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ECONOMIC VALUES AND FACTORS INFLUENCING MANAGEMENT AND CONSERVATION ATTRIBUTES OF KUBAH NATIONAL PARK, SARAWAK, MALAYSIA

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By

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Protection and conservation of environmental resources in most countries around the world rely heavily on the presence of national parks and protected areas. These areas offer highly beneficial use and non-use values for both current and future generation. Nevertheless, it is extremely difficult to express these economic values in monetary terms as typically there are regarded as non-marketable values. Ecotourism activities in national parks are one of the significant contributors to the growth of tourism industry, but often it comes at a price. Thus, sustainable management and conservation of national parks require understanding of public and park visitors' attitude and preferences.

The general objective is to assess the visitors and non-visitors' preferences and economic values of Kubah National Park (KNP). In order to realize the aims of the study, Contingent Valuation Method (CVM) and Choice Modeling (CM) method were utilized. A total of 618 respondents involved in face-to-face interviews, which involved a stratified random sampling selected for data collection. In the CVM method, a dichotomous choice CVM (DC-CVM) was employed to derive the respondents' WTP for improvement in management and conservation aspects at KNP. The logit models were used to elicit their WTP for the proposed price bids. Results from the study evidenced that in both samples, as the price bids increases, the probability of saying 'Yes' decreases. The estimated mean for the WTP is an increment of 71.74% (RM7.17 for Malaysian and RM14.35 for foreigner) for the visitor's sample and 53.10% for the non-visitor's sample (RM5.31), above the current entrance fee charges (RM10 for Malaysian and RM20 for foreign visitors).

In the CM method, Choice Experiment (CE) was employed by using conditional logit (CLGT) models to investigate the respondent's preferences of the management and conservation attributes. The estimations were split into two parts: Part A for Ecotourism and Management attributes (EMT) and Part B

covers for National Park and Conservation attributes (NPC). CLGT models were applied in order to capture the marginal values of these chosen attributes. The study finds that visitors have positive WTP for all EMT and NPC attributes. Non-visitors also have positive WTP for all attributes except for Natural Attractions (NA) in its EMT attributes. Marginal rate substitution was estimated to find out the WTP for each single of the EMT and NPC attributes. The results show that for EMT attributes, both samples are concerned with information availability the most and in the NPC attributes, there are more willing to pay more for fauna and flora observation as well as enforcement level. Findings of the study may assist national parks' manager and policy makers in evaluating current entrance fee charges as well as in designing strategic management and conservation policies for sustainable ecotourism development in Kubah National Park and other national parks in Sarawak.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

NILAI EKONOMI DAN FAKTOR-FAKTOR MEMPENGARUHI SIFAT PENGURUSAN DAN PEMULIHARAAN DI TAMAN NEGARA KUBAH, SARAWAK, MALAYSIA

Oleh

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Perlindungan dan pemuliharaan sumber alam sekitar di kebanyakan negara seluruh dunia bergantung kepada kewujudan Taman Negara dan kawasan-kawasan perlindungan. Kawasan ini menawarkan faedah yang sangat tinggi daripada segi nilai guna dan nilai bebas guna bukan sahaja untuk generasi semasa, tetapi juga untuk generasi akan datang. Walau bagaimanapun, ia adalah amat sukar untuk menyatakan nilai-nilai ekonomi dari segi kewangan kerana biasanya sumber-sumber ini tidak dianggap sebagai nilai-nilai guna. Aktiviti-aktiviti ekopelancongan di Taman Negara adalah salah satu penyumbang utama kepada pertumbuhan industri pelancongan, tetapi seringkali ianya datang dengan harganya yang tersendiri. Oleh itu, pengurusan mampan dan pemeliharaan Taman Negara memerlukan pemahaman terhadap sikap dan keutamaan orang awam dan juga pengunjung-pengunjung Taman Negara itu sendiri.

