes and Steed, 2001).

The reliability of the instruments is measured by the coefficient of reliability, ranging from 0 to 1.0. The coefficient reliability with a score of 1.0 is perfectly reliable, and of 0 is perfectly unreliable. Although coefficient reliability of 1.0 is usually never attainable, numbers close to 1.0 are considered to be very good, while numbers close to 0 represent poor internal consistency (Cronk, 2004).

6.3 Survey Instruments

For both the pilot study and full survey, the instrument consists of six main sections. The only difference between the two surveys was the survey mode. The pilot study was conducted using the self-administered mode, while the full study was done by on-site face-to-face interview. This is due to a very low response rate during the pilot survey. Although it is costly, the face-to-face interview was adopted for the full survey in ensuring a sufficient number of respondents for the study. The presentations of the survey instruments were designed to follow the suitability of the modes. A complete set of questionnaires is presented in Appendix A to D.

For the self-administered mode, the questions were synthesized, condensed and compressed to reduce the length of the questionnaire. The CR exercise for the destination choice was presented in Section C. This section starts with a complete page of clear instructions and examples on how to conduct the CR exercise. It was then followed by the CR exercises which were presented in two pages.

Meanwhile, the environmental concern was presented in Section D. Similar to the destination choice section, this section starts with a complete page of clear instructions and examples on how to conduct the CR exercise. However the 3 CR exercises were presented in one full page.

On the other hand, for the face-to-face interview mode, the instrument was designed with complete instructions for the interviewers. As for the ranking exercise concern, the CR exercises were presented to the respondents using a full page A4-card for every choice card. Each respondent was given 4 different cards for the destination choice and 3 different cards for the environmental concern. The cards were given one at a time for every CR exercise. The interviewer then asked the respondent to take a few minutes to digest the situation on the card before asking them to place in their rank.

The following discussion presented related variables and definition for each section of the survey instrument.

Section A: Trip Characteristics and Environmental and Service Attributes Rating

This section solicits information, among others: their purpose of visit, number of people travelling together, if the visit was their first-time or repeat visit and the activities they enjoyed in RMP. The visitors were asked to rate the quality of several of the environment and service attributes that they found in RMP. For the repeat visitors, they were asked whether or not they see any differences in the attribute quality. They were also asked regarding their knowledge about RMP and whether or not they will re-visit RMP in the future. Table 6.5 presents the trip characteristics variables. On the other hand, Table 6.6 details the environment and service attributes rating that were required from all respondents.

Section B: Travel Information

In this section respondents were asked about their travelling pattern, their embarkation point, the mode of transportation they took to the embarkation point, the jetty they departed from for the RMP and the length of their boat or ferry trip. While on the accommodation aspect, the respondents were asked about the type of accommodation they chose at RMP and the number of days they stayed or intended to stay at the RMP. Apart from that, they were asked whether or not they took a package trip to RMP, the price they paid for the package trip and some other expenses, excluding package price, they made during the trip. Travel information variables are presented in Table 6.7.

Table 6.5: Variables Definitions for Trip Characteristics

Variable	Definition
ADULT	Number of adults travelling together
CHILDREN	Number of children travelling together
PURPOSE	1=Vacation/Recreation; 2=Work/Business Trip; 3=Educational Visit; 4=Other Visit, need to specify
NUMVIS	Number of visits to RMP
PREVISIT	Last visit to RMP (for repeat visitors):1=0 to 6 months; 2=7 to 12 months; 3=1 to 2 years; 4=2 to 3 years; 5=3 to 4 years; 6=5 years or more
WHYREVISIT	1=Environmental and natural beauty of the islands; 2=Accommodation facilities that are provided; 3=Economical and value for money; 4=Other reasons, need to specify
CORALDIF	-2=Badly deteriorated; -1=Deteriorated; 0=Unchanged; 1 Slight improvement; 2= Great improvement
FISHDIF	-2=Badly deteriorated; -1=Deteriorated; 0=Unchanged; 1 Slight improvement; 2= Great improvement
WATERDIF	-2=Badly deteriorated; -1=Deteriorated; 0=Unchanged; 1 Slight improvement; 2= Great improvement
CONGESTDIF	-2=Badly deteriorated; -1=Deteriorated; 0=Unchanged; 1 Slight improvement; 2= Great improvement
HOTELDIF	-2=Badly deteriorated; -1=Deteriorated; 0=Unchanged; 1 Slight improvement; 2= Great improvement
FERRYDIF	-2=Badly deteriorated; -1=Deteriorated; 0=Unchanged; 1 Slight improvement; 2= Great improvement
REDANG	Visit Redang Island (1=yes; 0=no)
PINANG	Visit Pinang Island (1=yes; 0=no)
LIMA	Visit Lima Island (1=yes; 0=no)
ETEBU	Visit Ekor Tebu Island (1=yes; 0=no)
LANGTGH	Visit Lang Tengah Island (1=yes; 0=no)
PERHNTN	Visit Perhentian Island (1=yes; 0=no)
SUSUDARA	Visit Susu dara Island (1=yes; 0=no)
KAPAS	Visit Kapas Island (1=yes; 0=no)
TENGGOL	Visit Tenggol Island (1=yes; 0=no)
ACT1	3 most enjoyable activities; activity 1
ACT2	3 most enjoyable activities; activity 2
ACT3	3 most enjoyable activities; activity 3
KNOWRDG	Respondent come to know about RMP:1=Advertisement; 2= Previous Visit; 3=Just passing; 4=By recommendation
ADVSEEN	Advertisement that visitors came across prior to their visit to RMP: 1= Fisheries department website; 2=Tour operator website; 3=tourist information centre; 4=RMP leaflet; 5=TV advert; 6=Newspaper/magazine advert; 7=Holiday guide; 8=Other
WLREVISIT	Will respondent re-visit RMP in the future (1=yes; 0=no)

Table 6.6: Variables Definitions for Environment and Service Attributes Rating

Variable	Definition
CORALCON	Rating for coral reef condition 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
FISHCON	Rating for fish varieties 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
TURTLESG	Rating for turtle sighting 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
WATERCON	Rating for water quality and visibility 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
SNKLCRWD	Rating for present of congestion at the beach and snorkelling area 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
BCHCLN	Rating for beach cleanliness 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
BCHACS	Rating for beach accessibility 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
DIVESITE	Rating for diving sites 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
DIVECRWD	Rating for the presence of congestion at the diving sites 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
ACCOMCON	Rating for accommodation condition 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
FACICON	Rating for facilities available at the accommodation area 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
RESTSVC	Rating for restaurant services 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
FERRYSVC	Rating for ferry services 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable
FERRYSFT	Rating for ferry safety ness 4=Excellent; 3=Good; 2 Average; 1=Poor; 0=Not applicable

Table 6.7: Variables Definitions for Travel Information

Variable	Definition
STARTJNY	From where did the respondent start their journey
TRVTOJETTY	How did the respondent travel to the jetty point of embarkation
KM	How far the journey was in KM
HOURS	How long the journey took
JETTY	Which jetty did the respondent took their ferry to RMP: 1=Kuala Besut; 2=Merang; 3=Tok Bali; 4=Marang; 5=Kuala Terengganu; 6=Other jetty (need to specify)
BOATRIP	How long is the boat/ferry ride: 1= 30 minutes; 2=30 to 45 minutes; 3=45 minutes to 1 hour; 4= 1 hour to 1 ½ hour; 5=1 ½ hour to 2 hours; 6=more than 2 hours
TYPEACCM	Type of accommodation the respondent stayed at in RMP 1=4-star hotel; 2=3-star hotel; 3=Chalet and budget accommodation; 4=camping site; 5=other (need to specify)
LGTSTY	Length of stay or intended to stay (recoded into LENGTH)
LENGTH	Category of the length of stay: 1=day tripper; 2=2D1N; 3=3D2N;4=4D3N; 5= >4D3N
TAKEPKGE	Respondent taking package tour for trip to RMP (1=yes; 0=no)
PKGEPRICE	Package price the respondent paid in RM (recoded to PKPRIGP)
PKPRIGP	Group of package price paid in RM: 1=<RM300; 2=RM301-500; 3=>RM500
LANDTRAN	Package price paid included land transfer to jetty point (1=yes; 0=no)
FERRYFARE	Package price paid included ferry fare (1=yes; 0=no)
ACCOM	Package price paid included accommodation (1=yes; 0=no)
FOOD	Package price paid included food (1=yes; 0=no)
SNKLGRENT	Package price paid included snorkelling gear rent (1=yes; 0=no)
DIVEGRENT	Package price paid included diving gear rent (1=yes; 0=no)
SNKLTRIP	Package price paid included snorkelling trip (1=yes; 0=no)
DIVETRIP	Package price paid included diving trip (1=yes; 0=no)

Section C and D: Contingent Ranking (Destination Choice and Environmental Concern)

Section C contained the CR exercises for the destination choice while Section D contained the CR exercises for the environmental concern. The respondents were asked to place the rank from 1, as "most preferred" to 4, as "least preferred" for both CR exercises. In the destination choice, respondents were basically asked to rank the 4 islands, namely Redang, Perhentian, Kapas and Tenggol, according to their preference based on the combination of different levels of attributes and package prices. As for the environmental CR experiment, respondents were asked to rank the changes that could possibly occur to the level of the environmental attribute and the conservation fee. In completion of the ranking exercises, respondents were asked the closest factor governing their ranking decision. Variables concerned for both sections are presented in Tables 6.8 and 6.9.

Table 6.8: Variables Definitions for Destination Choice

Independent variable	Definition
RANK	Island ranking according to preference: 1=most preferred; 2=preferred; 3=less preferred; 4=least preferred
ISLAND	Island Name: Redang; Perhentian; Kapas; Tenggol
ACCOM	Accommodation Type: 1=Budget Accommodation; 2=3-Star Accommodation; 3=4-Star Accommodation
FAC	Accommodation Facilities: 1=Restaurant; 2=Restaurant and Entertainment; 3=Restaurant, Entertainment and Sport, Snorkelling and Scuba diving facilities
DIST	Distance To Beach: 0=On the beach; 5=5-minute walk; 10=10-minute walk
ACCESS	Accessibility From Mainland: 20=20-minute boat trip; 30=30-minute boat trip; 45=45-minute boat trip; 60=60-minute boat trip; 90=90-minute boat trip; 120=120-minute boat trip
PRICE	Package Price based on 3D2N average price: 300=RM300; 400=RM400; 500=RM500; 600=RM600; 700=RM700; 800=RM800
REASON	Reason governing ranking: 1=value for money; 2=accommodation type; 3=accommodation facilities; 4=distance to the beach; 5=accessibility and ferry trip; 6=the island itself; 7=other reason (need to specify)

Table 6.9: Variables Definitions for Environmental Concerns

Variable	Definition
RANK	Environmental condition ranking according to preference: 1=most preferred; 2=preferred; 3=less preferred; 4=least preferred
FISH	Fish/Coral Species: -1= Decreases with further development ; 0=Currently recorded 209 fish and 149 coral species; 1=Increases with sustainable management practices
TURTLE	Turtle Nesting: -1=Current average of 2945 nesting per year; 0=Increase with more conservation practices 1=Decreases as further habitat destroyed
CONGEST	Present of Congestion: 0=Current stage ; 1=Congested with increase in demand; 3=Very congested with excessive demand
FEE	Conservation Fee: 5=RM5.00 current fee; 10=Increase to RM10.00; 15=Increase to RM15.00
REASON	Reason governing ranking: 1=fish and coral species; 2= turtle sighting; 3=present of congestion; 4=conservation fee; 5=other reason (need to specify)

Section E: Opinion towards Nature and Conservation

In this section, nine statements were used to elicit the opinion of the respondents towards nature and conservation issues. Respondents were asked to rate whether they agreed or disagreed with the statements. The nine item statements comprised 5 positive statements and 4 negative statements which were measured using a 5-point *Likert* scale from "strongly agree" to "strongly disagree". The option 0 = "don't know" was given in order to give further freedom to the respondent to opt-out if they considered the statement presented to them was irrelevant, to avoid them being forced to take a stand or give an untrue answer. The variables and definitions are listed in Table 6.10.

Table 6.10: Variables Definitions for Opinion Items

Variable	Definition
BCHCLEAN	Beach cleanliness is satisfactory: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree.
QTYCRFIS	Quality of coral and fish varieties excellent: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
FISHERIE	Fisheries Department look after MP: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
HOTELPRO	Hotel industry more concerned about profit than environment: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
RANGER	Park ranger doing good job: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
VSTOTHRP	Visit other MP if entry fee was increased: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
DEVDETEN	Tourism development activity causes deterioration of environmental quality: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
PRESGOVT	Preserving natural park government responsibility, not visitors': 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree
LIKEVISIT	I like to visit nature preserves like RMP: 0=Don't know; 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

Section F: Demographic Information

The last section of the questionnaire contained questions related to respondent's socio-demographic characteristics. It includes gender, marital status, and age, level of education, occupation, and income. Furthermore, the respondents were also asked whether they were involved in any nature conservation group. They were requested to provide the name of the group or society that they were affiliated with. Their interests in nature and environment conservation were indirectly ascertained through the frequency with which they watched documentaries or read magazines about nature. The variables and definitions are presented in Table 6.11.

Table 6.11: Variables Definitions for Socio-Demographic Information

Variable	Definition
GENDER	Respondent's sex: 1=male; 2=female
MRTLSTS	Respondent's marital status: 1=single; 2=married; 3=widowed
AGE	Respondent's age in years (recoded into AGEGROUP)
AGEGROUP	Age group categories
EDUCATION	Level of education: 1=primary; 2=secondary; 3=polytechnic /college diploma; 4= university degree; 5=university post-grad degree; 6=other (need to specify)
OCCUPTN	Respondent's occupation: 1=private sector; 2=government sector; 3=self-employed; 4= retired; 5=housewife; 6=student; 7=unemployed; 8=other (need to specify)
OCCPRTNR	Partner/spouse's occupation: 1=private sector; 2=government sector; 3=self-employed; 4= retired; 5=housewife; 6=student; 7=unemployed; 8=other (need to specify)
INCOME	Respondent's monthly income in RM
PTNRINC	Partner/spouse monthly income in RM (including other household members if applicable)
HHINC	Household monthly income: calculated from INCOME + PTNRINC (recoded into HHINCGP)
HHINCGP	Household monthly income group: 1= <RM3000; 2=RM3001-5000; 3=>RM5000.
MBRCONGP	Nature conservation group affiliated (1=yes; 0=no)
WTCHDCM	Frequency of watching documentaries of reading magazine about nature and conservation: 0=never;1=frequently; 2=sometimes; 3=seldom;

The final part was the self-check by respondents concerning the survey instrument used for the study: whether the questionnaire they were presented with was interesting, educational, too long, difficult to understand or unrealistic. These characteristics-related variables are presented in Table 6.12.

Table 6.12: Variables Definitions for Questionnaire Check

Variable	Definition
QNINTRST	Questionnaire check: Interesting (1=yes; 0=no)
QNEDU	Questionnaire check: Educational (1=yes; 0=no)
Q2LONG	Questionnaire check: Too Long (1=yes; 0=no)
QNDIFF	Questionnaire check: Difficult to Understand (1=yes; 0=no)
QNUNRLST	Questionnaire check: Unrealistic (1=yes; 0=no)

6.4 The Survey Process

6.4.1 *Pilot study*

The first data collection, which consisted of the pilot study and the first phase of the full survey, was conducted in June-July 2003. The pilot study was conducted mainly at the RMPc for the first two weeks of June. It was considered appropriate after taking into account the short span of time, typically about 2 hours that the visitors had during their snorkelling trip at the centre. In this sense, self-administered questionnaire survey has the advantage of giving the respondents the freedom to fill in the survey at their convenience and is able to avoid disruption which can annoy some tourists who want to enjoy their snorkelling activities**.**

The self-administered survey was conducted with the help of the park rangers who distributed a total of 700 copies of the questionnaire set to the visitors at the RMPc. A total of 181 copies were returned. However, due to the length of the questionnaire set and the complexity of the questions, only 42 sets are considered usable. Out of the 42 usable sets, 37 were received from the local tourists while another 5 were received from foreign tourists. The sharp difference among the proportion of local and foreign responses indicated the decline in the number of foreign visitors who visited RMP for the year 2003 after the SARS epidemic scare, which hit almost the entire ASEAN[3] region in the year 2002-03.

Furthermore, the response rate for the self-administered survey is only 6 percent of the total 700 questionnaires distributed. The low rate of valid response from the self-administered survey proved that it is not a suitable eliciting technique for a stated preference study with a high degree of complexity such as found in the CR exercise. With the complexity and length in mind, the questionnaire was changed to suit the face-to-face interview format for the full survey.

[3] ASEAN stands for the Association of South-east Asian Nations which consists of Malaysia, Indonesia, Singapore, Thailand, Vietnam, Cambodia, Philippines, Myanmar, Brunei and Laos.

6.4.2 *First phase full survey*

For the first phase of the full survey, the face-to-face interviews using questionnaires were conducted. This phase was used to capture the local tourists since the number of foreign tourists had declined considerably. In the face-to-face interview, respondents were first asked whether or not they wanted to participate in the survey. Their willingness and voluntary participation dramatically decreased the number of incomplete surveys. However, even though voluntary participation was agreed upon, there was bound to be some respondents who would easily get bored and asked to excuse themselves before the interview was completed. The reasons given by those who did not complete the interview were usually due to the length of the interview session and the complexity of the questionnaire.

Furthermore, the face-to-face interviews were conducted mainly concentrating on two islands, Redang and Kapas islands. Kapas was specifically targeted as the survey site since it is a popular destination for the local day-trippers due to its proximity to the mainland. Apart from on-site survey, intercept interviews at the jetty points were also conducted. A total of 109 local tourists were successfully interviewed from both islands. Table 6.13 summarizes the outcome from the first data collection. Although the first data collection phase was able to get a total of 146 responses from the local tourists, the number was still well below the target samples projected earlier, which were 269.

Table 6.13: First Data Collection Output Summary

Self-admin version (700 questionnaire sets distributed)
• Total returned = 181 • **Usable = 42 (local = 37; foreign = 5)**
Face-to-face interview (all conducted on local tourists)
• Redang = 20 • Kapas = 89
TOTAL 151 (local = 146; foreign = 5)

6.4.3 *Second phase of full survey*

The second phase of the data collection was conducted in May-July 2004. Again it was conducted using the face-to-face interview mainly at Redang Island, concentrating on the foreign tourists at the RMPc. However, due to the availability of local tourists on sites, the survey also interviewed some additional local respondents, so that the initial target number of the sample is met. Although the foreign tourists in general were willing to participate in the survey, timing was still a major issue. Clearly, conducting a survey at the RMPc was not the best option since visitors only spent about 2 hours at the centre, and most of the time was spent in the water, snorkelling. The same technique as in the first phase, in terms of approaching visitors, was applied. The visitors were approached only when they were resting at the beach area.

Given the very short span of time available for the interview at the park centre, two other locations were chosen. The two locations were Teluk Dalam where the Berjaya Redang Resort is located and Pasir Panjang where Redang Laguna Resort and several other resorts are located. However, conducting the interviews at these locations gave similar problems as at the RMPc. Tourists were usually available at their resort area in the afternoon after a whole day of snorkelling and diving activities. This again confined the survey time to during the afternoon. As a result, several series of trips and interview sessions were made during the 3 month specified period. In the end, out of 150 visitors interviewed, a total of 132 people completed the whole interviews. The total comprised of 89 foreign tourists and 43 local tourists. The second data collection outcome summary is given in Table 6.14.

Table 6.14: Second Data Collection Output Summary (On-site and intercept face-to-face interviews)

	Number of tourists
Local Tourists	43
Foreign Tourists	89
Total	132

6.4.4 *Final sample size*

Taking into consideration the whole data collection processes, a total of 283 usable questionnaires were available for data analysis purposes. The total consists of 189 local visitors which made up 66.8 percent of the whole sample size and 94 foreign tourists which was 33.2 percent of the sample size. Table 6.15 sums up the total sample size:

Table 6.15: Number of Respondents

Methods	Local Tourists	Foreign Tourists
Self administered/self completion survey	37	5
Face-to-face interview	152	89
Total	**189 (66.8%)**	**94 (33.2%)**
TOTAL SAMPLE	**283**	

With the average annual number of visitors to RMP for the last ten years (1993 to 2002), at around 38,000 per year, the sample size is approximately 1 percent. Although the sample size is comparatively small in relation to the average visitor numbers, the ranking information generated is quite large. This is due to the fact that every single individual needed to repeat 4 exercises of destination choice ranking and 3 exercises of environmental ranking. In total the exercises generated a total of 4,528 (283 x 16) and 3,396 (283 x 12) data points for destination choice and environmental ranking respectively. The models however were analysed separately for the local and the foreign tourists. The local tourists data set consisted of 3,024 (189 x 16) for the destination choice, and 2,268 (189 x 12) for the environmental concern. On the other hand, the foreign tourists data set consisted of 1,504 (94 x 16) and 1,128 (94 x 12) for the destination choice and the environmental concern respectively. In total, the sample size generated for the study exceeded the minimum number required to estimate a choice probability for 50 percent of the real market situation with a relative accuracy of 10 percent at 95 percent confidence level, for both local and foreign tourists, as suggested by Louviere *et al*. (2000) (refer to Table 5.1).

6.5 Conclusion

Sampling frame and sampling size are crucial elements in getting a well represented finding for any study. However, it is important to note that there exists a trade-off between precision of the study and the cost involved in the survey process. The more variation in existence in the population will require a larger sample size, hence will cost more. There is an added advantage to using stated preference technique where the number of the sample size can be reduced and a smaller sample size can be employed if more information is collected per respondent. Although it is unlikely that the repeated choices from the same respondent are independent, a well-designed choice task will yield parameter vectors that are proportional to those derived from models estimated independently. A poor response rate from the self-administered survey mode took place during the pilot study forced the researcher to used the interview mode during the full survey despite the high cost. The face-to-face interview mode on the other hand helped ensure a better response rate, at the same time getting a more quality answer. Moreover, financial constraints and the location of the study area also hindered the achievement of the targeted sample size. Even though the actual sample size collected from the two surveys was less than the targeted number, the final sample size still exceeded the minimum number required. The following three chapters (Chapter 7, 8 and 9) discuss the findings of the survey.

Chapter 7: Result 1 - Local Tourists Analysis

7.0 Introduction

This purpose of this chapter is to present the whole analysis and results for local tourists visiting RMP. The chapter is separated into several sections. In the beginning, the profiles of the visitors are presented: their state of origin, their gender and age, educational levels, occupations, particulars of their visits to RMP, perceived changes in the state of the MP since their last visit (for those who have visited the park before), their port of embarkation, knowledge about the RMP and activities of interest at the marine park. The section also includes visitors' travel patterns, accommodation pattern, preferences and motives for visiting RMP and their attitude towards nature conservation. Some relationship among the variables of interest to the study are explored and reported. The second part of the chapter presents the result from the CR experiment. The section starts with an illustration of the ordinal regression used to determine the CR experiment using SPSS PLUM procedures. The CR results are presented in two separate sections, the destination and environmental choice. In the CR section several models are discussed and explored. Each analysis is followed by the determination of WTP for the attributes concerned for the valuation of both destination choice and environment.

7.1 Profile of Local Visitors

From the total of 189 respondents, 37.0 percent are from the East Coast, which comprises Terengganu (23.8%), Kelantan (9.0%) and Pahang (4.2%). This result can be explained by the location of the RMP which is situated on the East Coast of the Peninsula. Furthermore, the finding reveals that almost all of the visitors from Terengganu visit Kapas (95%), and out of that number, 38.0 percent are day trippers. For visitors who are not from the East Coast region, the majority came from Kuala Lumpur (21.7%), Selangor (10.1%) and Johor (9.5%) (Refer to Appendix E). Previous studies elsewhere (e.g. Wight, 1994, 1997) found that the origins of visitors varied depending on the type of activity preferred, besides other factors such as local opportunity, intervening opportunity, distance, costs and marketing efforts. The example highlighted by Wright (1994) is the study done by Tourism Canada found that

Canadians are the primary market to Canada (57%), followed by U.S residents (23%) and those from overseas (20%).

Table 7.1 provides a socio-economic profile of the subjects. Of the total number of 189 respondents in the survey, 108 (57%) are males and 81 (43%) are females. The gender mix of nature or eco-tourists reported in the literature is varied. Some studies, as quoted in Wight (1997), have reported a majority of males (Fennel and Smale, 1992; Backman and Potts, 1993; Tourism Canada, 1995); a majority of females (Cook, Stewart and Repass, 1992; Reingold, 1993); or an even split of males and females (Boo, 1990; Ingram and Durst, 1987).

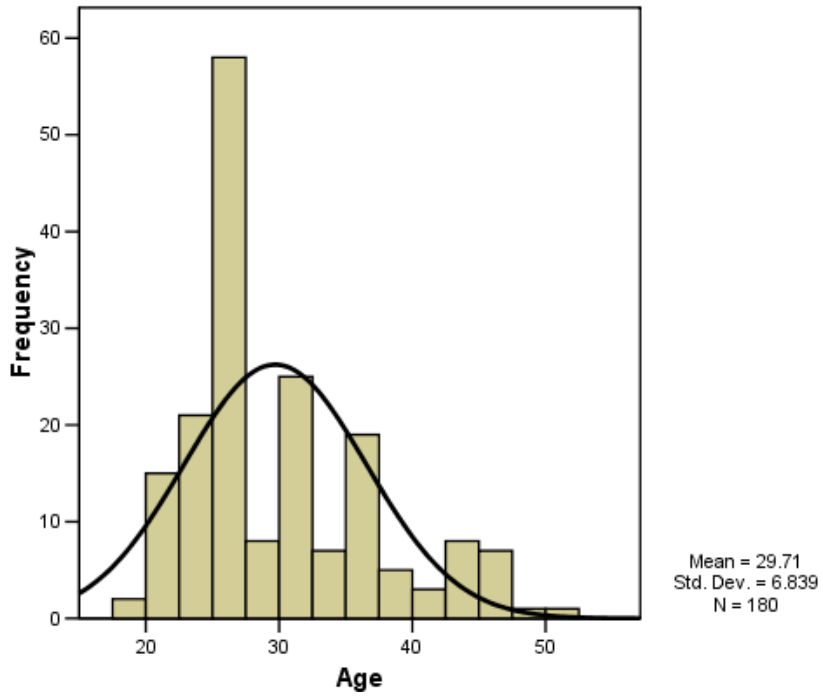
Table 7.1: Socio-Economic Characteristics

Demographic variable		**Percentage**
Gender	Males	57.1
n = 189	Females	42.9
Age	Below 20 years	4.4
n = 180	20 to 29 years	57.8
Mean = 29.7	30 to 39 years	28.3
s.d = 6.83	40 to 49 years	8.9
	50 years and above	0.6
Education	Primary Education	1.6
n = 189	Secondary Education	7.9
	Polytech/College Diploma	35.4
	University Degree	52.9
	Post-Graduate Degree	2.1
Marital status	Single	43.1
n = 188	Married	56.9
Economic variables		
Employment	Private Sector	58.2
n = 189	Government Sector	20.6
	Self Employed	8.5
	Housewife	5.8
	Student	6.9
Monthly Income		
n = 169	Less than RM3000	42.6
Mean =RM3784.62	RM3001 to RM5000	33.7
s.d = RM2014.65	More than RM5000	23.7

Out of 180 respondents who revealed their age, the majority (86.1 %) are in the 20 to 39 years age group. The mean of the actual age is 29.7 years (s.d = 6.83) as illustrated in Figure 7.1. The mode class is the 20-29 years of age group (57.8%), signifying that eco-tourism is a "youthful" activity. Ahmad *et al*. (2002) also found that the mode class for visitors to Payar

Marine Park was the 20-29 years age group, while Yeo (1998) found the mean age for Malaysian and Japanese visitors to be 29 years, and Chinese, 33 years. Less than one percent of the visitors to RMP are over 50 years old, and 4.4 percent are below 20 years old (Table 7.1). The literature has given varying information about the age of eco-tourists. For example, unlike the present finding, eco-tourists have been said to be older than the average (Boo, 1990; Backman and Potts, 1993; Eagles and Cascagnette, 1995); younger than average tourists (Yuan and Moisey, 1992; Chudintra, 1993); 54 years on average (Fennel and Smale, 1992); mid-30s to mid-50s in the Yukon, but mid-20s to mid-40s in the Northwest Territories (Tourism Research Group, 1998) as cited in Wight (1997).

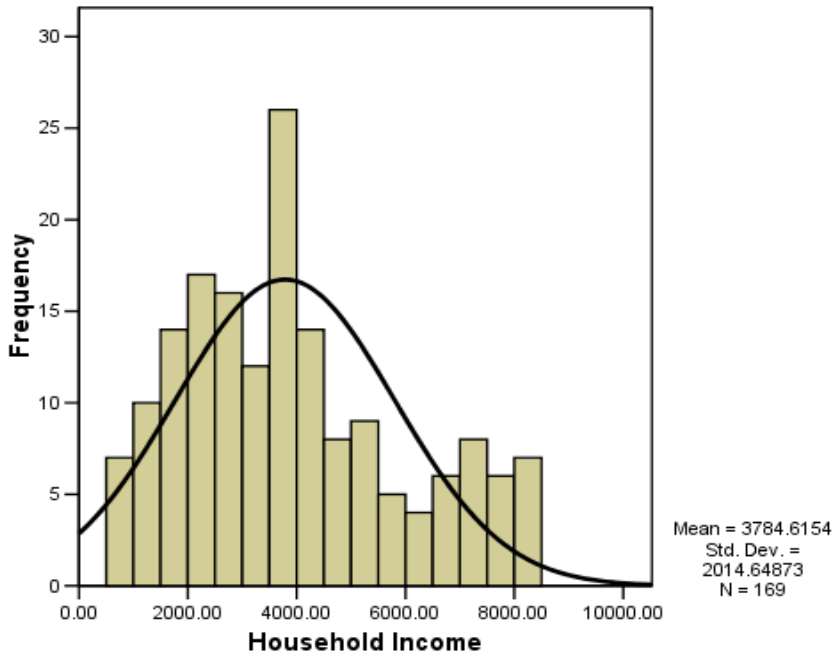
Figure 7.1: Actual Age in Years



Most of the respondents (90%) at RMP are highly educated, with at least a polytechnic or college diploma (35.4%) and a tertiary education (52.9%). Only a small fraction of them (1.6%) have a minimum of primary education, while 7.9 percent have a secondary school education (Table 7.1). Previous literature consistently suggests that nature tourists tend to be more highly educated than general tourists (Fennell and Smale, 1992; Cook, Stewart and Repass, 1992; Backman and Potts, 1993), as cited in Wight (1997). In addition to that, in case of MP in Malaysia, Ahmad *et al.* (2002) reported that more than 69 percent of their sample had at least a tertiary education.

As for occupation, 58 percent of our respondents reported working in the private sector and about 21 percent are in the government service. Self-employed, students and housewives composed about 9 percent, 7 percent and 6 percent respectively (Table 7.1). Obviously occupation directly links to income. The monthly household income of the respondents was collected in this study. The study found that 42.6 percent of the respondents earned less than RM3000 per month, while almost 34 percent earned between RM3001 and RM5000 per month. About 23 percent earned more than RM5000 per month. Actual income data is depicted in Figure 7.2. Household income range from RM500 to RM8500 per month slightly skewed to the right (skewness = 0.555) is revealed to be almost normally distributed with the mean of RM3784 per month (s.d = RM2014).

Figure 7.2: Actual Monthly Household Income Distribution



7.1.1 Profile Analysis by Age Group and Marital Status

Out of 188 respondents who reported their marital status, 43.1 percent are single while 56.9 percent are married. Table 7.2 shows the age-gender-marital status distribution of the RMP visitors. It is observed that for all age groups and marital status male visitors are predominant, except for young married couples of the 20-29 years age group. For this group,

female visitors exceeded the male visitors. Most of the single visitors (76 %) fall in the mode age group of 20-29.

Table 7.2: Age Group * Gender * Marital Status Distribution

Marital Status				Gender		Total
				Male	Female	
Single	age group	below 20 years	Count	6	2	8
			% of Total	8.0%	2.7%	10.7%
		20 to 29 years	Count	33	24	57
			% of Total	44.0%	32.0%	76.0%
		30 to 39 years	Count	7	3	10
			% of Total	9.3%	4.0%	13.3%
	Total		Count	46	29	75
			% of Total	61.3%	38.7%	100.0%
Married	age group	20 to 29 years	Count	20	27	47
			% of Total	19.0%	25.7%	44.8%
		30 to 39 years	Count	28	13	41
			% of Total	26.7%	12.4%	39.0%
		40 to 49 years	Count	12	4	16
			% of Total	11.4%	3.8%	15.2%
		50 years and above	Count	1	0	1
			% of Total	1.0%	.0%	1.0%
	Total		Count	61	44	105
			% of Total	58.1%	41.9%	100.0%

In terms of income distribution, the majority of the married visitors earned a high monthly income while single visitors earned a lower monthly income (Table 7.3). Most of the single respondents fall in the lower monthly income group of less than RM3000 per month (82.3%). On the other hand, the majority of the married couples earned more than RM3000 per month (81.6%), where 44.7 percent fall in the medium income bracket and 36.9 percent were in the high income group. This is obvious since household income is being used as compared to individual income.

Table 7.3: Age group * Household Income Group * Marital Status Distribution

Marital Status				Household Income Group			Total
				<RM3000	RM3001-5000	>RM5000	
Single	age group	Below 20 years	Count	5	0		5
			% of Total	8.1%	.0%		8.1%
		20 to 29 years	Count	40	7		47
			% of Total	64.5%	11.3%		75.8%
		30 to 39 years	Count	6	4		10
			% of Total	9.7%	6.5%		16.1%
	Total		Count	51	11		62
			% of Total	82.3%	17.7%		100.0%
Married	age group	20 to 29 years	Count	7	32	8	47
			% of Total	6.8%	31.1%	7.8%	45.6%
		30 to 39 years	Count	6	14	20	40
			% of Total	5.8%	13.6%	19.4%	38.8%
		40 to 49 years	Count	5	0	10	15
			% of Total	4.9%	.0%	9.7%	14.6%
		50 years and above	Count	1	0	0	1
			% of Total	1.0%	.0%	.0%	1.0%
	Total		Count	19	46	38	103
			% of Total	18.4%	44.7%	36.9%	100.0%

Table 7.4 further describes the characteristics of visitors at RMP, emphasizing married visitors. Out of 105 married visitors to RMP, more than 50 percent are travelling without children. Furthermore, 31 percent of the married respondents who travel without children fall in the young age group of 20-29 years. It can be contended that the majority of visitors to RMP are young married couples without children.

Table 7.4: Age group * Children Travelling * Marital Status Distribution

Marital Status				Children travelling			Total
				0	1-5	>10	
Married	age group	20 to 29 years	Count	33	14	0	47
			% of Total	31.4%	13.3%	.0%	44.8%
		30 to 39 years	Count	19	19	3	41
			% of Total	18.1%	18.1%	2.9%	39.0%
		40 to 49 years	Count	8	5	3	16
			% of Total	7.6%	4.8%	2.9%	15.2%
		50 years and above	Count	0	1	0	1
			% of Total	.0%	1.0%	.0%	1.0%
	Total		Count	60	39	6	105
			% of Total	57.1%	37.1%	5.7%	100.0%

7.2 Visit Pattern

Table 7.5 illustrates the visit pattern among the respondents. From the total of 189 respondents, 66 percent (125) were first time visitors to RMP, whereas the balance of 34 percent (64) was repeat visitors. The actual repeat visits range from 2 to 15 times and a majority of the visitors re-visit RMP for 2 to 5 times (90%). Furthermore of those who make these repeat visits, about 56 percent revisit RMP within a year, while 31 percent revisit after 1 to 2 years. When asked the reason they revisit the RMP, 70% gave "Environment and Natural Beauty" as the reason and almost 19 percent gave "Other Reasons". Among the other reasons stated by the respondents are "dekat" meaning "close in distance" to visit. Further investigation reveals that those who stated "distance" as the reason are those from Terengganu (75%) who visited Kapas repeatedly. Out of the 64 repeat visitors, 63 percent were married while 37 percent were single. Most of the single visitors (46%) revisit RMP within a 6 month period while almost 30 percent revisit within the period of 1 to 2 years. As for repeat visitors who are married, 30 percent of them revisit RMP within 6 months, 28 percent revisit within 7 months to a year period while 33 percent revisit RMP within a 1 to 2 years time frame as shown in Table 7.6.

Table 7.5: Visit Pattern

	Frequency	**Percentage**
Number of Visit (n=189)		
• first visit	125	66.1
• repeat visit	64	33.9
Repeat Visitors (n=64)		
• 2 to 5 times	58	90.6
• more than 5 times	6	9.4
Previous Visit (n=64)		
• 0 to 6 months	23	35.9
• 7 to 12 months	13	20.3
• 1 to 2 years	20	31.3
• more than 2 years	8	12.5
Reason for Re-Visit (n=64)		
• Environment and Natural Beauty	45	70.3
• Accommodation	1	1.6
• Value for Money	6	9.4
• Other Reason	12	18.8

Table 7.6: Previous Visit * Marital Status Distribution

Previous Visit		Marital Status		Total
		Single	Married	
0 to 6 months	Count	11	12	23
	% within Marital Status	45.8%	30.0%	35.9%
7 to 12 months	Count	2	11	13
	% within Marital Status	8.3%	27.5%	20.3%
1 to 2 years	Count	7	13	20
	% within Marital Status	29.2%	32.5%	31.3%
more than 2 years	Count	4	4	8
	% within Marital Status	16.7%	10.0%	12.5%
Total	Count	24	40	64
	% within Marital Status	100.0%	100.0%	100.0%
	% of Total	37.5%	62.5%	100.0%

7.2.1 *Perceived difference in the state of RMP*

Those who had been to RMP before were asked if they see any difference in the state of the environmental quality in the RMP since their last visit. The environmental qualities to which the study is referring are the coral reefs, fish varieties, water quality and the level of congestion. Apart from that, the visitors were also asked about the quality of accommodation and facilities and ferry service. All 64 repeat visitors responded to these questions and their ratings are summarized in Table 7.7. Visitors perceived some degree of improvement in all of the items, particularly for accommodation and facilities (61%), ferry service (51.6%), fish varieties, and water quality and visibility (48.4% respectively). On the other hand, 28.1 percent respondents claimed that the presence of congestion at RMP has worsened, while 20.3 percent reported that the quality of the coral reef has deteriorated.

