



UNIVERSITI PUTRA MALAYSIA

***RECREATIONAL VALUE OF MOUNTAIN BIKING AT PUTRAJAYA
CHALLENGE PARK, MALAYSIA***

NUR SYUHADA BINTI CHE IBRAHIM

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**RECREATIONAL VALUE OF MOUNTAIN
BIKING AT PUTRAJAYA CHALLENGE PARK,
MALAYSIA**

NUR SYUHADA BINTI CHE IBRAHIM

**MASTER OF SCIENCE
UNIVERSITI PUTRA MALAYSIA**

2013



**RECREATIONAL VALUE OF MOUNTAIN BIKING AT PUTRAJAYA
CHALLENGE PARK, MALAYSIA**

By

NUR SYUHADA BINTI CHE IBRAHIM

**Thesis Submitted to the School of Graduate Studies,
Universiti Putra Malaysia, in Fulfilment of the
Requirements for the Degree of Master of Science**

November 2013

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DEDICATION

This dissertation is specially dedicated to my beloved:

Abang
Umni
Abah
Ayah
Mama
Fatihah
Asyikin
Syamimi
Farhana
Firdaus
Artikah
Iman

For their support, encouragement and love.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

RECREATIONAL VALUE OF MOUNTAIN BIKING AT PUTRAJAYA CHALLENGE PARK, MALAYSIA.

By

NUR SYUHADA BINTI CHE IBRAHIM

November 2013

Chairman : Syamsul Herman Bin Mohammad Afandi, PhD
Faculty : Forestry

This thesis focuses on using the travel cost method to value mountain biking activity in one of the adventure recreation development in this country, Putrajaya Challenge Park (PCP) where there has been little or no previous works of this kind conducted before. The government has spent a large amount of money, RM38 million to build PCP mainly for providing the opportunities for its users maximising their satisfaction and gain experience in recreational activities mainly MTB activity. Mountain bikers gain non-monetary benefits through their enjoyment of riding mountain bikes at PCP and they obtain satisfaction from their participation. Thus, an assessment of the estimated value of benefits from recreational opportunities at PCP must be made with the aim of justifying the usage of PCP as MTB site. An onsite survey was necessary in order to obtain the primary data for this study. The questionnaire used for the onsite survey was designed to capture the socio-economic variables about mountain bikers, mountain biking participation characteristic variables and travel cost component variables. The count data with a sample size of 302 that generated from the survey was modelled with the linear regression model. Based on this study, there were six factors found to be significant at 95% confidence level which affected the demand for mountain biking at PCP. The variables were time cost, on-site time, type of visitors, age, year's participation and equipment cost. An estimate of consumer surplus (CS) per trip per user, as well as the total recreational value for 2011, was computed. The value estimated was RM90.91 per trip per user and the total recreational value for 2011 was RM 3, 63, 640.00. This value suggests that mountain biking has a significant value in the area and the management of PCP should be aware of the relative value of mountain biking when they make allocation decisions for the future development.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah
Master Sains

**NILAI REKREASI BAGI AKTIVITI BERBASIKAL LASAK DI TAMAN
CABARAN PUTRAJAYA, MALAYSIA.**

Oleh

NUR SYUHADA BINTI CHE IBRAHIM

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Fakulti : Perhutanan

Tesis ini memberi tumpuan kepada penggunaan kaedah kos perjalanan untuk menilai aktiviti berbasikal lasak di salah satu daripada pembangunan rekreasi di negara ini iaitu Taman Cabaran Putrajaya (TCP). Kerajaan telah membelanjakan sejumlah wang yang besar iaitu RM 38 juta bagi membina TCP yang bertujuan untuk memberi peluang kepada pengguna dalam memaksimumkan kepuasan dan menambahkan pengalaman dalam aktiviti berekreasi terutama aktiviti berbasikal lasak. Penunggang basikal lasak mendapat faedah melalui keseronokan menunggang basikal lasak di TCP dan mereka juga memperolehi kepuasan daripada penglibatan mereka. Dengan itu, satu taksiran bagi menganggar nilai faedah yang diperolehi daripada penglibatan dalam aktiviti berbasikal lasak di TCP perlu dilakukan dengan tujuan untuk menerangkan penggunaan TCP sebagai lokasi untuk berbasikal lasak. Soalan bagi kaji selidik yang digunakan direka bagi mendapatkan maklumat mengenai pembolehubah sosio-ekonomi penunggang basikal lasak, pembolehubah mengenai ciri-ciri penyertaan dalam aktiviti berbasikal lasak dan pembolehubah bagi kos perjalanan. Data yang diperolehi dengan saiz sampel sebanyak 302 dimodelkan dengan menggunakan model regresi linear. Terdapat enam faktor yang mempunyai signifikansi pada tahap keyakinan 95% yang mempengaruhi permintaan untuk aktiviti berbasikal lasak di TCP. Pembolehubah tersebut adalah kos masa, masa yang diperuntukkan di lokasi rekreasi (TCP), jenis pelawat, umur, penyertaan tahun dalam aktiviti berbasikal lasak dan kos peralatan. Anggaran lebihan pengguna bagi setiap lawatan dan setiap pengguna serta