Objektif umum kajian ini adalah untuk menaksir pilihan para pengunjung dan bukan pengunjung serta nilai-nilai ekonomi yang terdapat di Taman Negara Kubah (TNK). Untuk merealisasikan matlamat kajian, 'Kaedah Penilaian Kontinjen' (CVM) dan kaedah 'Pemodelan Pilihan' (CM) telah digunapakai. Seramai 618 responden terlibat dalam temubual bersemuka yang melibatkan persampelan rawak berstrata dipilih untuk tujuan pengumpulan data. Dalam kaedah CVM, kaedah pilihan dikotomi CVM (DC-CVM) telah digunakan untuk menilai kesediaan membayar responden untuk penambahbaikan dalam aspek pengurusan dan pemuliharaan di TNK. Model logit telah digunakan untuk menentukan kesediaan membayar responden untuk tawaran harga yang dicadangkan. Hasil daripada kajian ini mmbuktikan bahawa dalam kedua-dua sampel, apabila terdapat kenaikan harga tawaran, kebarangkalian untuk mengatakan 'Ya' semakin berkurangan. Anggaran purata bagi kesediaan membayar pengguna adalah peningkatan sebanyak 71.74% (RM7.17 bagi pengunjung Malaysia dan RM14.35 bagi pengunjung asing) bagi sampel

pengunjung dan 53.10% untuk sampel bukan pengunjung (RM5.31), daripada caj yuran kemasukan semasa (RM10 untuk Malaysia dan RM20 untuk pengunjung asing).

Dalam kaedah CM, 'Kaedah Eksperimen Pilihan' (CE) telah digunakan dengan menggunakan *conditional logit* (CLGT) model untuk mengenalpasti pilihan responden terhadap ciri-ciri pengurusan dan pemuliharaan. Penilaian telah dilakukan mengikut dua bahagian: Bahagian A adalah untuk sifat-sifat Pengurusan dan Ekopelancongan (EMT) dan Bahagian B meliputi sifat-sifat terhadap Pemuliharaan Taman Negara (NPC). Model CLGT digunakan untuk menganggarkan nilai-nilai marjinal bagi sifat-sifat tersebut. Kajian ini mendapati bahawa sampel pengunjung menunjukkan kesediaan membayar pengguna yang positif untuk semua sifat-sifat EMT dan NPC. Sampel bukan pengunjung juga memperlihatkan kesediaan membayar pengguna yang positif, kecuali tarikan semula jadi (NA), bagi sifat-sifat EMT. Penggantian kadar marjinal dianggarkan untuk mengetahui kesediaan membayar pengguna bagi setiap sifat EMT dan NPC. Keputusan menunjukkan bahawa di antara sifat-sifat EMT, kedua-dua sampel lebih mementingkan sifat 'penyediaan maklumat' dan bagi sifat-sifat NPC, kesediaan membayar pengguna di kalangan mereka adalah lebih tertumpu kepada sifat 'pemerhatian fauna' dan 'pemerhatian flora' serta 'tahap penguatkuasaan'. Hasil kajian boleh membantu pihak pengurusan dan pembuat dasar dalam menilai caj bayaran masuk semasa serta dalam merekabentuk dasar pengurusan dan pemuliharaan strategik untuk pembangunan ekopelancongan lestari di Taman Negara Kubah dan taman-taman

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

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LIST OF ABBREVIATIONS

AMT	Amenities
CBD	Convention on Biological Diversity
CE	Choice Experiment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFA	Confirmatory Factor Analysis
CFD	Complete Factorial Design
CLGT	Conditional Logit
CM	Choice Modelling
CPRICE	Conservation Fee Charges
CVM	Contingent Valuation Method
DC-CVM	Dichotomous Choice Contingent Valuation Method
EFA	Exploratory Factor Analysis
EL	Enforcement Level
EMT	Ecotourism and Management Attributes
FAU	Fauna Observation
FDS	Forest Department Sarawak
FFD	Fractional Factorial Design
FLO	Flora Observation
HPM	Hedonic Pricing Method
IIA	Independence of Irrelevant Alternatives
INFO	Information Availability
ITA	Iterative Trails Availability
IUCN	International Union for Conservation of Nature
KNP	Kubah National Park
LR	Likelihood Ratio
MPRICE	Entrance Fee Charges
MWC	Matang Wildlife Centre
NA	Natural Attractions
NOAA	National Oceanic and Atmospheric Administration
NPC	National Park and Conservation
NPWD	National Parks and Wildlife Division
NRE	Ministry of Natural Resources and Environment
PG	Park Guide Availability
RUM	Random Utility Model
RUT	Random Utility Theory
SFC	Sarawak Forestry Corporation
TCM	Travel Cost Method
TEV	Total Economic Value
WTA	Willingness to Accept
WTP	Willingness to Pay
WWF	World Wide Fund for Nature