A single-simple t-test compared the mean of the score of each item to the unchanged status score of 0. Significant differences were found in all items except for ‘beach and snorkelling congestion” at *t (63) values* and *standard deviations* reported in Table 7.7. Therefore, it can be interpreted that the perceived improvements on these items are significantly different from the unchanged state.

Table 7.7: Perceived Changes by Repeat Visitors (n=64)

	Percentage of sample responding various answers				
	Great Improvement (score=+2)	**Slight Improvement (score=+1)**	**Unchanged (score=0)**	**Deteriorated (score=-1)**	**Badly Deteriorated (score=-2)**
Coral reef *Mean = 0.39 (s.d = 1.002)* *(t(63) = 3.119, p < 0.01)*	17.2	25.0	37.5	20.3	0.0
Fish varieties *Mean = 0.53 (s.d = 0.89)* *(t(63) = 4.774, p < 0.01)*	15.6	32.8	40.6	10.9	0.0
Water quality and visibility *Mean = 0.58 (s.d = 1.096)* *(t(63) = 4.222, p < 0.01)*	25.0	23.4	42.2	3.1	6.3
Beach and snorkelling congestion *Mean = 0.28 (s.d = 1.147)* *(t(63) = 1.961, p = 0.054)*	17.2	26.6	28.1	23.4	4.7
Accommodation and facilities *Mean = 0.81 (s.d = 0.794)* *(t(63) = 8.183, p < 0.01)*	21.9	39.1	37.5	1.6	0.0
Ferry services *Mean = 0.69 (s.d = 0.753)* *(t(63) = 7.301, p < 0.01)*	17.2	34.4	48.4	0.0	0.0

7.2.2 *Visitors and islands*

Table 7.8 illustrates the distribution of the visitors who visited the islands in RMP. Out of 121 respondents who answered that they visited Redang, 54.5 percent were first timers while 45.5 percent were repeat visitors. As for Pinang, from the total of 121 respondents, 56.2 percent were first timers and 43.8 percent were repeat visitors to that island. For Kapas the percentage is quite similar, where out of 101 people who answered they had visited Kapas, 56.4 percent were first timers and 43.6 percent were repeat visitors. On the other hand, the distribution of visitors to Perhentian shows a different picture altogether where all of the 24 respondents who answered that they had visited the island were repeat visitors.

Table 7.8: Visitors and Islands

Island Name	Percentage First Visit	Percentage Repeat Visit
Redang (n = 121)	54.5	45.5
Pinang (n = 121)	56.2	43.8
Kapas (n = 101)	56.4	43.6
Perhentian (n = 24)	0.0	100.0
Lang Tengah (n = 21)	14.3	85.7
Lima (n = 9)	11.1	88.9
Ekor Tebu (n = 9)	11.1	88.9
Tenggol (n = 2)	0.00	100.0
Susu Dara (n = 1)	0.00	100.0

Furthermore, it is important to note that for the first timers who visited Redang (n=66), all of them had also visited Pinang during their visit. This can be due to the fact that Pinang is usually included as part of the snorkelling destinations arranged by most of the tour operators.

7.2.3 *Knowledge and travel pattern*

Table 7.9 describes the visitors' travel pattern. More than half of the visitors (54.8%) acquired knowledge about RMP through recommendation, while 25 percent used advertisements as the source of information. Meanwhile, three sources of advertisement were identified as the advertisement tools most used by the visitors when acquiring information. It is interesting to note that tour operators' websites came third after the department website and tourist information centre. Hence it is important for the Fisheries Department to regularly update their information, and not rely on the private sector in providing knowledge and information regarding RMP. Most of the visitors started their journey from Terengganu using boats which depart either from Merang or Kuala Terengganu to Redang, and Marang to Kapas. Visitors who departed from Merang had two choices of boat services. About 68 percent of those who departed from Merang used the fast boat services which take approximately 30 to 45 minutes to reach Redang. Meanwhile, approximately 32 percent used the slow boat service which took a longer time to reach Redang. Those who departed from Kuala Terengganu used a larger ferry, which can accommodate about 120 passengers and which took about 1 to 1.5 hours to reach Redang. Visitors who travelled to Kapas would depart from Marang. The trip lasted for approximately 30 minutes since Kapas is located

closer to the mainland. Furthermore 2 percent of the visitors travelled by air from Kuala Lumpur, as part of the package provided by the Berjaya Redang Resort. This direct flight from the capital city of Malaysia has just been introduced after the development of the only air-strip on the island was granted to Berjaya Redang Resort. The ability to travel by air has made the Berjaya Redang Resort accessible all year round regardless of the monsoon season. However, the off-season demand is yet to be explored.

Table 7.9: Visitors' Knowledge and Travel Pattern

	Frequency	Percentage
Knowledge about RMP (n=188)		
Advertisement	47	25.0
Previous Visit	32	17.0
Just Passing	6	3.2
By Recommendation	103	54.8
Three Top Advertisement (n= 158)		
Fisheries Department website	56	35.4
Tourist Information Centre	55	34.8
Tour operator website	51	32.3
Point of Embarkation (n= 189)		
Merang	69	36.5
Marang	89	47.1
Kuala Terengganu	27	14.3
Direct flight	4	2.1
Time taken for boat ride (n =184)		
30 minutes	100	54.3
30 to 45 minutes	35	19.0
45 minutes to 1 hour	26	14.1
1 to 1 1/2 hours	20	10.9

To further understand the visitors' travel pattern, cross tabulation between first time visitors and their knowledge about RMP was undertaken. Table 7.10 explains the relationship. It is interesting to note that a majority of the first timers seek recommendation from others before

visiting the RMP. Judging from the high percentage of recommendations, it is important to note that personal contact or word of mouth source is the key player in disseminating information.

Table 7.10: Knowledge about RMP (Source of Information)

			first-repeat		Total
			first visit	repeat visit	
Know about RMP	Advertisement	Count	32	15	47
		% of Total	17.0%	8.0%	25.0%
	Previous Visit	Count	0	32	32
		% of Total	.0%	17.0%	17.0%
	Just Passing	Count	2	4	6
		% of Total	1.1%	2.1%	3.2%
	By Recommendation	Count	90	13	103
		% of Total	47.9%	6.9%	54.8%
Total		Count	124	64	188
		% of Total	66.0%	34.0%	100.0%

7.2.4 *Accommodation and package price*

Table 7.11 describes the accommodation types chosen by the visitors. From the total number of visitors, 189, about 78 percent took a package to visit RMP, the majority of them choosing a package that cost less than RM300. Hence, the results indirectly explain why chalet and budget ranked as the most popular type of accommodation chosen by the visitors. In terms of the nights spent in RMP, it directly depends on the type of package chosen by the visitors. The majority stayed for 3 days and 2 nights (64%). Most of the basic packages included ferry fare, accommodation and food. While some also stated that their packages included snorkelling trips (88%) and snorkelling gear rent (83%), scuba diving trip and gear rent usually were tailored to divers. Only a small fraction of the respondents took a diving package (6%), while 56 percent of the respondents stated that the package they took also included the land transfer from the airport or bus station to the embarkation jetty.

Table 7.11: Visitors' Accommodation Pattern

	Frequency	Percentage
Take Package (n=189)		
No	42	22.2
Yes	147	77.8
Package price (n=147)		
<RM300	100	68.0
RM301-500	39	26.5
>RM500	8	5.4
Accommodation type (n=172)		
4-star Hotel	22	12.8
3-star Hotel	12	7.0
Chalet and Budget	113	65.7
Camping Site	25	14.5
Length of stay (n=189)		
Day Trippers	18	9.5
2 Days 1 Night	27	14.3
3 Days 2 Nights	120	63.5
4 Days 3 Nights	17	9.0
> 4D3N	7	3.7

Table 7.12 further describes the characteristics of visitors who chose chalet and budget types of accommodation. It is interesting to highlight that more than half (62.4%) of those who stayed at this type of accommodation earned more than RM3000 per month. One possible assumption can be derived: the finding signifies that income does not determine the type of accommodation chosen by the visitors at RMP.

Table 7.12: Income Group and Budget Type Accommodation

Income Group	Chalet and Budget (%)
Less than RM3000	38 (37.6)
RM3001 to RM5000	39 (38.6)
More than RM5000	24 (23.8)
Total	101 (100)

7.2.5 *Activity of interest at RMP*

When asked to list three most enjoyable activities at RMP, by far the most popular activity enjoyed by the visitors is snorkelling (Table 7.13). Apart from snorkelling, the remaining 7 percent of the most enjoyable activities were swimming, camping and relaxing. Swimming on the other hand became the top choice for the second most enjoyable activity, followed by fish feeding, scuba diving and relaxing. While relaxing dominated the third most enjoyable activities in the RMP, fish feeding, camping and scuba diving also were included in this list.

Table 7.13: Popular Activities Enjoyed by Visitors

Choice	Activity	Percentage
Most popular	Snorkelling (n = 189)	92.6
Second choice	Swimming (n = 177)	62.4
Third choice	Relaxing (n= 172)	56.6

The findings contrasted with the results found in the report by DTRP (2003), whereby resting is the first choice activity, followed by snorkelling and scuba diving as second and third respectively. The possible explanation for the difference may be due to the way the questions were put to the respondents. In this study, the respondents were asked to list three most enjoyable activities while at the RMP, rather than activities they partake in. However, the main theme of the activities, whether those they enjoyed most or those they were involved in while in the RMP, is still those related to the water activities which became the main reason why they visited RMP.

7.3 Visitors' Rating of Various Features of RMP

In order to understand visitors' perceptions of various features of the RMP, the respondents were asked to rate several environmental qualities as well as the accommodation and facilities available. They were asked to rate from "excellent' to "poor" those features they experienced or encountered during their visit or state "not applicable" to those features they did not experience. Table 7.14 below reveals the visitors' rating of various features of RMP. Judging by the number, the response rate is quite high for all items except for turtle sighting

and diving related items. In terms of coral condition and fish varieties, almost all visitors agreed that they are in more than average condition.

Majority (90%) rated the coral reef around the island from "good" to "excellent." The main attraction for visitors is the coral reef that serves as a breeding and feeding ground for the fish and other marine life. Visitors seem to be most pleased with the diversity of fish species found around the island and visible from either the boat or the bridge. Almost 90 percent of them rate the fish varieties from good to excellent. The same situation can be observed in terms of water quality and visibility. The water quality is also pleasing to a majority of visitors as 88 percent gave it a rating of between "good" and "excellent." It is logical to expect that the visibility of the fish diversity and species will depend on the water quality in the area surrounding the island and the continued presence of the coral reef. Only a very small fraction of the visitors rated those items "poor".

As for the turtle sighting, a very high fraction of the answer (69%) stated that it is not applicable to them. The possible scenario is that they did not see any turtles since turtles usually land during night time. Apart from that, the turtle nesting area is strictly prohibited to any visitors. In terms of beach cleanliness, beach accessibility and the presence of congestion at the snorkelling area, the majority (approximately 80% for all items) rated these items from "average" to "good", although there are still a respectable number of visitors who rated these items as in "excellent" condition. It is generally true that the visitors to the Marine Park Centre have been quite cooperative in keeping the beach area free of litter by collecting their own rubbish and taking it with them to the main island for disposal. Only 3 percent of all respondents gave a "poor" rating to this item.

Judging from the number, a small fraction of the visitors were involved in scuba-diving activities, making it impossible for most of them (85%) to give any comment on the condition of the dive sites. However, to most divers, the dive sites are still in good to excellent condition, apart from the presence of congestion. It can be deduced that, over all, the states of natural beauty and environment attributes at RMP are still in good condition. Congestion is still low and not alarming with the exception of the Marine Park Centre at Pinang. The crowd is usually quite large during the snorkelling trips to the park centre.

However, the situation only lasts, at most, 2 to 3 hours every day. Up to this point, the visitors still found the accommodation and ferry services satisfactory. Most of the visitors rated these items from "average" to "good" although there are some concerns about the safety of the ferry and restaurant services.

Table 7.14: Visitors' Rating of Various Features of RMP

	Percentage of sample responding with various answers					
	Excellent	**Good**	**Average**	**Poor**	**Not applicable**	**Total % (number)**
Coral reef	29.6	60.3	7.9	0.5	1.6	100.0 (189)
Fish varieties/ species	23.8	65.6	9.5	0.0	1.1	100.0 (189)
Turtle sighting	4.8	12.0	7.2	7.2	68.9	88.4 (167)
Water quality/ visibility	36.0	51.9	10.6	1.1	0.5	100.0 (189)
Beach/snorkelling crowd	10.7	53.5	30.5	3.2	2.1	98.9 (187)
Beach cleanliness	17.1	54.5	25.1	3.2	0.0	98.9 (187)
Beach accessibility	11.4	62.0	24.5	2.2	0.0	97.4 (184)
Scuba diving sites	4.2	9.6	1.2	0.0	85.0	88.4 (167)
Diving site congestion	2.4	8.4	4.2	0.0	85.0	88.4 (167)
Accommodation	13.8	45.5	20.6	0.5	19.6	100.0 (189)
Accommodation facilities	14.3	37.0	25.9	3.2	19.6	100 (189)
Restaurant services	14.3	37.6	23.3	5.8	19.0	100.0 (189)
Ferry services	11.2	59.6	28.7	0.5	0.0	99.5 (188)
Ferry safety	10.1	50.3	31.9	6.4	1.1	99.5 (188)

Table 7.15: Overall Mean Score of Attributes

Item	Overall mean	s.d
Coral reef	3.21	0.601
Fish varieties/ species	3.14	0.564
Turtle sighting	2.46	1.019
Water quality/ visibility	3.23	0.677
Beach/snorkelling crowd	2.73	0.695
Beach cleanliness	2.86	0.730
Beach accessibility	2.83	0.646
Scuba diving sites	3.20	0.277
Diving site congestion	2.88	0.666
Accommodation	2.90	0.669
Accommodation facilities	2.78	0.782
Restaurant services	2.75	0.831
Ferry services	2.81	0.623
Ferry safety	2.65	0.751

Note: mean scale 1 = poor; 2 = average; 3 = good; 4 = excellent

Excluding the "not applicable" answers, the overall mean for each item was calculated and presented in Table 7.15. The overall mean ranges from 2.46 calculated for turtle sighting to 3.23 calculated for water visibility. Based on the overall mean scores, it can be confirmed that all attributes, about which the respondent were asked, are still in the above average condition as perceived by the visitors.

7.3.1 *Features rating by groups*

To further investigate the situation, several Independent Sample t-Tests were run to determine the mean difference between several groups of interest. The differences in mean were tested for first versus the repeat visitors, gender, marital status and affiliation with nature and conservation group.

The Independent-Samples t-Test procedure compares means for two groups of cases. The mean values for the two groups are displayed in the Group Statistics table. If the significance value for the Levene Test is high (greater than 0.05), the results that assume equal variances for both groups is used. On the other hand, if the significance value for the Levene Test is low (less than 0.05), then the results that do not assume equal variances for both groups are used. A low significance value for the t-test (less than 0.05) indicates that there is a

significant difference between the two group means. Alternatively the confidence interval for the mean difference which does not contain zero also indicates that the group mean is significantly different. However, if the significance value is high and the confidence interval for the mean difference contains zero, then it cannot be concluded that there is a significant difference between the two group means (SPSS, 1999; Cronk, 2003).

Table 7.16 illustrates the SPSS output for the Independent-Samples t-Test as an example. In the case above, the mean score for marital status is tested. Since the Levene Test is high (0.217), the results that assume equal variances for both groups is used. It can be concluded that there is significant difference in mean rating among the single and married group for the item coral condition (t (183) = *-2.815, $p < 0.05$*). The mean for the married group was significantly higher (*$m = 3.32$, s.d = 0.544*) than the mean for the single group (*$m = 3.08$, s.d = 0.636*). Although both groups rated coral condition "good", the married group perceived the coral condition to be better than did the unmarried visitors.

Table 7.16: Independent Sample t-Test – SPSS output

Group Statistics

	Marital Status	N	Mean	Std. Deviation	Std. Error Mean
Coral Condition	Single	79	3.08	.636	.072
	Married	106	3.32	.544	.053

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Coral Condition								Lower	Upper
Equal variances assumed	1.532	.217	-2.815	183	.005	-.245	.087	-.416	-.073
Equal variances not assumed			-2.752	152.603	.007	-.245	.089	-.421	-.069

Table 7.17: Mean Comparison between Groups

Item*	Group	n	Group mean	s.d	Overall mean (s.d)
Coral reef	Single	79	3.08	.636	3.21
t (183) = *-2.815*	Married	106	3.32	.544	(0.601)
Fish varieties/ species	Single	80	3.04	.561	3.14
t (167.46) = *-2.417*	Married	106	3.24	.544	(0.564)
Water quality/ visibility	Single	80	3.06	.681	3.23
t (165.84) = *-3.058*	Married	107	3.36	.650	(0.677)
Beach accessibility	Single	79	2.70	.607	2.83
t (182) = *-2.395*	Married	105	2.92	.661	(0.646)
Fish varieties/ species	Male	106	3.23	.637	3.14
t (182.57) = *2.420*	Female	81	3.04	.431	(0.564)
Diving Site Congestion	Male	20	2.75	.639	3.20
t (23) = *-2.084*	Female	5	3.40	.548	(0.577)
Beach cleanliness	Member	29	3.14	.516	2.86
t (52.72) = *2.958*	Non-member	158	2.80	.753	(0.730)
*all items listed are significant at 5 % t-value (d.f)					

The results listed in Table 7.17 highlight those items with mean values that are statistically significant between the groups compared. The Independent-Samples t-Test result revealed that there are four items that were statistically different in mean between the marital status groups. Those items are coral condition (explained as the example), fish varieties and species, water visibility and beach accessibility. Means ratings by the married group were found to be statistically higher in all four items compared to the single group. Two items were discovered statistically different in mean by gender. These items were fish variety and diving sites. Mean rating for males was statistically higher compared to females for fish variety while the female group was discovered to have a higher mean rating for dive sites. One last item was statistically different in mean by affiliation to conservation group. The mean for those who were affiliated to a conservation group was significantly higher (*m = 3.14, s.d = 0.516*) than the mean for the single group (*m = 2.80, s.d = 0.753*). However, there is no statistical difference in mean between the first time visitors and the repeat visitors for any items.

7.4 Membership in Conservation Group

A majority of the respondents (85%) reported not being involved in any conservation or nature group (Table 7.18). Only 15 percent stated they belong to certain conservation groups. In the case of the first time visitors, a more or less similar proportion of males (14.3%) and females (14.7%) reported being members of conservation groups. However in the case of repeat visitors, 31 percent of women reported such membership, compared to 14 percent of the men. Employing the Chi-Square Test of Independence, however, revealed that the pattern of membership does not depend on either gender (*Chi-squared* (*1*) *= 0.377, p > 0.05*) or repeat visit (*Chi-squared* (*1*) *= 0.231, p > 0.05*).

Table 7.18: Membership to Nature Conservation Group

First-Repeat				Gender		Total
				Male	Female	
First Visit	Membership of conservation group	No	Count	48	58	106
			% within Gender	85.7%	85.3%	85.5%
		Yes	Count	8	10	18
			% within Gender	14.3%	14.7%	14.5%
	Total		Count	56	68	124
			% within Gender	100.0%	100.0%	100.0%
Repeat Visit	Membership of conservation group	No	Count	44	9	53
			% within Gender	86.3%	69.2%	82.8%
		Yes	Count	7	4	11
			% within Gender	13.7%	30.8%	17.2%
	Total		Count	51	13	64
			% within Gender	100.0%	100.0%	100.0%

7.5 Will Visitors Revisit RMP?

The beauty and first-hand experiences with nature that RMP has to offer somehow still manage to sustain the interest of the visitors, as almost all (97%) of them stated that they are willing to re-visit the island in the future (Table 7.19). In fact all of the repeat visitors were very positive that they will re-visit RMP in the future. Of those (3% of all visitors) who do not have the intention to re-visit RMP, 4 percent were male visitors while 6 percent were female. The desire to re-visit the RMP cut across all occupational categories and age levels. The intention to re-visit RMP reflects that the visitors are still happy with the current condition and enjoy the natural beauty of the RMP. This also serves as a good indicator for the Fisheries Department which manages the park successfully.

Table 7.19: Will Revisit Redang in Future?

First-Repeat				Gender		Total
				Male	Female	
First Visit	Will Revisit Redang in Future?	No	Count	2	4	6
			% within Gender	4.1%	5.9%	5.1%
		Yes	Count	47	64	111
			% within Gender	95.9%	94.1%	94.9%
	Total		Count	49	68	117
			% within Gender	100.0%	100.0%	100.0%
Repeat Visit	Will Revisit Redang in Future?	Yes	Count	51	13	64
			% within Gender	100.0%	100.0%	100.0%
	Total		Count	51	13	64
			% within Gender	100.0%	100.0%	100.0%

7.6 Attitude towards Nature and Conservation

Generally, given the high level of education and income, respondents are supportive of, and have a positive attitude towards, nature and conservation of the RMP's natural beauty (Table 7.20). The mean scores for all 5 positive items in the attitude instrument, which range from 3.68 for 'park ranger' to 4.43 for 'like to visit nature preserve', indicated that they have a degree of agreement on those statements. By looking at the mid-point of each Likert response scale to indicate the categories of the mean score, it can be concluded that the respondents' mean scores for all 5 items fall in the "agree" category.

Table 7.20: Positive Statements in the Attitude Instrument

Positive Attitude Statements*	Mean	Std. Dev.
Beach cleanliness is satisfactory	4.05	.875
Quality of coral and fish varieties excellent	3.99	.767
Fisheries Department look after MP	3.90	.691
Park ranger doing good job	3.68	.678
I like to visit nature preserves like RMP	4.43	.568

* "Likert" response scale:
1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree

In terms of the negative statements in the attitude instrument, the mean scores range from the minimum of 2.81 for 'hotel concerned with profit' to the highest of 3.99 for 'tourism development deteriorates environment'. It can be interpreted that they tend to be undecided for the statement of "hotel concerned with profit over environment" and "visit other park if fee increases", however they disagree with the statements that 'tourism development deteriorates environment' and 'preservation is solely government responsibility' (Table 7.21).

Table 7.21: Negative Statements in the Attitude Instrument

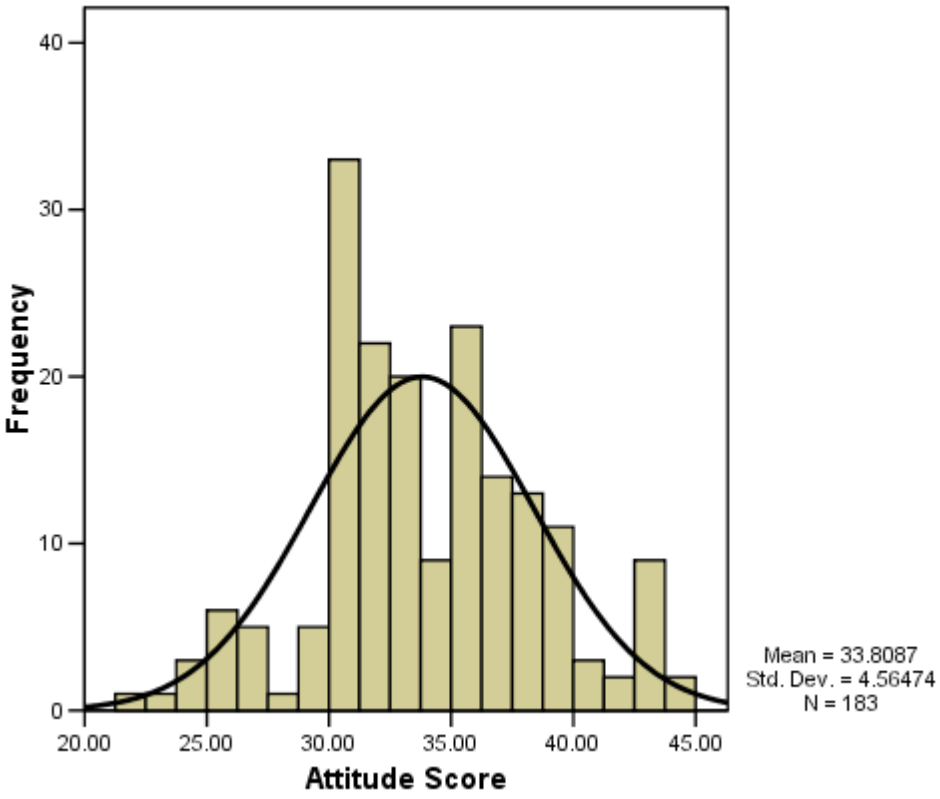
Negative Attitude Statements**	Mean	Std. Dev.
Hotel industry more concerned about profit than environment	2.81	1.343
Visit other MP if entry fee were increased	2.97	1.190
Tourism development activity deteriorate environmental quality	3.99	.880
Preserving natural park government responsibility, not visitors'	3.98	1.174

** "Likert" response scale:
1 = Strongly Agree; 2 = Agree; 3 = Undecided; 4 = Disagree; 5 = Strongly Disagree

7.6.1 *Reliability of attitude scale*

To gauge the reliability of the attitude scale discussed above, a reliability test procedure was conducted as suggested by Mueller (1986). Out of the total 189 respondents, 183 cases are valid for the measurement of attitude scale, i.e. they responded to all the nine items. The outcome of this test indicates that the whole attitude instrument is quite reliable with the value of *Cronbach-alpha* equal to 0.69, and can further be improved to 0.71, if one of the items is dropped from the instrument (Refer to Appendix F). It can be concluded that the attitude instrument is able to explain 70 percent of the variation in respondents' attitudes towards nature and conservation. All of the items are positively correlated with the total attitude score, although one item indicated weak item-to-total correlation (0.183). As the potential improvement in alpha value is small if the item is deleted, all 9 items are retained to compute the attitude scores.

Figure 7.3: Attitude Score Distribution



7.6.2 *Attitude scores*

Theoretically, the scores should range from 9 (1 × 9) to 45 (5 × 9). In this study, the attitude scores range from 22 to 45, with a mean value of 33.8 and standard deviation of 4.56. The distribution is almost normal with a slight positive skew (skewness = 0.091), as depicted in Figure 7.3. In order to understand the variables that may have impact on attitude score, the test of independence and relatedness using Chi-squared Test is used. For the purpose of this testing procedure, the attitude score is divided into 3 distinct levels. The range for each level is determined by the mean score plus/minus 1 standard deviation. The 3 levels are: low attitude score with mean score less than 29.24, the medium attitude score level ranges from 29.24 to 38.36 and the high attitude score has a mean score of more than 38.36. The attitude levels were then tested with several variables, among others gender, marital status, age group, level of education, affiliation with conservation groups and first-repeat visit. Chi-square tests of independence revealed 3 significant results of dependency between attitude level toward nature and conservation, and gender, education level and membership to conservation group which will be discussed in detail in the next section. No statistically significant dependencies were found between attitude level with marital status ($\chi^2(2) = 3.407$, $p > 0.05$), age group ($\chi^2(8) = 26.461$, $p > 0.05$), repeat visit ($\chi^2(2) = 3.878$, $p > 0.05$) and household income level ($\chi^2(4) = 7.798$, $p > 0.05$). Attitude levels appear to be independent of those variables.

7.6.3 *Attitude and gender*

Gender does make a difference in the patterns of attitude scores. Although the majority of the visitors (around 70%) belong to the middle attitude class, irrespective of their gender, a higher proportion of men belong to the low attitude class compared to women (Table 7.22). A Chi-square test of independence was calculated comparing the frequency of attitude class for men and women. A significant interaction was found (χ^2 (2) = 6.139, $p < 0.05$). Men tend to have a lower attitude score compared to women. Thus the majority of the female visitors are more favourable towards nature and conservation, such as that obtained in the RMP.

Table 7.22: Attitude and Gender

			Gender		Total
			Male	Female	
Attitude Level	Low Attitude Score	Count	18	4	22
		% within Gender	17.1%	5.1%	12.0%
	Medium Attitude Score	Count	72	62	134
		% within Gender	68.6%	79.5%	73.2%
	High Attitude Score	Count	15	12	27
		% within Gender	14.3%	15.4%	14.8%
Total		Count	105	78	183
		% within Gender	100.0%	100.0%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.139(a)	2	.046
Likelihood Ratio	6.719	2	.035
Linear-by-Linear Association	2.867	1	.090
N of Valid Cases	183		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.38.

7.6.4 *Attitude and education*

A significant pattern between attitude levels and educational attainment were found among the respondents to RMP. Based on the evidence, we see that there is some degree of dependence between these attributes (χ^2 (4) = 12.511, p = 0.014). Table 7.23, illustrated that the most of the respondents with a higher educational attainment belong to either medium or high attitude score classes. However, there were 2 cells having an expected count less than 5 (22%). Although there is no assumption about the shape of the distribution, the Chi-square Test of Independence assumed that the expected frequencies for each category should be at least 1, and no more than 20 percent of the categories should have an expected frequency of less than 5 (Cronk, 2003: p.88). Hence the result of the Chi-square test of independence, between attitude and education, violated the assumption. Notwithstanding this, love for nature is therefore nurtured by education, implying that the public can be educated about the need to conserve the natural environment by promotional materials and greater publicity.

Table 7.23: Attitude and Education

Attitude Level		Education Level: Primary and Secondary	Education Level: Diploma	Education Level: University Degree	Total
Low Attitude Score	Count	5	11	6	22
	% w/in Education Level	27.8%	17.5%	5.9%	12.0%
Medium Attitude Score	Count	13	44	77	134
	% w/in Education Level	72.2%	69.8%	75.5%	73.2%
High Attitude Score	Count	0	8	19	27
	% w/in Education Level	.0%	12.7%	18.6%	14.8%
Total	Count	18	63	102	183
	% w/in Education Level	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.511(a)	4	.014
Likelihood Ratio	14.639	4	.006
Linear-by-Linear Association	11.280	1	.001
N of Valid Cases	183		

a 2 cells (22.2%) have expected count less than 5. The minimum expected count is 2.16.

7.6.5 *Attitude and membership to conservation group*

The same situation is revealed in the Chi-square test of independence between attitude and affiliation to a conservation group (Table 7.24). There was a significant degree of dependency between attitude and affiliation (χ^2 (2) = 6.840, p = 0.033). A positive attitude toward nature and conservation was somehow related to affiliation to conservation group, although the result should be read with caution since there is also violation on the test.

Table 7.24: Attitude and Membership

Attitude Level		Membership		Total
		No	Yes	
Low Attitude Score	Count	22	0	22
	% within Membership	14.2%	.0%	12.1%
Medium Attitude Score	Count	114	20	134
	% within Membership	73.5%	74.1%	73.6%
High Attitude Score	Count	19	7	26
	% within Membership	12.3%	25.9%	14.3%
Total	Count	155	27	182
	% within Membership	100.0%	100.0%	100.0%

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.840(a)	2	.033
Likelihood Ratio	9.593	2	.008
Linear-by-Linear Association	6.743	1	.009
N of Valid Cases	182		

a 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.26.

7.7 Respondents' Views on Questionnaire

To end the interviews, respondents were asked about what they thought of the questionnaire on five specific dimensions, namely, whether they find it interesting (+), whether it is educational (+), whether it is too long (–), difficult to understand (–), and whether it is unrealistic (not credible) (–). This called for a multiple-response analysis and the results are presented below. The researcher is interested in the count for "Yes=1" answers to all five dimensions. On whether they find it is interesting, 76.6 percent answered in the affirmative (perhaps to be polite?). About 78.6 percent considered it to be educational. A higher number of 85.2 percent stated it is too long. Is it difficult to understand? About 42 percent believed it to be difficult while 25 percent found it is "unrealistic" too (Table 7.25).

Table 7.25: Respondents' View on Our Questionnaire (Count for "Yes=1")

What do you think of this questionnaire?	**Frequency**	**Percentage**
Questionnaire interesting? (n=175)	134	76.6
Questionnaire educational? (n=172)	135	78.6
Questionnaire too long? (n=182)	155	85.2
Questionnaire difficult to understand? (n=171)	71	41.5
Questionnaire unrealistic? (n=168)	43	25.6

7.8 Ordinal Regression and CR Result

The following discussion presents the results for the CR experiment elicited from sections C and D of the questionnaire. The section starts with a simple analysis of island rank as a tourist destination. Next it checks the consistency of the ranking experiment with the economic theory. The ordinal regression output from SPSS PLUM procedure is illustrated and discussed for the Basic Model 1. Finally the section discusses how the test for Independence from Irrelevant Alternatives (IIA) was conducted on Model 1.

7.8.1 *Island rank*

Visitors were asked to rank their preferences for different levels of accommodation and service attributes for the destination choice. Examining the ranking by Island in Table 7.26, 42.6 percent rank Kapas as the most preferred destination, followed by Redang (31.2%) and Perhentian (23.1%). Tenggol scores the highest ranking for least preferred destination (63.1%) followed by Perhentian (19.8%). The popularity of Kapas exceeded the popularity of Redang due to the proximity to the mainland which allows day trippers to visit the island. On the other hand, Tenggol is still not commonly known as a tourist destination among the local tourists while Perhentian requires the longest journey to travel from the mainland.

Table 7.26: Island Ranking

			Island Name				Total
			Redang	Perhentian	Kapas	Tenggol	
Destination Rank	Most Preferred	Count	236	175	322	23	756
		% within Island Name	31.2%	23.1%	42.6%	3.0%	25.0%
	Preferred	Count	237	213	227	79	756
		% within Island Name	31.3%	28.2%	30.0%	10.4%	25.0%
	Less Preferred	Count	220	218	141	177	756
		% within Island Name	29.1%	28.8%	18.7%	23.4%	25.0%
	Least Preferred	Count	63	150	66	477	756
		% within Island Name	8.3%	19.8%	8.7%	63.1%	25.0%
Total		Count	756	756	756	756	3024
		% within Island Name	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 7.4: Destination Rank by Island

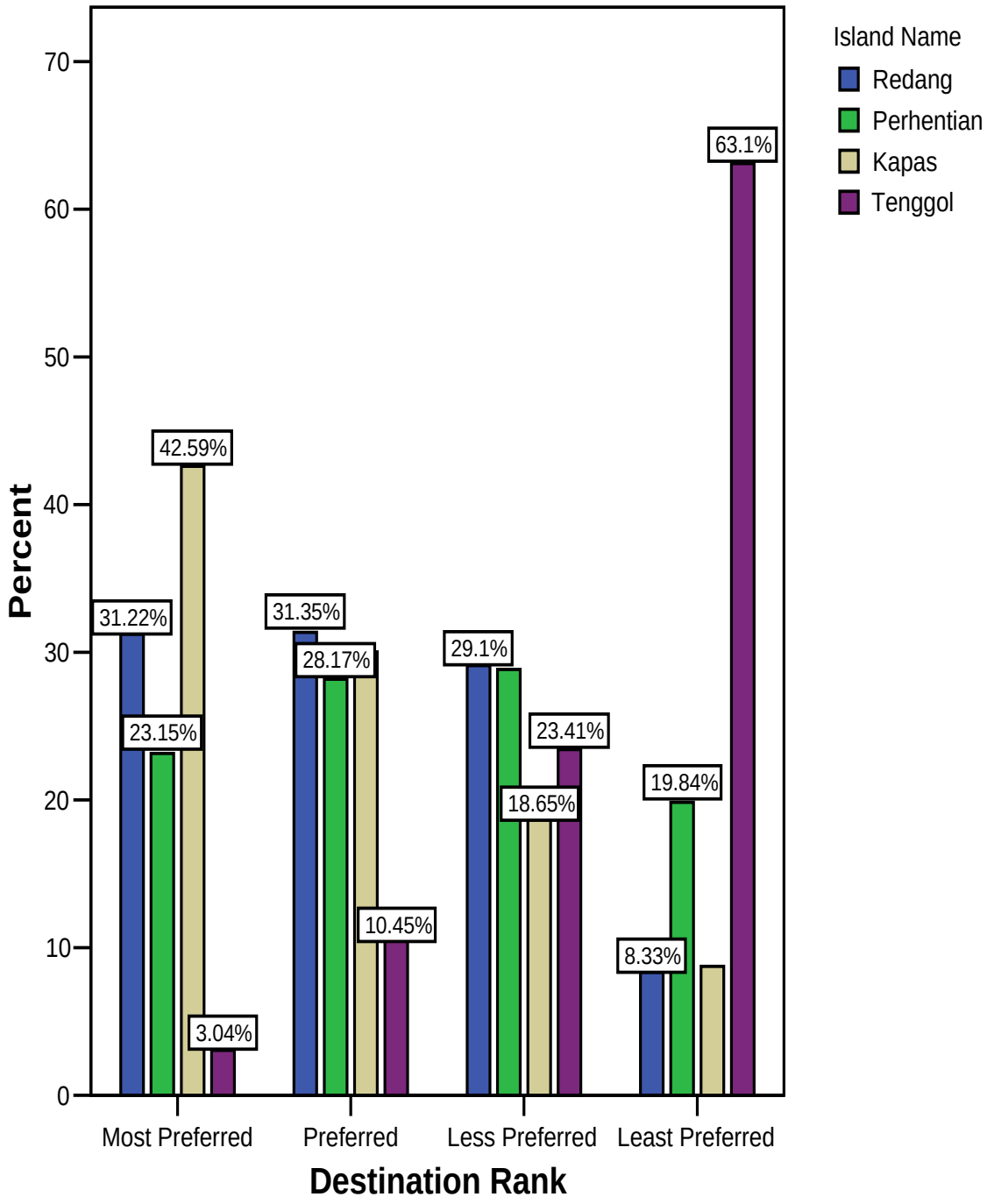


Figure 7.5: Complete Ranking for All Islands

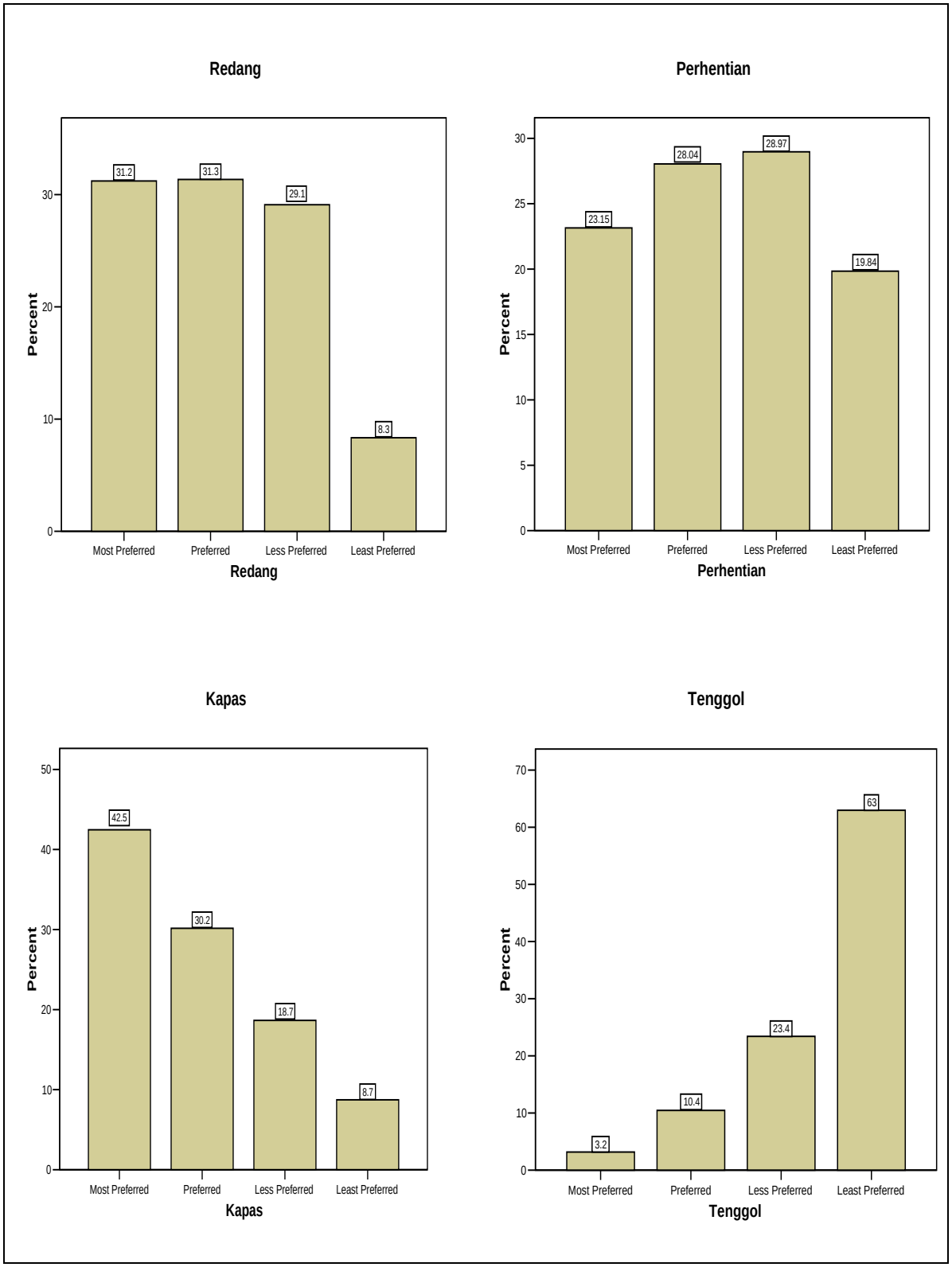


Table 7.27: Frequency Distribution of CR for Complete Ordering (n = 756)

Preference Order	Frequency	Percent
Redang > Perhentian > Kapas > Tenggol	89	11.8
Redang > Perhentian > Tenggol > Kapas	10	1.3
Redang > Kapas > Perhentian > Tenggol	71	9.4
Redang > Kapas > Tenggol > Perhentian	53	7.0
Redang > Tenggol > Perhentian > Kapas	5	0.7
Redang > Tenggol > Kapas > Perhentian	8	1.1
Perhentian > Redang > Kapas > Tenggol	41	5.4
Perhentian > Redang >Tenggol > Kapas	4	0.5
Perhentian > Kapas > Redang > Tenggol	76	10.1
Perhentian > Kapas >Tenggol > Redang	16	2.1
Perhentian > Tenggol > Redang > Kapas	36	4.8
Perhentian > Tenggol > Kapas > Redang	2	0.3
Kapas > Redang > Perhentian > Tenggol	111	14.7
Kapas > Redang >Tenggol > Perhentian	75	9.9
Kapas > Perhentian > Redang > Tenggol	89	11.8
Kapas > Perhentian > Tenggol > Redang	19	2.5
Kapas > Tenggol > Redang > Perhentian	9	1.2
Kapas > Tenggol > Perhentian > Redang	19	2.5
Tenggol > Redang > Perhentian > Kapas	6	0.8
Tenggol > Redang > Kapas > Perhentian	0	0
Tenggol > Perhentian > Redang > Kapas	5	0.7
Tenggol > Perhentian > Kapas > Redang	1	0.1
Tenggol > Kapas > Redang > Perhentian	5	0.7
Tenggol > Kapas > Perhentian > Redang	6	0.8
Total	**756**	**100.0**

Complete ordering of the CR result is illustrated in Table 7.27 above. Of the 31.2 percent respondents who rank Redang as the most preferred destination, about 12 percent rank Redang in preference to Perhentian, Perhentian is preferred to Kapas, and Kapas is preferred to Tenggol. As for those who choose Perhentian as the most preferred destination, 10 percent rank Perhentian preferred to Kapas, Kapas to Redang and Redang to Tenggol. For those who chose Kapas as the most preferred destination, the ordering of Kapas is preferred to Redang, Redang to Perhentian and Perhentian to Tenggol score the most (15%). Based on the ordering patterns, Kapas, Redang and Perhentian are closely ranked together as the top three destinations.