jumlah nilai rekreasi untuk 2011 telah dikira. Nilai yang dianggarkan adalah RM90.91 bagi setiap lawatan dan setiap pengguna dan jumlah nilai rekreasi untuk 2011 adalah RM 3, 63, 640.00. Nilai ini menunjukkan bahawa aktiviti berbasikal lasak mempunyai nilai yang besar di kawasan tersebut dan pengurusan TCP perlu sedar nilai relatif berbasikal lasak apabila mereka membuat keputusan bagi peruntukan untuk pembangunan pada masa hadapan.



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Last but not least, thanks to all who have involved direct or indirectly towards the completion of the project.

I certify that a Thesis Examination Committee has met on 15 November 2013 to conduct the final examination of Nur Syuhada Binti Che Ibrahim on her thesis entitled "Recreational Value of Mountain Biking at Putrajaya Challenge Park (PCP), Putrajaya" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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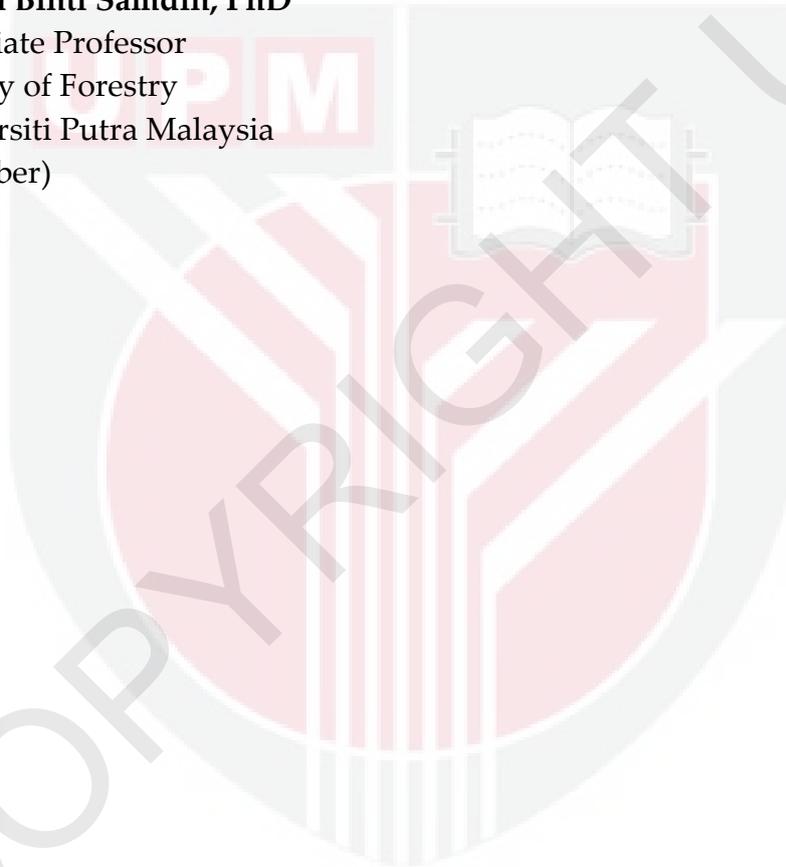
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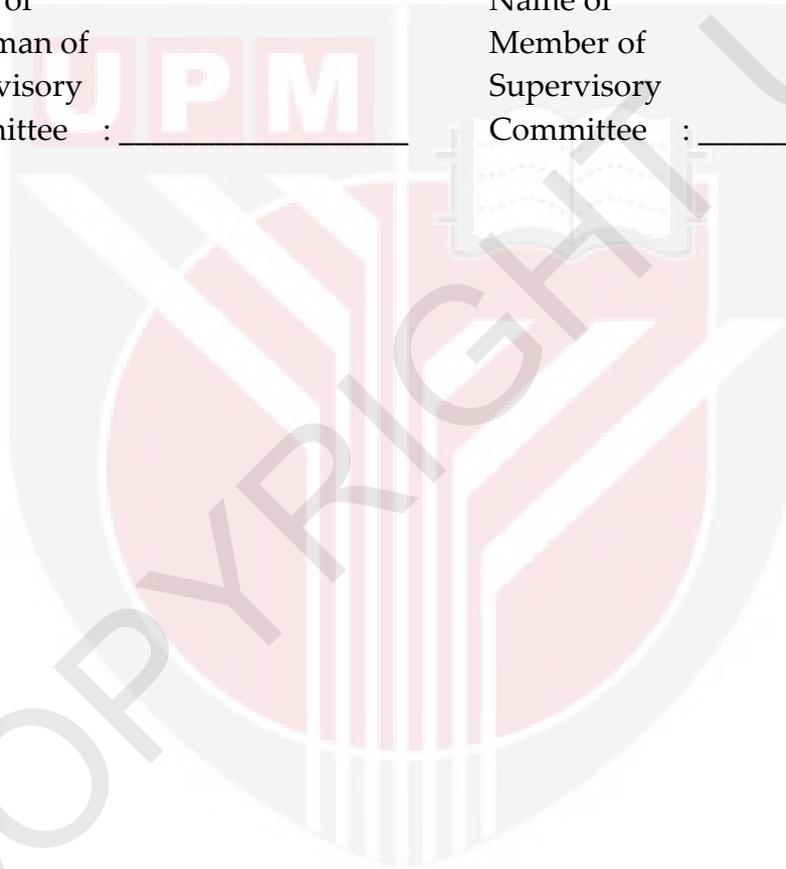