CHAPTER 1

INTRODUCTION

1.1 Introduction

Economies have been long found to benefit from environmental resources. Environmental resources such as rivers, lakes, wetlands, protected areas or national parks produce a great variety of goods and services such as water, air, fish, timber, recreation and etc. Protected areas and national parks are important for biodiversity conservation. They are the foundations of practically all national and international strategies, set aside to maintain functioning natural environments, to act as refuges for species and to maintain ecological processes which could not survive in most intensely managed landscapes and seascapes (Dudley, 2008).

Thus, the economic benefits related to the natural environments have always been difficult to measure in monetary expressions. In an economy, a market works with the equilibrium of the demand and supply function of goods and services. Under a perfectly competitive market, goods and services are allocated efficiently. However, the goods and services offered by the environmental resources are commonly labelled as public goods. The characteristics of public goods make it difficult for the market to work ordinarily in an economic market. One of the common market failures affecting protected areas is their characteristics of public goods including non-excludability and non-rivalry. Non-excludability denotes that no one can be excluded from benefiting from its ability. Non-rivalry ensures that the marginal cost of an additional consumer is zero and does not reduce others to consume the same good. While national parks are not likely to be pure public goods, they are likely to exhibit these criteria into certain degrees.

The value of the public goods or environmental goods and services is not readily available compared to private goods and services. These goods and services are generally provided outside the market system and do not exhibit prices. In other words, they do not have market values. The absence of such values for the non-market goods and services may lead to inefficient allocation of environmental resources. This would typically lead to undervalued and underfunded relative to other government budgetary considerations. Thus, protected areas and national parks offer a wide range of benefits that include tourism, education, recreation, ecosystem services and etc. An expression of these values in monetary values will help to ensure the efficient allocation of the environmental resources. In detail, the identification of these benefits in monetary terms could be used to justify public investment in protected area. This would motivate for the sustainability for efficient management and conservation actions that shall meet the interests in development.

In order to express these benefits in monetary values, it is crucial to consider the assistance of non-market valuation techniques that have been introduced and developed to cater the market failures. These non-market valuation techniques does not only provide information on how these benefits are able to be measured, but provide protected area managers with information on the goods and services provided by these areas as well as information regarding the visitors preferences (WCPA-IUCN, 2000).

1.2 Problem Statement

National parks may suit best ecotourism activities and create great economic impacts to the local community as well as enhancing the national income. The rising popularity of national parks as recreational purposes helps to boost the national economic growth of nations around the world. However, the establishment of national parks itself does not guarantee protection for natural abundance of the protected areas, but instead it relies heavily on the management effectiveness of the protected area's authority. Inappropriate management of the natured based tourism and recreation may impact on the environment through degradation of soil, vegetation, wildlife and water resources (cited in Tisen, 2008).

Conflicts between ecotourism and national park's conservation rises as ecotourism activities are heavily dependent on the natural abundances of the protected areas. The biggest challenge that lies in managing national parks is that the harmonizing ability between the pressures and threats with conservation objectives (NRE, 2006). Thus, the protection of bio diversified ecosystem of the areas is very much dependent on the management effectiveness of the protected areas authority. Management and conservation of the environmental resources are essential for sustainable ecotourism and it requires strategic management and conservation policies.