7.8.2 *Test of consistency with economic theory*

A series of consistency tests were conducted in order to assess the validity of the CR experiment, as conducted by Foster and Maurato (2002). The fundamental axioms of the consumer theory are based on a series of rules for the ordinal ranking of product bundles. Taking the ordinal ranking of the attributes bundle as product bundles enables us to observe any violation of responses to the ranking questions. The three axioms of central interest are non-satiation, transitivity and continuity (Kreps, 1990; Varian, 1992 and Pindyck and Rubinfeld, 1995).

- **Non-Satiation**

  The non-satiation axiom states that a consumer must prefer a bundle which is in all respects superior to another. The CR survey provides a test of this axiom whenever the existences of dominant pairs of alternatives in the choice card are presented to the respondent. As an illustration, one alternative might offer a shorter time of accessibility as another alternative with all other attributes of the same value and the same price. Or one alternative might offer better types of accommodation to other alternatives with all other attributes the same value and the same price. If the respondents were behaving rationally in accordance with the non-satiation axiom, they would universally rank the superior alternative higher compared to the other alternative.

- **Transitivity**

  The transitivity axiom relates the overall consistency of a series of pair-wise rankings. It requires that if a consumer prefers option A over option B and option B over option C, then the person must necessarily prefer option A over option C. For instance, if a respondent prefers Redang over Perhentian and Perhentian over Kapas, then, rationally, the respondent must necessarily prefer Redang over Kapas. Transitivity was tested on one of the seven versions of the choice sets. However the number of respondents responding to the version is quite limited.

- **Continuity**

  The continuity axiom states that two commodity bundles which are similar to each other will be ranked close together in the consumer's preference ordering. This axiom effectively precludes lexicographic ordering of bundles, by requiring respondents to trade-off gains in one commodity against losses in another. Lexicographic preference describes a situation where individuals make a choice on the basis of a hierarchical series of criteria. Alternatives in a particular choice set are first ranked according to their performance against the first or the most important of these criteria. If there are any ties between alternatives, these are settled with reference to second criteria, and so on. Individuals, who behave in accordance with this paradigm, will evidently be unwilling to trade-off an improvement in terms of low ranking criteria against deterioration in terms of higher ranking criteria.

Table 7.28: Test for Consistency with Fundamental Axioms of Consumer Choice

	Non-Satiation		**Transitivity**		**Continuity**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Total possible number of test failures	264		24		162	
Actual number of test failures	116	43.4	9	37.5	38	23.5
Redang vs. Kapas Violation	81	69.8	9	100.0		

The three axioms concerned above are tested by looking at the percentage of compliance and failure among the responses given by the respondents. Table 7.28 explains the summary of the test finding. Out of 264 responses given by the respondents facing the dominant choice in their choice sets, 43.4 percent of the dominant choice were inappropriately ranked and violated the non-satiation axiom. The possible explanation for the violation is because of the knowledge the respondents have regarding the preferred island compared to the one that possesses the dominant characteristic in the choice card. In this sense, the respondent will stick to the preferred island even though the attributes are slightly less attractive compared to the dominant choice. Accounting for about 70 percent of the violation, Redang is ranked higher as compared to Kapas which possesses the dominant criteria in the choice set.

In terms of the transitivity, 9 out of 24 respondents were inconsistent with their own ranking. In all cases, the violation involved the ranking between Kapas and Redang. Following the transitivity axiom, if Kapas is preferred to Perhentian, and Perhentian is preferred to Redang, rationally Kapas should be preferred to Redang. However, Redang was preferred to Kapas in all cases. The possible explanation of the violation again demonstrated the effect of the island name which influenced the choice. This strengthened the previous argument about familiarity and knowledge that respondents have regarding their preferred island to visit.

On the other hand, 23.5 percent of 162 responses violated the continuity axiom. The ranking sets used in the study were comprised of four different alternatives, with each having five different product attributes, producing up to twenty different potential lexicographic orderings. Consequently, it is highly unlikely that respondents would exercise all twenty orders during the ranking process.

7.8.3 *PLUM procedure – an illustration using destination choice basic model 1*

Results presented here are for the basic model of the destination choice (Model 1). It illustrates the SPSS output from PLUM procedure and the interpretation of the output.

Table 7.29: Ordinal Regression SPSS Output 1

Warnings

There are 68 (17.3%) cells (i.e., dependent variable levels by combinations of predictor variable values) with zero frequencies.

The warning given by the PLUM procedure is relevant for the Goodness-of-Fit test. If the number of cells with zero frequencies is small then inferences can be made about the fit of the model to the data. The use of continuous independent variables or many categorical predictors or some predictors with many values will create a large number of cells with zero frequencies. According to Norusis (2004), the warning is only informative if a limited number of independent variables with a limited number of categories are used. However, the chi-squared tests for nested models remain valid.

Table 7.30: Ordinal Regression SPSS Output 2

Case Processing Summary

		N	Marginal Percentage
Rank	Least Preferred	756	25.0%
	Less Preferred	756	25.0%
	Preferred	756	25.0%
	Most Preferred	756	25.0%
Valid		3024	100.0%
Missing		0	
Total		3024	

The case processing summary gives a frequency table of the dependent variables. The number of valid cases of 3,024 is considered in the regression without a missing case. All rank categories have the same marginal percentage which also indicates that *Rank* possesses evenly distributed categories.

Table 7.31: Ordinal Regression SPSS Output 3

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	3394.961			
Final	2349.116	1045.846	5	.000

Link function: Logit.

The model fitting information is a likelihood ratio test of the model (Final) against one in which all parameter coefficients are 0 (except the intercept). The null hypothesis tested is that all the parameter coefficients are 0. The chi-squared statistic is the difference in the –2 log-likelihoods between the initial (baseline) and final models. If the significance of the test is small (i.e., less than 0.05) then we can reject the null hypothesis that all the parameter coefficients are 0, which means that the Final model is outperforming the initial model. The chi-squared value of 1,045.85 with 5 degrees of freedom and $p < 0.05$ indicates that the basic model of the rank destination is highly significant. This means that we can reject the null hypothesis that the model without predictors is as good as the model with predictors.

Table 7.32: Ordinal Regression SPSS Output 4

Goodness-of-Fit

	Chi-Squared	Df	Sig.
Pearson	1698.886	286	.000
Deviance	1642.371	286	.000

Link function: Logit.

The goodness-of-fit table presents two tests of the null hypothesis that the model adequately fits the data. The *Pearson* and *Deviance* statistics should have a chi-squared distribution with

the shown degrees of freedom if the null is true. If the significance of the test is small (i.e., less than 0.05), then the model does not adequately fit the data. However, the tests are not informative because of the large number of zero frequencies generated given by the warning earlier.

Table 7.33: Ordinal Regression SPSS Output 5

Pseudo R-Square

Cox and Snell	.292
Nagelkerke	.312
McFadden	.125

Link function: Logit.

In linear regression, the r-squared statistic is the proportion of the total variation in the response that is explained by the model. The r^2 statistic cannot be exactly computed for ordinal regression models, so approximations are computed instead. A large pseudo r-squared statistics indicate that more of the variation in the response is explained by the model, to a maximum of 1. Looking at McFadden r^2, the main attributes concerned explained 12.5 percent of destination ranking.

Table 7.34: Ordinal Regression SPSS Output 6

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Rank = 1.00]	-3.191	.179	319.297	1	.000	-3.541	-2.841
	[Rank = 2.00]	-1.755	.170	106.295	1	.000	-2.088	-1.421
	[Rank = 3.00]	-.366	.168	4.740	1	.029	-.696	-.037
Location	Accom	.966	.056	296.935	1	.000	.857	1.076
	Fac	.044	.042	1.097	1	.295	-.038	.126
	Dist	-.022	.010	4.656	1	.031	-.041	-.002
	Access	-.003	.001	4.707	1	.030	-.005	.000
	Price	-.007	.000	710.560	1	.000	-.007	-.006

Link function: Logit.

Parameter estimates, their standard errors, significance tests, and confidence intervals are provided for all Threshold and Location parameters. The Wald statistic is the square of the ratio of the parameter estimate to its standard error. If the significance of the statistic is small (i.e., less than 0.05), then the parameter is useful to the model.

The Threshold values indicate the cumulative logits when the independent variables equal zero. Threshold values are necessary for calculation of the predicted value. Threshold

parameters are ordered, though their confidence intervals may overlap. Thresholds with overlapping confidence intervals indicate that they are difficult to separate.

The positive coefficients for *Accom* and *Fac* indicate that higher levels of accommodation types and facilities increase the probability of higher destination ranking. The negative values for *Dist, Access* and *Price* show that these variables decrease the probability of assigning higher destination rank. The Wald statistic has a chi-squared distribution with 1 degree of freedom. The values under Sig. show that *Accom, Dist, Access* and *Price* are highly significant with $p < 0.05$. However, *Fac* is not significant ($p > 0.05$).

SPSS PLUM procedure also allows the user to save the predicted response category calculated by the model. Taking a cross-tabulation between the observed responses by respondents *Rank* and the predicted response category *pre_1*, calculated by the model, will produce a classification table or a confusion matrix that assigns cases to each category. A case is assigned to the response category for which it has the largest predicted probability (Norusis, 2004).

Table 7.35: Observed and Predicted Ranking (Model 1)

	Predicted Response Category				
Observed Ranking (n=3024)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=756)	435	183	101	37	57.5
Less Preferred (n=756)	168	318	154	116	42.1
Preferred (n=756)	103	146	288	219	38.1
Most Preferred (n=756)	75	76	177	428	56.6
Overall Percentage	29.6	21.7	19.6	29.1	48.6

Table 7.35 is the classification table for observed and predicted rank for Model 1. Out of 756 observations for each response category, 435 (57.5%) are correctly assigned to the category *Least Preferred* using the predicted probability, and 318 (42.1%) are correctly assigned to the category *Less Preferred* using the predicted probability. As for *Preferred* rank category, 288 (38.1%) observations are correctly assigned while 428 (56.6%) of the observations for *Most*

Preferred are correctly assigned to the category. Overall almost half (48.6%) of the responses are correctly assigned to each category by the model.

7.8.4 *Independence from irrelevant alternatives*

Before continuing with further analysis of the model and apart from the fundamental axiom of the consumer theory conducted previously, the test for Independence from Irrelevant Alternatives (IIA) was conducted for the basic CR model. The MNL model assumes that the odds ratio between choice alternatives is independent of other alternatives. This derives from the fact that the error terms in the MNL model are assumed to be distributed iid (Lusk and Norwood, 2005). In other words, the independence assumption derives from the initial assumption in the MNL model that the disturbances are independent.

It is important to conduct such an IIA test since it is the underlying assumption of the conditional distribution and ordered cases (Beggs et al. 1981). The IIA refers to the situation where the ranking in between two bundles of a choice set is not affected by the identity of the remaining bundle in the set. In this sense the relative odds of choosing one alternative over the other are the same no matter what other alternatives are available or what the attributes of other alternatives are. Under IIA, the ratio of the probabilities for any two alternatives is the same whether or not other alternatives are available. In this case the IIA implies that the ratio of probabilities of choosing any two islands does not depend on the availability of a third island. With the assumption of $\mu = 1$, the ratio of probabilities between islands *i* and *j* is shown in equation 7.1 (Train, 2002).

$$\begin{aligned}\frac{P_{in}}{P_{jn}} &= \frac{\exp(V_{in})/\sum_{j\in J_n}\exp(V_{jn})}{\exp(V_{jn})/\sum_{j\in J_n}\exp(V_{jn})} \\ &= \frac{\exp(V_{in})}{\exp(V_{jn})} \\ &= \exp(V_{in} - V_{jn})\end{aligned} \tag{7.1}$$

Equation 7.1 shows that the ratio of probabilities only depends on the islands *i* and *j*, and not on other island(s) in the alternative sets, J_n. The Hausman-McFadden test has frequently been used to test whether or not the IIA property holds in empirical studies (Hausman and McFadden, 1984).

Hausman and McFadden (1984) suggest that if a subset of a choice set truly is irrelevant, omitting it from the model altogether will not change the parameter estimates systematically. Greene (1991) argues that inclusion of these alternatives in a choice set will be inefficient but will not lead to inconsistency. But if the remaining odds ratios are not truly independent of these alternatives, the parameter estimates obtained when these choices are eliminated will be inconsistent. This is the basis for the Hausman's specification test. The statistic is

$$\chi^2 = (\hat{\beta}_s - \hat{\beta}_f)' \, [\hat{V}_s - \hat{V}_f]\text{-}1 \, (\hat{\beta}_s - \hat{\beta}_f)$$

where *s* indicates the estimators based on the restricted subset, *f* indicates the estimator based on the full set of choice, and $\hat{V}_s - \hat{V}_f$ are the respective estimates of the asymptotic covariance matrices. The statistic is asymptotically distributed as chi-squared with *K* degree of freedom (Greene, 1991).

If IIA holds, the parameter estimates obtained on a subset of alternatives will not be significantly different from those obtained on the full set of alternatives. If the IIA test does not hold, i.e. the odds ratios are not truly independent of the alternatives; the parameter estimates obtained will be inconsistent. In doing this the basic model needs to be re-estimated on a subset of alternatives (Train, 2002) following Hausman-McFadden.

The problem with the IIA axiom is that it leads to a failure to take account of the fact that two alternatives are very similar, and are "perfect substitutes" as describe in Train (2002) with a classic example[1] of red bus and blue bus versus car in terms of choosing a mode of transportation. Table 7.36 presents the results from the IIA test. Three subsets were estimated and compared to the estimate from the basic model. In every subset one alternative was removed at a time. Checking the sign of the parameter estimates, *Access* carries an opposite sign in the subset without Redang and without Kapas while *Fac* and *Dist* carry an opposite sign in the subset without Perhentian. *Fac* remains insignificant in all subsets. *Dist* is not significant in the subsets without Perhentian and without Kapas while *Access* is not significant in the model without Redang. The likelihood ratio test of the model (Final) against the intercept only model for all subsets is highly significant with a very large value of χ^2 indicating that the final model is outperforming the intercept only models in every subset.

Finally the log likelihood ratio test comparing the basic model and the subset model was conducted. The difference between -2 log likelihood of the basic model and the subset models is extremely large rejecting the null hypothesis that the parameter estimates obtained on a subset of alternatives are not significantly different from those obtained on the full set of alternatives on all occasions. In other words IIA does not hold, since the parameter estimates obtained on a subset of alternatives are significantly different from those obtained on the full set of alternatives. The failure in the IIA test in this study suggested that most of the islands are almost a perfect substitute for each others. In other words, all the islands are almost equally desirable in terms of a tourist destination.

[1] In the example, consumers initially face a decision between two modes of transportation: car and red bus. Suppose that the consumer has an equal probability to choose between these two options, the probability is 0.5. Therefore the odds ratio between these two choices is equal to 1. Now suppose that a blue bus is added as a third alternative. With the assumption that bus commuters do not care about the bus color, consumers are expected to choose between bus and car still with equal probability, so the probability of car is still 0.5, while the probabilities of each of the two bus types is 0.25. However IIA implies that this is not the case: for the odds ratio between car and red bus to be preserved, the new probabilities must be: car 0.33; red bus 0.33; blue bus 0.33. Therefore, the problem with the IIA axiom is that it leads to a failure to recognize the fact that red bus and blue bus are similar, and they are "perfect substitutes".

However, while the model fails the IIA test, it can be argued that none of the islands are irrelevant alternatives. All exist and all are relevant alternatives that tourists could choose to visit. Therefore all need to be included in the choice set presented to respondents. The islands are substitutes, to varying degrees, for each other; and the inclusion of one island from the choice set will result in these tourists being distributed amongst the other islands in proportion to their market shares.

Finally the log likelihood ratio test comparing the basic model and the subset model was conducted. The difference between -2 log likelihood of the basic model and the subset models is extremely large rejecting the null hypothesis that the parameter estimates obtained on a subset of alternatives are not significantly different from those obtained on the full set of alternatives on all occasions.

Table 7.36: Result of IIA Test

	Basic Model (n=3204)		**CR without Redang (n= 2268)**		**CR without Perhentian (n= 2268)**		**CR without Kapas (n= 2268)**	
Variable	Coeff. Value	Std. Error	Coeff. Value	Std. Error	Coeff. Value	Std. Error	Coeff. Value	Std. Error
Accom	0.966*	0.056	0.883*	0.086	0.973*	0.062	1.172*	0.064
Fac	0.044	0.042	0.059	0.049	-0.006	0.049	0.050	0.049
Dist	-0.022*	0.010	-0.044*	0.013	0.020	0.013	-0.012	0.010
Access	-0.003*	0.001	0.001	0.001	-0.029*	0.003	0.005*	0.002
Price	-0.007*	0.000	-0.008*	0.000	-0.006*	0.000	-0.006*	0.000
-2 Log Likelihood								
Intercept Only	3394.961		2566.301		2577.946		2652.901	
Final	2349.116		1701.283		1639.666		1857.506	
χ^2 (df=5)	1045.846*		865.017*		938.280*		795.392*	
McFadden (r^2)	0.125		0.138		0.149		0.128	

* Significant at 95% confidence level

χ^2 is the difference between -2 log likelihood of the Intercept only and the final model.

At 95% confidence level the critical value for χ^2 distribution is 11.07 with 5 degrees of freedom

7.9 CR Result – Destination Choice

This is the first part of the CR result concerning how to determine the nature of rank among the islands in the RMP as tourist destinations. The section starts with the presentation and discussion of the three simple models. Apart from that, different WTP values for certain destination choice attributes of interest in the models are calculated. The section proceeds with the expansion of the simple model to more complicated models with income and social-demographic interactions. Finally the section touches on the differences in ranking pattern among the visit patterns to understand the effect of knowledge and familiarity of the goods being evaluated among the respondents.

7.9.1 *Basic specification*

Initially the choice specification assumes the ranking is not affected by socioeconomic and demographic factors. Table 7.37 shows 3 simple specifications. The first one is the basic model discussed earlier. The second introduced *Island* as an attribute while the third considered *Island* as a factor. The estimates for these models are quite plausible. As anticipated, the signs for all attributes are well-behaved, meaning that they conform to the economic theory. Respondents place a positive value for type of accommodation (*Accom*) and hotel facilities (*Fac*) indicating that higher levels of accommodation type and facilities increases the probability of higher destination ranking. The negative values for distance from the beach area (*Dist*), accessibility from the mainland (*Access*) and package price (*Price*) show that these variables decrease the probability of assigning a higher destination rank.

When *Island* is included as an attribute in Model 2, it carries a negative sign indicating a higher ranking is related to Redang while a lower ranking is related to Tenggol. As individual islands are introduced as factor in Model 3, they carry positive signs indicating that the island concerned contributes towards a higher ranking. All of the variables are statistically significant at 95 percent confidence level with the exception of hotel facilities, which is not significant in all three models. A likelihood ratio test of the model (Final) against one in which all parameter coefficients are zero confirms that the estimates of the overall models are statistically significant. The null hypothesis that the parameter estimates of the model are zero is rejected on all occasions.

Table 7.37: CR – Basic Specification Models

	Model 1 – Basic (n = 3024)			Model 2 - Island Attribute (n = 3024)			Model 3 - Island Factor (n = 3024)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**
Redang							1.784*	0.116	446.00
Perhentian							1.906*	0.201	476.50
Kapas							1.869*	0.155	467.25
Tenggol							0(a)	.	
Island				-0.499*	0.036	83.17			
Accom	0.966*	0.056	138.00	0.680*	0.060	113.33	0.822*	0.061	205.50
Fac	0.044	0.042	6.29	0.040	0.042	6.67	0.048	0.043	12.00
Dist	-0.022*	0.010	3.14	-0.044*	0.010	7.33	-0.045*	0.010	11.25
Access	-0.003*	0.001	0.43	-0.007*	0.001	1.17	-0.007*	0.003	1.75
Price	-0.007*	0.000		-0.006*	0.000		-0.004*	0.000	
-2 Log Likelihood									
Intercept Only	3394.961			3483.795			3483.795		
Final	2349.116			2241.220			2096.660		
χ^2 (df)	1045.846* (5)			1242.575* (6)			1387.134* (8)		
McFadden (r^2)	0.125			0.148			0.165		
Calculated LR (df)				107.89 (1)			252.45 (3)		

∗ Significant at 95% confidence level a. Parameter set to zero because it is redundant.

In comparing the three models the LR tests were conducted to test whether or not the additional parameter estimates in Model 2 and Model 3 are equal to zero. The comparison is between the extended models (Model 2 and 3) and the base model (Model 1). The ratio is given by the difference between -2 log likelihood of the two models. The null hypotheses were rejected on both occasions concluding that the additional parameter estimates are statistically significant from zero.

In terms of overall performance, Model 3 outperformed Model 2 and Model 1. This is given by a larger pseudo r^2 statistic (0.165) compared to 0.148 in Model 2 and 0.125 in Model 1. It can be contended that the individual island does matter in explaining the destination ranking.

7.9.2 *Observed and predicted ranking of simple specification*

Before continuing with further analysis, the predictive responses of all models above were investigated. Table 7.38 is the replication of Table 7.35 in the previous section and is the classification table for observed and predicted rank for Model 1. As explained before, out of 756 observations for each response category, 435 (57.5%) are correctly assigned to the category *Least Preferred* using the predicted probability and 318 (42.1%) are correctly assigned to the category *Less Preferred* using the predicted probability. As for *Preferred* rank category, 288 (38.1%) observations are correctly assigned while 428 (56.6%) of the observations for *Most Preferred* are correctly assigned to the category. Overall, almost half (48.6%) of the responses are correctly assigned to each category by the model.

In Table 7.39 the confusion table comparing the observed destination ranking versus the predicted response by the model for each rank category for Model 2 is shown. The overall percentage of correct assignment to each rank category decreases by 3 percent to 45 percent as compared to the previous model. Out of 756 observations for each rank category, 496 (65.6%) are correctly assigned to the category *Least Preferred* using the predicted probability and 254 (33.6%) are correctly assigned to the category *Less Preferred* using the predicted probability. As for *Preferred* rank category, 276 (36.5%) observations are correctly assigned while 339 (44.8%) of the observation for *Most Preferred* are correctly assigned to the category.

The confusion matrix comparing the observed destination ranking versus the predicted response by the model for each rank category for the Model 3 is given in Table 7.40. There is a slightly higher overall predictive capability in Model 3 as compared to other models. Overall about 50 percent of the ranks are correctly assigned in Model 3. Out of 756 observations for each rank category, about 68.3 percent (516) are correctly assigned to *Least Preferred* and 34.7 percent (262) are correctly assigned to *Less Preferred* by the model. Apart from that the model correctly assigned about 33 percent of the ranking to *Preferred* while about 64 percent is correctly assigned to the *Most Preferred* category using the predictive probability in Model 3.

Table 7.38: Observed and Predicted Ranking (Model 1)

	Predicted Response Category				
Observed Ranking (n=3024)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=756)	435	183	101	37	57.5
Less Preferred (n=756)	168	318	154	116	42.1
Preferred (n=756)	103	146	288	219	38.1
Most Preferred (n=756)	75	76	177	428	56.6
Overall Percentage	29.6	21.7	19.6	29.1	48.6

Table 7.39: Observed and Predicted Ranking (Model 2)

	Predicted Response Category				
Observed Ranking (n=3024)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=756)	496	169	63	28	65.6
Less Preferred (n=756)	185	254	198	119	33.6
Preferred (n=756)	92	147	276	241	36.5
Most Preferred (n=756)	53	98	266	339	44.8
Overall Percentage	36.4	18.6	20.2	24.8	45.1

Table 7.40: Observed and Predicted Ranking (Model 3)

	Predicted Response Category				
Observed Ranking (n=3024)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=756)	516	127	56	57	68.3
Less Preferred (n=756)	178	262	163	153	34.7
Preferred (n=756)	82	111	249	314	32.9
Most Preferred (n=756)	23	94	156	483	63.9
Overall Percentage	34.2	17.4	16.5	31.9	49.9

7.9.3 *WTP for basic specification model*

The WTP values for all three models are reproduced in Table 7.41. All values were calculated including the value for *Fac* even though the attribute was not statistically significant for comparison purposes. The range of WTP is from RM113.00 to RM205.00 for improvement in accommodation type, RM6.00 to RM12.00 for improvement in hotel facilities available, RM3.00 to RM12.00 for the option of accommodation which is situated closer to the beach area and from RM0.40 to RM1.75 for shorter boat ride from the mainland among the three models.

Table 7.41: WTP for Destination Choice Attributes

VARIABLE	Model 1	Model 2	Model 3
Accom	138.00	113.33	205.50
Fac	6.29	6.67	12.00
Dist	3.14	7.33	11.25
Access	0.43	1.17	1.75
Island		83.17	
Redang			446.00
Perhentian			476.50
Kapas			467.25

The improvement in accommodation type is the change, for example, from budget type accommodation to 3-star type accommodation or from a 3-star to a 4-star type of accommodation. The improvement of the hotel facilities is the comparison between the accommodation that provides basic restaurant facilities to the facilities that include some type of entertainment, to the facilities involving provision of snorkelling and diving equipment rental services. The improvement in the distance to the beach can be the variation in the package price charged by the tour operators among the accommodation which is situated on the beach front as compared to that which are located inland which requires some walking time. Finally, the accessibility time refers to every minute improvement in the time taken for the boat ride from the mainland jetty to the island. Having calculated all the values of WTP, the model can further be re-estimated differently according to the models presented earlier. In terms of WTP for island attribute in Model 2, it can be interpreted as the willingness to pay for the variation in the package price that involves a different island destination. Basically price varies at about RM83.00 for a package to a different island destination. As for the WTP for a specific island calculated in Model 3, it can be interpreted as the willingness to pay for a

3D2N package for the specific island. WTP for package holiday at Perhentian is higher than for Kapas and Redang taking Tenggol as the reference island.

7.9.4 *WTP by level*

To further understand the WTP of each attribute, Model 3 is now being regressed on their level basis. The result is presented in Table 7.42. Most of the main attributes appear to be contributing very significantly towards ranking at their individual level except for hotel facilities and travelling time. The overall explanatory power of the model is much better than the main attributes model discussed in the previous section, given by the value of the r^2 of 0.166.

Taking Tenggol as the reference point, and holding all other things being equal (*ceteris paribus*), the result indicates that respondents are willing to pay up to RM532.00 for a similar package at Kapas, RM485.00 at Redang and RM428.00 at Perhentian. Although, in reality, the WTP values derived from the study appear to be higher than to the current pricing practice, it is safe to deduce that different island destination and location does matter in determining the difference in package price. Apart from that, the result of the study can certainly confirm that there exists some extra consumer surplus that operators should look into in considering the pricing for holiday packages in the future.

In terms of accommodation type, with reference to the budget type accommodation, *ceteris paribus*, respondents are willing to pay up to RM219.00 for a similar package at a 3-star hotel and RM395.00 at a 4-star hotel. The differences in price with respect to standard and type of accommodation confirm the current market practice.

As for the hotel facilities, taking restaurant as the basis point, *ceteris paribus*, respondents are willing to pay RM2.00 extra for a similar package at a hotel with improved facilities including some kind of entertainment. Their willingness to pay for higher end facilities which provide some entertainment and sports facilities is around RM23.00. The possible explanation for the situation justifies that the destinations meant for water-related activities and other kinds of entertainment did not carry a significant value to visitors at the marine

park. The calculated value however should be taken with caution since at all levels of *Fac* attributes are not statistically significant to the ranking model.

Table 7.42: WTP for Destination Choice Attribute by Level

	Basic Model by Attribute Level (n = 3024)		
Variable	**Coefficient**	**Std. Error**	**WTP by Level**
Redang	1.940*	0.138	485.00
Perhentian	1.712*	0.176	428.00
Kapas	2.128*	0.223	532.00
Tenggol	0(a)	.	
4 stars Accommodation	1.583*	0.155	395.75
3 stars Accommodation	0.877*	0.077	219.25
Budget Accommodation	0(a)	.	
Restaurant/Entertainment/Sport	0.094	0.085	23.50
Restaurant/Entertainment	-0.009	0.086	2.25
Restaurant	0(a)	.	
10 minutes walk	-0.469	0.099	117.25
5 minutes walk	-0.044*	0.108	11.00
On the beach	0(a)	.	
20-minute boat trip	0.115	0.216	28.75
30-minute boat trip	0.222	0.155	55.50
45-minute boat trip	0.303*	0.117	75.75
60-minute boat trip	0(a)	.	
90-minute boat trip	0.196	0.142	49.00
120-minute boat trip	0(a)	.	
Price	-0.004	0.000	
-2 Log Likelihood			
Intercept Only	3483.795		
Final	2088.278		
χ^2 (df)	1395.517* (14)		
McFadden (r^2)	0.166		

*Significant at 95% confidence level a This parameter set to zero because it is redundant

With regards to the proximity to the beach area, holding on the beach location as the reference point, *ceteris paribus*, respondents are willing to pay up to RM11.00 more to have their holiday resort at the beach front to avoid a 5-minute walk. The WTP value to avoid a 10-minute walk is extremely high, RM117.00, however the attribute is not statistically significant to the model. The difference in price is not only due to the fact that hotels are located differently, but also true within the same resort where the sea view rooms have a higher premium compared to the hill view rooms.

Finally, with respect to boat trips, holding a one-hour boat ride as the reference point, and holding all other things equal, respondents are willing to pay RM75.00 to reduce the travelling time by between 15 and 45 minutes. The willingness to pay becomes smaller for further reductions in travel time. Results indicated that respondents are willing to pay up to RM55.00 to reduce the travelling time by half to 30 minutes and up to RM28.00 to further reduced the travelling time to just 20 minutes. Taking a two-hour boat trip as a reference point, the magnitude of 30 minutes saving in travelling time is almost the same. Respondents are willing to pay up to RM49.00 to reduce the travelling time from two hours to 90 minutes. The calculated value however should be taken with caution since at all level of *Access* attributes, except for one, are not statistically significant to the ranking model.

7.9.5 *Income interaction model*

The addition of the income interaction term which enters the model as *Price/Income* does not improve the result. Table 7.43 compares the results between Model 3 without the income interaction effect and Model 4 with the interaction effect. The parameter estimate for the income interaction carries a positive sign which contradicted the expected sign. Theoretically, the interaction term *Price/Income* should carry a negative sign as *Price* is negatively related with *Rank*. It can be contended that the magnitude of income effect outweighs the price effect for the overall ranking through the interaction variable. The positive coefficient of the income interaction variable has decreased the WTP estimates for all attributes concerned.

The explanatory power of the model also deteriorated as indicated by the reduction in r-square from 0.165 to 0.159. In order to find which model is the best one, the LR statistic is calculated. The ratio is given by the difference between -2 log likelihood of the two models. The null hypothesis is that the coefficient of the "extra" variable in the income interaction model is zero. The calculated value is so large compared to critical value for χ^2 distribution is 3.84 with 1 degree of freedom at 95 percent confidence level rejecting the null hypothesis that the income interaction coefficient is zero. This confirmed that the income interaction parameter estimate is statistically significant from zero and significantly contributed to the model.

Table 7.43: CR – Income Interaction

	Island Factor and Income Interaction					
	Model 3 – Island Factor (n=3024)			Model 4 – Income Int. (n=2704)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP^**
Redang	1.784*	0.116	446.00	1.757*	0.122	359.32
Perhentian	1.906*	0.201	476.50	1.808*	0.213	369.75
Kapas	1.869*	0.155	467.25	1.745*	0.163	356.87
Tenggol	0(a)	.		0(a)	.	
Accom	0.822*	0.061	205.50	0.784*	0.064	160.33
Fac	0.048	0.043	12.00	0.053	0.045	10.84
Dist	-0.045*	0.010	11.25	-0.045*	0.011	9.20
Access	-0.007*	0.003	1.75	-0.007	0.004	1.43
Price	-0.004*	0.000		-0.005*	0.000	
Price/Income				0.417*	0.218	
-2 Log Likelihood						
Intercept Only	3483.795			6818.874		
Final	2096.660			5630.053		
χ^2 (df)	1387.134* (8)			1188.821* (9)		
McFadden (r^2)	0.165			0.159		
Calculated LR (df)	3533.39 (1)					

∗ Significant at 99% confidence level ^ Average household income RM3784

a This parameter is set to zero because it is redundant.

7.9.6 *Socio-demographic interaction model*

Additional specifications include *gender* (1= male, 0 = female), *age group* (5 different scales where 1 indicates the younger age group and 5 is the oldest age group), *education level* (5 different scales where 1 indicates primary education and 5 indicates tertiary education), *visit pattern* (1 = first visit, 0 = repeat visit) and *membership* of any conservation group (1 = yes, 0 = no). The comparison results are presented in Table 7.44.

In both Model 5 and Model 6, the main attributes carry the right sign except for access from the mainland which unexpectedly changed, while price over income interaction still remains positive on both occasions. *Hotel facilities* however improve to be statistically significant at 95 percent confidence level in the reduced Model 6, making all main attributes contribute significantly toward the destination ranking model.

In the reduced interaction model *gender* does not significantly contribute to the model on its own but appears significant when interacted with type of *accommodation* and *price.* The negative sign on *gender-accommodation* interaction indicates male respondents are less likely to assign higher rank in association to accommodation type than female respondents, while the positive sign on the *gender-price* interaction indicates that male respondents are more likely to place a higher ranking in association to package price compared to female respondents.