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LIST OF ABBREVIATIONS

MTB	Mountain Biking
PCP	Putrajaya Challenge Park
TCM	Travel Cost Method
NYSTIs	National Youth Skills Training Institutes
SCUBA	Self-Contained Underwater Breathing Apparatus
KDCP	Kota Damansara Community Forest
FRIM	Forest Research Institute of Malaysia
FCS	Forestry Commission Scotland
IMBA	International Mountain Bicycling Association
MBTA	Mountain Bike Tourism Association
GDP	Gross Domestic Product
WTA	Willingness To Accept
WTP	Willingness To Pay
TEV	Total Economic Value
SP	Stated Preference
RP	Revealed Preferences
ZTCM	Zonal Travel Cost Method
ITCM	Individual Travel Cost Method
CS	Consumer Surplus
SL	Semi Logarithmic

CHAPTER I

INTRODUCTION

1.1 General Background

Mountain biking (MTB), one of bicycling activities, can be categorised as an adventure recreation activity. It is relatively a new recreational pursuit compared to the other recreational activities in Malaysia. MTB is known to be associated with risks and high technical skills, but still the MTB enthusiasts enjoy their activity and get benefit from it. MTB can be categorised under the group of bicycling activity, which focuses primarily on off-road travel. This activity is also an environmentally sustainable and quiet activity that gives the rider a physical and enjoyable outdoor experience (Mountain Bikers of Santa Cruz, 2007).

The popularity of MTB in Malaysia has shown an increasing trend thus adds to the demand for more cycling sites and special events for MTB. This growing popularity has captured the Government's attention to establish proper infrastructures. In line with the growing demand for MTB, the Malaysian Government also encourages participation in such an active recreation activity to achieve a healthy lifestyle. One of the infrastructures that have been established to support MTB activity is the Putrajaya Challenge Park (PCP), which is one of the well-known MTB sites in Malaysia. The park has become a popular MTB site among the majority of mountain bikers. It has a network of trails rated with different difficulty levels for mountain bikers to choose from according to their ability and preferences.

However, MTB activity inflicts some costs on a park such as for repairing the trails, their maintenance, and new trails construction for MTB. Therefore, estimating the recreational benefit of MTB will enable the managements to improve allocation decision. Knowing the monetary value of MTB benefits would also help the management provide high quality recreation opportunities to the participants so that they would enjoy recreation experiences at the highest quality. Hence, the purpose of this study is to estimate the recreational value of MTB at PCP by using Travel Cost Method (TCM).