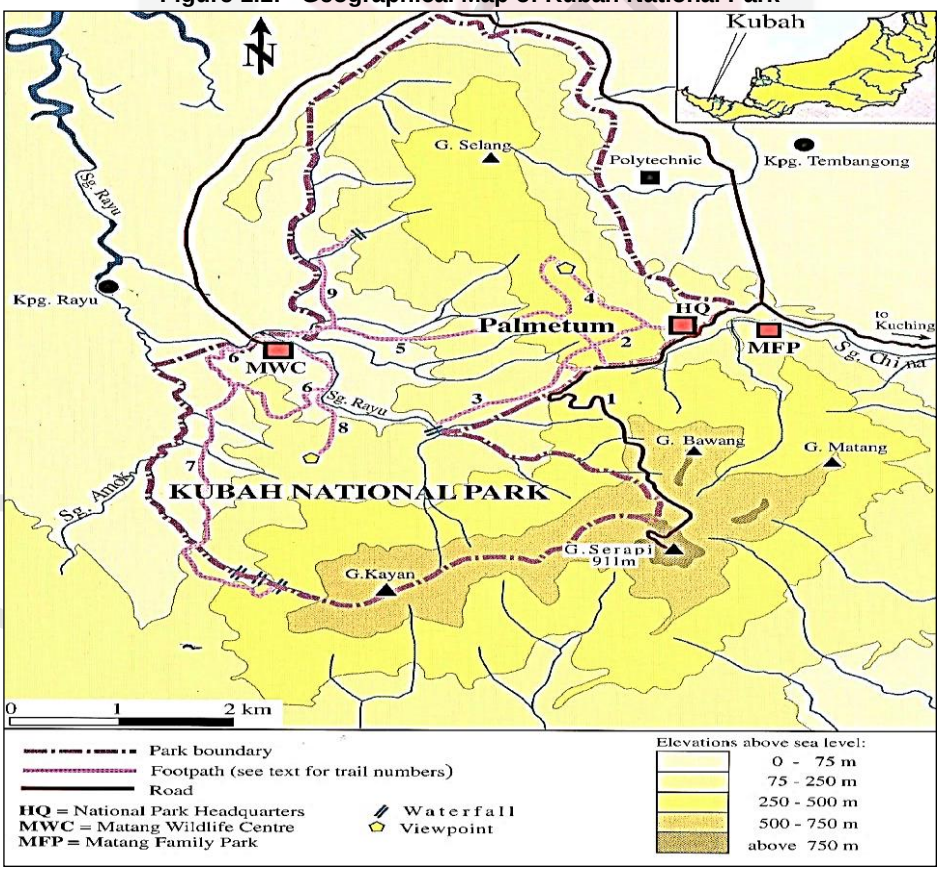
Increment in the number of visitors to national parks in Malaysia drives increasing pressures from the conflict between development interests and financial sustainability issues. Currently, most of the Malaysian national parks are making deficit and only a few such as Kinabalu National Park would manage to come by (Backhaus, 2005). Therefore, the application of non-market valuation methods to protected areas such as national parks in Malaysia is likely relevance given the critical need to ensure the allocation of the natural resources to be effective that will contribute to improvement in managing and conserving protected areas. Therefore, the non-market valuation methods of these environmental resources are becoming increasingly significant in order to guarantee the implementation of effective management and conservation policies.

Kubah National Park (KNP) provides a good illustration of a public good of the environmental resources. It is located on the southwest (Figure 1.1) of Sarawak and situated about 22 kilometres, from the west of Sarawak's capital city,

Kuching. On its 22 square kilometres area, 98 species of palm trees have been recorded, which makes it one of the richest palm habitat in the world (WWF-Malaysia & Cubbit, 1998). Moreover, the area offers a wide variety of native flora and fauna such as pitcher plants and bintangor trees, orang utan, birds, frogs and others. A more detailed historical background of KNP is discussed in the following chapter.

Driven by the ecological degradation from ecotourism activities, the main purpose of this study is to evaluate the economic values in KNP by utilizing the economic valuation tools. This study offers to assist in the further development of the current management guidelines and policies for the ecotourism development that shall contribute to the sustainable development and conservation in Malaysia's national parks, particularly in the state of Sarawak. The assessment of the natural resource's value at KNP is essential to understand the respondents' preferences for the attributes offer at the park. The information from the results of this research would help the policy makers and park wardens in implementing suitable management policies and guidelines, as well as in planning and managing conservation issues in parks.