Age group is not significant on its own but appears to be significant to the model when interacted with *hotel facilities* and *accessibility*. The negative sign indicates higher *age group* is less likely to place a higher ranking in association to hotel facilities while the positive sign indicates that the older age group is more likely to a place higher rank in terms of travelling time than the younger age group. *Education* appears significant when interacted with *accommodation* type and *accessibility*. The result shows that more highly educated respondents tend to be more likely to place a higher rank in association with better type of *accommodation* and less likely to place a higher rank with regards to *accessibility*.

Visit pattern is significant when interacted with *facility* types and *price*. First time visitors are less likely to place a higher rank associate to *facility* and more likely to assign a higher rank associate with price than repeat visitors. *Affiliation* with a conservation group appears to contribute significantly to the model on its own and when interacted with *accommodation* type. Those who are members of conservation groups are more likely to assign higher ranking compared to those who are not, and are less likely to assign higher rank with regard to accommodation type.

Table 7.44: CR – Interaction Model

	Model 5 Interaction (n=2640)		Model 6 – Reduced (n=2704)	
Variable	**Coef**	**Std. Error**	**Coef**	**Std. Error**
Redang	1.745*	0.124	1.774*	0.122
Perhentian	1.868*	0.218	1.844*	0.214
Kapas	1.720*	0.167	1.759*	0.164
Tenggol	0(a)	.	0(a)	.
Accom	0.613*	0.298	0.498*	0.186
Fac	0.345	0.233	0.226*	0.072
Dist	-0.056	0.055	-0.043*	0.011
Access	0.005	0.007	0.001*	0.006
Price	-0.005*	0.001	-0.006*	0.000
Price/Income	0.462	0.267	0.545*	0.244
Gender	-0.237	0.396		
Gender*Accom	-0.245	0.131	-0.289*	0.100
Gender*Fac	-0.026	0.102		
Gender*Dist	-0.036	0.024		
Gender*Access	0.001	0.003		
Gender*Price	0.002*	0.001	0.001*	0.000
AgeGp	-0.060	0.107		
AgeGp*Accom	-0.029	0.113		
AgeGp*Fac	-0.127	0.083	-0.159*	0.058
AgeGp*Dist	0.026	0.023		
AgeGp*Access	0.008*	0.003	0.006*	0.002
AgeGp*Price	0.000	0.000		
Edu	0.238	0.239		
Edu*Accom	0.125	0.079	0.149*	0.049
Edu*Fac	-0.028	0.061		
Edu*Dist	0.013	0.014		
Edu*Access	-0.004*	0.002	-0.003*	0.001
Edu*Price	0.000	0.000		
Visit	-0.006	0.407		
Visit*Accom	-0.058	0.132		
Visit*Fac	-0.147	0.103	-0.154*	0.074
Visit*Dist	-0.030	0.024		
Visit*Access	-0.002	0.003		
Visit*Price	0.001*	0.001	0.001*	0.000
Member	1.344*	0.562	0.603*	0.260
Member*Accom	-0.418*	0.172	-0.357*	0.163
Member*Fac	-0.171	0.136		
Member*Dist	-0.010	0.032		
Member*Access	0.002	0.004		
Member*Price	-0.001	0.001		

*Significant at 95% confidence level a This parameter set to zero because it is redundant

Table 7.45: Test Statistic Value for Interaction and Reduce Model

	Interaction Model	Reduced Model
-2 Log Likelihood		
Intercept Only	7204.649	7345.815
Final	5994.222	6120.925
χ^2 (df)	1210.427* (39)	1224.890* (19)
McFadden (r^2)	0.165	0.163
N	2640	2704
Calculated LR (df)	126.70 (20)	

χ^2 is the difference between -2 log likelihood of the interaction and the reduced model.
At 95% confidence level the critical value for χ^2 distribution is 31.41 with 20 degrees of freedom.

Table 7.45 produces the test statistic values for both models. The χ^2 values from the log likelihood ratio test are highly significant in both models, rejecting the null hypothesis that the parameters estimate are zero and confirming that the final models are out-performing the initial model. However, there is not much difference in the explanatory power of the model as indicated by the value of r-squared.

In order to test the performance of the two models, the LR statistic is calculated. The ratio is given by the difference between -2 log likelihood of the full model and the reduced model. The null hypothesis is that coefficients of all "extra" variables in the full model are zero. At 95 percent confidence level the critical value for χ^2 distribution is 31.41 with 20 degree of freedom rejecting the null hypothesis that coefficients of all "extra" variables are zero.

7.9.7 *Visit pattern model*

The differences in ranking pattern between the first time visitors and repeat visitors were examined in two different models above (Table 7.46). The analysis is considered crucial to understand the effect of knowledge and familiarity of the goods being evaluated among the respondents. The signs for all coefficients appear to follow the theoretical expectation in both models. In terms of attributes concerned, *accommodation* type and *price* are statistically significant explaining the ranking for both first time and repeat visitors, while *distance* to the beach front is the additional attribute that explained the ranking pattern for first time visitors. In terms of island preferences, Kapas is preferred to Perhentian and Redang among the first timers while Perhentian is preferred to Redang and Kapas among the repeat visitors.

Comparing the WTP, first time visitors are willing to pay more for change in accommodation type and proximity to the beach front, while the repeat visitors are willing to pay more for improvement in hotel facilities and shorter boat ride to the island.

Table 7.46: Ranking by First and Repeat Visitors

	First Time Visit (n = 2001)			Repeat Visit (n = 1023)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**
Redang	1.771*	.142	442.75	1.846*	.201	369.20
Perhentian	1.787*	.246	446.75	2.198*	.351	439.60
Kapas	1.984*	.192	496.00	1.673*	.264	334.60
Tenggol	0(a)	.		0(a)	.	
Accom	.885*	.076	221.25	.704*	.104	140.80
Fac	.007	.052	1.75	.133	.074	26.60
Dist	-.052*	.013	13.00	-.031	.018	6.20
Access	-.005	.004	1.25	-.011	.006	2.20
Price	-.004*	.000		-.005*	.001	
-2 Log Likelihood						
Intercept Only	2633.971			1540.306		
Final	1717.827			1059.472		
χ^2 (df)	916.144 (8)			480.834 (8)		
McFadden (r^2)	0.165			0.170		

*Significant at 95% confidence level a This parameter is set to zero because it is redundant

7.10 CR Result – Environmental Concerns

This is the second part of the CR result concerning on how to determine the rank for certain environmental quality attributes that are of importance to tourists to the RMP. The section starts with the presentation and discussion of the simple model and interaction model. The section continues by touching on the differences in ranking pattern among the visit patterns. Finally the section presented the different WTP values calculated for each environmental quality attribute concerned in the study.

7.10.1 *Comparison between basic and income interaction model*

Table 7.47 represents the comparison of results between the basic specification and income interaction model. Both models carry the expected sign in all attributes. The main attributes also appear to be very significant factors contributing toward ranking. Although income interaction carries the expected sign, it does not appear to make a significant contribution to the model. Both models are highly significant rejecting the null hypothesis for the LR test against the intercept only model.

Table 7.47: Basic and Income Interaction Model

	Basic and Income Interaction					
	Model 1 – Basic Model (n=2256)			**Model 2 – Income Int. (n=2020)**		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP^**
Fish	1.473*	.074	4.95	1.482*	.078	5.04
Turtle	.287*	.069	0.97	.282*	.073	0.96
Congest	-2.027*	.070	6.82	-2.056*	.075	6.99
Fee	-.297*	.013		-.291*	.015	
Fee/Income				-11.477	14.935	
-2 Log Likelihood						
Intercept Only	2871.045			4027.499		
Final	835.667			2191.035		
χ^2 (df)	2035.377* (4)			1836.464* (5)		
McFadden (r^2)	0.325			0.328		

*Significant at 99% confidence level ^ Average household income RM3784

The explanatory power of the models is also much better; exceeding the 30 percent region compared to the destination choice models. WTP appears to increase slightly for fish and congestion when an income effect is included, whereas WTP decreases slightly for turtles.

The same procedure was taken, introducing the socio-economic factors into the model. To be consistent with the former analysis the same set of variables was introduced to the model. The variables concerned are *gender*, *age group*, *education level*, *visit pattern* and *membership* of any conservation group. None of the socio-economic variables appears to be significant in the model, although the main attributes remain highly significant.

7.10.2 *Observed and predicted ranking*

Before continuing with further analysis, the predictive response of the model was investigated for both models. Table 7.48 shows the classification table comparing the observed environmental ranking versus the predicted response by the model for each rank category for the basic model. The model has successfully predicted the *Most Preferred* rank and the *Least Preferred* rank. Out of 564 observations for each rank category, about 94 percent are correctly assigned to *Most Preferred* and 80 percent are correctly assigned to *Least Preferred* by the model. On the contrary, the model correctly assigned about 50 percent of the ranking to *Less Preferred* while only 35 percent is correctly assigned to *Preferred* category.

Table 7.48: Observed and Predicted Ranking (Basic Model)

	Predicted Response Category				
Observed Ranking (n=2256)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=564)	453	63	44	4	80.3
Less Preferred (n=564)	74	279	117	94	49.5
Preferred (n=564)	37	201	199	127	35.3
Most Preferred (n=564)	0	21	15	528	93.6
Overall Percentage	31.1	19.1	13.6	36.2	64.7

The comparison for the income interaction model is presented in Table 7.49. The model has successfully predicted the *Most Preferred* rank and the *Least Preferred* rank. Out of 564 observations for each rank category, about 94 percent are correctly assigned to *Most Preferred* and 80 percent are correctly assigned to *Least Preferred* by the model. On the

other hand, the model correctly assigned about 50 percent of the ranking to *Less Preferred* while about 35 percent is correctly assigned to *Preferred* category. Overall about 66 percent of the ranks are correctly assigned in both basic and income interaction models.

Table 7.49: Observed and Predicted Ranking (Income Interaction Model)

	Predicted Response Category				
Observed Ranking (n=2256)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=564)	405	55	41	4	80.2
Less Preferred (n=564)	67	252	106	80	49.9
Preferred (n=564)	33	179	176	117	34.9
Most Preferred (n=564)	0	19	13	473	93.7
Overall Percentage	31.0	19.3	13.5	36.2	57.9

7.10.3 *Comparison between first time and repeat visitors*

The effect of knowledge and familiarity is also investigated in the environmental concern about the marine park. The respondents were analysed separately according to their *visit pattern*, concerning the first time visitors versus repeat visitors. The main attributes have the expected signs and are highly significant for both groups. Interestingly enough, WTP for each of the attributes suggested the effect of familiarity and knowledge between them. The repeat visitors appear to have a higher WTP for all attributes regarding environmental concerns as compared to the first time visitors (Table 7.50).

Table 7.50: Ranking by First and Repeat Visitors

	First Time Visit (n = 1492)			Repeat Visit(n = 746)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**
Fish	1.540*	.093	4.87	1.360*	.122	5.15
Turtle	.214*	.086	0.68	.421*	.117	1.59
Congest	-2.085*	.088	6.60	-1.931*	.116	7.31
Fee	-.316*	.016		-.264*	.021	
-2 Log Likelihood						
Intercept Only	1974.570			987.218		
Final	583.682			337.363		
χ^2 (df)	1390.888* (4)			649.854* (4)		
McFadden (r^2)	0.336			0.307		

*Significant at 99% confidence level

7.10.4 *WTP by level*

To further understand the WTP of each of the attributes, the basic model is now being regressed on their level basis. The result is presented in Table 7.51. All the main attributes appear to be contributing very significantly towards ranking at their individual level. The overall explanatory power of the models is much better than the main attributes only model discussed earlier, given by the value of the r^2 of 0.372.

Taking the current stage as the reference point for all attributes, and holding all other things equal, results indicate that respondents are willing to pay up to RM4.31 to see an improvement in the number of fish and coral species with sustainable management practices. On the other hand, in order to avoid the decline in the number of fish and coral species with further development taking place surrounding the marine park, they are willing to pay up to RM6.70.

As for the turtle nesting, respondents are willing to pay up to RM4.76 to see an increment in turtle nesting take place and at the same time are willing to pay up to RM3.78 to avoid the decline in the number of turtles nesting with the threats of further development in the area, *ceteris paribus*. Finally with respect to the level of congestion at the marine park centre, holding all other things equal, respondents are willing to pay up to RM2.80 in order to maintain the current level of congestion without reaching the next congestion level, due to the increase in demand. In addition, respondents are willing to pay as much as RM13.37 to avoid reaching the third level of *very congested* due to excessive demand.

Table 7.51: WTP of Environmental Attributes by Level

	Basic Model by Attribute Level (n = 1128)		
Variable	**Coef**	**Std. Error**	**WTP**
Decrease in Fish/Coral Species	-2.383*	0.144	6.70
Increase in Fish/Coral Species	1.533*	0.134	4.31
Current Stage	0(a)	.	
Decrease in Turtle Nesting	-1.347*	0.125	3.78
Increase in Turtle Nesting	-1.694*	0.143	4.76
Current Stage	0(a)	.	
Congested	-0.996*	0.113	2.80
Very Congested	-4.761*	0.190	13.37
Current Stage	0(a)	.	
Fee	-0.356*	0.015	
-2 Log Likelihood			
Intercept Only	2871.045		
Final	546.667		
χ^2 (df)	2324.378* (7)		
McFadden (r^2)	.372		

*Significant at 99% confidence level a This parameter is set to zero because it is redundant

7.11 Conclusion

This chapter presents the whole analyses and results for local tourists visiting RMP. It is divided into several sections. The visitors' profiles are discussed in the early part followed by their travel patterns, accommodation patterns, preferences and motives, and their attitudes toward nature and conservation are presented. The main part of the chapter is presenting the results from the CR experiments which are divided into two different parts, namely the destination choice and the environmental features. Several models are discussed and explored. Each analysis is followed by the determination of WTP for the attributes concerned.

Chapter 8: Result 2 - Foreign Tourists Analysis

8.0 Introduction

The purpose of this chapter is to present the complete analysis and results for the foreign tourists visiting RMP. Similar analyses to those for the local tourists were repeated for the foreign tourists' data set. Similar in presentation, this chapter is separated into several sections. In the beginning, the profiles of the visitors are presented. Following this section, travel pattern, accommodation pattern, preferences and motives and their attitude towards nature and conservation are also analyzed. The second part of the chapter presents the result from the CR experiment. The CR results are presented in two separate sections for destination choice and environmental concern.

8.1 Profiles of Foreign Visitors

This section will cover the country of origin of the visitors, their gender and age, educational level, occupation, particulars of their visits to RMP, perceived changes in the state of the park since their last visit (for those who have visited the park before), their port of embarkation, knowledge about the RMP, activities of interest at the marine park. From the total of 94 respondents, 36.2 percent were from Singapore, followed by China (12.8 %) and Japan (9.6 %). Indonesians, Taiwanese, British and American each comprised 6.4 percent (Refer to Appendix G). The proportions of the respondents closely resemble the actual foreign tourists' data for the year 2004.

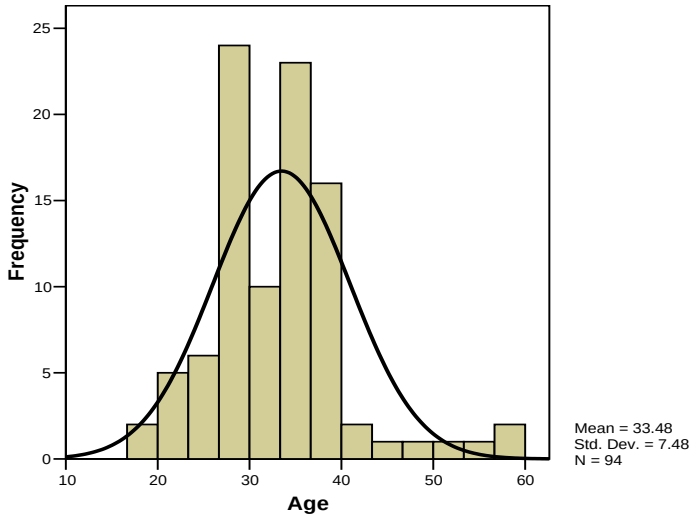
Table 8.1 provides a socio-economic profile of the subjects. Of the total number of 94 respondents in the survey, 52 (55.3%) are males and 42 (44.7%) are females. As stated in the previous section (local tourists profile), the gender mix of nature or eco-tourists reported in the literature is varied. The majority (86.1 %) of the foreign tourists are in the 20 to 39 years age group. The mean of the actual age is 33.48 years (s.d = 7.48) and the actual age distribution is given in Figure 8.1. The modal class is the 30-39 years of age group (63.8%), signifying that eco-tourism is a "youthful" activity, similar to the result from local respondents.

Table 8.1: Socio-Economic Characteristics

Demographic variables		**Percentage**
Gender	Males	55.3
n = 94	Females	44.7
Age	Below 20 years	2.1
n = 94	20 to 29 years	22.3
Mean = 33.48	30 to 39 years	63.8
s.d = 7.48	40 to 49 years	7.4
	50 years and above	4.3
Education	Primary Education	1.1
n = 94	Secondary Education	0
	College Diploma	25.5
	University Degree	60.6
	Post-Graduate Degree	12.8
Marital status	Single	27.7
n = 94	Married	72.3
Economic variables		
Employment	Private Sector	86.2
n = 94	Government Sector	7.4
	Self Employed	0
	Housewife	0
	Student	6.4
Monthly Income		
n = 92	Less than RM3000	19.6
Mean = RM8971.52	RM3001 to RM5000	8.7
s.d = RM9199.33	More than RM5000	71.7

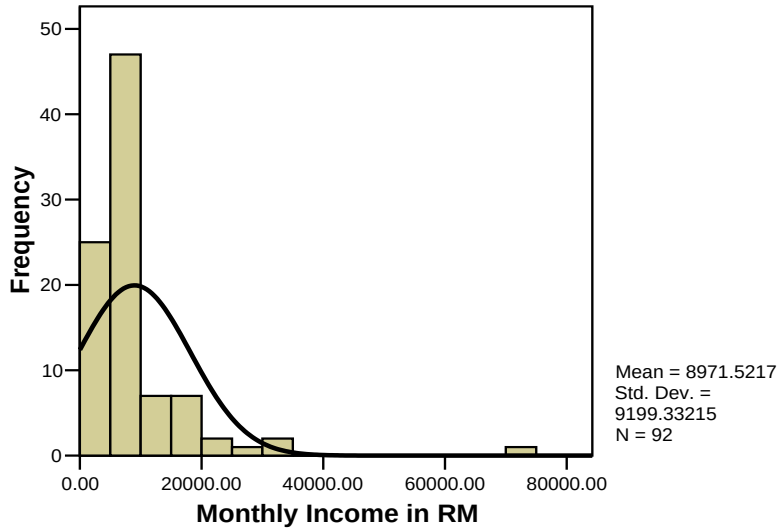
In terms of education, as compared to the local visitors, most of the foreign respondents (98.9%) at RMP are highly educated, with at least a polytechnic or college diploma (25.5%) and a tertiary education - graduates and post-graduates (73.4%). Only a small fraction of them (1.1%) have a minimum of primary education (Table 8.1). As for occupation, the majority of the foreign visitors (86.2%) report working in the private sector, and the remainder consists of 7.4 percent from the government sector and 6.4 percent are students (Table 8.1). Obviously occupation is directly linked to income. Monthly household income of the respondents was collected in this study. The study found that a majority of the foreign respondents (71.7%) earned more than RM5000 per month, while almost 20 percent earned less than RM3000 and another 9 percent earned between RM3001 and RM5000 per month.

Figure 8.1: Actual Age in Years



Actual income distribution is depicted in Figure 8.2. Household income range from RM500 to RM75000 per month is skewed to the right (skewness = 4.532) with a mean of RM8972 per month (s.d = RM9199).

Figure 8.2: Actual Monthly Household Income Distribution



8.1.1 *Profile analysis by age group and marital status*

Out of 94 foreign respondents who reported their marital status, 27.7 percent are single while 72.3 percent are married. Table 8.2 shows the age-gender-marital status distribution of the RMP foreign visitors. It is observed that there is no clear pattern of distribution. For the unmarried group, female tourists are mainly from the younger age group (29 years and below) while the male tourists are mainly among older age group of more than 30 years old. A vast majority of the single tourists (84.7%) come from two age groups of 20-29 years (38.5%) and 30-39 years (46.2%). The married tourists on the other hand are dominated by male visitors except for young married couples of the 20-29 years age group. For this group, female visitor numbers exceeded male visitors. Furthermore, most of the married visitors (70.6 %) fall in the modal age group of 30-39.

Table 8.2: Age Group * Gender * Marital Status Distribution

Marital Status				Gender		Total
				Male	Female	
Single	Age Group	Below 20 years	Count	0	2	2
			% of Total	.0%	7.7%	7.7%
		20 to 29 years	Count	4	6	10
			% of Total	15.4%	23.1%	38.5%
		30 to 39 years	Count	9	3	12
			% of Total	34.6%	11.5%	46.2%
		50 years and above	Count	2	0	2
			% of Total	7.7%	.0%	7.7%
	Total		Count	15	11	26
			% of Total	57.7%	42.3%	100.0%
Married	Age Group	20 to 29 years	Count	1	10	11
			% of Total	1.5%	14.7%	16.2%
		30 to 39 years	Count	29	19	48
			% of Total	42.6%	27.9%	70.6%
		40 to 49 years	Count	5	2	7
			% of Total	7.4%	2.9%	10.3%
		50 years and above	Count	2	0	2
			% of Total	2.9%	.0%	2.9%
	Total		Count	37	31	68
			% of Total	54.4%	45.6%	100.0%

In terms of income distribution, a majority of the visitors from both marital status groups earned a high monthly income. A higher percentage of the single respondents are from the higher income group (79.2%) as compared to the married group (69.1%). On the contrary, more married tourists fall in the lower income group (22.1%) compared to the single tourists in the lower income group (12.5%). About the same percentage of the visitors from both marital status groups are in the middle range of income. Among those married visitors in the high income group, 52.9 percent are in the age range of 30 to 39 years. For the single visitors, of those who are in the higher income group, 29.2 percent are in the age range of 20 to 29 years and 33.3 percent from the 30 to 39 years age group (Table 8.3).

Table 8.3: Age group * Household Income Group * Marital Status Distribution

Marital Status				Monthly Income Group2 in RM			Total
				< RM3000	RM3001- 5000	> RM5000	
Single	Age Group	Below 20 years	Count	0	0	2	2
			% of Total	.0%	.0%	8.3%	8.3%
		20 to 29 years	Count	1	0	7	8
			% of Total	4.2%	.0%	29.2%	33.3%
		30 to 39 years	Count	2	2	8	12
			% of Total	8.3%	8.3%	33.3%	50.0%
		50 years and above	Count	0	0	2	2
			% of Total	.0%	.0%	8.3%	8.3%
	Total		Count	3	2	19	24
			% of Total	12.5%	8.3%	79.2%	100.0%
Married	Age Group	20 to 29 years	Count	7	0	4	11
			% of Total	10.3%	.0%	5.9%	16.2%
		30 to 39 years	Count	7	5	36	48
			% of Total	10.3%	7.4%	52.9%	70.6%
		40 to 49 years	Count	1	1	5	7
			% of Total	1.5%	1.5%	7.4%	10.3%
		50 years and above	Count	0	0	2	2
			% of Total	.0%	.0%	2.9%	2.9%
	Total		Count	15	6	47	68
			% of Total	22.1%	8.8%	69.1%	100.0%

Table 8.4: Age group * Children Travelling * Marital Status Distribution

Marital Status				Number of Children Travelling		Total
				0	1-5	
Married	Age Group	20 to 29 years	Count	11	0	11
			% of Total	16.2%	.0%	16.2%
		30 to 39 years	Count	29	19	48
			% of Total	42.6%	27.9%	70.6%
		40 to 49 years	Count	4	3	7
			% of Total	5.9%	4.4%	10.3%
		50 years and above	Count	1	1	2
			% of Total	1.5%	1.5%	2.9%
	Total		Count	45	23	68
			% of Total	66.2%	33.8%	100.0%

Table 8.4 further describes the characteristics of visitors at RMP with emphasis on married visitors travelling with children. Out of 68 married visitors to RMP, 66.2 percent are travelling without children. Furthermore, 42.6 percent of the married respondents who travel without children fall in the age group of 30-39 years while another 16.2 percent fall in the younger age group of 20-29 years. For those who travel with children, although the modal group of age is 30-39 years, none of those from the younger age group reported travelling with children. As for the single travellers, 24 out of 26 respondents reported travelling without children. It can be contended that the majority of visitors to RMP are young married couples without children.

8.2 Visit Pattern

Table 8.5 illustrates the visit pattern among the respondents. From the total of 94 respondents, 71.3 percent (67) were first time visitors to RMP whereas the balances of 28.7 percent (27) were repeat visitors. The majority of the repeat visitors re-visit RMP twice (92.6%) while the remainder re-visit 3 times. Furthermore of those who make these repeat visits, about 67 percent of them revisit RMP after 1 to 2 years while about 19 percent re-visit the park within a year period. When asked the reason they revisit the RMP, the majority of them (92.6%) gave "Environment and Natural Beauty" as the reason for revisiting. Further analyses among the repeat visitors found that about 60 percent are Singaporean. The remaining 40 percent is comprised of British (15%), Indonesian (7%), and Japanese (7%), while French, Netherlanders and Spanish made up the remaining 11 percent.

Table 8.5: Visit Pattern

	Frequency	Percentage
Number of Visit (n=94)		
• first visit	67	71.3
• repeat visit	27	28.7
Repeat Visitors (n=27)		
• 2 times	25	92.6
• 3 times	2	7.4
Previous Visit (n=27)		
• 0 to 6 months	4	14.8
• 7 to 12 months	1	3.7
• 1 to 2 years	18	66.7
• more than 2 years	4	14.8
Reason for Re-Visit (n=27)		
• Environment and Natural Beauty	25	92.6
• Value for Money	1	3.7
• Other Reason	1	3.7

Out of the 27 repeat visitors, 70 percent were married while 30 percent are single. Most of the repeat visitors who are single revisit RMP within a 6 month period (50%) while the other 38 percent revisit within a period of 1 to 2 years and the remainder after 2 years. As for repeat visitors who are married, 79 percent of them revisit RMP within 1 to 2 years while the other 16 percent revisit after 2 years period of time frame as shown in Table 8.6. The period of repeat visiting indicated that single visitors are more mobile and able revisit with less planning than those who are married. Apart from that, for married visitors the children factor is another thing to consider when planning a visit or holiday.

Table 8.6: Previous Visit * Marital Status Distribution

Previous Visit		Marital Status		Total
		Single	Married	
0 to 6 months	Count	4	0	4
	% within Marital Status	50.0%	.0%	14.8%
7 to 12 months	Count	0	1	1
	% within Marital Status	.0%	5.3%	3.7%
1 to 2 years	Count	3	15	18
	% within Marital Status	37.5%	78.9%	66.7%
more than 2 years	Count	1	3	4
	% within Marital Status	12.5%	15.8%	14.8%
Total	Count	8	19	27
	% within Marital Status	100.0%	100.0%	100.0%
	% of Total	29.6%	70.4%	100.0%

8.2.1 *Perceived difference in the state of RMP*

Repeat visitors are also asked if they see any difference in the state of the environmental quality in the RMP since their last visit. Apart from that, the visitors were also asked about the quality of accommodation and facilities and ferry service. All 27 repeat visitors responded to these questions and their ratings are summarized in Table 8.7. Foreign visitors perceived some degree of improvement in all of the items, particularly for environmental quality items. All items scored more than 50 percent saying either they perceived some kind of improvement compared to those who say there is no change or have even deteriorated in their condition. Fish varieties is noticed the most where almost 89 percent indicated a positive change, followed by water visibility (78%), coral reefs (70%) and finally the level of congestion (63%). On the other hand, about 19 percent perceived the degree of congestion is getting worse while 15 percent indicated the coral reefs have deteriorated. In terms of accommodation and facilities about 52 percent claimed there is some degree of improvement while 52 percent indicated that there is no change in terms of ferry services. A single-simple t-test compared the mean of the score of each item to the unchanged status score of 0. Highly significant differences were found in all items. Therefore it can be interpreted that the perceived improvements in these items are significantly different from the unchanged state.

Table 8.7: Perceived Changes by Repeat Visitors (n=27)

	Percentage of sample responding various answers				
	Great Improvement (score=+2)	**Slight Improvement (score=+1)**	**Unchanged (score=0)**	**Deteriorated (score=-1)**	**Badly Deteriorated (score=-2)**
Coral reef *Mean = 0.89 (s.d = 1.050) (t(26) = 4.399, p < 0.01)*	33.3	37.0	14.8	14.8	0.0
Fish varieties *Mean = 1.19 (s.d = 0.736) (t(26) = 8.370, p < 0.01)*	33.3	55.6	7.4	3.7	0.0
Water quality and visibility *Mean = 1.33 (s.d = 0.832) (t(26) = 8.327, p < 0.01)*	55.6	22.2	22.2	0.0	0.0
Beach and snorkelling congestion *Mean = 0.78 (s.d = 1.121) (t(26) = 3.606, p = 0.001)*	33.3	29.6	18.5	18.5	0.0
Accommodation and facilities *Mean = 0.85 (s.d = 0.907) (t(26) = 4.878, p < 0.01)*	33.3	18.5	48.1	0.0	0.0
Ferry services *Mean = 0.81 (s.d = 0.921) (t(26) = 4.595, p < 0.01)*	33.3	14.8	51.9	0.0	0.0

8.2.2 *Visitors and islands*

Table 8.8 illustrates the distribution of the visitors who visited the islands in RMP. Out of 90 respondents who answered that they visited Redang, 71.1 percent were first timers while 28.9 percent were repeat visitors. As for Pinang, from the total of 94 respondents, 71.3 percent were first timers and 28.7 percent were repeat visitors to that island. Furthermore, it is important to note that for those who visited Redang (n = 90), all of them had also visited Pinang during their visit. This can be due to the fact that Pinang is usually included as part of the snorkelling destination arranged by most of the tour operators. The small number of visitors who visited Kapas (1 respondent) and Perhentian (4 respondents) were all repeat visitors. Although Kapas and Perhentian are not so popular among the foreign tourists, these

two islands were able to win the hearts of those who had visited them previously. Of the 10 respondents who visited Lang Tengah, 70 percent were repeat visitors as compared to 30 percent first timers. On the other hand, none of the respondents reported they had ever visited Lima, Ekor Tebu, Tenggol or Susu Dara. These four islands seem to be unpopular among the foreign tourists.

Table 8.8: Visitors and Islands

Island Name	Percentage First Visit	Percentage Repeat Visit
Redang (n = 90)	71.1	28.9
Pinang (n = 94)	71.3	28.7
Kapas (n = 1)	0.0	100.0
Perhentian (n = 4)	0.0	100.0
Lang Tengah (n = 10)	30.0	70.0

8.2.3 *Knowledge and travel pattern*

Table 8.9 describes the visitors' travel pattern. More than half of the visitors (54.3%) acquired knowledge about RMP through recommendation, 22.8 percent revisited because of their previous experience, while 18.5 percent used advertisements as the source of information. Three sources of advertisement were identified as the advertising tools that have been most used by the visitors when acquiring information. Tour operator websites became the primary source of information followed by tourist information centres and the department website. This is probably because most of the holidaymakers took some time planning their vacation and the majority of them took packages visiting the RMP. Hence it is important for all parties, including the DMPM to regularly update their information, particularly their websites to cater for the internet age in providing knowledge and information regarding RMP.

Most of the visitors started their journey from Terengganu using boats which depart either from Merang or Kuala Terengganu to RMP. About 90 percent of those who departed from Merang used the fast boat service which takes approximately 30 to 45 minutes to reach RMP. Meanwhile, the remaining 10% were using the slow boat service which takes a longer time. Those who departed from Kuala Terengganu (90%) used a larger ferry, which can

accommodate about 120 passengers and which takes about 1 to 1.5 hours to reach Redang. Furthermore, 5 percent of the visitors travelled by air from Kuala Lumpur, as part of the package provided by the Berjaya Redang Resort.

Table 8.9: Visitors' Knowledge and Travel Pattern

	Frequency	Percentage
Knowledge about RMP (n=92)		
Advertisement	17	18.5
Previous Visit	21	22.8
Just Passing	4	4.3
By Recommendation	50	54.3
Three Top Advertisement (n=91)		
Tour operator website	38	41.8
Tourist information Centre	15	16.5
Fisheries department website	14	15.4
Point of Embarkation (n=94)		
Merang	55	58.5
Kuala Terengganu	34	36.2
Direct flight	5	5.3
Time taken for boat ride (n=94)		
30 minutes	16	17.0
30 to 45 minutes	38	40.4
45 minutes to 1 hour	8	8.5
1 to 1 1/2 hours	32	34.0

To further understand the visitors' travel pattern, cross-tabulation between visitors and their knowledge about RMP was carried out (Table 8.10). It is interesting to note that a majority (72%) of the first timers seek recommendation from others before visiting the RMP. Judging from the high percentage of recommendations, it is important to note that personal advice or word of mouth source is the key player in disseminating information. On the other hand, previous experiences visiting the island become the main factor pulling repeat visitors to the island (78%).

Table 8.10: Knowledge about RMP * Source of Information

Know about RMP		first-repeat visit		
		first visit	repeat visit	Total
Advertisement	Count	15	2	17
	% within first-repeat visit	23.1%	7.4%	18.5%
Previous Visit	Count	0	21	21
	% within first-repeat visit	.0%	77.8%	22.8%
Just Passing	Count	3	1	4
	% within first-repeat visit	4.6%	3.7%	4.3%
By Recommendation	Count	47	3	50
	% within first-repeat visit	72.3%	11.1%	54.3%
Total	Count	65	27	92
	% within first-repeat visit	100.0%	100.0%	100.0%

8.2.4 *Accommodation and package price*

Table 8.11 describes the accommodation types chosen by the visitors. From the total of 94 visitors, about 78 percent took packages to visit RMP and the majority of them had chosen a package that cost more than RM300. Hence, the results indirectly explain why 3 or 4-star hotels ranked as the most popular type of accommodation chosen by the visitors. In terms of the nights spent in RMP, it directly depends on the type of package chosen by the visitors. Most of the visitors stayed either for 3 days and 2 nights (40%) or 4 days and 3 nights (40%). Most of the basic packages included ferry fare, accommodation and food, while some also stated that their packages included snorkelling trips (89%) and snorkelling gear rent (66%). Scuba diving trips and gear rent were usually tailored to divers. Only a small fraction of the respondents took diving packages (4%), while 82 percent of the respondents stated that the package they took also included the land transfer from the airport or bus station to the embarkation jetty.

Table 8.11: Visitors' Accommodation Pattern

	Frequency	Percentage
Take Package (n=94)		
No	21	22.3
Yes	73	77.7
Package price (n=72)		
<RM300	13	18.1
RM301-500	28	38.9
>RM500	31	43.1
Accommodation type (n=92)		
4-star Hotel	48	52.2
3-star Hotel	12	13.0
Chalet and Budget	29	31.5
Camping Site	3	3.3
Length of stay (n=94)		
Day Trippers	4	4.3
2 Days 1 Night	5	5.3
3 Days 2 Nights	38	40.4
4 Days 3 Nights	38	40.4
> 4D3N	9	9.6

Table 8.12 further describes the characteristics of visitors who chose each accommodation type and their monthly income. More than half (68.8%) who chose a 4-star hotel and the majority (81.8%) of those staying at 3-star hotels earn more than RM5000 per month. It is interesting however, to highlight that the majority (82.8%) of those who stayed in budget accommodation earned more than RM5000 per month. One possible assumption can be derived from this. The finding signifies that income does not determine the type of accommodation chosen by the visitors at RMP.

Table 8.12: Income Group and Accommodation Type

Income Group	4-stars (%)	3-stars (%)	Budget (%)
Less than RM3000	11 (22.9)	2 (18.2)	3 (10.3)
RM3001 to RM5000	4 (8.3)	0 (0.0)	2 (6.9)
More than RM5000	33 (68.8)	9 (81.8)	24 (82.8)
Total	48 (100.0)	11 (100.0)	29 (100.0)

8.2.5 *Activities of interest at RMP*

When asked to list the three most enjoyable activities at RMP, by far the most popular activity enjoyed by the visitors is snorkelling (Table 8.13). Apart from snorkelling, the remaining 3 percent of the most popular activities were fish feeding and viewing. Fish feeding and viewing on the other hand become the top choice for the second most enjoyable activities, relaxing and scuba diving. While relaxing, dominated the third most enjoyable activities in the RMP, fish feeding, camping and scuba diving also were listed in this list.

Table 8.13: Popular Activities Enjoyed by Visitors

Choice	**Activity**	**Percentage**
Most popular	Snorkelling (n = 94)	96.8
Second choice	Fish Feeding and Viewing (n=91)	53.8
Third choice	Relaxing (n=87)	59.8

The finding among the foreign tourists also contrasted with the result found in the report by DTRP (2003), whereby resting is the first choice activity, followed by snorkelling and scuba-diving as second and third respectively. The possible explanation for the difference may be is similar to those of local tourists; the way the respondents were asked the questions.

8.3 *Visitors' rating of various eatures of RMP*

In order to understand visitors' perception of various features of the RMP, the respondents were asked to rate several environmental qualities as well as the accommodation and facilities available. They were asked to rate from "excellent' to "poor" those features they experienced or encountered during their visit, or state "not applicable" to those features they did not experience. Table 8.14 reveals the visitors' rating of various features of RMP. Full response rates from all 94 respondents were gathered for all items listed.

In terms of coral condition and fish varieties, almost all visitors agreed that they are in more than average condition. A majority of 89 percent rated the coral reef around the island from "good" to "excellent." The main attraction for visitors is the coral reef that serves as a breeding and feeding ground for the fish and other marine life. Visitors seem to be most

pleased with the diversity of fish species found around the island and visible from either the boat or bridge. Almost 92 percent of them rate the fish varieties from good to excellent. Only two percent rated these two items "poor".

The same situation can be observed in terms of water quality and visibility. The water quality is also pleasing to the majority of visitors as almost 95 percent gave it a rating of between "good" and "excellent." It is logical to expect that the visibility of the fish diversity and species will depend on the water quality in the area surrounding the island and the continued presence of the coral reef. None of the visitors rated this item "poor".
As for the turtle sighting, a very high fraction of the answer (60%) stated that it is not applicable to them. The possible scenario is that they did not experience turtle sighting since turtles usually land at night time.