Figure 1.1: Geographical Map of Kubah National Park



Source: Hazebroek & Morshidi (2000)

Increments in the entrance fee charges in KNP may offer consumers better management and conservation services. An increase in the entrance fee charges might lead to a higher level of awareness among the consumers on the importance of effective management and sustainable conservation of the area. Currently, the entrance fees charge exercise at KNP was set by the Forest Department Sarawak (FDS) and the Sarawak Forestry Corporation (SFC). The charges were identical at all national parks in the State. Thus, the entrance fee charges didn't take into account the values of the attributes exist in the park nor being set based on the preferences of the consumers. With this, the environmental values of KNP might be undervalued or overvalued and does not reflect the real values of the area. New entrance fee charges would allow the park managers and authorities to deliver a better management and conservation services at the park. A contribution from the consumer's side may support various enhancement projects that will secure appropriate and sustainable management and conservation services of the research area. A detailed summary of the entrance fee charges at KNP is described in Table 1.1.

Table 1.1: Entrance Fee Charges to Kubah National Park

Entrance Fees	
Foreigner	
Adult	RM20 per person
Disabled person	RM10 per person
Children (between 6 and18 years old)	RM7 per person
Children (6 years and below)	Free
Local	
Adult	RM10 per person
Senior/Disabled person	RM5 per person
Children (between 6 and 18 years old)	RM3 per person
Children 6yrs & below	Free

Source: Zaini (2012)

National parks are among important places that offer ecotourism destinations in Sarawak and play an important role in biodiversity conservation and protection in the State. The increasing trend in the yearly statistics to KNP proves that the park is becoming a significant ecotourism spot in Sarawak (Table 1.2). From a number of less than 30,000 visitors in 2003, the visitors grow to more than 45, 000 visitors in 2014. The park also recorded the highest number of visitors since it is open to the public in 2014.

Table 1.2: Number of Visitors to KNP and MWC

Year	KNP			MWC			Grand Total
	Local	Foreigner	Total	Local	Foreigner	Total	
2003	3,914	433	4,347	23,828	1,231	25,059	29,406
2004	4,436	796	5,232	22,544	1,297	23,841	29,073
2005	4,436	823	4,347	16,077	3,696	19,773	24,120
2006	4,673	864	5,259	14,106	1,916	16,022	21,281
2007	4,095	993	5,088	15,347	2,979	18,326	23,414
2008	5,664	1,115	6,779	12,914	2,406	15,320	22,099
2009	5,138	1,349	6,487	11,741	2,012	13,753	20,240
2010	6,720	1,477	8,197	20,307	2,565	22,872	31,069
2011	6,647	2,047	8,694	29,590	5,556	35,146	43,840
2012	9, 686	5,931	15,617	19,735	3,180	22,915	38,532
2013	7,260	2,787	10,047	20,695	3,236	23,931	33,978
2014	9,147	3,481	12,628	28,834	5,059	33,893	46,521
2015*	6,599	1,854	8,453	16,170	1,855	18,025	26,478

Note: * Visitor's statistics up to July 2015
Source: Sarawak Forestry Corporation (2015)

An increasing number of visitor's record to the park creates challenges in managing the park. The park's management will need to ensure that the facilities provided are in good condition and services offered are best to cater the visitors need. Besides, the management authority would also need to ensure that the main objectives to protect and conserve the park's ecosystem and biodiversity are being supported at the same time.

The gazettement of KNP aids in the initial preservation and conservation of the floristic diversity of the area particularly rare and endangered palm species. Its presence in the Kuching area gives opportunities to the local residents to appreciate and enjoy the nature that exist in its own untouched setting. Visitors may be involved in recreational activities such as forest walks, picnicking and bird watching. The visitors may also choose to spend an overnight stay in a natural setting. Other than that, visitors could also organize nature-related research activities or participate in organizational social or institutional education in the park. Most of the researches that have been done in the area were conducted by related government agencies in collaboration with local universities and students. By performing these activities, they will gain relevant information and useful knowledge from their observation and experience in the park, which would indirectly educate and create awareness to the visitors on the importance of nature. The visitors would become more appreciative of the mother-nature and this would help in protecting and managing the park area itself, by least.

Despite the different objectives of the visit, the increment of visitors to the park may guarantee positive impacts not only for the funding of the park, as well as to the economic opportunities around. In the long run, the recreational and ecotourism activities such as employment and could help in the development of business opportunities in the nearby local community of the park. Nevertheless, the central subject that needs to be answered is that either consumer is willing to pay for better services for the purpose to improve the management and conservation attributes at KNP. It is crucial to determine the both visitors and non-visitors' (public) willingness to pay and how much percentage increments to the current entrance fee charges that they are willing to contribute for better conversion. Plus, there are several other factors that affect the demand to visit KNP, which might help in determining the consumer's willingness to pay would change as the entrance fee charges increases. Hence, it is the duty of this study to explore which factors that most affects consumer's willingness to pay.

This research would attempt to offer a step towards a better decision making by examining the economic values and factors influencing management and conservation attributes offered at KNP. Identifying the most important attributes of Kubah National Park and the utmost pressing issues that need to be highlighted is an important part of general management and conservation planning of the research area itself. The economic values in question are the values of the environmental resources at the research area. By looking at the policy level, this assessment would also concentrate on the evaluation of the current and future changes in the entrance fee system of the park. The importance of setting the suitable amount of entrance fees is needed as it is significant to the collection of income collection to KNP. Contingent choice and choice experiment surveys are uniquely well suited to the objective of systematically collecting and examining information about the benefits created by attributes offered at the park. Since finances and resources are scarce, it is necessary for the park's authority to select which attributes to focus and require priority.

In order to realize the purposes explained previously, the research questions that require to be addressed are:

- What type of visit characteristics are found among visitors and non-visitors (potential visitors) in KNP?
- What are the visitors and non-visitors' demographic factors that influence the economic values in KNP?
- How much the visitors and non-visitors are willing to pay for improved services in KNP?
- What are the attributes that visitors and non-visitors consider in making a decision to visit KNP?

1.3 Research Objectives

General Objective:

In general, the purpose of this study is to assess the visitors and non-visitors' preferences and economic values of Kubah National Park (KNP). Specifically, the objectives of the study included the followings:

Specific:

- To examine the visitors and non-visitors attitude and perception towards KNP's roles and functions;
- To determine the factors that influence respondent's preferences for improved services in KNP;
- To evaluate the existing application of entrance fee charges at KNP; and
- To evaluate the respondents' preferences towards the management and conservation attributes of KNP.

Other objectives of the study are;

- To identify the demographic factors which influence current and potential visitors to visit KNP; and
- To develop management recommendations for implementation of the entrance fee system as well as other policies for sustainable ecotourism in KNP.

1.4 Significance of Study

Environmental valuation of national parks and protected area provides essential significance for the state of Sarawak. It is the mission of the Sarawak Forestry Corporation (SFC) to conserve, develop and market products and services while maintaining balance economic, environmental and social interests. Therefore, the aim of this study is to provide a precise insight on the values provided by the environmental resources that benefits the current and future generations. The results from this study help in better understanding of the economic values of KNP as well as the roles and functions of these values in balancing life's quality. A better management and conservation services could be suggested if policy makers and park managers are given sufficient information on the functions and values of KNP. The research would contribute significantly to the management effectiveness of the NP system in Malaysia, particularly in Sarawak. It will provide a full range of economic value of recreational activities that support ecotourism in KNP, which may be used in managing and developing process towards sustainable development of the research area.