In terms of the presence of congestion at the snorkelling area, approximately 64 percent rated this item from "good" to "excellent", while about 32 percent rate it as "average". As for the beach cleanliness about 79 percent rated the item from "good" to "excellent", while 17 percent rate it as "average". However, there are still about 4 percent of the visitors who rated it as "poor". It is generally true that the visitors to the RMPc have been quite cooperative in keeping the beach area litter-free by collecting their own rubbish and taking it with them to the main island for disposal. Nonetheless, at this current stage, cleanliness is a factor within our control and can further be improved.

Judging from the number, only a small fraction of the visitors were involved in scuba-diving activity, making it impossible for most of them (71%) to give any comment on the condition of the dive sites. However, to most divers, the dive sites are still in "good" condition, despite the presence of congestion. It can be deduced that, overall, the states of natural beauty and environment attributes at RMP are still in good condition. The presence of congestion is still low and not alarming, with the exception of the RMPc at Pinang Island. The crowd here is usually quite large during snorkelling trips to the park centre. However, the situation only lasts, at the most, 2 to 3 hours every day during high tide.

Table 8.14: Visitors' Rating of Various Features of RMP

	Percentage of sample responding with various answers (n = 94)				
	Excellent	**Good**	**Average**	**Poor**	**Not applicable**
Coral reef	42.6	46.8	8.5	2.1	0.0
Fish varieties/ species	47.9	43.6	6.4	2.1	0.0
Turtle sighting	7.4	17.0	7.4	8.5	59.6
Water quality/ visibility	60.6	34.0	5.3	0.0	0.0
Beach/snorkelling crowd	20.2	43.6	31.9	2.1	2.1
Beach cleanliness	24.5	54.3	17.0	4.3	0.0
Beach accessibility	46.8	45.7	6.4	1.1	0.0
Scuba diving sites	5.3	21.3	2.1	0.0	71.3
Diving site congestion	5.3	14.9	7.4	1.1	71.3
Accommodation	24.5	36.2	36.2	1.1	2.1
Accommodation facilities	12.8	46.8	35.1	3.2	2.1
Restaurant services	6.4	42.6	43.6	4.3	3.2
Ferry services	17.0	64.9	17.0	1.1	0.0
Ferry safety	19.1	52.1	27.7	1.1	0.0

Up to this point, the visitors still found the accommodation and ferry services to be in above average condition. Most of the visitors (61%) rated from "good" to "excellent" for accommodation type, while accommodation facilities (82%) and restaurant services (86%) were rated from "average" to "good". Despite the above average scores for most of the service items, there are still some concerns about the accommodation facilities and restaurant services which allow for some kind of improvement.

Excluding the "not applicable" rating, the overall mean for each item was calculated and presented in Table 8.15. The overall mean range from 2.53, calculated for restaurant services, to 3.55, calculated for water visibility. Based on the overall mean scores, it can be confirmed that all attributes the respondents were asked about are still in above average condition as perceived by the visitors.

Table 8.15: Overall Mean Score of Attributes

Item	Overall mean	s.d
Coral reef	3.30	0.716
Fish varieties/ species	3.37	0.703
Turtle sighting	2.58	1.030
Water quality/ visibility	3.55	0.598
Beach/snorkelling crowd	2.84	0.774
Beach cleanliness	2.99	0.769
Beach accessibility	3.38	0.658
Scuba diving sites	3.11	0.506
Diving site congestion	2.85	0.770
Accommodation	2.86	0.806
Accommodation facilities	2.71	0.734
Restaurant services	2.53	0.689
Ferry services	2.98	0.622
Ferry safety	2.89	0.710

Note: mean scale 1 = poor; 2 = average; 3 = good; 4 = excellent

8.3.1 *Features rating by groups*

To further investigate the situation, several Independent Sample t-Tests were run to determine the mean difference between several groups of interest. The differences in mean were tested for first versus repeat visitors, gender, marital status and affiliation with nature and conservation groups.

Table 8.16: Mean Comparison between Groups

Item*	**Group**	**n**	**Group mean**	**s.d**	**Overall mean (s.d)**
Beach cleanliness *t* (91.188) = *-2.111*	Male	52	2.85	.849	2.99 (0.769)
	Female	142	3.17	.621	
Restaurant services *t* (89) = *2.394*	Male	50	2.68	.741	2.53 (0.689)
	Female	41	2.34	.575	
Beach cleanliness *t* (92) = *2.228*	Single	26	3.27	.724	2.99 (0.769)
	Married	68	2.88	.764	
Accommodation *t* (90) = *-1.934*	Member	10	2.40	.699	2.86 (0.806)
	Non-member	82	2.91	.804	
Accommodation facilities *t* (90) = *-2.368*	Member	10	2.20	.632	2.71 (0.734)
	Non-member	82	2.77	.725	
Ferry safety *t* (92) = *-2.382*	Member	10	2.40	.699	2.89 (0.710)
	Non-member	84	2.95	.693	

*all items listed are significant at 5 % t-value (d.f)

The results listed in Table 8.16 highlight those items with mean values that are statistically significant between the groups compared. The Independent Samples t-Test result revealed that there are two items that are statistically different in mean between genders. Those items are beach cleanliness and restaurant services. The mean rating for females is statistically higher compared to males for beach cleanliness while the male group is discovered to have a higher mean rating for restaurant services than the female. Means rating by the single group is found to be statistically higher compared to the married group for one item, namely beach cleanliness. Finally, there exist statistical differences in mean by affiliation to a conservation group in three items: accommodation, accommodation facilities and ferry safety-ness. The mean for those who are not affiliated to any conservation group appeared to be significantly higher than the mean for those who are affiliated to a conservation group for all three items.

However, there is no statistical difference in mean between the first time visitors and the repeat visitors for any of the items.

8.4 Membership of Conservation Group

Only 11 percent of the respondents reported being involved in some kind of conservation or nature group as compared to the majority (89%) who are not affiliated with any group. Table 8.17 illustrates the relationship between membership and education level with respect to their visit pattern. Among the first time visitors only 6 percent are affiliated with a conservation group while about 22 percent of the repeat visitors are members of conservation groups. One thing common to all those who reported involvement in conservation groups is that they are among those with higher education backgrounds. Apart from the data illustrated in the table below, the study found that the gender was mixed among the 22 percent who are involved with conservation groups, 10 percent are male and 12 percent female, 8 percent of them are single compare to 14 percent who are married, while 80 percent of them are among the older age group of 30 years old and above. Employing the Chi-Square Test of Independence however, only revealed that pattern of membership does depend on first-repeat visit pattern ($Chi\text{-}squared\ (1) = 5.374,\ p < 0.05$) while there is no clear relationship between membership and gender mix ($Chi\text{-}squared\ (1) = 0.128,\ p > 0.05$), marital status ($Chi\text{-}squared\ (1) = 0.328,\ p > 0.05$) and age group ($Chi\text{-}squared\ (1) = 1.758,\ p > 0.05$).

Table 8.17: Membership to Nature Conservation Group

First-Repeat visit			Education Level				
			Primary Education	College Diploma	University Graduate Degree	Post-Graduate Degree	Total
First Visit							
Membership of Nature Conservation Society/Group	No	Count		20	36	7	63
		% within Edu. Level		100.0%	94.7%	77.8%	94.0%
	Yes	Count		0	2	2	4
		% within Edu. Level		.0%	5.3%	22.2%	6.0%
Repeat Visit							
Membership of Nature Conservation Society/Group	No	Count	1	4	15	1	21
		% within Edu. Level	100.0%	100.0%	78.9%	33.3%	77.8%
	Yes	Count	0	0	4	2	6
		% within Edu. Level	.0%	.0%	21.1%	66.7%	22.2%

8.5 Will Visitors Revisit RMP?

The beauty and first-hand experiences with nature that RMP has to offer somehow still manage to sustain the interest of the visitors, where about 86 percent of the respondents stated that they are willing to revisit the island in the future. A closer examination of the data is shown in Table 8.18 with the relationship between willingness to revisit RMP and number of children travelling among the first timers and repeat visitors. Among the first timers, about 75 percent of those who travelled without children and 90 percent of those travelling with children are willing to revisit RMP in the near future. The situation is also true among the repeat visitors, where about 96 percent of those who travelled without children are willing to revisit. In fact all of the repeat visitors who travelled with children are strongly affirmative that they will revisit RMP. Apart from the data displayed in Table 8.18, of those who have the intention to revisit RMP, 55 percent are male while 45 percent are female visitors, 70 percent are married as compared to 30 percent single, and 82 percent with higher monthly income greater than RM3000 and 18 percent with lower income. The desire to re-visit the RMP cut across all occupational categories and age levels. The intention to revisit RMP reflects that the visitors are still happy with the current condition and enjoy the natural beauty of the RMP. This also serves as a good indicator for the DMPM who manage the park successfully.

Table 8.18: Will Revisit RMP in Future?

First-Repeat Visit			Children Travelling		
			No	Yes	Total
First Visit					
Will Revisit Redang in Future?	No	Count	12	2	14
		% within Children Travelling	25.5%	10.0%	20.9%
	Yes	Count	35	18	53
		% within Children Travelling	74.5%	90.0%	79.1%
Repeat Visit					
Will Revisit Redang in Future?	No	Count	1	0	1
		% within Children Travelling	4.5%	.0%	3.7%
	Yes	Count	21	5	26
		% within Children Travelling	95.5%	100.0%	96.3%

8.6 Attitude towards Nature and Conservation

Generally, given the high level of education and income, respondents are supportive of, and have a positive attitude towards, nature and the conservation of the RMP's natural beauty (Table 8.19). The mean scores for all 5 positive items in the attitude instrument, which range from 3.66 for 'park ranger' to 4.48 for 'like to visit nature preserve', indicated that they have a degree of agreement on those statements. By looking at the mid point of each Likert response scale to indicate the categories of the mean score, it can be concluded that the respondents' mean scores for all 5 items fall in the "agree" category.

Table 8.19: Positive Statements in the Attitude Instrument

Positive Attitude Statements*	**Mean**	**Std. Dev.**
Beach cleanliness is satisfactory	4.06	1.025
Quality of coral and fish varieties excellent	4.18	0.950
Fisheries Department look after MP	3.70	0.827
Park ranger doing good job	3.66	0.899
I like to visit nature preserves like RMP	4.48	0.523

* "Likert" response scale:
1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree

In terms of the negative statements in the attitude instrument, the mean scores range from the minimum of 2.34 for 'tourism development deteriorates the environment' to the highest of 3.85 for 'preservation is solely the government's responsibility' (Table 8.20). It can be interpreted that the respondents tend to agree with the statement that 'tourism development

deteriorates the environment' and disagree with the statement 'preserving natural parks is the government's responsibility, not visitors'. They however, tend to be undecided with the statements that 'hotel is concerned with profit over environment' and 'visit other park if fee increases'.

Table 8.20: Negative Statements in the Attitude Instrument

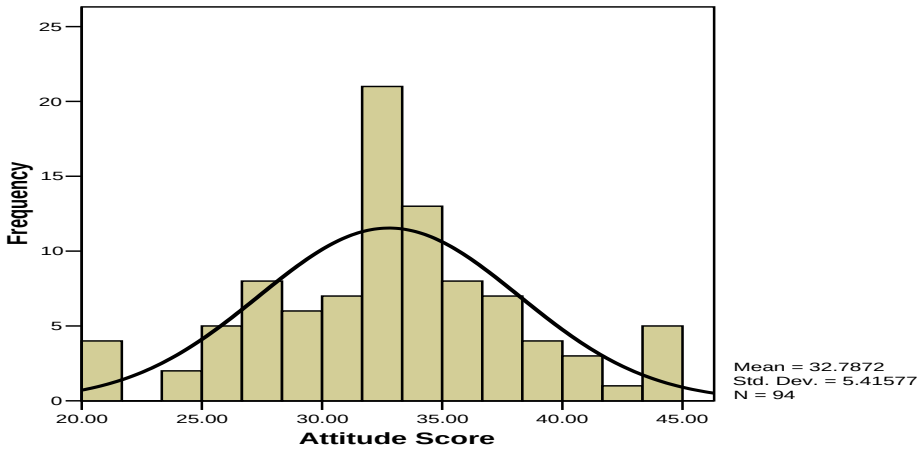
Negative Attitude Statements**	Mean	Std. Dev.
Hotel industry more concerned about profit than environment	3.26	1.182
Visit other MP if entry fee were increased	3.26	1.163
Tourism development activity deteriorate environmental quality	2.34	1.178
Preserving natural park government responsibility, not visitors'	3.85	1.218

** "Likert" response scale:
1 = Strongly Agree; 2 = Agree; 3 = Undecided; 4 = Disagree; 5 = Strongly Disagree

8.6.1 *Reliability of attitude scale*

To gauge the reliability of the attitude scale discussed above, a reliability test procedure was conducted, similar to the local tourists' data. All the 94 respondents form a valid response for the measurement of attitude scale, i.e. they respond to all the nine items. The outcome of this test indicates that the whole attitude instrument is quite reliable with the value of *Cronbach-alpha* equal to 0.767, and can further be improved to 0.789, if one of the items is dropped from the instrument (Refer to Appendix H). It can be concluded that the attitude instrument is able to explain about 77% of the variation in respondents' attitude towards nature and conservation. All of the items are positively correlated with the total attitude score, although one item indicated weak item-to-total correlation (0.190). As the potential improvement in alpha value is small if the item is deleted, all 9 items are retained to compute the attitude scores.

Figure 8.3: Attitude Score Distribution



8.6.2 *Attitude scores*

The attitude scores for foreign tourists' data set range from 21 to 45, with a mean value of 32.8 and standard deviation of 5.42. The distribution is almost normal with a slight positive skew (skewness = 0.103), as illustrated in Figure 8.3. In order to understand the variable that may have an impact on the attitude score, the test of independence and relatedness using the Chi-squared Test is used. For the purpose of this testing procedure, the attitude score is divided into 3 distinct levels. The range for each level is determined by the mean score plus/minus 1 standard deviation. The low attitude score level has a mean score less than 27.37, the medium attitude score level ranges from 27.37 to 38.19 and the high attitude score level has a mean score of more than 38.19. The attitude levels were than tested with several variables, among others gender, marital status, age group, level of education, affiliation with conservation groups and first-repeat visit. Chi-square tests of independence revealed that none of the above variables had significant results of dependency with level of attitude toward nature except for frequency of visit. However, generally about 70 percent of the respondents fall in the medium attitude score group, 16 percent in the lower attitude score group and another 14 percent in the high attitude score group for all these variables. Apart from that, it is worth noting that education and affiliation with a conservation group promote a better attitude towards conservation and environment. To illustrate some examples, the following sections discuss the relationship between attitude score and frequency of visit and gender.

8.6.3 *Attitude and frequency of visit*

Table 8.21 illustrates the relationship between attitude level and frequency of visit. A significant pattern between attitude levels and frequency of visit were found among the respondents to RMP. Based on the evidence, we see that there is some degree of dependence between these attributes (χ^2 (2) = 8.857, p = 0.012). The evidence displayed that the most of the first time visitors belong to either low (19.4%) or medium (73.1%) attitude score classes. On the other hand most of the repeat visitors belong to either medium (63.0%) or high (29.6%) attitude score classes. However, there were 2 cells having an expected count less than 5 (33%). Although there is no assumption about the shape of the distribution, the Chi-square Test of Independence assumed that the expected frequencies for each category should be at least 1, and no more than 20 percent of the categories should have expected frequencies of less than 5 (Cronk, 2003: p.88). Hence the result of the Chi-square test of Independence, between attitude and first-repeat visit, violated the assumption. Notwithstanding this, love for nature is actually translated by the visit pattern itself. This implies that the visitors who chose a nature destination usually have a strong attitude toward conservation. The more they visited this kind of setting the more their love toward nature and the need to conserve the natural environment might be strengthened.

Table 8.21: Attitude and Frequency of Visit

		first-repeat visit		
Attitude Level		first visit	repeat visit	Total
Low Attitude Score	Count	13	2	15
	% within first-repeat visit	19.4%	7.4%	16.0%
Medium Attitude Score	Count	49	17	66
	% within first-repeat visit	73.1%	63.0%	70.2%
High Attitude Score	Count	5	8	13
	% within first-repeat visit	7.5%	29.6%	13.8%
Total	Count	67	27	94
	% within first-repeat visit	100.0%	100.0%	100.0%

8.6.4 *Attitude and gender*

Although the relationship between gender and attitude score is not statistically significant ($\chi^2(2) = 0.933$, $p > 0.05$) the data show some kind of pattern. Although a majority of the visitors (around 70%) belong to the middle attitude class, irrespective of their gender, a higher proportion of men (19.2%) belong to the low attitude class compared to women (11.9%), while a slight extra percentage of women (14.3%) belong to the high attitude class compared to men (13.5%). Men tend to have a lower attitude score compared to women. Thus, majority of the female visitors are more favourable towards nature and conservation, such as that obtained in the RMP.

8.7 Respondents' Views on Questionnaire

At the end of the interviews, respondents were asked about what they think of the questionnaire. On whether they find it is interesting, 73.4 percent answered in the affirmative. About 72.3 percent considered it to be educational. A higher number of 80.9 percent stated it is too long. About 42 percent believed it to be difficult while 33 percent found it is "unrealistic" (Table 8.22).

Table 8.22: Respondents' View on Our Questionnaire (Count for "Yes=1")

What do you think of this questionnaire?	Frequency	Percentage
Questionnaire interesting? (n=94)	69	73.4
Questionnaire educational? (n=94)	68	72.3
Questionnaire too long? (n=94)	76	80.9
Questionnaire difficult to understand? (n=94)	39	41.5
Questionnaire unrealistic? (n=94)	31	33.0

8.8 Ordinal Regression and CR Result

The following discussion presents the results for the CR experiment elicited from sections C and D of the questionnaire. The section starts with simple analysis of islands ranked as a tourist destination. Next it checks the consistency of the ranking experiment with the economic theory. Finally the section discusses how the test for Independence from Irrelevant Alternatives (IIA) was conducted on Model 1.

8.8.1 *Island ranking*

Visitors were asked to rank their preferences for different levels of accommodation and service attributes for the destination choice. Examining the ranking by Island in Table 8.23, 50.8 percent rank Kapas as the most preferred destination, followed by Redang (27.9%) and Perhentian (17.3%). Tenggol scores the highest ranking for least preferred destination (57.4%) followed by Perhentian (20.2%). The pattern of findings is very similar to the one conducted among the local tourists where the popularity of Kapas exceeded the popularity of Redang. Since none of the foreign tourists were interviewed at Kapas and none of them were day trippers, the popularity of Kapas can now be interpreted differently. Although experience and familiarity factors of Kapas were eliminated among the foreign tourists, it is still chosen as the most popular destination in the ranking experiment. It now can be inferred that the results are more objective, based on the information given in the ranking experiment. However, it is still too early to judge the situation. Further evidence can only be seen in the consistency test with the economic theory in the next section. Tenggol however is still not commonly known as a tourist destination among the foreign tourists while Perhentian requires the longest journey from the mainland.

Table 8.23: Island Ranking

		Island Name				Total
Destination Rank		Redang	Perhentian	Kapas	Tenggol	
Most Preferred	Count	105	65	191	15	376
	% within Island Name	27.9%	17.3%	50.8%	4.0%	25.0%
Preferred	Count	109	111	107	49	376
	% within Island Name	29.0%	29.5%	28.5%	13.0%	25.0%
Less Preferred	Count	104	124	52	96	376
	% within Island Name	27.7%	33.0%	13.8%	25.5%	25.0%
Least Preferred	Count	58	76	26	216	376
	% within Island Name	15.4%	20.2%	6.9%	57.4%	25.0%
Total	Count	376	376	376	376	1504
	% within Island Name	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 8.4: Destination Rank by Island

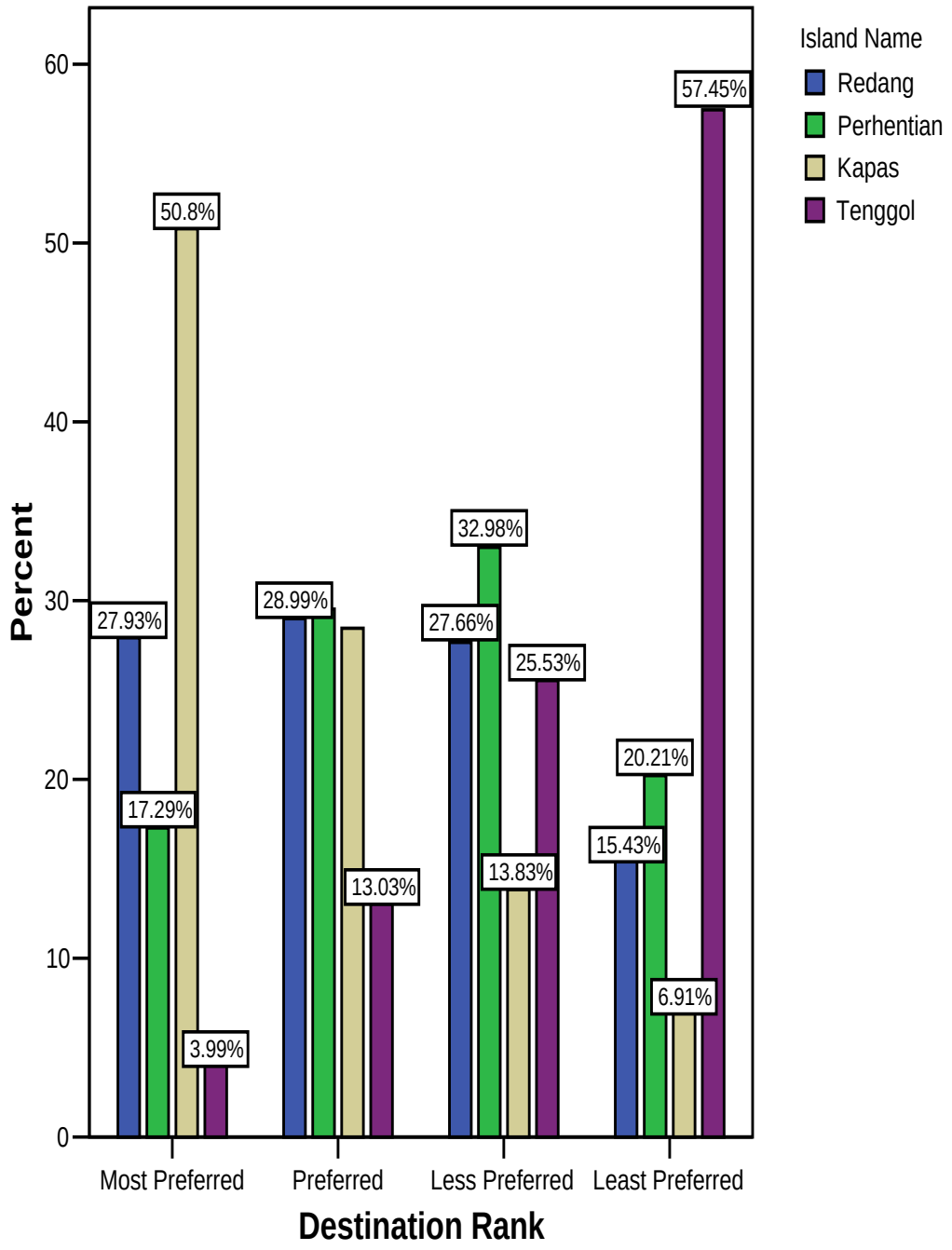
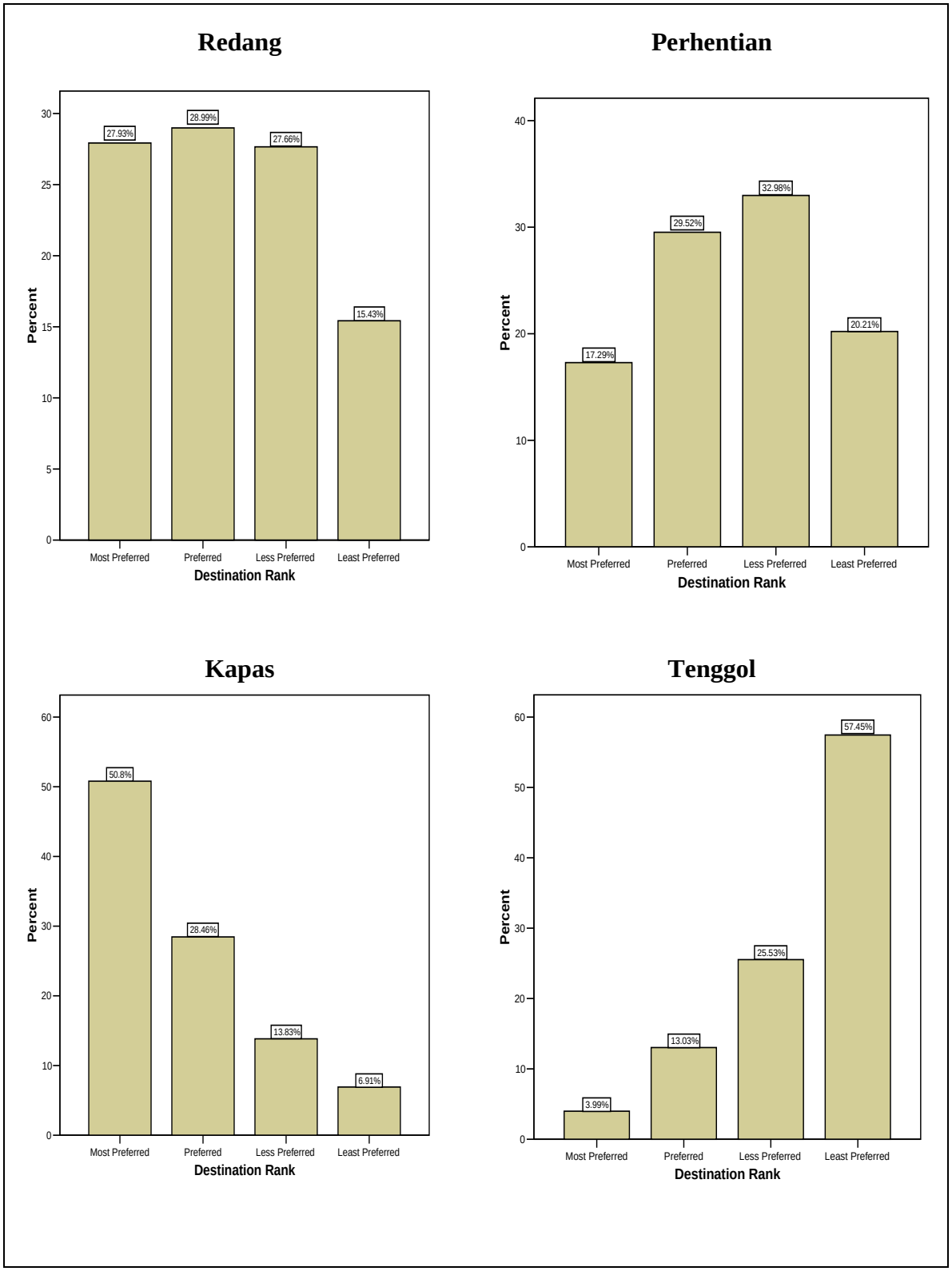


Figure 8.5: Complete Ranking for All Islands



Complete ordering of the ranking result is illustrated in Table 8.24. Out of the 27.9 percent respondents who ranked Redang as the most preferred destination, 9 percent ranked Redang in preference to Kapas, Kapas is preferred to Perhentian, and Perhentian is preferred to Tanggol. As for those who chose Perhentian as the most preferred destination, about 17 percent rank Perhentian preferred to Kapas, Kapas to Redang and Redang to Tenggol, while for those who chose Kapas as the most preferred destination, the ordering of Kapas is preferred to Perhentian, Perhentian to Redang, and Redang to Tenggol score the most (14.6%). Based on the ordering patterns, Kapas, Redang and Perhentian are closely ranked together as the top three destinations.

Table 8.24: Frequency Distribution for Complete Ordering (n = 376)

Preference Order	Frequency	Percent
Redang > Perhentian > Kapas > Tenggol	20	5.3
Redang > Perhentian > Tenggol > Kapas	15	4.0
Redang > Kapas > Perhentian > Tenggol	34	9.0
Redang > Kapas > Tenggol > Perhentian	5	1.3
Redang > Tenggol > Perhentian > Kapas	12	3.2
Redang > Tenggol > Kapas > Perhentian	19	5.1
Perhentian > Redang > Kapas > Tenggol	3	.8
Perhentian > Redang >Tenggol > Kapas	3	.8
Perhentian > Kapas > Redang > Tenggol	65	17.3
Perhentian > Kapas >Tenggol > Redang	0	0
Perhentian > Tenggol > Redang > Kapas	33	8.8
Perhentian > Tenggol > Kapas > Redang	5	1.3
Kapas > Redang > Perhentian > Tenggol	39	10.4
Kapas > Redang >Tenggol > Perhentian	0	0
Kapas > Perhentian > Redang > Tenggol	55	14.6
Kapas > Perhentian > Tenggol > Redang	3	.8
Kapas > Tenggol > Redang > Perhentian	7	1.9
Kapas > Tenggol > Perhentian > Redang	0	0
Tenggol > Redang > Perhentian > Kapas	15	4.0
Tenggol > Redang > Kapas > Perhentian	5	1.3
Tenggol > Perhentian > Redang > Kapas	18	4.8
Tenggol > Perhentian > Kapas > Redang	0	0
Tenggol > Kapas > Redang > Perhentian	13	3.5
Tenggol > Kapas > Perhentian > Redang	7	1.9
Total	**376**	**100.0**

8.8.2 *Test of consistency with economic theory*

A similar series of consistency tests as conducted earlier in the local data set were conducted in order to assess the validity of the ranking experiment. The fundamental axioms of the consumer theory are based on a series of rules for the ordinal ranking of product bundles. Taking the ordinal ranking of the attributes bundle as product bundles, enable us to observe any violation of responses to the ranking questions. The test followed the one done by Foster and Maurato (2002) testing for three axioms of non-satiation, transitivity and continuity. Table 8.25 explains the summary of the test findings.

Table 8.25: Test for Consistency with Fundamental Axioms of Consumer Choice

	Non-Satiation		**Transitivity**		**Continuity**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Total possible number of test failures	134		17		83	
Actual number of test failures	20	14.9	2	11.8	6	7.2
Redang vs. Kapas Violation	19	95.0	2	100.0		

Out of 134 responses given by the respondents facing the dominant choice in their choice sets, 14.9 percent of the dominant choice was inappropriately ranked and violated the non-satiation axiom. The possible explanation for the violation is because of the knowledge the respondents have regarding the preferred island as compared to the one that possesses the dominant characteristic in the choice card. In this sense, the respondents will stick to the preferred island even though the attributes are slightly less attractive compared to the dominant choice. About 95 percent of the violation, Redang is ranked higher compared to Kapas which possesses the dominant criteria in the choice set.

In terms of the transitivity, 2 out of 17 respondents (11.8%) were inconsistent with their own ranking. In both cases, the violation involved the ranking between Kapas and Redang. Following the transitivity axiom, if Kapas is preferred to Perhentian, and Perhentian is preferred to Redang, rationally Kapas should be preferred to Redang. However, Redang was preferred compared to Kapas in both cases. The possible explanation of the violation again demonstrated the effect of the island name which influenced the choice. This strengthened

the previous argument about familiarity and knowledge that respondents have regarding their preferred island to visit.

On the other hand, seven percent of 83 responses violated the continuity axiom. The ranking sets used in the study were comprised of four different alternatives, with each having five different product attributes, producing up to twenty different potential lexicographic orderings. Consequently, it is highly unlikely that respondents exercising all twenty orders during the ranking process took place.

8.8.3 *Independence from irrelevant alternatives*

Before continuing with further analysis of the model and apart from the fundamental axiom of the consumer theory conducted previously, the test for Independence from Irrelevant Alternatives (IIA) was conducted. For the purpose of this test Model 1, which is the basic model, was used. Table 8.26 presents the result from the IIA test. Three subsets were estimated and compared to the estimate from the basic model. In every subset one alternative was removed at a time. Checking the sign of the parameter estimates, all of them are carrying the expected sign except for *Access* (accessibility from the main land) which carries an opposite sign in the subset without Kapas. *Fac* (hotel facilities) appears to be insignificant in all subsets except for the subset without Redang while *Access* is not significant in the model without Kapas. The likelihood ratio test of the model (Final) against the intercept only model for all subsets is highly significant with a very large value of χ^2 indicating that the final model is outperforming the intercept only models in every subset. Finally the log likelihood ratio test comparing the basic model and the subset model was conducted. The differences between -2 log likelihood of the basic model and the subset models are extremely large, rejecting the null hypothesis that the parameter estimates obtained on subset of alternatives are not significantly different from those obtained on the full set of alternatives on all occasions.

Table 8.26: Result of IIA Test

	Basic Model (n=1504)		**CR without Redang (n= 1128)**		**CR without Perhentian (n= 1128)**		**CR without Kapas (n= 1128)**	
Variable	Coeff. Value	Std. Error	Coeff. Value	Std. Error	Coeff. Value	Std. Error	Coeff. Value	Std. Error
Accom	1.278*	0.085	1.349*	0.128	1.303*	0.093	1.372*	0.093
Fac	0.061	0.059	0.158*	0.069	0.025	0.070	0.108	0.067
Dist	-0.095*	0.015	-0.127*	0.021	-0.056*	0.019	-0.084*	0.016
Access	-0.008*	0.002	-0.007*	0.002	-0.035*	0.005	0.002	0.002
Price	-0.009*	0.000	-0.009*	0.000	-0.008*	0.000	-0.007*	0.000
-2 Log Likelihood								
Intercept Only	2439.414		1869.468		1808.025		1809.437	
Final	1655.985		1275.943		1145.946		1290.367	
χ^2 (df=5)	783.429*		593.525*		662.078*		519.070*	
McFadden (r^2)	0.188		0.190		0.212		0.169	

* Significant at 95% confidence level

χ^2 is the difference between -2 log likelihood of the Intercept only and the final model.

At 95% confidence level the critical value for χ^2 distribution is 11.07 with 5 degrees of freedom.

8.9 CR Result – Destination Choice

This is the first part of the CR result concerning on how to determine the nature of rank among the islands in the RMP as tourist destinations. The section starts with the presentation and discussion of the three simple models. Apart from that, different WTP values for certain destination choice attributes of interest in the models are calculated. The section proceeds with the expansion of the simple model to more complicated models with income and social-demographic interactions. Finally the section touches on the differences in ranking pattern among the visit patterns to understand the effect of knowledge and familiarity of the goods being evaluated among the respondents.

8.9.1 *Basic specification*

Initially the choice specification assumes the ranking is not affected by socioeconomic and demographic factors. Table 8.27 shows three simple specifications. The first one is the basic model (Model 1). The second model (Model 2) introduced *Island* as an attribute while the third (Model 3) considered *Island* as a factor.

The estimates for these models are quite plausible. As anticipated the signs for all attributes are well-behaved, meaning that they conform to the economic theory. Respondents place a positive value for *Accom* (type of accommodation) and *Fac* (hotel facilities) indicating that higher level of accommodation types and facilities increases the probability of higher destination ranking, while for *Fac*, the result is uncalled since it is not statistically significant. The negative values for *Dist* (distance from the beach area), *Access* (accessibility from the main land) and *Price* (package price) show that these variables decrease the probability of assigning a higher destination rank. When *Island* is included as an attribute in Model 2, it carries a negative sign indicating a higher ranking is related to Redang while a lower ranking is related to Tenggol. As individual islands are introduced as a factor in Model 3, they carry positive signs indicating that the island concerned contributes towards a higher ranking. All of the variables are statistically significant at 95 percent confidence level with the exception of hotel facilities which is not significant in all three models. A likelihood ratio test of the model (Final) against one in which all parameter coefficients are zero confirms that the estimates of the overall models are statistically significant. The null hypothesis that the parameter estimates of the model are zero is rejected on all occasions.

Table 8.27: CR – Basic Specification

	Model 1 – Basic (n = 1504)			Model 2 – Island Attribute (n = 1504)			Model 3 - Island Factor (n = 1504)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**
Redang							1.277*	0.165	182.43
Perhentian							0.994*	0.285	142.00
Kapas							1.907*	0.220	272.43
Tenggol							0(a)	.	
Island				-0.327*	0.052	40.88			
Accom	1.278*	0.085	142.00	1.092*	0.090	136.50	1.188*	0.090	169.71
Fac	0.061	0.059	6.78	0.062	0.060	7.75	0.101	0.060	14.43
Dist	-0.095*	0.015	10.55	-0.118*	0.015	14.75	-0.109*	0.015	15.57
Access	-0.008*	0.002	0.89	-0.012*	0.002	1.50	-0.002	0.005	0.29
Price	-0.009*	0.000		-0.008*	0.000		-0.007*	0.000	
-2 Log Likelihood									
Intercept Only	2439.414			2485.178			2485.178		
Final	1655.985			1663.163			1591.627		
χ^2 (df)	783.429* (5)			822.015* (6)			893.551* (8)		
McFadden (r^2)	0.188			0.197			0.214		
Calc. LR (df)				7.178 (1)			64.358 (3)		

∗ Significant at 95% confidence level a. Parameter set to zero because it is redundant.

In comparing the three models the LR tests were conducted to test whether or not the additional parameter estimates in Model 2 and Model 3 were equal to zero. The comparison was between the extended models (Model 2 and 3) and the base model (Model 1). The ratio is given by the difference between -2 log likelihood of the two models. The null hypotheses were rejected on both occasions concluding that the additional parameter estimates are statistically significant from zero.

In terms of overall performance, Model 3 outperformed Model 2 and Model 1. This is given by a larger pseudo r-square statistic (0.214) compared to 0.197 in Model 2 and 0.188 in Model 1. It can be contended that the individual island does matter in explaining the destination ranking.

8.9.2 *Observed and predicted ranking of simple specification*

Before continuing with further analysis, the predictive responses of all models above were investigated. Table 8.28 shows the classification table comparing the observed destination ranking from the experiments versus the predicted response by the model for each rank category for Model 1. Overall about 48 percent of the ranks are correctly assigned in Model 1. Out of 376 observations for each rank category, about 33% are correctly assigned to *Most Preferred* and 30 percent are correctly assigned to *Least Preferred* by the model. On the contrary, the model correctly assigned about 21% of the ranking to *Preferred* while only 16 percent is correctly assigned to the *Less Preferred* category.