In the current practices, the only estimation of economic values of KNP can only be derived from the entrance fee charges, which has been set at RM10

and RM20 for the Malaysian or foreign visitors, respectively. These charges are identical and apply to all national parks in Sarawak. Plus, it the charges were set without asking the visitors or public (non-visitors) on how much they're willing to pay and their preferences, given the level services offer. This would help in evaluating the best level that visitors and non-visitors' willingness to pay for management and conservation aspects in KNP. Therefore, it is the focus of this study to determine the economic values for improved in environmental resources in KNP through a willingness to pay approach. The information gain from this research would provide information about KNP for policy makers and national park's authorities and managers that can be used in their management and conservation aspects.

The recommendations from this research could be divided into fivefold. First, presently, there is a lack of information on non-market valuation values of KNP. Previous studies that have been conducted in KNP had only focused on the biological research of the area such as on the diversity of the palms (Pearce, 1992), frogs (Das & Haas, 2010), bats (Seelan et al., 2008), birds (Orenstein et al., 2010) and etc. For that reason, this study would be the first attempt to estimate the economic values of KNP in monetary terms. The results reported in this study helps to fill the information gap by estimating non-market values of national parks. The estimation of the economic values of ecotourism development in KNP will provide information on the respondents' preferences through their willingness to pay for the conservation and management of the park. The information obtain from the research could assist in the planning and development decision for the park's sustainable tourism. Such information will help in determining the values that visitors value the most for potential tourism in the research area. Thus, it will help in conserving and developing which aspects or facilities at the park that should be given more attention in order to maintain sustainable ecotourism at the park. Additionally, from the economic perspective of the study, it is capable to help and identify potential ways to generate substantial funds for national park management and conservation, which in this case is through the collection of fees from the visitors. Furthermore, it could help in offering the recreational facilities, infrastructure, accessibility and staffing resources that are essential for managing effectively ecotourism sites.

Secondly, the examination of how visitors and non-visitors (public) perceive the roles and functions of KNP would assist in delivering appropriate management and sustainable conservation of the area. This information is essential in understanding of the public and park visitors' attitude and perception. Thirdly, this study was conducted with two samples, such as visitors (consumer) and non-visitors (public). The non-visitor's sample is also included as they might be potential visitors as well in the future. It is crucial to include non-visitors' (public) opinion as not only that the management decisions should be considering information about which park's attributes provide benefits to visitors but it shall consider the most non-use value to the non-visitors.

In this study, both contingent valuation method (CVM) and an approach of stated preference method, the Choice Experiment (CE) technique were applied to estimate the willingness to pay for improvement in the KNP's management and conservation. Therefore, not only that this study is the first attempt to estimate the environmental values of the KNP in monetary terms, it is also the first attempt for the cross checking of these two methods, both in Sarawak and Malaysia. Currently, there are a few numbers of valuation method studies of non-market goods that have been conducted in recreational sites in Malaysia. Abdullah (1993) conducted the CVM to value the outdoor recreational resources in Taman Tasik Perdana (Kuala Lumpur), Willis et al. (1996) used both TCM and CVM to estimate the recreational value of FRAs in Malaysia (cited in Yacob et al., 2008), Yeo (1998) applied CVM in his thesis to estimate the WTP for recreational benefits in Pulau Payar Marine Park, Radam et al. (2002) conducted a CVM study to investigate the individual's WTP for the conservation of tourism spots in the district of Damai (Kuching) and Radam and Mansor (2002) employed dichotomous choice CVM (DC-CVM) to estimate the recreational value in Manukan Islan, Sabah. Both studies done by Radam and Busu (2003) and Othman and Asmuni (2003) also applied the DC-CVM in their studies to value the outdoor recreational resources of the Malaysian Agricultural Park, and to measure the non-market benefits of conserving the wetland from the non-users perspective in Paya Indah Wetland in Kuala Langat, respectively. Additionally, Samdin (2008) applied CVM to determine the appropriate pricing policy for sustainable management of Taman Negara, Malaysia.