In Table 8.29 the confusion table comparing the observed destination ranking versus the predicted response by the model for each rank category for Model 2. There is only a marginal difference in the predictive capability in Model 2 as compared to Model 1. Overall about 48 percent of the ranks are correctly assigned in Model 2. Out of 376 observations for each rank category, about 32 percent are correctly assigned to *Most Preferred* and 30 percent are correctly assigned to *Least Preferred* by the model. Apart from that the model correctly assigned about 19 percent of the ranking to *Preferred* while only 18 percent is correctly assigned to the *Less Preferred* category.

The third table on the same page (Table 8.30) is the confusion matrix comparing the observed destination ranking versus the predicted response by the model for each rank category for Model 3. There is a slightly higher overall predictive capability in Model 3 compared to other models. Overall about 50 percent of the ranks are correctly assigned in Model 3. Out of 376 observations for each rank category, about 33 percent are correctly assigned to *Most Preferred* and 31 percent are correctly assigned to *Least Preferred* by the model. Apart from that the model correctly assigned about 19 percent of the ranking to *Preferred* while only 17 percent is correctly assigned to the *Less Preferred* category.

Table 8.28: Observed and Predicted Ranking (Model 1)

	Predicted Response Category				
Observed Ranking (n=1504)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=376)	220	79	69	8	58.5
Less Preferred (n=376)	120	112	119	25	29.8
Preferred (n=376)	32	92	150	102	39.9
Most Preferred (n=376)	12	31	94	239	63.6
Overall Percentage	30.5	15.5	20.8	33.1	47.9

Table 8.29: Observed and Predicted Ranking (Model 2)

	Predicted Response Category				
Observed Ranking (n=1504)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=376)	220	114	34	8	58.5
Less Preferred (n=376)	105	132	109	30	35.1
Preferred (n=376)	33	89	138	116	37.6
Most Preferred (n=376)	10	31	101	234	62.2
Overall Percentage	30.4	18.2	19.1	32.3	48.1

Table 8.30: Observed and Predicted Ranking (Model 3)

	Predicted Response Category				
Observed Ranking (n=1504)	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=376)	236	84	44	12	62.8
Less Preferred (n=376)	116	132	90	38	35.1
Preferred (n=376)	36	75	145	120	38.6
Most Preferred (n=376)	10	31	83	252	67.0
Overall Percentage	30.8	17.3	19.0	32.9	50.9

8.9.3 *WTP for basic specification models*

The WTP values for all three models are reproduced in Table 8.31. All values were calculated including the value for *Fac* even though the attribute was not statistically significant for comparison purposes. The range of WTP is from RM136.50 to RM169.71 for improvement in accommodation type, RM6.78 to RM14.43 for improvement in hotel facilities available, RM10.55 to RM15.57 for the option of accommodation which is situated closer to the beach area and from RM0.29 to RM1.50 for shorter time of boat ride from the main land.

Table 8.31: WTP for Destination Choice Attributes

VARIABLE	Model 1	Model 2	Model 3
Accom	142.00	136.50	169.71
Fac	6.78	7.50	14.43
Dist	10.55	14.75	15.57
Access	0.89	1.50	0.29
Island		40.88	
Redang			182.43
Perhentian			142.00
Kapas			272.24

In terms of WTP for island attribute in Model 2, it can be interpreted as the willingness to pay for the variation in the package price that involves a different island destination. Basically the price varies around RM40.88 for a package at different island destinations.

As for the WTP for a specific island calculated in Model 3, it can be interpreted as the willingness to pay for a 3-day/2-night package for the specific island as compared to Tenggol as the reference. In other words, the premium price that tour operators can charge for a package to Redang, Perhentian or Kapas compared to Tenggol. WTP for a package holiday at Kapas carries the highest premium followed by the packages to Redang and Perhentian compared to those in Tenggol.

8.9.4 *WTP by level*

To further understand the WTP of each attribute, Model 3 is now being regressed on their level basis. The result is presented in Table 8.32. Most of the main attributes appear to be contributing very significantly towards ranking at their individual level except for hotel

facilities and travelling time. The overall explanatory power of the model is much better than the main attributes model discussed earlier, given by the value of the r^2 of 0.218.

Taking Tenggol as the reference point, the result indicates that, respondents are willing to pay up to RM144.00 for a similar package at Perhentian, RM170.00 at Redang and RM188.00 at Kapas, *ceteris paribus*. At this point, it is safe to deduce that different island destination and location does matter in determining the different in package price.
In terms of accommodation type, with reference to the budget type accommodation, respondents are willing to pay up to RM168.00 for a similar package at a 3-star hotel and RM326.00 at a 4-star hotel. The differences in price with respect to standard and type of accommodation confirm the current market practice.

As for the hotel facilities, taking restaurant as the basis point, holding other things equal, respondents are willing to pay RM56.00 for a similar package at a hotel with improved facilities including some kind of entertainment. However, their willingness to pay for higher end facilities which provide some entertainment and sport facilities is not as high, around RM29.00. The possible explanation for the situation is that most packages include charges for snorkelling gear rental and the equipment is provided for them. Most of the expert divers bring their own equipment.

With regard to the proximity to the beach area, holding the beach location as the reference point, respondents are willing to pay up to RM138.00 less for a similar package further from the beach front that requires a 10-minute walk and up to RM73.00 less for those packages that are 5 minutes away from the beach front. The difference in price is not only due to the fact that hotels are located differently, but also true within the same resort where the sea view rooms have a higher premium than the hill view rooms.

Finally, with respect to the boat trip, holding a one-hour boat ride as the reference point, respondents are willing to pay RM5.00 to reduce the travelling time by 15 minutes to 45 minutes. The willingness to pay becomes greater for further reduction in travel time. Results indicated that respondents are willing to pay up to RM38.00 to reduce the travelling time to 30 minutes and up to RM120.00 to further reduce the travelling time to only 20 minutes. It is

interesting to note that the willingness to pay for an express service using a *fast boat service* is almost double the actual current charge which is around RM60.00 per person. Taking a two-hour boat trip as a reference point, the magnitude of 30 minutes saving in travelling time is more or less the same. Respondents are willing to pay up to RM32.00 to reduce the travelling time from two hours to 90 minutes. However the results should be treated with caution since only reduction to a 20-minute boat trip is statistically significant.

Table 8.32: WTP for Destination Choice Attribute by Level

	Basic Model by Attribute Level (n = 1504)		
Variable	**Coefficient**	**Std. Error**	**WTP by Level**
Redang	1.191*	0.193	170.14
Perhentian	1.012*	0.245	144.57
Kapas	1.317*	0.307	188.14
Tenggol	0(a)	.	
4 star Accommodation	2.282*	0.228	326.00
3 star Accommodation	1.179*	0.114	168.43
Budget Accommodation	0(a)	.	
Restaurant/Entertainment/Sport	0.205	0.121	29.29
Restaurant/Entertainment	0.398*	0.126	56.86
Restaurant	0(a)	.	
10-minute walk	-0.970*	0.150	138.57
5-minute walk	-0.515*	0.156	73.57
On the beach	0(a)	.	
20-minute boat trip	0.845*	0.313	120.71
30-minute boat trip	0.270	0.231	38.57
45-minute boat trip	0.037	0.165	5.29
60-minute boat trip	0(a)	.	
90-minute boat trip	-0.226	0.204	32.29
120-minute boat trip	0(a)	.	
Price	-0.007*	0.000	
-2 Log Likelihood			
Intercept Only	2485.178		
Final	1574.113		
χ^2 (df)	911.066* (14)		
McFadden (r^2)	0.218		

*Significant at 95% confidence level a This parameter is set to zero because it is redundant

8.9.5 Income Interaction Model

The addition of the income interaction term which enters the model as *Price/Income* does not improve the result. Table 8.33 compares the results between Model 3 without the income interaction effect and Model 4 with the interaction effect. Unlike the local data, the parameter estimate for the income interaction carries the expected negative sign. Theoretically, the interaction term *Price/Income* should carry a negative sign as *Price* is negatively related with *Rank*. The explanatory power of the model however, has slightly deteriorated as indicated by the reduction in r-square from 0.214 to 0.211. In order to find which model is the best one, the LR statistic is calculated. The ratio is given by the different between the -2 log likelihood of the two models. The null hypothesis is that the coefficient of the "extra" variable in the income interaction model is zero. The calculated value is very large compared to the critical value for χ^2 distribution which is 3.84 with 1 degree of freedom at 95 percent confidence level, rejecting the null hypothesis that the income interaction coefficient is zero. This confirmed that the income interaction parameter estimate is statistically significant from zero and contributed significantly to the model.

Table 8.33: CR – Income Interaction

	Island Factor and Income Interaction					
	Model 3 – Island Factor (n=1504)			**Model 4 – Income Int. (n=1472)**		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP^**
Redang	1.277*	0.165	182.43	1.264*	0.167	208.64
Perhentian	0.994*	0.285	142.00	0.978*	0.287	161.43
Kapas	1.907*	0.220	272.43	1.891*	0.222	312.13
Tenggol	0(a)	.		0(a)	.	
Accom	1.188*	0.090	169.71	1.188*	0.091	196.09
Fac	0.101	0.060	14.43	0.103	0.061	17.00
Dist	-0.109*	0.015	15.57	-0.110*	0.016	18.16
Access	-0.002	0.005	0.29	-0.002	0.005	0.33
Price	-0.007*	0.000		-0.006*	0.000	
Price/Income				-0.524	0.460	
-2 Log Likelihood						
Intercept Only	2485.178			3658.336		
Final	1591.627			2796.300		
χ^2 (df)	893.551* (8)			862.036* (9)		
McFadden (r^2)	0.214			0.211		
Calculated LR (df)	1204.673 (1)					

∗ Significant at 99% confidence level ^ Average household income RM8971.52

8.9.6 *Socio-demographic interaction model*

Additional specifications include gender (1= male, 0 = female), age group (5 different scales where 1 indicates the younger age group and 5 is the oldest age group), education level (5 different scales with 1 indicating primary education and 5 indicating tertiary education), visit pattern (1 = first visit, 2 = repeat visit) and membership of any conservation group (1 = yes, 0 = no). The comparison results are presented in Table 8.34. In both Models 5 and 6, island names appear to be statistically significant confirming their important contribution to the models and ranking process.

In Model 5, *Accom* and *Price* carry the expected sign and are statistically significant. The interaction effect of price and income (*Price/Income*), although it carries the expected sign, is not statistically in the model. The other three attributes namely *Fac, Dist* and *Access,* although they carry an unexpected sign, are not statistically significant. Among the additional variables, *AgeGp* and *Visit* appear to be statistically significant contributions to the model on their own. Apart from that, age groups also appear to be significant through the interaction with price while visit appears to be significant through the interaction with facilities and price. *Gender* and *Edu* are not statistically significant on their own. However both *Gender* and *Edu* appear to be statistically significant in the interaction with price. *Member,* on the other hand, is not significant even through the interaction.

In Model 6, all the main attributes carry the expected sign except for *Fac*. Apart from that, *Fac* and *Access* are not statistically significant to the model. *Gender, Edu* and *Member* are statistically significant on their own and with the price interaction. Apart from appearing to be statistically significant on their own, *AgeGp* is also statistically significant in the interaction with accommodation and price, while *Visit* is statistically significant in the interaction with facilities and price.

In terms of interpretation, the reduced interaction Model 6, the negative sign on *gender* indicates generally that male respondents are less likely to assign higher rank compared to female respondents, while the positive sign on the *gender-price* interaction indicates that male respondents are more likely to place a higher ranking in association to package price than female respondents.

The positive sign with *AgeGp* indicates that, generally, the higher age group respondents are more likely to place a higher ranking than the lower age group respondents. The negative signs indicate the higher age group is less likely to place a higher ranking in association to accommodation type while the younger age group respondents are more likely to a place lower rank in terms of package price compared to the older respondents.
The result shows that higher educated respondents generally tend to be more likely to place a higher rank than lower educated groups, indicated by the positive sign on *Edu*. They are also more likely to place a higher rank with regards to price.

First time visitors in general are less likely to place a higher rank compared with the repeat visitors, given by the negative sign on *Visit*. They are also are less likely to place a higher rank in associate to facility and price than repeat visitors.

Affiliation with a conservation group (*Member*) appears to contribute significantly to the model on its own and when interacted with price. Those who are members of conservation groups are more likely to assign higher ranking than those who are not, and are less likely to assign higher rank with regard to price.

Table 8.35 produces the test statistic values for both models. The χ^2 values from the log likelihood ratio test are highly significant in both models, rejecting the null hypothesis that the parameters estimate are zero and confirming that the final models are out-performing the initial model. However, there is not much difference in the explanatory power of the model as indicated by the value of r-square.

In order to test the performance of the two models, the LR statistic is calculated. The ratio is given by the difference between the -2 log likelihood of the full model and the reduced model. The null hypothesis is that coefficients of all “extra” variables in the full model are zero. At 95% confidence level the critical value for χ^2 distribution is 30.14 with 19 degrees of freedom rejecting the null hypothesis that coefficients of all “extra” variables are zero.

Table 8.34: CR – Interaction Model

	Model 5 Interaction (n=1472)		Model 6 – Reduced (n=1504)	
Variable	**Coef**	**Std. Error**	**Coef**	**Std. Error**
Redang	1.287*	0.169	1.294*	0.166
Perhentian	1.020*	0.292	1.043*	0.288
Kapas	1.910*	0.226	1.905*	0.221
Tenggol	0(a)	.	0(a)	.
Accom	1.904*	0.793	1.856*	0.338
Fac	-0.501	0.568	-0.313	0.182
Dist	0.072	0.142	-0.110*	0.015
Access	0.004	0.017	-0.003	0.005
Price	-0.012*	0.003	-0.013*	0.003
Price/Income	-0.762	0.469		
Gender	-0.481	0.542	-0.710*	0.357
Gender*Accom	-0.146	0.185		
Gender*Fac	-0.124	0.134		
Gender*Dist	-0.033	0.034		
Gender*Access	-0.004	0.004		
Gender*Price	0.002*	0.001	0.002*	0.001
AgeGp	1.325*	0.387	0.923*	0.284
AgeGp*Accom	-0.252	0.131	-0.222*	0.112
AgeGp*Fac	-0.026	0.096		
AgeGp*Dist	-0.031	0.024		
AgeGp*Access	-0.001	0.003		
AgeGp*Price	-0.002*	0.001	-0.001*	0.001
Edu	-0.659	0.349	-0.516*	0.250
Edu*Accom	0.124	0.134		
Edu*Fac	0.025	0.092		
Edu*Dist	-0.009	0.024		
Edu*Access	0.000	0.003		
Edu*Price	0.001*	0.001	0.001*	0.001
Visit	-1.615*	0.554	-1.689*	0.452
Visit*Accom	-0.162	0.188		
Visit*Fac	0.310*	0.139	0.320*	0.131
Visit*Dist	-0.012	0.035		
Visit*Access	-0.001	0.004		
Visit*Price	0.003*	0.001	0.002*	0.001
Member	1.483	0.972	1.550*	0.607
Member*Accom	-0.111	0.309		
Member*Fac	-0.021	0.226		
Member*Dist	0.027	0.055		
Member*Access	0.005	0.006		
Member*Price	-0.004	0.001	-0.004*	0.001

Significant at 95% confidence level a This parameter is set to zero because it is redundant

Table 8.35: Test Statistic Value for Interaction and Reduced Model

	Interaction Model	Reduced Model
-2 Log Likelihood		
Intercept Only	3970.603	3924.320
Final	3052.796	2989.598
χ^2 (df)	917.807* (39)	934.722* (20)
McFadden (r^2)	0.225	0.224
N	1472	1504
Calculated LR (df)	63.198 (19)	

χ^2 is the difference between -2 log likelihood of the interaction and the reduced model.
At 95% confidence level the critical value for χ^2 distribution is 30.14 with 19 degrees of freedom.

8.9.7 *Visit pattern model*

The differences in ranking pattern between the first time visitors and repeat visitors were examined in two different models in Table 8.36. The analysis is considered crucial to understanding the effect of knowledge and familiarity of the goods being evaluated among the respondents. The signs for all coefficients appear to follow the theoretical expectation in both models except for *Access* in the repeat visit model. However *Access* is not statistically significant in the model. In terms of the attributes concerned, *Accom, Dist and Price* are statistically significant explaining the ranking for the first time visit model. On the other hand, *Accom, Dist, Fac and Price* are statistically significant explaining the ranking for the repeat visit model.

In terms of the island name, all islands appear to be statistically significant, explaining the ranking for first time visit model, while Perhentian appears to be not statistically significant for the repeat visit model. Translating the island coefficients as the island preferences, Kapas is preferred to Perhentian, and Perhentian is preferred to Redang among the first time visitors, while Kapas is preferred to Redang and Redang is preferred to Perhentian among the repeat visitors.

Table 8.36: Ranking by First and Repeat Visitors

	First Time Visit (n = 1072)			Repeat Visit (n = 432)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**
Redang	1.009*	0.196	126.13	1.946*	0.317	389.20
Perhentian	1.200*	0.341	150.00	0.442	0.529	88.40
Kapas	1.596*	0.264	199.50	2.62*	0.408	524.00
Tenggol	0(a)	.		0(a)	.	
Accom	1.311*	0.109	163.88	0.899*	0.165	179.80
Fac	0.003	0.073	0.38	0.308*	0.110	61.60
Dist	-0.107*	0.018	13.38	-0.122*	0.029	24.40
Access	-0.009	0.006	1.13	0.015	0.009	3.00
Price	-0.008*	0.001		-0.005*	0.001	
-2 Log Likelihood						
Intercept Only	1953.668			889.064		
Final	1261.715			663.613		
χ^2 (df)	691.953 (8)			225.451 (8)		
McFadden (r^2)	0.233			0.188		

*Significant at 95% confidence level a This parameter is set to zero because it is redundant

Looking at the model performance, the χ^2 values from the log likelihood ratio test are highly significant in both models rejecting the null hypothesis that the parameter estimates are zero and confirming that the final models are out-performing the initial model. The explanatory power of the model as indicated by the value of r-squared, however, indicate that the first time visit model is better that the repeat visit model. Comparing the WTP, repeat visitors are willing to pay more for changes in all of the attributes concerned. As for the overall package, WTP for 3 days and 2 nights package with reference to Tenggol are much higher among the repeat visitors than the first time visitors, except for Perhentian. Having said that, however, Perhentian appears not to be a statistically significant contribution to the ranking model among the repeat visitors.

8.10 *CR result – environmental concerns*

This is the second part of the CR result concerning how to determine the rank for certain environmental quality attributes that are of importance among tourists to the RMP. The section starts with the presentation and discussion of the simple model and interaction model. The section follows by touching on the differences in ranking pattern among the visit patterns. Finally the section presents the different WTP values calculated for each of the environmental quality attributes concerned in the study.

8.10.1 *Comparison between basic and interaction model*

Table 8.37 represents the comparison of results between the basic specification and income interaction model for the environmental concerns. Both models carry the expected sign in all attributes except for the *Fee/Income* interaction which carries an opposite sign. The positive sign, however, can be explained by the existence of the income effect which outweighed the fee effect for the environmental attributes. In the basic model, all the main attributes also appear to be contributing very significantly to ranking. In the income interaction model on the other hand, *Turtle* and the interaction form of *Fee/Income* do not appear to be significant contributors to the model.

Both models are highly significant, rejecting the null hypothesis for the LR test against intercept only model. The explanatory power of the models is also much better, exceeding the 30 percent region as compared to the destination choice models. WTP appears to increase slightly for *Fish* when an income effect is included, whereas decreases slightly for *Turtle* and *Congest*.

Continuing the analysis, the same procedure was undertaken, introducing the socio-economic factors into the model. To be consistent with the former analysis the same set of variables was introduced to the model. The variables concerned are gender, age group, education level, visit pattern and membership of any conservation group. None of the socio-economic variables appears to be significant in the model, although the main attributes remain highly significant.

Table 8.37: Basic and Income Interaction Model

	Basic and Income Interaction					
	Model 1 – Basic Model (n=1128)			Model 2 – Income Int. (n=1104)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP^**
Fish	1.561*	0.107	4.62	1.599*	0.109	4.64
Turtle	0.195*	0.099	0.58	0.175	0.100	0.51
Congest	-1.973*	0.099	5.84	-1.997*	0.101	5.80
Fee	-0.338*	0.019		-0.346*	0.021	
Fee/Income				14.740	28.562	
-2 Log Likelihood						
Intercept Only	1516.271			2272.799		
Final	476.700			1244.304		
χ^2 (df)	1039.572 (4)			1028.495		
McFadden (r^2)	0.332			0.336		

*Significant at 99% confidence level ^ Average household income RM8971.52

8.10.2 *Observed and predicted ranking*

Before continuing with further analysis, the predictive response of the model was investigated for both models. Table 8.38 shows the classification table comparing the observed environmental ranking versus the predicted response by the model for each rank category for the basic model. The model has successfully predicted the *Most Preferred* rank and the *Least Preferred* rank. Out of 282 observations for each rank category, about 93 percent are correctly assigned to *Most Preferred* and 82 percent are correctly assigned to *Least Preferred* by the model. On the contrary, the model correctly assigned about 54 percent of the ranking to *Preferred* while only 35 percent is correctly assigned to the *Less Preferred* category.

Table 8.38: Observed and Predicted Ranking (Basic Model)

	Predicted Response Category				
Observed Environmental Ranking	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=282)	231	30	18	3	81.9
Less Preferred (n=282)	38	99	94	51	35.1
Preferred (n=282)	13	57	152	60	53.9
Most Preferred (n=282)	0	2	18	262	92.9
Overall Percentage	31.1	13.3	20.4	35.2	65.9

The comparison for the income interaction model is presented in Table 8.39. The model has successfully predicted the *Most Preferred* rank and the *Least Preferred* rank. Out of 276 observations for each rank category, about 93 percent are correctly assigned to *Most Preferred* and 83 percent are correctly assigned to *Least Preferred* by the model. On the other hand, the model correctly assigned about 54 percent of the ranking to *Preferred* while about 36 percent is correctly assigned to the *Less Preferred* category. Overall about 66 percent of the ranks are correctly assigned in both basic and income interaction models.

Table 8.39: Observed and Predicted Ranking (Income Interaction Model)

	Predicted Response Category				
Observed Environmental Ranking	**Least Preferred**	**Less Preferred**	**Preferred**	**Most Preferred**	**Percent Correct**
Least Preferred (n=276)	228	28	17	3	82.6
Less Preferred (n=276)	35	99	92	50	35.9
Preferred (n=276)	13	56	148	59	53.6
Most Preferred (n=276)	0	2	18	253	92.8
Overall Percentage	31.3	13.6	20.3	34.8	65.9

8.10.3 *Comparison between first time and repeat visitors*

Finally, the effect of knowledge and familiarity is also investigated in the environmental concern about the marine park. The results are displayed in Table 8.40. The respondents were analysed separately according to their visit pattern, the first time visitors versus repeat visitors. All of the main attributes have the expected signs and are highly significant for both groups except for *Turtle* in the first-time visit model. There is no specific pattern explaining the differences between the two groups. WTP for *Fish* is higher while WTP for *Congest* is marginally higher among the first-time visitors compared to the other group. In contrast to that, WTP for *Turtle* is significantly higher among the repeat visitors compared to the first-time visitors.

Table 8.40: Ranking by First and Repeat Visitors

	First Time Visit (n = 804)			Repeat Visit (n = 324)		
Variable	**Coef**	**Std. Error**	**WTP**	**Coef**	**Std. Error**	**WTP**
Fish	1.600*	0.127	4.88	1.475*	0.199	4.01
Turtle	0.129	0.116	0.39	0.375*	0.187	1.02
Congest	-1.918*	0.116	5.85	-2.134*	0.194	5.80
Fee	-0.328*	0.023		-0.368*	0.038	
-2 Log Likelihood						
Intercept Only	1088.998			496.954		
Final	368.890			173.095		
χ^2 (df)	720.108 (4)			323.859 (4)		
McFadden (r^2)	0.323			0.361		

*Significant at 99% confidence level

8.10.4 *WTP by level*

To further understand the WTP of each attribute, the basic model is now regressed on their level basis. The result is presented in Table 8.41. All the main attributes appear to be contributing very significantly towards ranking at their individual level. The overall explanatory power of the models is much better than the main attributes model discussed earlier, given by the value of the r^2 of 0.377.

Taking the current stage as the reference point for all attributes, results indicate that respondents are willing to pay up to RM3.50 to see an improvement in the number of fish and coral species with sustainable management practices. On the other hand, in order to avoid the decline in the number of fish and coral species with further development taking place surrounding the marine park, they are willing to pay up to RM6.73.

As for the turtle nesting, respondents are willing to pay up to RM4.14 to see an increment in turtle nesting take place and at the same time are willing to pay up to RM2.28 to avoid the decline in the number of turtle nesting with the threats of further development in the area.

Finally with respect to the level of congestion at the marine park centre, the respondents are willing to pay up to RM1.99 in order to maintain the current level of congestion without

reaching the next congestion level, from the increase in demand. In addition, respondents are willing to pay as much as RM11.37 to avoid reaching the third level of congestion due to excessive demand.

Table 8.41: WTP of Environmental Attributes by Level

	Basic Model by Attribute Level (n = 1128)		
Variable	**Coef**	**Std. Error**	**WTP**
Decrease in Fish/Coral Species	-2.760*	0.208	6.73
Increase in Fish/Coral Species	1.437*	0.181	3.50
Current Stage	0(a)	.	
Decrease in Turtle Nesting	-0.934*	0.169	2.28
Increase in Turtle Nesting	-1.698*	0.200	4.14
Current Stage	0(a)	.	
Congested	-0.818*	0.159	1.99
Very Congested	-4.664*	0.253	11.37
Current Stage	0(a)	.	
Fee	-0.410*	0.022	
-2 Log Likelihood			
Intercept Only	1516.271		
Final	337.242		
χ^2 (df)	1179.029 (7)		
McFadden (r^2)	0.377		

*Significant at 99% confidence level a This parameter set to zero because it is redundant

8.11 Conclusion

This chapter replicates the procedure done in Chapter 7 but focusing on foreign tourists instead of locals. A complete analyses and results for the foreign tourists visiting RMP are done and presented. The chapter begins with the description of the profiles of the visitors. It then analyses the travel patterns, accommodation patterns, preferences and motives of the tourists and their attitudes toward nature and conservation. The second part of the chapter presents results from the CR experiments. The results are presented for both destination choice and environmental concern.

Chapter 9: Result 3 - Local Community Analysis

9.0 Introduction

Understanding the tourists' behaviour, WTP and island ranking alone are not enough to ensure the sustainability of an island destination especially with those involving local community. The locals' perception and attitude toward tourism industry in their area are important elements to be explored. This is crucial since the willingness and readiness of the local to directly involve and participate in tourism industry will able to ensure the sustainability of the industry. Therefore, the local community study in this thesis is very important part in order to understand the locals' need so that it can be included in the planning process and successfully integrated in the development of the island since they are one of the major stakeholders in the industry. The local community is the host while the tourist is the guest to such a place like RMP. A harmonious relationship between these two parties will ensure the stability and sustainability of the industry.

To begin with, this chapter starts with a description on how the community study was done followed by a report on the profile of the local community and a discussion about the relationship between the Redang community and RMP. The relationships between communities and tourism, and community members' opinions regarding RMP and tourism are also discussed. Finally, this chapter looks into villagers' attitudes surrounding conservation and the development of RMP.

9.1 The Survey

Prior to the survey was conducted, a series of interviews with the key persons in the Redang village was done together with close observation from the researcher. Among the person interviewed was the head of the village, the police man in charge of the Redang police station and several teachers at the primary school. The interview among others is to gather some first hand knowledge of the community together with the way to approach the community study. Some crucial questions to be explored in the community study such as the awareness of the community regarding RMP and the degree of their acceptance of the in coming tourist were discussed in detail during the interview. The final decision was to conduct a door to door

interview among the villager after considering the potential degree of participation and their education background. As mention in Section 3.3, the DTRP reported there are 1453 people residing in Redang village with a total of 206 household. Out of the 206 households, a total of 200 households were interviewed giving the data gathered in the study as close as a census data with a 97 percent participation rate. Following sections presented the finding of this community study.

9.2 Local Community Profile

Table 9.1: Demographic and Socio-economic Backgrounds of the Local Community

		n= 200		n= 200
Demographic variables		%	**Economic Variables**	%
Gender	Male	45.5		
	Female	54.5	Employment	
Age	Under 20	4.0	Public sector	9.5
	20 to 30 yrs	29.5	Private sector (service)	33.0
	31 to 40 yrs	32.5	Agriculture and Fishery	12.0
	41 to 50 yrs	18.5	Self-employed	1.0
	Over 50	15.5	Retired	2.0
			Housewife	40.5
Education	No Formal Education	9.0	Student	2.0
	Primary Education	56.5		
	Secondary Education	28.0		
	Polytechnic/College	5.5		
	University Degree	1.0		

Table 9.1 provides some of the socio-economic characteristics derived from this study. Respondents were 45.5 percent male and 54.5 percent female, signifying a nearly equal representation of both genders. Furthermore, the majority of the respondents were between the ages of 20 and 40 (63.0%), with the average in the group between 31 and 40. In terms of education, more than half the total sample (56.5%) had completed primary education, while 28 percent had completed secondary school. Only a small fraction of the respondents had completed tertiary education (6.5% with college and university educations), while 9.0 percent did not have any formal education at all. In general, the majority of the respondents were housewives (40.5%), while 33 percent worked in the private sector. Some 12 percent were involved in agriculture and fishery sectors, while 9.5 percent worked in the public sector. Out

of the total 200 respondents, 66 (33%) of them claimed that their jobs were related to tourism activities.

Table 9.2 illustrates the types of jobs listed by the 66 respondents according to tourism sub-sectors. Jobs involving service accommodation, for instance house-keepers and cleaners, were highlighted most by these respondents, followed by those connected to food services and restaurants, as well as transportation and boat services. Basically, most of the villagers involved in tourism-related sectors worked at hotels and resorts on the island. For instance, the Berjaya Redang Resort was committed to employing 60 percent of their staff members from the local community. As for the provision of accommodation, only one chalet was fully owned and managed by a local family.

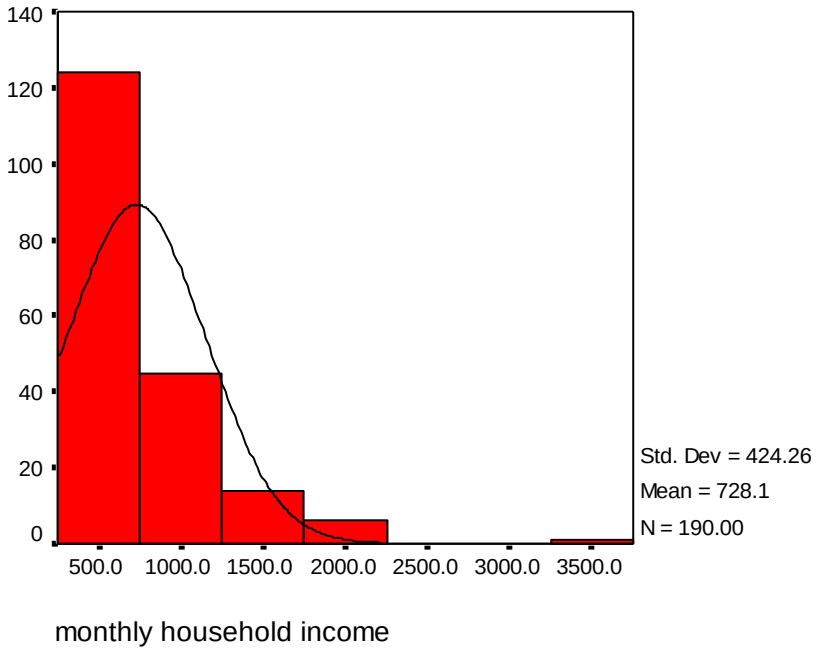
Table 9.2: Tourism Related Jobs

Sectors	**n=66 (%)**
Accommodation	40.9
Food and restaurant	16.7
Transportation and boat services	16.7
Tour guide	1.5
Souvenir shop	4.5
Other	19.7
Total	100.0

Monthly household income levels of the respondents were collected in this study. Out of 200 respondents, a total of 190 revealed their monthly household incomes during the interview. The study found that 26.3 percent of the respondents earned less than RM500[1] per month. The majority of them (62.1%) earned between RM500.00 and RM1000.00 per month. About 6.3 percent earned between RM1001.00 and RM1500.00 per month, while only 5.3 percent earned more than RM1500.00 per month. Actual income data are depicted in Figure 9.1. Household incomes ranged from RM416.00 to RM3417.00 per month skewed to the right (skewness = 2.499), with a mean of RM728.10 per month (s.d = RM424.26). In terms of national income levels, the community as a whole tended to fall in the lower income group. The situation resembled ones in traditional agriculture and fishery communities in general.

[1] RM500.00 per month ≅ £70.00 in 2004 and ≅ £100.00 in 2011.

Figure 9.1: Monthly Household Income Distribution



9.3 The Community, the Marine Park and Tourism

As the interviews progressed, it was sensed by the interviewer that the majority of the local population did not really understand the definition and jurisdiction of the marine park. When referring to the "marine park", most of them associated the term with the "marine park centre (RMPc)" at Pulau Pinang. Some were even surprised to find out that they were living within the MP's jurisdiction. However, a personal interview with the head of the community revealed the truth. According to him, from the very beginning of the planning of the MP, a series of discussions between the authority and the community members had taken place. The community furthermore had been fully informed about the establishment of the MP, and about how such developments would impact their daily lives. In fact, even the decision to move from their original settlement on Pulau Pinang to the newly allocated village on Pulau Redang had been made after achieving a consensus agreement among community members. Clearly, there were some misconceptions regarding the term amongst respondents. However, this study has not sought to deal with the definitions and jurisdiction of the MP, even though it would be interesting to quantify the actual number of residents who really understood these terms.

In the survey, respondents were asked about the importance of environmental quality. They were also asked whether or not the establishment of the MP was able to attract tourists to the island. In the end, they were asked about the overall impacts of tourism on the community and the island. The questions elicited many interesting answers.

Out of the 200 respondents, 29.0 percent said they learned the importance of the environmental quality of the island from their families, followed by 25.0 percent who learned about it from the elderly, and 18.0 percent who learned about it at school. About 15.5 percent of the respondents, however, revealed that nobody had ever explained the importance of environmental quality to them. Although this number is quite alarming, it is still early, at this point of time, to make any judgements or assumptions regarding people's awareness of and attitudes towards the environment. However, it is acknowledged that there is a potential to improve their understanding and awareness, and to enhance their attitudes toward the environment through the local education system provided mainly to young generation. Further analysis regarding local community attitudes towards the environment and the establishment of the MP will be discussed at length later in this chapter.

Respondents were asked about their perceptions about the relationships between the MP and tourist activities on the island. The results revealed that all 200 respondents agreed that the establishment of the MP attracted more tourists, both local and foreign, to the island. In fact, more than 90.0 percent agreed that the government should increase the investments on the island in order to improve environmental quality, which in the end would benefit both the community and tourists. Table 9.3 highlights the scenario perceived by the community about the number of tourists to the island. Almost all of the respondents (97.0%) perceived that the number of visitors to the island had increased steadily over the past few years. However, the remaining 3.0 percent held a different opinion, of which 2.0 percent said there was no change in the number of tourists, while 1.0 percent perceived a decline in the number of people coming to the island.

Table 9.3: Opinions on the Number of Tourists

	Frequency	Percent
Number of visitors to RMP rising steadily	194	97.0
Number of visitors to RMP declining	2	1.0
No change in the number of visitors to RMP	4	2.0
Total	200	100.0

9.4 Impact of Tourists on the Community

Aside from asking about community members' perceptions about the number of tourists to RMP, respondents were also asked about the impacts of the growing number of visitors on their daily lives. The results are illustrated in Table 9.4. It is interesting to note that almost half the respondents (48.0%) perceived that the growing number of visitors to the island had not affected them at all. Only 31.0 percent believed that the tourists contributed some positive impacts. 13.0 percent believed that the growing number of visitors had contributed some negative impacts, and 8.0 percent noted that the situation had both positive and negative impacts.

Table 9.4: Impact of Growing Number of Visitors

Impacts	Frequency	Percent
None	96	48.0
Positive	62	31.0
Negative	26	13.0
Both positive and negative	16	8.0
Total	200	100.0

Of the 200 respondents, about 31.0 percent of the respondents described the specific impacts they perceived. These comments were further divided into general categories. The positive impacts fell into two main categories, namely economic and social ones. A total of 35 comments claimed that tourism contributed towards improving their economic condition, while six comments stated that tourists contributed towards positive exposure and better interactions with outsiders.

In terms of negative impacts, three main categories were generated, namely economic, social and environmental ones. Both economic and social categories appeared with 12 comments in each, while four comments were made in terms of the environment. In the economic

category, the freedom of conducting traditional fishing activities was the major concern, followed by attention towards the increase in prices of daily goods. As for the social category, social and moral problems resulting from interactions with and exposure to outsiders were the major concern. Meanwhile, regarding the environment, comments were made in relation to the destruction of the natural beauty and environmental quality in the development of tourist sites.

Further analysis was carried out to understand the impact of the number of tourists on three subgroups. The subgroups included gender, age group and occupation. The age groups were further classified into two categories. The first category was ‘young’, which consisted of respondents 40 years old and under, while the other category was ‘old’, represented by respondents more than 40 years old. A Chi-square test of independence was calculated, comparing the frequency of impact class for the three variables. Significant interactions were found between the impacts and all of the three variables, as illustrated in Table 9.5.

The results revealed that the majority of respondents who claimed that the growing number of visitors had no impact on them were females (64.6%), as compared to only 35.4 percent of male respondents. Almost the same proportion of both genders agreed that the increased number of visitors had positive impacts. On the other hand, 73.1 percent of respondents who believed that the increase in the number of visitors resulted in negative impacts were male, as compared to only 26.9 percent of female respondents. It is also interesting to note that 75.0 percent who had mixed feelings regarding the impacts were females, as compared to 25.0 percent of male respondents.

In terms of age groups, 57.3 percent of those who perceived no impact were amongst young people, as compared to 42.7 percent who belonged to the older generation. A majority of those who perceived positive impacts and had mixed feelings regarding the impacts were also amongst the younger generation, as compared to the older group. Meanwhile, a fifty-fifty split amongst the age groups had negative perceptions about the increasing number of tourists to the island.

In terms of occupation, the majority of those who claimed that there was no impact of growing numbers of tourists were among those who were not involved in tourism-related

jobs, as compared to those who were directly involved with such jobs. This was also true for those who perceived negative impacts and had mixed feelings regarding the increase in the number of tourists to the island.

Table 9.5: Relationships between Impact and Gender, Age Group and Occupation

Impact of Growing Number of Visitors	Gender		Age Group		Occupation	
	Male	**Female**	**Young**	**Old**	**Tourism-related**	**Tourism-unrelated**
No	34 (35.4)	62 (64.6)	55 (57.3)	41 (42.7)	17 (17.7)	79 (82.3)
Positive	34 (54.8)	28 (45.2)	50 (80.6)	12 (19.4)	34 (54.8)	28 (45.2)
Negative	19 (73.1)	7 (26.9)	13 (50.0)	13 (50.0)	9 (34.6)	17 (65.4)
Both	4 (25.0)	12 (75.0)	14 (87.5)	2 (12.5)	6 (37.5)	10 (62.5)
Total	91	109	132	68	66	134
χ^2-Test	$\chi^2(3) = 16.802$, $p = 0.001$		$\chi^2(3) = 15.432$, $p = 0.001$		$\chi^2(3) = 23.704$, $p = 0.000$	

* ( ) percentage within rows for each variable

At this point, it may be argued that two factors might significantly influence the perceived impacts amongst the groups discussed. Those two factors are the degree of direct contact, and the level of interaction between visitors and members of the host community.

9.5 Tourist Existence and the Community

In addition to soliciting respondents' opinions regarding the number of tourists visiting the island, the surveys also asked them to comment on the existence of tourists in three specific areas. Table 9.6 illustrates the results. Respondents liked the idea of tourists being in public areas and in snorkelling areas. However, the aversion degree increased towards the idea of tourists visiting village areas. These findings signify an important message about the local community. Obviously, their willingness to accept the fact that their surroundings have become part of tourist attractions does have a limit.

Table 9.6: Community Members' Opinions on Visitors' Existence

	Public Areas (n=200)	Snorkelling Areas (n=200)	Village Areas (n=200)
Like (%)	74.0	71.5	48.5
Don't Mind (%)	19.0	19.5	13.0
Don't like (%)	7.0	9.0	38.5
Total (%)	100.0	100.0	100.0

To further investigate the general findings in Table 9.6, a Chi-square test for relatedness was calculated, comparing the frequency of the feelings towards the existence of tourists at each specific area, and three subgroups similar to the impact analysis. The findings reveal that significant relationships were found between gender and feelings at all three different locations (Table 9.7). However, the only category that revealed a significant relationship between feelings and age group (Table 9.8), and feelings and occupation (Table 9.9), was that of the village areas.

As illustrated in Table 9.7, the majority of respondents of both genders had a 'like' feeling (71.4% men and 76.1% women) regarding the existence of tourists within public areas, as compared to 'don't mind' and 'don't like' feelings. The same situation was also true for feelings about tourists' existences in snorkelling areas, where about 68 percent of male and 74 percent of female respondents liked the idea, as compared to the two other kinds of feeling. The situation changed when respondents were asked about the existence of tourists in village areas. Although more than 50 percent of male respondents liked the idea of tourists in village areas, the number of those who objected to this idea increased to more than 25 percent. A stronger objection was revealed amongst female respondents, with 48.6 percent not liking the idea of tourists in village areas. The number of female respondents who liked the existence of tourists in village areas was also shrinking, as compared to the two other locations.

Table 9.7: Relationship between Gender and Feeling in Different Areas

Location	Public Areas			Snorkelling Areas			Village Areas		
Gender	**Like**	**Don't Mind**	**Don't Like**	**Like**	**Don't Mind**	**Don't Like**	**Like**	**Don't Mind**	**Don't Like**
Male	65 (71.4)	15 (16.5)	11 (12.1)	62 (68.1)	13 (14.3)	16 (17.6)	51 (56.0)	16 (17.6)	24 (26.4)
Female	83 (76.1)	23 (21.1)	3 (2.8)	81 (74.3)	26 (23.9)	2 (1.8)	46 (42.2)	10 (9.2)	53 (48.6)
χ^2 -Test	χ^2 (2) = 6.881, p = 0.032			χ^2(2) = 16.258, p = 0.000			χ^2(2) = 11.034, p = 0.004		

* ( ) percentage within rows of each location

Meanwhile, Table 9.8 shows the relationship between age group and feeling. Although the χ^2 -test only revealed a significant result in the relationship between age groups and the presence of tourists only in village areas, the pattern of degree of likeness about the existence of tourists is quite similar to the previous results. A higher degree of likeness by both groups in the public areas (72.7% young and 76.5% old age group) and snorkelling areas (73.5% young and 67.6% old age group) is revealed, as compared to those who did not mind or disliked the tourists' existence.

However, in terms of village areas, a higher percentage of respondents from both age groups disliked the idea of tourists visiting their village. A significant switch may be observed, especially amongst those within the old age group category, where more than 55 percent disliked the presence of tourists in village areas, as compared to those who liked the tourists' presence there. Almost 30 percent of the younger respondents did not like the presence of tourists in the village, as compared to the degrees of dislike in the other two areas.

Table 9.8: Relationship between Age Group and Feeling in Different Areas

Location	Public Areas			Snorkelling Areas			Village Areas		
Age Group	**Like**	**Don't Mind**	**Don't Like**	**Like**	**Don't Mind**	**Don't Like**	**Like**	**Don't Mind**	**Don't Like**
Young	96 (72.7)	29 (22.0)	7 (5.3)	97 (73.5)	27 (20.5)	8 (6.1)	72 (54.5)	21 (15.9)	39 (29.5)
Old	52 (76.5)	9 (13.2)	7 (10.3)	46 (67.6)	12 (17.6)	10 (14.7)	25 (38.6)	5 (7.4)	38 (55.9)
χ^2 -Test	χ^2 (2) = 3.484, p = 0.175			χ^2(2) = 4.122, p = 0.127			χ^2(2) = 13.539, p = 0.001		

* ( ) percentage within rows of each location

A similar pattern may be found in the relationship between feelings towards the existence of tourists in different areas and types of occupation, as shown in Table 9.9. Although the χ^2 - test of relatedness revealed only one statistically significant relationship (in the village areas), the obvious pattern of likeness existed in other locations. Regardless of job sector, community members preferred tourists to be confined to their own designated areas. Comparing the degree of likeness, 76.1 percent of those who were not involved in tourism-related sectors liked the existence of tourists in public areas, as compared to only a small fraction (6.7%) who did not like it. Almost 70 percent of those working in tourism-related sectors liked tourists in public areas, as compared to only 7.6 percent who did not like them there. About 70 percent of those not involved in the tourism sector liked tourists to be in snorkelling areas, as compared to 10.4 percent who did not like them there.

Meanwhile, 75.8 percent of those involved in the tourism sector favoured tourists existence in snorkelling areas, and only 6 percent of them objected to the idea. However, increased degrees of resentment towards the existence of tourists in the village areas are illustrated by both occupational groups. The percentage of those objecting to the existence of tourists in the village areas increased significantly between both groups (47.0 percent of those with non-tourism-related jobs, and 21.2 percent of those involved in the tourist sector).

Table 9.9: Relationship between Occupation and Feeling in Different Areas

Location	**Public Areas**			**Snorkelling Areas**			**Village Areas**		
Sector	**Like**	**Don't Mind**	**Don't Like**	**Like**	**Don't Mind**	**Don't Like**	**Like**	**Don't Mind**	**Don't Like**
Tourism-unrelated	102 (76.1)	23 (17.2)	9 (6.7)	93 (69.4)	27 (20.1)	14 (10.4)	61 (45.5)	10 (7.5)	63 (47.0)
Tourism-related	46 (69.7)	15 (22.7)	5 (7.6)	50 (75.8)	12 (18.2)	4 (6.1)	36 (54.5)	16 (24.2)	14 (21.2)
χ^2 -Test	χ^2 (2) = 1.013, p = 0.602			χ^2(2) = 1.283, p = 0.526			χ^2(2) = 17.967, p = 0.000		

* ( ) percentage within rows of each location

These findings signify an important message about the local community. Obviously there are some limitations in the inhabitants' willingness to accept the presence of tourists. Even though community members liked the idea of the tourists' presence at designated and public areas, the degrees of objection increased in relation to tourists' encroachments into village areas.

To further understand the different levels of feeling toward the existence of tourists, the test continued with an Independent-Sample t-test on the related subgroups. This was a similar test for understanding differences in mean values for the two groups as conducted in Chapters 7 and 8. For interpretation purposes, the degree of feeling was coded as "-1 = don't like", "0 = don't mind" and "+1 = like". A positive mean value for an item indicated a positive feeling, while a negative mean value of an item indicated a negative feeling towards the existence of tourists in a specific location by the different subgroups analysed in this study.

Table 9.10 displays the complete results of the Independent-Samples t-test, comparing the average responses of males and females concerning community members' feelings about the existence of tourists in three different locations. It is revealed that there were significant differences in the mean scores on two of the three locations between males and females. Differences occurred in the feeling about tourists 'in snorkelling areas' and 'in village areas'. For the first item (tourists in snorkelling areas), the mean of the female group was significantly higher (*m = 0.73, s.d = 0.49*) than the mean of the male group (*m = 0.51, s.d = 0.78*). Since the means of both groups were positive, they signified that both groups 'liked' the presence of tourists in snorkelling areas. However, when compared to male respondents, female respondents were more likely to approve of the idea of visitors being in snorkelling areas.

Table 9.10: Mean Comparison and t-value for Community Members' Feelings about Tourists Present in Different Locations and Gender

Items	Mean (sd)			t-value (df)
	Male	**Female**	**Overall**	
Tourists in public areas	0.5934 (0.69886)	0.7339 (0.50263)	0.6700 (0.60242)	-1.603 (159.698)
Tourists in snorkelling areas	0.5055 (0.77994)	0.7248 (0.48822)	0.6250 (0.64534)	-2.328* (145.537)
Tourists in village areas	0.2967 (0.86274)	-0.0642 (0.95525)	0.1000 (0.92969)	2.805* (196.753)

* = significant at 5%

Meanwhile, for the second item (tourists in village areas), the mean of the female group was significantly lower (*m = -0.064, s.d = 0.96*) than the mean of the male group (*m = 0.30, s.d = 0.86*). Apart from this, the mean value for females also carried a negative sign. This showed that of the two groups, female respondents were more likely than the male group to object to

the idea of visitors being in the village. This phenomenon could be explained by the fact that women on the islands are less exposed to the tourism industry and to tourists themselves. Many of the jobs related to tourism were occupied by men. Furthermore, women who were exposed to visitors were mainly ones working in the accommodation sector, and it is important to note that this number is quite low.

Apart from the explanation given above, two more factors played an important role in determining the perceptions of women towards visitors in their village. The two factors were culture and moral values. Based on the general comments made by these respondents, many believed that tourists, particularly Westerners, would bring with them some negative impacts. Such impacts described by them included improper dress codes, alcoholism and relationships that were not permissible by the Islamic faith.

Meanwhile, Table 9.11 statistically compares the differences in means amongst the different age groups and feelings about the existence of tourists in the different locations. The results show that there was a significant difference in the mean score on one of the three items between the two groups. The difference occurred in feelings about tourists 'in village areas'. The mean for older respondents was significantly lower (*m = -0.19, s.d = 0.95*) than the mean for younger respondents (*m = 0.25, s.d = 0.89*). Apart from this, the mean score for old respondents carried a negative sign. This result shows that the older generation was not so happy about the presence of tourists, especially in the village areas, as compared to the younger respondents who tended to have positive feelings about it.

Table 9.11: Mean Comparison and t-value for Community Members' Feelings about Tourists Present in Different Locations and Age Groups

Items	Mean (sd)			t-value (df)
	Young	Old	Overall	
Tourists in public areas	0.6742 (0.57288)	0.6618 (0.66040)	0.6700 (0.60242)	0.138 (198.0)
Tourists in snorkelling areas	0.6742 (0.58605)	0.5294 (0.74254)	0.6250 (0.64534)	1.399 (111.051)
Tourists in village areas	0.2500 (0.88564)	-0.1912 (0.95037)	0.1000 (0.92969)	3.255* (198.0)

* = significant at 5%

Judging from the results illustrated in Table 9.11, it may be argued that younger respondents were more comfortable and happy than the older generation, in terms of accepting the idea of visitors in village areas. Their resentment is quite understandable. The majority of the older generation were fishermen who believed that the development of MP destroyed their way of living, and somehow 'forced' them to build a new career. Some were able to assimilate into their new career, the tourism industry, fairly easily. However, to some, the change was difficult, since it was quite late to start a new career after all.

The final part of the Independent Sample t-test is illustrated in Table 9.12, which statistically compares the differences in means amongst the different job groups and feelings about the existence of tourists in different locations. It appears that the mean scores of the feelings regarding the existence of tourists in village areas are statistically different between the two groups. The mean score for the non-tourism-related group is significantly lower (*m = -0.0149, s.d = 0.97*) than the mean score for tourism-related group (*m = 0.33, s.d = 0.81*). Furthermore, the mean score for the non-tourism-related group also carries a negative sign. This result shows that those involved in tourism related jobs had positive feelings about the existence of tourists in village areas. In contrast, those not involved in the industry tended to have more negative feelings about the tourists' presence in village areas.

Table 9.12: Mean Comparison and t-value for Community Members' Feelings about Tourists Present in Different Locations and Occupation

Items	Mean (sd)			t-value (df)
	Tourism-unrelated	Tourism-related	Overall	
Tourists in public areas	0.6940 (0.59101)	0.6212 (0.62672)	0.6700 (0.60242)	0.803 (198.0)
Tourists in snorkelling areas	0.5896 (0.67404)	0.6970 (0.58097)	0.6250 (0.64534)	-1.165 (147.971)
Tourists in village areas	-0.0149 (0.96546)	0.3333 (0.81019)	0.1000 (0.92969)	-2.679* (151.500)

* = significant at 5%

It may be reckoned that respondents working in tourism-related jobs were more comfortable and happy with accepting the idea of visitors in village areas, as compared to those not involved in tourism-related jobs. This may be due to the fact that they were the group of people who were in continuous and direct contact with visitors. Furthermore, the fact that

they were dependent on tourism as a source of income could have made them feel that visitors and tourism were purely commercial matters.

In short, it may be concluded that the members of the community as a whole did accept the presence of tourists and tourism activities in their daily lives. However, some barriers still existed. Some of the barriers were caused by external factors, such as economic ones. Others were developed internally through their moral, cultural, and religious beliefs. Nevertheless, it is important to note that certain groups, such as the younger generation, took such barriers lightly, but others considered those barriers seriously as portrayed in the analysis.

9.6 Attitudes towards the MP

After considering the impacts of the tourism industry and general feelings about the presence of tourists, respondents demonstrated mixed feelings regarding their statements in the attitude instrument. Table 9.13 illustrates the mean scores for all five positive items in the instrument. The mean scores ranged from 2.99 for 'participation in development' to 4.21 for 'generally happy with development', indicating that they had a degree of agreement on those statements. By looking at the mid-point of each Likert response scale to indicate the categories of the mean score, it may be concluded that the respondents' mean scores for four out of six items fall in the "agree" category while the other two fall in the "undecided" category.

Table 9.13: Positive Statements in the Attitude Instrument

Positive Statements*	Mean	Std. Dev.
1. Tourism enlightens the Marine Park situation	4.07	0.76684
2. Tourism creates jobs for local people	4.04	0.89318
3. Our opinions were asked during the development of the MP as a tourist attraction	3.36	0.93453
4. I am happy when tourists visit the MP	4.13	0.64922
5. We were given the chance to participate in the development of the MP into a tourist attraction	2.99	0.99989
6. Generally I am happy with the development of the tourism industry in the MP	4.21	0.74549

*"Likert" response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree

Respondents tended to agree with the statement that tourism enlightened the MP situation. They also agreed that they benefited economically, due to the fact that tourism was able to create jobs for the local community. The respondents were also aware of the fact that their surroundings had become a tourist destination, and they agreed to accept the incoming tourists. Finally, they tended to agree with the fact that they were happy with the development of the tourism industry in the MP. Although some of the respondents were still supportive of the idea, it is also interesting to note that respondents were rather undecided regarding statements on the planning and development of the MP. There is also no strong indicator about the statement regarding their participation during the development process of the MP.

Meanwhile, Table 9.14 illustrates the mean scores for each of the negative items in the attitude instrument. The mean scores range from 3.21 for 'tourists do not understand local people' to 3.47 for 'tourism destroys natural beauty', indicating that they did not have strong feelings about all three negative statements. Respondents in general were undecided when asked about visitors' understandings of the local community. However, it is important to note that a significant percentage of the local community members had no direct contact with visitors, particularly foreign visitors, and only saw them passing through their village. Having said this, however, it is interesting to highlight that at the same time, the respondents disagreed that 'tourists do not value the natural beauty' of the environment and can destroy the natural beauty of the MP.

Table 9.14: Negative Statements in the Attitude Instrument

Negative Statements**	Mean	Std. Dev.
1. Tourists do not understand local people	3.21	0.83630
2. Tourists do not value the natural beauty in this MP	3.41	0.88595
3. Tourism destroys the natural beauty of this MP	3.47	0.85583

**"Likert" response scale: 1 = Strongly Agree; 2 = Agree; 3 = Undecided; 4 = Disagree; 5 = Strongly Disagree

9.6.1 *Reliability of attitude instrument*

To gauge the reliability of the attitude instrument discussed above, a simple reliability test procedure was conducted, as suggested by Mueller (1986). The outcome of this test indicates that the entire attitude instrument was quite reliable, with the value of Cronbach-alpha equal to 0.7 and able to be further improved to 0.73, if one of the items were to be dropped from the instrument (Table 9.15). The result indicates that the instrument would be able to explain around 70 percent of the variation in respondents' attitudes towards tourism development in RMP. All of the items are positively correlated with the total attitude scores, although one item indicates a weak item-to-total correlation (0.11). However, as the potential improvement in alpha value would be small if this item were to be deleted, all of the 9 items have been retained to compute the attitude scores.

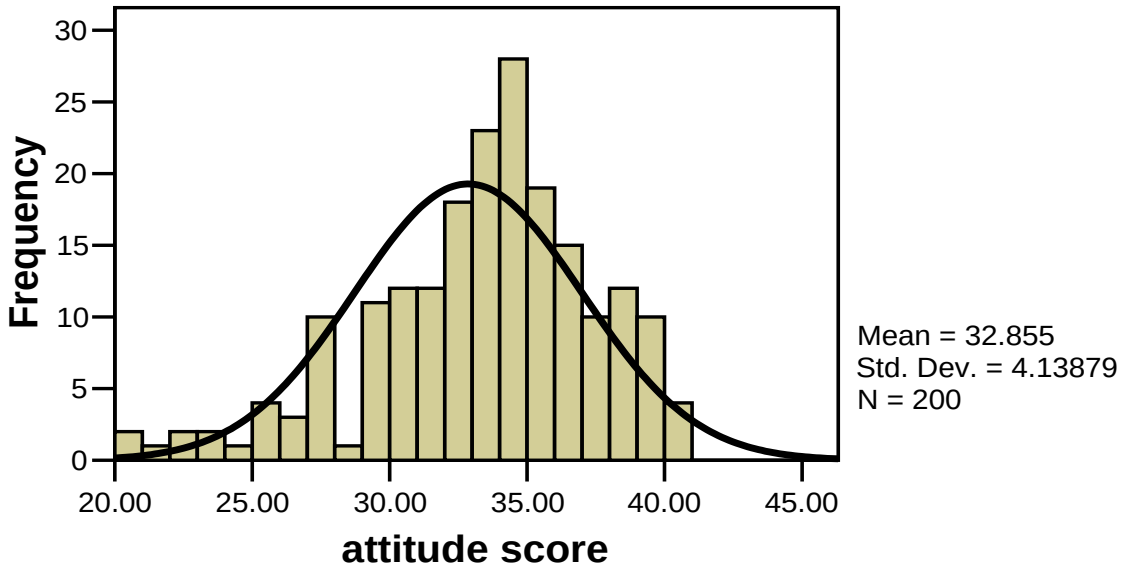
Table 9.15: Reliability Test of Attitude Instrument

Attitude Statements	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Tourists do not understand local people	29.6450	14.833	.248	.700
Tourists do not value the natural beauty of this MP	29.4500	13.927	.366	.678
Tourism destroys the natural beauty of this MP	29.3900	13.455	.469	.657
Tourism enlightens the MP situation	28.7850	13.818	.478	.658
Tourism creates jobs for local people	28.8200	13.505	.431	.664
Opinions were asked during the development of MP as a tourist attraction	29.5000	13.407	.416	.667
I am happy when tourists visit the MP	28.7300	14.379	.473	.663
We were given chance to participate in the development of the MP into a tourist attraction	29.8700	15.269	.110	.735
Generally I am happy with the development of the tourism industry in this MP	28.6500	13.766	.508	.653

9.6.2 *Attitude scores*

Theoretically, attitude scores should range from 9 (1 ×9) to 45 (5 × 9)[2]. In this study, the attitude scores ranged from 20 to 41, with a mean value of 32.86 and a standard deviation of 4.14. Figure 9.2 depicts the distribution of the attitude scores for the total number of respondents. The distribution is almost normal with a slight negative skew (skewness = -0.724), as depicted in Figure 9.2. In order to understand the variables that may have impacted the attitude score, the test of independence and relatedness using Chi-squared Test was used. For the purpose of this testing procedure, the attitude score was divided into three distinct levels. The range for each level was determined by the mean score plus/minus 1 standard deviation. The low attitude score level had mean scores less than 28.72, the medium attitude score level ranged from 28.72 to 37.0 and the high attitude score level had a mean score of more than 37.0.

Figure 9.2: Distribution of Attitude Score of n = 200



The attitude levels were then tested with three variables concerned: gender, age group, and occupation. Chi-square tests of independence revealed two significant results of dependency between attitude levels towards tourism development and gender, and occupation, which will be discussed in detail in the next section. There were no statistically significant dependencies

[2] 9 (1 ×9) to 45 (5 × 9): 1 is the minimum score for each item; 9 refers to the number of items tested and 5 is the maximum score for each item in the instrument.

found between attitude levels with age group (χ^2 (2) = 3.150, p > 0.05). This indicates that attitude levels appear to be independent from age group.

9.6.3 *Attitude and gender*

In general, the majority of the community (68.9%) belonged to the medium attitude class, irrespective of gender. However, within the attitude scores, about 65 percent of males belonged to the low attitude group, as compared to 35 percent of females. The same scenario may be seen in the high attitude group. The main contrast was in the medium attitude group, where 64 percent were females as compared to 36 percent of males. Gender does make a difference in the patterns of attitude scores (Table 9.16). A Chi-square test of independence was calculated comparing the frequency of attitude class for men and women. A significant interaction was found (χ^2 (2) = 14.22, p < 0.05) between the two variables.

Table 9.16: Attitude and Gender

		Gender		Total
Attitude Group		Male	Female	
Low Attitude Score	Count	24	13	37
	% within attitude group	64.9%	35.1%	100.0%
	% of Total	12.0%	6.5%	18.5%
Medium Attitude Score	Count	50	87	137
	% within attitude group	36.5%	63.5%	100.0%
	% of Total	25.0%	43.5%	68.5%
High Attitude Score	Count	17	9	26
	% within attitude group	65.4%	34.6%	100.0%
	% of Total	8.5%	4.5%	13.0%
Total	Count	91	109	200
	% within attitude group	45.5%	54.5%	100.0%
	% of Total	45.5%	54.5%	100.0%

9.6.4 *Attitude and occupation*

A significant pattern between attitude levels and occupation was found amongst the respondents. Based on the evidence, we found a significant dependency between these attributes (χ^2 (2) = 6.066, p < 0.05). Table 9.17 illustrates that 60 percent of the low attitude group were among those not involved in the tourism industry, as compared to 40 percent who

were involved. Meanwhile, the high attitude group consisted of an equal proportion of those from both groups.

Table 9.17: Attitude and Occupation

Attitude Group		Occupation		Total
		Tourism-unrelated	Tourism-related	
Low Attitude Score	Count	22	15	37
	% within attitude group	59.5%	40.5%	100.0%
	% of Total	11.0%	7.5%	18.5%
Medium Attitude Score	Count	99	38	137
	% within attitude group	72.3%	27.7%	100.0%
	% of Total	49.5%	19.0%	68.5%
High Attitude Score	Count	13	13	26
	% within attitude group	50.0%	50.0%	100.0%
	% of Total	6.5%	6.5%	13.0%
Total	Count	134	66	200
	% within attitude group	67.0%	33.0%	100.0%
	% of Total	67.0%	33.0%	100.0%

9.7 Conclusions

The findings of this analysis have revealed some interesting facts about the local community. In general, the community liked the idea of their island being developed as a marine park. Many of them, particularly the younger generation, said that the development had generated job opportunities through tourism activities. Unfortunately, many also realized that tourism had introduced some negative impacts. When further analyses were done, results revealed that the community members did not like the idea of tourists entering their village. Objections to these visits were mainly based on social and religious grounds. However, they had no objections toward tourists in public or designated areas. Finally, the attitude measurements were able to confirm the significant relationship between attitudes and the MP development. This is crucial in order to understand the future path of tourism development in RMP.

ISLAND TOURISM SURVEY MALAYSIA

(photo; http://agrolink.moa.my/dof/tlaut/red_int.html)

Greetings and welcome to Marine Park of Malaysia. My name is Shamsul Bahrain Rawi. I am a researcher at University of Newcastle upon Tyne, United Kingdom and a staff member at the Universiti Utara Malaysia. Currently I am conducting a survey regarding island tourism in Malaysia. Your opinion is important and will contribute greatly towards management, conservation and preservation of the environment, specifically at the Redang Marine Park (RMP). Please answer all questions by circling or by checking the appropriate parts that applicable to you. All information is strictly treated as confidential. Should you have any question and doubt, please do not hesitate to contact me at my addresses below:

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Thank you in advance for your willingness and cooperation.

PART A: BACKGROUND INFORMATION

Please answer all questions by checking ✓ the appropriate box/boxes, by circling the appropriate numbers or by filling up any blank spaces that are applicable to you.

1(a) State of origin: _____ 1 (b) Hometown: _____

2. Number of people travelling together: Adult: _____ Children: _____

3. What is the main purpose of your visit to Redang Marine Park?

☐	Vacation/Recreation	☐	Educational Visit
☐	Work/Business Trip	☐	Others: Please specify: _____

4. How many times have you visited Redang Marine Park in the last 5 years?

1		2		3		4		If more, please state: _____

If FIRST VISIT, please SKIP No.5, 6, 7 and GO TO No.8.

5. How long ago was your last visit to Redang Marine Park?

☐	0 to 6 months	☐	2 to 3 years
☐	7 to 12 months	☐	3 to 4 years
☐	1 to 2 years	☐	5 years or more

6. What makes you re-visit Redang Marine Park?

- ☐ Environmental and natural beauty of the islands
- ☐ Accommodation facilities that are provided
- ☐ Economical and value for money
- ☐ Other reasons (Please state): _____

7. Did you notice any differences in the following attributes compared to your previous visit? **Please ✓ all that applies.**

	Great Improvement	Slight Improvement	Unchanged	Deteriorated	Badly Deteriorated
Coral Reef					
Fish varieties/species					
Water quality/visibility					
Beach/snorkelling congestion					
Hotel and facilities					
Ferry Services					

8. Which island(s) in the Redang Marine Park have you visited? **Please ✓ all that applies.**

☐	Redang Island	☐	Perhentian Island
☐	Pinang Island	☐	Susu Dara Island
☐	Lima Island	☐	Kapas Island
☐	Ekor Tebu Island	☐	Tenggol Island
☐	Lang Tengah Island	☐	Other (Please specify): _____

9. What are the 3 important activities that you enjoy the most while at Redang Marine Park? **Please ✓ 3 most enjoyable activities.**

☐	Snorkelling	☐	Fish feeding, viewing
☐	Swimming	☐	Relaxing
☐	Scuba Diving	☐	Turtle Volunteer Camp
☐	Camping	☐	Other (Please state): _____

10. How would you rate the following attributes at Redang Marine Park?
(Please ✓ the appropriate boxes)

	Excellent	Good	Average	Poor	Not applicable
Coral reef					
Fish varieties/species					
Turtle sighting					
Water quality/visibility					
Beach/snorkelling crowd					
Beach cleanliness					
Beach accessibility					
Scuba diving sites					
Diving site congestion					
Hotel and accommodation					
Hotel facilities					
Restaurant services					
Ferry services					
Ferry safety					

11. How did you come to know about Redang Marine Park? **(Please ✓ all that applies)**

☐	Advertisement	☐	Just passing
☐	Previous visit	☐	By recommendation

12. Which of the following advertising had you seen about Redang Marine Park prior to your visit? **(Please ✓ all that applies)**

☐	Fisheries Department Website	☐	TV Advertisement
☐	Tour Operators Website	☐	Newspaper/magazine Advertisement
☐	Tourist Information Centre	☐	Holiday Guide Advertisement
☐	Redang Marine Park Leaflet	☐	Other (Please specify):_____

13. Will you re-visit Redang Marine Park in the future?

☐	Yes	☐	No

14. Do you have any suggestion on how to improve the environmental quality of Redang Marine Park? _____
_____

15. What are the 3 **WORDS** that you can best describe Redang Marine Park specifically as a destination choice?

1	_____
2	_____
3	_____

PART B: TRAVEL INFORMATION

Please answer all questions by checking ☐ the appropriate box/boxes, by circling the appropriate numbers or by filling up any blank spaces that are applicable to you.

1. From where do you start your journey? _____
   (Please write the SPECIFIC starting point e.g.: Kuala Lumpur)

2. How do you travel from your starting point to the jetty? _____
   (Please indicate the SPECIFIC mode of transportation e.g.: by bus or driving)

3. How far is your journey to jetty? _____Km. 4. How long does it take? _____Hours.

5. Where did you take the boat to Redang Marine Park?

☐	Kuala Besut	☐	Marang
☐	Merang	☐	Kuala Terengganu
☐	Tok Bali	☐	Other (Please state):_____

6. How long is the boat ride?

☐	30 minutes	☐	1 hour to 1 1/2 hours
☐	30 to 45 minutes	☐	1 1/2 hours to 2 hours
☐	45 minutes to 1 hours	☐	More than 2 hours

7. Where do you stay while in the Redang Marine Park?
   (You are welcome to provide the specific name of the resort: _____)

☐	4-stars hotel	☐	Budget accommodation
☐	3-stars hotel	☐	Camping site
☐	Chalet	☐	Others (please state):_____

8. How long do you stay or intend to stay at Redang Marine Park? _____ Days.

9. Do you use package tour for your trip to Redang? ☐ Yes ☐ No
   (If Yes, please answer No. 10, 11 and 12. If No, please proceed to No. 12)

10. How much do you pay for your package? RM _____

11. Does the package include:

	Yes	No		Yes	No
Land transfer to jetty			Snorkelling Equipment Rental		
Ferry fare			Diving Equipment Rental		
Accommodation			Site specific snorkelling trip		
Food			Site specific diving trip		
Others:_____			Others:_____		

12. How much money do you spent for your journey on the items below:
    (Please provide an estimated amount for relevant items only.)

	RM		**RM**
Petrol		Accommodation	
Bus Fare		Food	
Taxi Fare		Snorkelling Equipment Rental	
Boat Fare		Diving Equipment Rental	
Air Fare		Souvenirs	
Others: _____		Miscellaneous	
TOTAL		**TOTAL**	

PART C: DESTINATION CHOICE

Below are some general characteristic regarding accommodations and facilities at some of the islands in Redang Marine Park. From the general information, you will be given some tables that may contain different combination of attributes. Please go though the combination. Think for a while and **RANK** them according to your preferences. Please write **"1" for the "MOST PREFERRED" and "4" for the "LEAST PREFERRED" islands** as a destination choice with the combination of facilities provided. You will be asked to repeat the ranking process for several times. Later you will be asked the closest reason that influences you in making your decision. The first one was done for you as an example.

ATTRIBUTE	RANGE OF AVAILABLE ATTRIBUTES
Accommodation type	From Budget chalet to a 4-star/hotel
Hotel facilities	From basic Restaurant to combinations of Entertainment and Sport Snorkelling and Scuba diving
Proximity to beach	From directly situated on the beach to 10 minutes of walking distance to the beach
Accessibility (Boat ride)	From 20 minutes to 120 minutes
Standard Packages Price Average price base on 3 Days/2 Nights per person	From RM300 to RM800

Example:

Destination Condition				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	3 stars	Budget type	Budget type
Hotel facilities	Restaurant and Entertainment	Restaurant, Entertainment and Sport, Snorkelling and Scuba diving	Restaurant and Entertainment	Restaurant and Entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	60 minutes
Package price	RM500	RM400	RM400	RM700
RANK	3	1	2	4

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of this statements best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.

1	I consider the value for money package	✓
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Others reason (Please specify): _____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE ''1'' IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	Budget type	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	60 minutes
Package price	RM800	RM400	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	3 stars	3 stars	Budget type
Hotel facilities	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	10 minutes walk	On beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	45 minutes
Package price	RM800	RM600	RM400	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel facilities	Restaurant	Restaurant	Restaurant	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	45 minutes
Package price	RM300	RM300	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	45 minutes
Package price	RM400	RM300	RM300	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☑ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify):_____	

PART D: ENVIRONMENTAL CONCERNS

Below are some general conditions regarding environmental quality and conservation fee at the Redang Marine Park. From the general information, you will be given some tables that may contain different combination of attributes. Please go though the combination. Think for a while and **RANK** them according to your preferences. Please write **"1" for the "MOST PREFERRED" and "4" for the "LEAST PREFERRED" islands** to visit if the destinations possess such environmental condition. You will be asked to repeat the ranking process for several times. Later you will be asked the closest reason that influences you in making your decision. The first one was done for you as an example.

ATTRIBUTES	LEVEL
Fish species and coral species	Currently recorded 209 fish and 149 coral species Increase with sustainable management practices Decrease with further development
Green turtle nesting	Current average of 2,945 nesting per year Increase with more conservation practices Decrease as further habitat destroyed
Beach and snorkelling congestion	Current stage Congested with increase in demand Very congested with excessive demand
Conservation fee	Currently RM5.00 Suggested to increase to RM10.00 or RM15.00

Example:

ENVIRONMENTAL SITUATION				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Decrease	Increase	Decrease
Green turtle nesting	Current average of 2945 nest/yr	Decrease	Decrease	Current
Beach & snorkelling congestion	Current stage	Current stage	Congested	Congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM10.00
RANK	1	2	3	4

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.

1	I enjoy viewing the fish and coral species	
2	Turtle sighting is very important to me	
3	Beach and snorkelling congestion	
4	Conservation fees	✓
5	Other reason (please specify): _____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF THE ENVIRONMENTAL ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE ''1'' AS THE "MOST PREFERRED" DESTINATION AND "4" FOR THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

ENVIRONMENTAL SITUATION 1				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Increase	Increase	Current stage
Green turtle nesting	Current average of 2,945 nesting per year	Current stage	Increase	Decrease
Beach & snorkelling congestion	Current stage	Very congested	Current stage	Very congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM15.00
RANK				

ENVIRONMENTAL SITUATION 2				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Current stage	Current stage	Decrease
Green turtle nesting	Current average of 2,945 nesting per year	Increase	Current stage	Increase
Beach & snorkelling congestion	Current stage	Congested	Current stage	Very congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM15.00
RANK				

ENVIRONMENTAL SITUATION 3				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish species and coral species	Currently 209 fish and 149 coral species	Decrease	Increase	Decrease
Green turtle nesting	Current average of 2,945 nest/yr	Decrease	Decrease	Current stage
Beach and snorkelling congestion	Current stage	Current stage	Congested	Congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM10.00
RANK				

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.

1	I enjoy viewing the fish and coral species	
2	Turtle sighting is very important to me	
3	Beach and snorkelling congestion	
4	Conservation fees	
5	Other reason (please specify):_____	

PART E: GENERAL OPINION TOWARD NATURE AND CONSERVANTION

Below are statements about general opinion toward nature and conversation. Please answer whether you **Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree or Don't Know** to every statement. Please **CIRCLE ONLY ONE** answer for each statement.

1. The beach cleanliness at Redang Marine Park (RMP) is satisfactory

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

2. The quality of coral and fish varieties at RMP is excellent

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

3. The Fisheries Department try to look after the marine environment

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

4. Hotel industry at RMP is more concerned about profit than the environment

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

5. The Marine Park Ranger is doing a good job at RMP

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

6. I would rather visit other marine park if the entry fee were increased

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

7. Fast development to cater tourism activity deteriorate the environment quality at RMP

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

8. Preserving natural park is the government's responsibility, not the visitors'

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

9. I like to visit nature preserves like RMP

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

PART F: CLASSIFICATION INFORMATION

Please answer all questions by checking ✓ the appropriate box/boxes, by circling the appropriate numbers or by any blank spaces that are applicable to you.

1. Gender: Male ☐ Female ☐

2. Marital Status: Single ☐ Married ☐ Widowed ☐

3. Age **(please circle one box only)**

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	363	37	3	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
63	64	65	66	67	68	69	70	71	72	73	74	75	76	77

If MORE THAN 77 years please specify:_____ years old

4. Level of education

☐	Primary education	☐	University graduate degree
☐	Secondary education	☐	University post-graduate degree
☐	Politechnique/college diploma	☐	Other (please specify):_____

5. Occupation **(please WRITE 1 for YOUSELF and 2 for your SPOUSE/PARTNER)**

Private sector	☐	☐	Housewife	☐	☐
Government sector	☐	☐	Student	☐	☐
Self employed	☐	☐	Unemployed	☐	☐
Retired	☐	☐	Other (please specify):_____	☐	☐

6. Personal monthly income in RM
please circle one of the approximate income earn grid below

500	600	700	800	900	1000	1100	1200	1300	1400	1500
1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600
2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700
3800	3900	4000	4100	4200	4300	4400	4500	4600	4700	4800
4900	5000	5100	5200	5300	5400	5500	5600	5700	5800	5900

IF MORE THAN 5,900/month, please write your approximate income: _____

7. Monthly income if spouse/partner is working
please circle one of the income earn grid below

500	600	700	800	900	1000	1100	1200	1300	1400	1500
1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600
2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700
3800	3900	4000	4100	4200	4300	4400	4500	4600	4700	4800
4900	5000	5100	5200	5300	5400	5500	5600	5700	5800	5900

IF MORE THAN 5,900/month, please write your approximate income: _____

8. Are you a member of any nature conversation group?
☐ Yes (please specify): _____ ☐ No

9. How frequent do you watch documentaries or read magazines to find out and learn more about nature and environmental in a month period?
Frequently ☐ Sometimes ☐ Seldom ☐ Never ☐

10. What do you think of this questionnaire? **(please circle either yes or no)**

Interesting	Yes	No	Difficult to understand	Yes	No
Educational	Yes	No	Unrealistic	Yes	No
Too long	Yes	No	Other (please specify):_____	Yes	No

THANK YOU FOR YOUR TIME & COOPERATION-HAVE A NICE VACATION

ISLAND TOURISM SURVEY MALAYSIA

(photo; http://agrolink.moa.my/dof/tlaut/red_int.html)

Greetings and welcome to Marine Park of Malaysia. My name is Shamsul Bahrain Rawi. I am a researcher at University of Newcastle upon Tyne, United Kingdom and a staff member at the Universiti Utara Malaysia. Currently I am conducting a survey regarding island tourism in Malaysia. Your opinion is important and will contribute greatly towards management, conservation and preservation of the environment, specifically at the Redang Marine Park (RMP). Please answer all questions by circling or by checking the appropriate parts that applicable to you. All information is strictly treated as confidential. Should you have any question and doubt, please do not hesitate to contact me at my addresses below:

SCHOOL OF ARCHITECTURE,
PLANNING AND LANDSCAPE
UNIVERSITY OF NEWCASTLE
NEWCASTLE UPON TYNE
UNITED KINGDOM
s.b.rawi@ncl.ac.uk.
Phone: +44-0191-222-7800

SCHOOL OF ECONOMICS
UNIVERSITI UTARA MALAYSIA
06010 SINTOK
KEDAH DARUL AMAN
MALAYSIA
shamsul@uum.edu.my
Phone: +604-700-3526

Thank you in advance for your willingness and cooperation.