At present, there are only three studies that have adopted the CM approach in Malaysia such as; Jamal (2000) adopted the CM approach to estimate the values of Matang Mangrove Forest and Jamal (2002) in his study of the household preferences for solid waste management in Malaysia. Yacob et al. (2008) conducted the first study that applied the CE method to estimate the value of ecotourism sites in Malaysia, particularly the Pulau Redang Marine Park. From these evidences, it would seem that this study is the first to estimate the WTP for improvement in national park's conservation and management by using both CVM and CE, in Malaysia. Therefore, this study has the advantage of cross checking of these two models. Moreover, this research will likely contribute to the knowledge and development of CVM and CE approach in developing countries like Malaysia. It could be a platform for other potential studies of the similar areas in the economics literature.

National parks are highly valuable and vital to the ecosystems for countries around the world. Driven by the ecological degradation from ecotourism activities, the main purpose of this study is to evaluate the economic values in KNP by utilizing the economic valuation tools. This study offers to assist in the further development of the current management guidelines and policies in the ecotourism development that shall contribute to the sustainable development and conservation in Malaysia's national parks, particularly in the state of Sarawak. The assessment of the natural resource's value in KNP is essential to understand the visitor's preferences. Plus, it is also important to understand and monitor the ecotourism activities in order to attain future sustainable

ecotourism development as well as managing the conservation issues in KNP. The information from the results of this research would help the policy makers and park wardens in implementing suitable management policies and guidelines, as well as in planning and managing conservation issues in parks.

This research would attempt to offer a step towards a better decision making by examining the economic values of the intangible resources offered in KNP. The economic values in question are the values of the environmental resources on the research area. By looking at the policy level, this assessment would also concentrate on the examination of the current and future changes in the entrance fee system of the park. The importance of setting the suitable amount of entrance fees is needed as it is significant to the collection of income and revenue collection to KNP. Any changes in the entrance fees are significant in the maintenance and conservation of the park.

Furthermore, this research aims to offer policy makers in formulating efficient management and conservation strategy by providing them with information and results from a valuation study in using KNP in Sarawak as a case study. The benefits or values estimated from this study include the management of the ecotourism facilities and services and conservation of the environmental resources which can be used in analyzing alternative management and conservation options. Examining these two aspects would assist in the sustainable management and conservation of KNP. The estimation of the economic values of ecotourism development in KNP will provide information on the respondents' preferences through their willingness to pay for management and conservation of the park. The information obtains from the research could assist in the planning and development decision for the park's sustainable tourism. Such information will help in determining the values that visitors value the most for potential tourism at the research site and serve as a guideline to assist the policy makers in terms of the welfare measures such as environmental values and their ecotourism benefits, which may assist in effective pricing policy at KNP. Thus, it will help in conserving and developing which aspects or facilities at the park that should be given more attention in order to maintain sustainable ecotourism and conservation of KNP.

1.5 Organization of Thesis

This thesis consists of six chapters and has been structured as follows. The first chapter provides an introduction to the research, complemented by discussion on the problem statement, research objectives and significance of the study. The second chapter offers an overview of the background to the study. The concept of a protected area and national park is defined and their importance and their roles in management and conservation of natural resources are explored. This chapter also includes a comprehensive description of KNP.

A review of applicable economic theory and current practice regarding the application of the non-market valuation studies in national parks and other related protected areas is discussed in Chapter 3. The discussion begins with the underpinning theories that are relevant to measure the environmental values. This is followed by a review of potential methodologies for valuing NPs. This discussion is structured according to the elicitation approach that could be used for this purpose. Two elicitation methods are reviewed such as stated and revealed preference methods. Nevertheless, the main emphasis of this chapter would be set on the stated preference method, mainly on the CVM and CE approach that will be employed in this research. The theoretical model, the strengths and weaknesses in both methods are discussed along with its suitability for valuing national parks.

In Chapter 4, the theoretical framework is explained and includes of research methodologies that were implemented in this study, questionnaire design and implementation, estimation techniques and data collection as well as sampling procedures. Chapter 5 discusses on the estimated results of both methods. The implications of the results would also be discussed and compared in this chapter. Finally, in Chapter 6, consists of a summary of the results, follows by a conclusion and policy implications, limitations of study and recommendations for future studies.

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