PART A: BACKGROUND INFORMATION

Please answer all questions by checking ✓ the appropriate box/boxes, by circling the appropriate numbers or by filling up any blank spaces that are applicable to you.

1. Country of origin: _____

2. Number of people travelling together: Adult: _____ Children: _____

3. What is the main purpose of your visit to Redang Marine Park?

☐	Vacation/Recreation	☐	Educational Visit
☐	Work/Business Trip	☐	Others: Please specify: _____

4. How many times have you visited Redang Marine Park in the last 5 years?

1		2		3		4		If more, please state: _____

If FIRST VISIT, please SKIP No.5, 6, 7 and GO TO No.8.

5. How long ago was your last visit to Redang Marine Park?

☐	0 to 6 months	☐	2 to 3 years
☐	7 to 12 months	☐	3 to 4 years
☐	1 to 2 years	☐	5 years or more

6. What makes you re-visit Redang Marine Park?

- ☐ Environmental and natural beauty of the islands
- ☐ Accommodation facilities that are provided
- ☐ Economical and value for money
- ☐ Other reasons (Please state): _____

7. Did you notice any differences in the following attributes compared to your previous visit? **Please ✓ all that applies.**

	Great Improvement	Slight Improvement	Unchanged	Deteriorated	Badly Deteriorated
Coral Reef					
Fish varieties/species					
Water quality/visibility					
Beach/snorkelling congestion					
Hotel and facilities					
Ferry Services					

8. Which island(s) in the Redang Marine Park have you visited? **Please ✓ all that applies.**

☐	Redang Island	☐	Perhentian Island
☐	Pinang Island	☐	Susu Dara Island
☐	Lima Island	☐	Kapas Island
☐	Ekor Tebu Island	☐	Tenggol Island
☐	Lang Tengah Island	☐	Other (Please specify): _____

9. What are the 3 important activities that you enjoy the most while at Redang Marine Park? **Please ✓ 3 most enjoyable activities.**

☐	Snorkelling	☐	Fish feeding, viewing
☐	Swimming	☐	Relaxing
☐	Scuba Diving	☐	Turtle Volunteer Camp
☐	Camping	☐	Other (Please state): _____

10. How would you rate the following attributes at Redang Marine Park?
(Please ✓ the appropriate boxes)

	Excellent	Good	Average	Poor	Not applicable
Coral reef					
Fish varieties/species					
Turtle sighting					
Water quality/visibility					
Beach/snorkelling crowd					
Beach cleanliness					
Beach accessibility					
Scuba diving sites					
Diving site congestion					
Hotel and accommodation					
Hotel facilities					
Restaurant services					
Ferry services					
Ferry safety					

11. How did you come to know about Redang Marine Park? **(Please ✓ all that applies)**

☐	Advertisement	☐	Just passing
☐	Previous visit	☐	By recommendation

12. Which of the following advertising had you seen about Redang Marine Park prior to your visit? **(Please ✓ all that applies)**

☐	Fisheries Department Website	☐	TV Advertisement
☐	Tour Operators Website	☐	Newspaper/magazine Advertisement
☐	Tourist Information Centre	☐	Holiday Guide Advertisement
☐	Redang Marine Park Leaflet	☐	Other (Please specify):_____

13. Do you have any suggestion on how to improve the environmental quality of Redang Marine Park? _____
_____

14. What are the 3 **WORDS** that you can best describe Redang Marine Park specifically as a destination choice?

1	_____
2	_____
3	_____

PART B: TRAVEL INFORMATION

Please answer all questions by checking ✓ the appropriate box/boxes, by circling the appropriate numbers or by filling up any blank spaces that are applicable to you.

1. Where did you take the boat to Redang Marine Park?

☐	Kuala Besut	☐	Marang
☐	Merang	☐	Kuala Terengganu
☐	Tok Bali	☐	Other (please state): _____

2. How long is the boat ride?

☐	30 minutes	☐	1 hour to 1 1/2 hours
☐	30 to 45 minutes	☐	1 1/2 hours to 2 hours
☐	45 minutes to 1 hours	☐	More than 2 hours

3. Where do you stay while in the Redang Marine Park? _____

☐	4-stars hotel	☐	Budget accommodation
☐	3-stars hotel	☐	Camping site
☐	Chalet	☐	Others (please state):_____

4. How long do you stay or intend to stay at Redang Marine Park? _____ Days.

5. Do you use package tour for your trip to Redang?

☐ Yes **(If Yes, please ANSWER No.6 and 7)**

☐ No **(If No, please SKIP No.6, 7 and proceed to No.8)**

6. How much do you pay for your package?

RM	**OR**	**Other currency Please state:_____**

7. Does the package include :

	Yes	No
Land transfer to jetty		
Ferry fare		
Accommodation		
Food		
Snorkelling Equipment Rental		
Diving Equipment rental		
Site specific snorkelling trip		
Site specific diving trip		
Other (please indicate): _____		

8. Do you have the specific intention to visit Redang Marine Park?

☐ Yes ☐ No

9. If yes, how long does it take you to plan your trip to Redang Marine Park prior to your departure?

☐	Less than a month	☐	3 to 4 month
☐	1 to 2 month	☐	4 to 5 month
☐	2 to 3 month	☐	More than 6 month

10. Will you re-visit Redang Marine Park in the future?

☐ Yes ☐ No

PART C: DESTINATION CHOICE

Below are some general characteristic regarding accommodations and facilities at some of the islands in Redang Marine Park. From the general information, you will be given some tables that may contain different combination of attributes. Please go though the combination. Think for a while and **RANK** them according to your preferences. Please write **"1" for the "MOST PREFERRED" and "4" for the "LEAST PREFERRED" islands** as a destination choice with the combination of facilities provided. You will be asked to repeat the ranking process for several times. Later you will be asked the closest reason that influences you in making your decision. The first one was done for you as an example.

ATTRIBUTE	**RANGE OF AVAILABLE ATTRIBUTES**
Accommodation type	From Budget chalet to a 4-star/hotel
Hotel facilities	From basic Restaurant to combinations of Entertainment and Sport Snorkelling and Scuba diving
Proximity to beach	From directly situated on the beach to 10 minutes of walking distance to the beach
Accessibility (Boat ride)	From 20 minutes to 120 minutes
Standard Packages Price Average price base on 3 Days/2 Nights per person	From RM300 to RM800 **Note: RM is Ringgit Malaysia £1=RM6.20 US$1=RM3.80**

Example:

Destination Condition				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	3 stars	Budget type	Budget type
Hotel facilities	Restaurant and Entertainment	Restaurant, Entertainment and Sport, Snorkelling and Scuba diving	Restaurant and Entertainment	Restaurant and Entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	60 minutes
Package price	RM500	RM400	RM400	RM700
RANK	3	1	2	4

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of this statements best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.		
1	I consider the value for money package	✓
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Others reason (Please specify): _____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE ''1'' IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	Budget type	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	60 minutes
Package price	RM800	RM400	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	3 stars	3 stars	Budget type
Hotel facilities	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	10 minutes walk	On beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	45 minutes
Package price	RM800	RM600	RM400	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel facilities	Restaurant	Restaurant	Restaurant	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	45 minutes
Package price	RM300	RM300	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	45 minutes
Package price	RM400	RM300	RM300	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☐✓ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify):_____	

PART D: ENVIRONMENTAL CONCERNS

Below are some general conditions regarding environmental quality and conservation fee at the Redang Marine Park. From the general information, you will be given some tables that may contain different combination of attributes. Please go though the combination. Think for a while and **RANK** them according to your preferences. Please write **"1" for the "MOST PREFERRED" and "4" for the "LEAST PREFERRED" islands** to visit if the destinations possess such environmental condition. You will be asked to repeat the ranking process for several times. Later you will be asked the closest reason that influences you in making your decision. The first one was done for you as an example.

ATTRIBUTES	**LEVEL**
Fish species and coral species	Currently recorded 209 fish and 149 coral species Increase with sustainable management practices Decrease with further development
Green turtle nesting	Current average of 2,945 nesting per year Increase with more conservation practices Decrease as further habitat destroyed
Beach and snorkelling congestion	Current stage Congested with increase in demand Very congested with excessive demand
Conservation fee	Currently RM5.00 Suggested to increase to RM10.00 or RM15.00 **Note: RM is Ringgit Malaysia** **£1=RM6.20 US$1=RM3.80**

Example:

ENVIRONMENTAL SITUATION				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Decrease	Increase	Decrease
Green turtle nesting	Current average of 2,945 nest/yr	Decrease	Decrease	Current
Beach & snorkelling congestion	Current stage	Current Stage	Congested	Congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM10.00
RANK	1	2	4	3

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.

1	I enjoy viewing the fish and coral species	
2	Turtle sighting is very important to me	
3	Beach and snorkelling congestion	
4	Conservation fees	✓
5	Other reason (please specify): _____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF THE ENVIRONMENTAL ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE ''1'' AS THE "MOST PREFERRED" DESTINATION AND "4" FOR THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

ENVIRONMENTAL SITUATION 1				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Increase	Increase	Current stage
Green turtle nesting	Current average of 2,945 nesting per year	Current stage	Increase	Decrease
Beach & snorkelling congestion	Current stage	Very congested	Current Stage	Very congested
Conservation fee	RM5.00	RM5.00	RM10.00	RM10.00
RANK				

ENVIRONMENTAL SITUATION 2				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish and coral species	Currently 209 fish and 149 coral species	Current stage	Current stage	Decrease
Green turtle nesting	Current average of 2,945 nesting per year	Increase	Current stage	Increase
Beach & snorkelling congestion	Current stage	Congested	Current stage	Very congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM15.00
RANK				

ENVIRONMENTAL SITUATION 3				
	ISLAND 1	**ISLAND 2**	**ISLAND 3**	**ISLAND 4**
Fish species and coral species	Currently 209 fish and 149 coral species	Decrease	Increase	Decrease
Green turtle nesting	Current average of 2,945 nest/yr	Decrease	Decrease	Current stage
Beach and snorkelling congestion	Current stage	Current stage	Congested	Congested
Conservation fee	RM5.00	RM5.00	RM15.00	RM10.00
RANK				

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.		
1	I enjoy viewing the fish and coral species	
2	Turtle sighting is very important to me	
3	Beach and snorkelling congestion	
4	Conservation fees	
5	Other reason (please specify): _____	

PART E: GENERAL OPINION TOWARD NATURE AND CONSERVANTION

Below are statements about general opinion toward nature and conversation. Please answer whether you **Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree or Don't Know** to every statement. Please **CIRCLE ONLY ONE** answer for each statement.

1. The beach cleanliness at Redang Marine Park (RMP) is satisfactory

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

2. The quality of coral and fish varieties at RMP is excellent

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

3. The Fisheries Department try to look after the marine environment

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

4. Hotel industry at RMP is more concerned about profit than the environment

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

5. The Marine Park Ranger is doing a good job at RMP

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

6. I would rather visit other marine park if the entry fee were increased

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

7. Fast development to cater tourism activity deteriorate the environment quality at RMP

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

8. Preserving natural park is the government's responsibility, not the visitors'

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

9. I like to visit nature preserves like RMP

5. Strongly Agree	4. Agree	3. Neither agree nor Disagree	2. Disagree	1. Strongly Disagree	0. Don't Know

PART F: CLASSIFICATION INFORMATION

Please answer all questions by checking ✓ the appropriate box/boxes, by circling the appropriate numbers or by any blank spaces that are applicable to you.

1. Gender: Male ☐ Female ☐

2. Marital Status: Single ☐ Married ☐ Widowed ☐

3. Age **(please circle one box only)**

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	363	37	3	39	40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
63	64	65	66	67	68	69	70	71	72	73	74	75	76	77

If MORE THAN 77 years please specify:_____ years old

4. Level of education

☐ Primary education
☐ Secondary education
☐ Politechnique/college diploma
☐ University graduate degree
☐ University post-graduate degree
☐ Other (please specify):_____

5. Occupation **(please WRITE 1 for YOUSELF and 2 for your SPOUSE/PARTNER)**

Private sector	☐	☐	Housewife	☐	☐
Government sector	☐	☐	Student	☐	☐
Self employed	☐	☐	Unemployed	☐	☐
Retired	☐	☐	Other (please specify):_____	☐	☐

6. Household Income Grid **(PLEASE STATE THE CURRENCY):** _____

Please circle one of the APPROXIMATE income earn from the grid below.
Note: Annual income = (Monthly income x 12) Monthly income = (Weekly income x 4)

Annually	<5000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000
Monthly	<461	461	500	583	667	750	833	917	1000	1038	1167	1250	1333
Weekly	<96	96	115	135	154	173	192	212	231	250	269	288	308
Annually	17000	18000	19000	20000	21000	22000	23000	24000	25000	26000	27000	28000	29000
Monthly	1417	1500	1583	1667	1750	1833	1917	2000	2083	2167	2250	2333	2417
Weekly	327	346	365	385	404	423	422	462	481	500	517	538	558
Annually	30000	31000	32000	33000	34000	35000	36000	37000	38000	39000	40000	41000	42000
Monthly	2500	2583	2667	2750	2833	2917	3000	3083	3167	3250	3333	3417	3500
Weekly	577	596	617	635	654	673	692	712	731	750	769	788	808
Annually	43000	44000	45000	46000	47000	48000	49000	50000	51000	52000	53000	54000	55000
Monthly	3583	3667	3750	3833	3917	4000	4083	4167	4250	4333	4417	4500	4583
Weekly	827	846	865	885	904	923	942	962	981	1000	1019	1038	1058
Annually	56000	57000	58000	59000	60000	**IF MORE THAN 60,000/annum., please write your approximate income:_____**							
Monthly	4667	4750	4833	4917	5000								
Weekly	1077	1096	1115	1135	1154								

7. Are you a member of any nature conversation group?

☐ Yes (please specify): _____ ☐ No

8. How frequent do you watch documentaries or read magazines to find out and learn more about nature and environmental in a month period?

Frequently ☐ Sometimes ☐ Seldom ☐ Never ☐

9. What do you think of this questionnaire? **(Please circle either Yes or No)**

Interesting	Yes	No	Difficult to understand	Yes	No
Educational	Yes	No	Unrealistic	Yes	No
Too long	Yes	No	Other (please specify):_____	Yes	No

THANK YOU FOR YOUR TIME & COOPERATION-HAVE A NICE VACATION

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE "1" IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	3 stars	3stars	Budget type
Hotel facilities	Restaurant and Entertainment	Restaurant	Restaurant and Entertainment	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	5 minutes walk
Accessibility from the main land (boat ride)	60 minutes	120 minutes	20 minutes	45 minutes
Package price	RM400	RM600	RM400	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel facilities	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	60 minutes	90 minutes	20 minutes	45 minutes
Package price	RM300	RM600	RM300	RM500
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	Budget type	Budget type	3 stars
Hotel facilities	Restaurant, Entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment	Restaurant, Entertainment and sport, snorkelling and scuba diving	Restaurant
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	60 minutes	90 minutes	20 minutes	45 minutes
Package price	RM500	RM600	RM300	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	Budget type	3 stars	3 stars
Hotel facilities	Restaurant and entertainment	Restaurant, entertainment	Restaurant and entertainment	Restaurant
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	45 minutes
Package price	RM400	RM300	RM300	RM500
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statements best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☑ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify):_____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE "1" IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED → **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	3 stars	Budget type	3 stars
Hotel facilities	Restaurant	Restaurant and entertainment	Restaurant	Restaurant
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	5 minutes walk
Accessibility from the main land (boat ride)	45 minutes	120 minutes	30 minutes	60 minutes
Package price	RM600	RM400	RM400	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	Budget type	3 stars	Budget type
Hotel facilities	Restaurant	Restaurant	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	On the beach	On the beach	On the beach	5 minutes walk
Accessibility from the main land (boat ride)	45 minutes	120 minutes	30 minutes	45 minutes
Package price	RM500	RM300	RM300	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	Budget type	Budget type	Budget type
Hotel facilities	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	5 minutes walk
Accessibility from the main land (boat ride)	60 minutes	120 minutes	20 minutes	60 minutes
Package price	RM300	RM400	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	3 stars	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	60 minutes	90 minutes	20 minutes	60 minutes
Package price	RM400	RM400	RM400	RM500
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statements best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☐ ✓ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify):_____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE "1" IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED → **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	3 stars	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	5 minutes walk
Accessibility from the main land (boat ride)	30 minutes	120 minutes	20 minutes	45 minutes
Package price	RM500	RM300	RM400	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	3 stars
Hotel facilities	Restaurant and entertainment	Restaurant and entertainment	Restaurant and Entertainment	Restaurant and entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	5 minutes walk
Accessibility from the main land (boat ride)	60 minutes	120 minutes	20 minutes	45 minutes
Package price	RM800	RM300	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	Budget type	3 stars	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment
Proximity to the beach	10 minutes walk	10 minutes walk	5 minutes walk	5 minutes walk
Accessibility from the main land (boat ride)	30 minutes	120 minutes	20 minutes	60 minutes
Package price	RM300	RM400	RM300	RM400
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	Budget type	Budget type	Budget type
Hotel facilities	Restaurant and entertainment	Restaurant	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	45 minutes
Package price	RM600	RM600	RM300	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statements best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ✓ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify):_____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE "1" IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	3 stars	Budget type	Budget type
Hotel facilities	Restaurant	Restaurant	Restaurant	Restaurant and Entertainment
Proximity to the beach	10 minutes walk	10 minutes walk	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	60 minutes	90 minutes	20 minutes	45 minutes
Package price	RM700	RM300	RM400	RM800
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	10 minutes walk	On the beach	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	45 minutes
Package price	RM400	RM300	RM300	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	3 stars	Budget type	3 stars	Budget type
Hotel facilities	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment	Restaurant
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	60 minutes
Package price	RM700	RM400	RM300	RM800
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	3 stars	Budget type	3 stars
Hotel facilities	Restaurant and entertainment	Restaurant and entertainment	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	45 minutes
Package price	RM300	RM300	RM400	RM500
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☐ ✓ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify): _____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE "1" IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	Budget type
Hotel Facilities	Restaurant and Entertainment	Restaurant	Restaurant and Entertainment	Restaurant and Entertainment
Proximity to the beach	10 minutes walk	10 minutes walk	5 minutes walk	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	30 minutes	45 minutes
Package price	RM500	RM600	RM300	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	Budget type	Budget type	Budget type	3 stars
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	On the beach	On the beach	On the beach	5 minutes walk
Accessibility from the main land (boat ride)	30 minutes	120 minutes	20 minutes	45 minutes
Package price	RM700	RM600	RM300	RM800
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation type	4 stars	Budget type	Budget type	3 stars
Hotel facilities	Restaurant	Restaurant and Entertainment	Restaurant	Restaurant and entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	60 minutes
Package price	RM400	RM400	RM300	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation types	3 stars	Budget types	3 stars	Budget types
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	On the beach
Accessibility from the main land (boat ride)	60 minutes	90 minutes	20 minutes	45 minutes
Package price	RM600	RM300	RM300	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statements best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☐ ✓ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify): _____	

PLEASE RANK THE ISLAND DESTINATION BASE ON THE COMBINATION OF ATTRIBUTES GIVEN ACCORDING TO YOUR PREFERENCE WHERE "1" IS THE "MOST PREFERRED" DESTINATION AND "4" IS THE "LEAST PREFERRED" DESTINATION

RANK: 1 2 3 4

MOST PREFERRED **LEAST PREFERRED**

DESTINATION CONDITION 1				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation types	Budget type	3 stars	Budget type	Budget type
Hotel facilities	Restaurant and Entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and Entertainment	Restaurant and Entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	On the beach
Accessibility from the main land (boat ride)	30 minutes	90 minutes	20 minutes	60 minutes
Package price	RM500	RM400	RM400	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 2				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation types	3 stars	Budget type	3 stars	3 stars
Hotel facilities	Restaurant	Restaurant and entertainment	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving
Proximity to the beach	On the beach	On the beach	On the beach	On the beach
Accessibility from the main land (boat ride)	60 minutes	90 minutes	20 minutes	60 minutes
Package price	RM500	RM400	RM300	RM600
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 3				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation types	4 stars	Budget type	Budget type	Budget type
Hotel facilities	Restaurant	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant	Restaurant and entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	5 minutes walk
Accessibility from the main land (boat ride)	45 minutes	120 minutes	30 minutes	45 minutes
Package price	RM400	RM600	RM300	RM500
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

DESTINATION CONDITION 4				
	REDANG ISLAND	**PERHENTIAN ISLAND**	**KAPAS ISLAND**	**TENGGOL ISLAND**
Accommodation types	3 stars	3 stars	3 stars	Budget types
Hotel facilities	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment	Restaurant, entertainment and sport, snorkelling and scuba diving	Restaurant and entertainment
Proximity to the beach	On the beach	10 minutes walk	On the beach	On the beach
Accessibility from the main land (boat ride)	45 minutes	90 minutes	20 minutes	45 minutes
Package price	RM300	RM600	RM300	RM700
RANK				

Please check (✓) here if you prefer NONE of the above. ☐

Which **ONE** of these statement best explains the reasoning behind the choices you have just made? **PLEASE CHOOSE ONE** by **checking** ☑ in the corresponding box.

1	I consider the value for money package	
2	Accommodation type	
3	Hotel facilities	
4	Distance to beach	
5	Accessibility and ferry trip is very crucial	
6	I choose the island itself	
7	Other reason (please specify): _____	

Appendix D: Local Community Questionnaire

LOCAL COMMUNITY SURVEY REDANG MARINE PARK MALAYSIA

(photo; http://agrolink.moa.my/dof/tlaut/red_int.html)

Greetings and thank you in advance for your willingness to participate in this survey. My name is Shamsul Bahrain Rawi. I am a researcher at University of Newcastle upon Tyne, United Kingdom and a staff member at the Universiti Utara Malaysia. Currently I am conducting a survey regarding Redang Marine park (RMP) and the community participation in tourism industry. Your opinion is important and will contribute greatly towards management, conservation and preservation of the environment, specifically at the RMP. All information is strictly treated as confidential. Should you have any question and doubt, please do not hesitate to contact me at my addresses below:

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MALAYSIA
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Thank you for your willingness and cooperation.

PART A: BACKGROUND INFORMATION

1. Age (years): [1] Below 20 [2] 20 – 30 [3] 31 – 40 [4] 41 – 50 [5] More than 50

2. Gender: [1] Male [2] Female

3. Marital Status: [1] Single [2] Married [3] Widowed

4. Level of education:
   - [1] Primary education
   - [2] Secondary education
   - [3] Politechnique/college diploma
   - [4] University graduate degree
   - [5] University post-graduate degree
   - [6] Other (please specify):_____

5. Occupation:
   - [1] Student
   - [2] Housewife
   - [3] Working in:
     - [3.1] Service Industry
       - [3.1.a] Food Stall
       - [3.1.b] Accommodation
       - [3.1.c] Tour Guide
       - [3.1.d] Souvenir Shop
       - [3.1.e] Transportation/Ferry/Boat
       - [3.1.f] Other (please specify): _____
     - [3.2] Public Sector
     - [3.3] Agriculture/ Fishing Industry
     - [3.4] Other (please specify): _____
   - [4] Retired
   - [5] Unemployed

6. Monthly Household Income in Ringgit Malaysia (RM) :

Please circle one of the approximate income earn in the grid below										
500	600	700	800	900	1000	1100	1200	1300	1400	1500
1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600
2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700
3800	3900	4000	4100	4200	4300	4400	4500	4600	4700	4800
4900	5000	5100	5200	5300	5400	5500	5600	5700	5800	5900

IF MORE THAN 5,900/month, please write your approximate income: _____

PART B: MARINE PARK

1) How do you learn about the importance of environmental quality?

1	From my family
2	From old people in my community
3	From school
4	No one ever explained it to me
5	Other (please specify): _____

_____

2) Do you belief that marine park able to attract the interest of:

Malaysian Tourists	1	Yes
	0	No
International Tourists	1	Yes
	0	No

3) Do you think that government should spend more money for conservation purpose in the marine park?

1	Yes
0	No

PART C: TOURISM

1) What do you think about the number of tourists coming to the marine park:

1	The number of tourists keep on increasing
2	The number of tourists is decreasing
3	There is no change in the number of arrival
4	There is no tourist coming here

2) What is your feeling about:

a)	Tourists in the public area	1	Like	2	Don't like	3	Don't mind
b)	Tourists at the snorkelling area	1	Like	2	Don't like	3	Don't mind
c)	Tourists visiting your village	1	Like	2	Don't like	3	Don't mind

3) Do you think that the increase in the number of tourists coming to the marine park affect your daily life?

1	Yes
0	No

1	Have positive effect (specify): _____
2	Have negative effect (specify): _____
3	Have both positive and negative effects (specify):

_____

4) In general, please describe your feeling about the in coming of tourists to this marine park:_____

_____

_____

_____

PART D: GENERAL STATEMENTS ABOUT MARINE PARK AND TOURISM

Below are general statements about Marine Park and tourism. Please answer whether you **Strongly Agree, Agree, Neither Agree nor Disagree, Disagree or Strongly Disagree** to every statement. Please **CHOOSE ONLY ONE** answer for each statement.

1. Tourism has enlightened the marine park surrounding

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

2. Tourism industry has create job opportunity to the local community

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

3. Our opinion is considered when establishing the marine park as a tourists' destination

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

4. I am happy when tourists visit this marine park

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

5. Tourists do not understand the local values

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

6. We are given the opportunity to be involved in the development of this island

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

7. Tourists do not value the natural beauty of this marine park

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

8. Tourism has destroyed the natural beauty of this marine park

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

9. In general, I am happy with the development of the tourism industry in this marine park

1. Strongly Agree	2. Agree	3. Neither agree nor Disagree	4. Disagree	5. Strongly Disagree

THANK YOU FOR YOUR TIME & COOPERATION-HAVE A NICE DAY

Appendix E: State of Origin (Local Tourists)

State	Frequency	Percentage
Johor	18	9.5
Kedah	4	2.1
Kelantan	17	9.0
Kuala Lumpur	41	21.7
Melaka	15	7.9
N. Sembilan	4	2.1
Pahang	8	4.2
Penang	8	4.2
Perak	9	4.8
Sabah	1	0.5
Selangor	19	10.1
Terengganu	45	23.8
Total	189	100.0

Appendix F: Reliability Test of Attitude Instrument (Local Tourists)

Reliability

Case Processing Summary

		N	%
Cases	Valid	183	96.8
	Excluded (a)	6	3.2
	Total	189	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.694	.743	9

Item Statistics

	Mean	Std. Deviation	N
Beach cleanliness is satisfactory	4.05	.875	183
Quality of coral and fish varieties excellent	3.99	.767	183
Fisheries Department look after MP	3.90	.691	183
Park ranger doing good job	3.68	.678	183
I like to visit nature preserves like RMP	4.43	.568	183
Hotel industry more conerned about profit than environment	2.81	1.343	183
Visit other MP if entry fee were increased	2.97	1.190	183
Tourism development activity deteriorate environmental quality	3.99	.880	183
Preserving natural park government responsibility, not visitors'	3.98	1.174	183

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Beach cleanliness is satisfactory	29.75	16.659	.477	.551	.647
Quality of coral and fish varieties excellent	29.81	16.800	.549	.582	.639
Fisheries Department look after MP	29.91	17.498	.495	.468	.652
Park ranger doing good job	30.13	17.682	.473	.433	.656
I like to visit nature preserves like RMP	29.38	18.534	.405	.258	.670
Hotel industry more concerned about profit than environment	31.00	15.824	.300	.203	.696
Visit other MP if entry fee were increased	30.84	15.958	.364	.263	.672
Tourism development activity deteriorate environmental quality	29.81	17.240	.386	.281	.665
Preserving natural park government responsibility, not visitors'	29.83	17.651	.183	.119	.715

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
33.81	20.837	4.565	9

Appendix G: Country of Origin (Foreign Tourists)

Country	Frequency	Percentage
Singapore	34	36.17
China	12	12.77
Japan	9	9.57
Indonesia	6	6.38
Taiwan	6	6.38
UK	6	6.38
USA	6	6.38
Australia	2	2.13
Denmark	2	2.13
France	2	2.13
Hong Kong	2	2.13
Italy	2	2.13
Netherlands	2	2.13
Spain	1	1.06
Switzerland	1	1.06
UEA	1	1.06
Total	94	100.00

Appendix H: Reliability Test of Attitude Instrument (Foreign Tourists)

Reliability

Case Processing Summary

		N	%
Cases	Valid	94	100.0
	Excluded(a)	0	.0
	Total	94	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.767	.783	9

Item Statistics

	Mean	Std. Deviation	N
Beach cleanliness is satisfactory	4.06	1.025	94
Quality of coral and fish varieties excellent	4.18	.950	94
Fisheries Department look after MP	3.70	.827	94
Park ranger doing good job	3.66	.899	94
I like to visit nature preserves like RMP	4.48	.523	94
Hotel industry more conerned about profit than environment	3.26	1.182	94
Visit other MP if entry fee were increased	3.26	1.163	94
Tourism development activity deteriorate environmental quality	2.34	1.178	94
Preserving natural park government responsibility, not visitors'	3.85	1.218	94

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Beach cleanliness is satisfactory	28.72	22.718	.570	.448	.726
Quality of coral and fish varieties excellent	28.61	24.069	.468	.473	.742
Fisheries Department look after MP	29.09	23.735	.609	.647	.726
Park ranger doing good job	29.13	24.220	.486	.673	.740
I like to visit nature preserves like RMP	28.31	26.796	.417	.316	.756
Hotel industry more conerned about profit than environment	29.53	20.209	.727	.626	.694
Visit other MP if entry fee were increased	29.53	25.026	.254	.250	.778
Tourism development activity deteriorate environmental quality	30.45	25.669	.190	.127	.789
Preserving natural park government responsibility, not visitors'	28.94	22.211	.491	.338	.739

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
32.79	29.331	5.416	9

Appendix I: Entry Tickets / Coupons

Adult TicketRM5.00

Children Ticket RM2.50

Remarks about contribution towards conservation and protection of marine heritage (ticket overleaf)

Appendix J: Photos of RMP

Inside the ferry to RMP

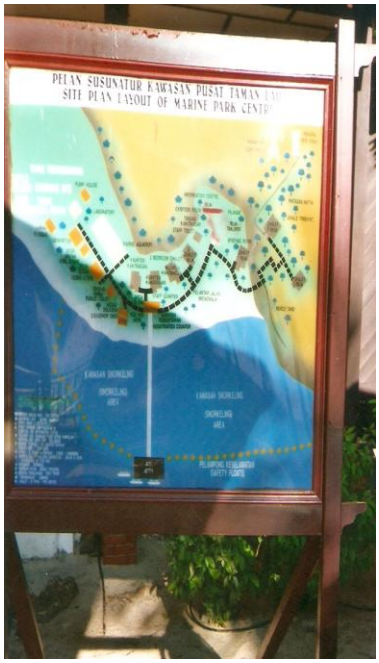
RMPc jetty: View from the ferry

A long walk to RMPc

Welcome sign to RMPc

Activities prohibited in RMP

Distribution of coral around Redang Island



RMPc layout plan

Ticket booth

RMPc administration and information building

Pathway to the camp ground

Pathway to exhibition area

Camping ground

Exhibition area

Information at the exhibition area


Exhibit of turtles marine life skeletons

Temporary turtle pond

Keeping newly hatched turtle in the temporary pond prior to release

Newly arrived tourists being briefed by tourists' guide about do and don't at RMP

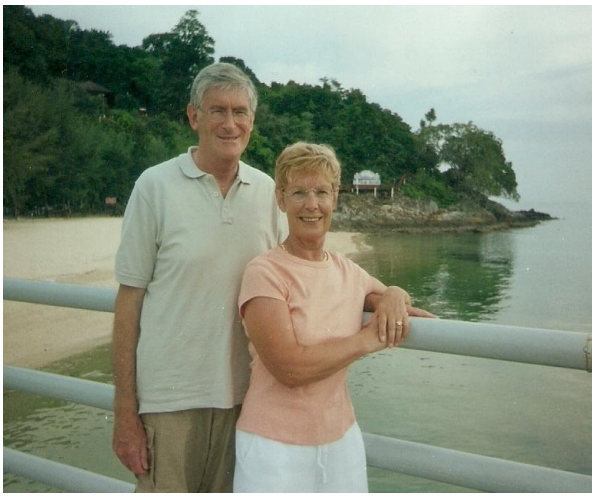
Water clarity

Snorkelling

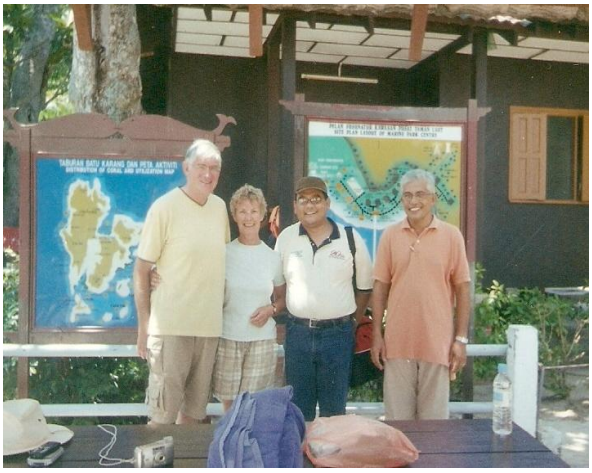
Snorkelling

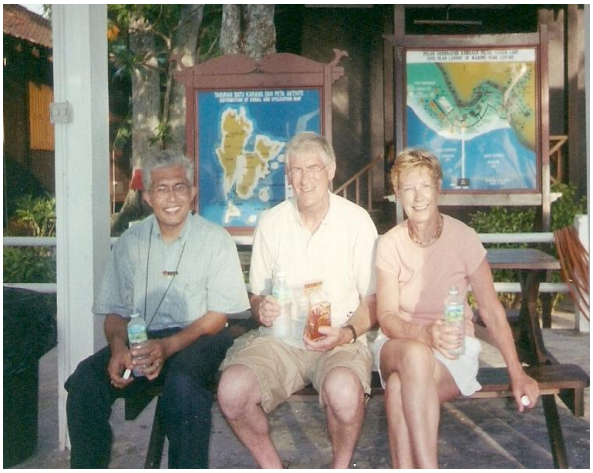
Swimming and fish feeding

Beach area

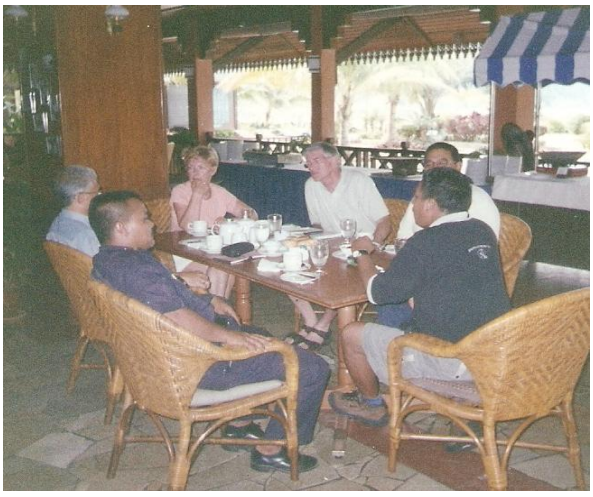


Prof.Willis and wife





With Prof. Willis, Mrs. Willis and Mr. Rahim, Head of RMP



Tea and informal meeting with Berjaya Redang Recreation Manager, Mr. Nahar.


Surrounding view of Redang island


Rocky area suitable for swiftlet nesting

Serenity of the island after tourists left

Sunset

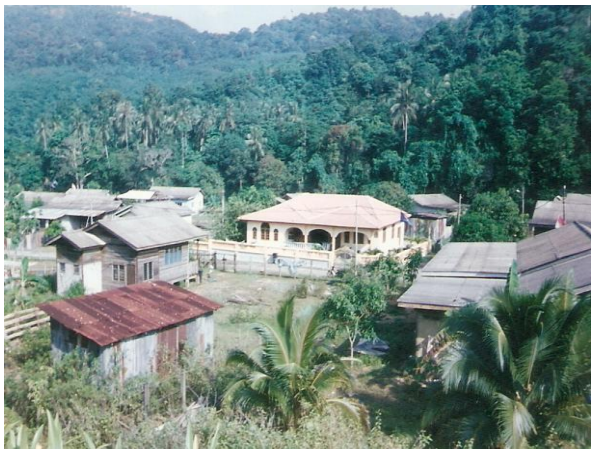
Entry to Berjaya Redang Island Resort

Arial view of Berjaya Redang

White sandy beach of Berjaya Redang

New development at Berjaya Redang

Redang Laguna at Pasir Panjang Beach



Arial view of Kampung Redang (village area)

Redang Primary School

Redang Mosque

SATU, waterworks maintenance centre

Redang Preschool

Public phones available

Local hawker selling traditional titbits

Locally own grocery shop

Locally own seafood restaurant

The only locally own chalet