1.2 Adventure Recreation

There are so many types of adventure recreation such as white water rafting, wall climbing, rock climbing, mountaineering, SCUBA diving, bungee jumping, motor cross, and MTB. In Malaysia, the Government acknowledges the contribution of recreation and sports towards enhancing national unity, increasing healthy activities, and the spirit of patriotism. The Minister of The Youth and Sports Ministry (2009 to 2011), Datuk Ahmad Shabery Cheek encouraged adventure activities development in Malaysia by monitoring the facilities owned by youth associations and encouraging the interest among the young people through planned adventure activities development programmes. Datuk Ahmad Shabery Cheek cited in The Star (7 June 2010) said that:

'Adventure activities such as air and motor activities are still new and have not yet become part of the country's culture'

He also stated that the involvement of the National Youth Skills Training Institutes (NYSTIs) could assist in producing adventure activities equipment and this will make the price of other adventure activities equipment much cheaper. In Malaysia, there are numerous adventure parks that provide services and facilities for adventure activities, such as Sunway Lagoon Extreme Park, Sunway City Ipoh, Port Dickson Extreme Park, and Extreme Park Sepang.

Adventure recreation or risk recreation provides different experiences from the traditional recreation as the former poses elements of real and perceived physical dangers to the participants. There are some examples of the adventure recreation activities according to Ewert (1987) and Hall and Weiler (1992) (see Table 1.1).

Table 1.1: Adventure Recreation Pursuits

Adventure Recreation Pursuits		
Backpacking	Kayaking	Rogaining
Bicycling	Mountaineering	Snowshoeing
Ballooning	Orienteering	Spelunking
Diving	Rafting	Sailing
Hang gliding	Rappelling	Sky diving
Hiking	Rock climbing	Trekking

Source: Ewert (1987); Hall and Weiler (1992).

This study focuses on MTB and the subsequent discussion on adventure activity is focused only on MTB.

1.3 Mountain Biking (MTB)

MTB is an activity of riding a bicycle off-road, usually over rough terrain using specially designated mountain bikes in order to enhance durability and performance on rough terrain. This activity can be broken down into various categories, which are cross country, downhill, trail riding, dirt jump, slope style, and free ride. Individuals who take part in MTB activity (known as mountain biker) are required to have self-reliance, core strength and balance, endurance, and bike handling and controlling skills. Bike, gloves, shoes, clothing, hydration systems, GPS navigation device, tires pump, bike tools, high-power lights, protective gear, helmet, body armour and pads, and first aid are some examples of equipment and accessories for MTB activity.

As the number of mountain bikers increases, the demand for trail use also increases. The cities continue to expand but open spaces within the communities become scarce, thus it is likely that mountain biking enthusiasts will place great demands on the recreational park resources to meet their recreational needs, especially in constructing quality MTB trails. The MTB trails with better condition and quality are important in offering high level of satisfaction and experience among the mountain bikers. There are various MTB trails around Malaysia. Table 1.2 shows the famous MTB trails around Kuala Lumpur and Selangor.

Table 1.2: Mountain Biking Trails around Kuala Lumpur and Selangor

Mountain Biking Trail	Respective Authority
Putrajaya Challenge Park, Presint 5, Putrajaya	Perbadanan Putrajaya
Bukit Kiara, Taman Tun, Kuala Lumpur.	National Landscape Department
Kota Damansara Community Forest (KDCF), Kota Damansara, Kuala Lumpur	Malaysian Nature Society
Forest Research Institute Malaysia (FRIM), Kepong, Kuala Lumpur	Ministry Of Natural Resources And Environment
Shah Alam Extreme Park, Shah Alam.	Shah Alam City Council

MTB is a growing activity in Malaysia with a huge, active community. Numerous programmes and amenities have been provided to the MTB enthusiasts in Malaysia. Table 1.3 shows some of the events organised in Malaysia recently. The source of the event's information is based on their official website.

Table 1.3: Events of Mountain Biking in Malaysia

Programme	Month/Year	Venue	Organiser
Malaysian Mountain bike Downhill Super Series (MDHSS)	Annually since 2010	Around Malaysia	Malaysian Downhill Association (MDHA)
Putrajaya Inter Park Ride (PIPR)	Monthly activity	Putrajaya	Perbadanan Putrajaya & Chemical Company of Malaysia Berhad
1 Belia 1 Malaysia Mountain Bike Championship 2011	May 2011	Taman Cabaran Putrajaya	Perbadanan Putrajaya
Pakan Mountain Bike Cross-Country Endurance	1 October until 31 December 2011	Pakan, Sarawak	Department of Youth and Sports Sarawak
Putrajaya MTB Jamboree	April 2012	Putrajaya	Ministry of Tourism Malaysia
MTB Challenge Perlis	May 2012	Felda Rimba Mas, Padang Besar, Perlis	Perlis Youth Council & the Department of Youth and Sports
Karnival MTB DH & XCO	May 2012	Taman Cabaran Putrajaya	Ministry of Youth and Sports
KL Mountain Bike Carnival (KLMBC)	July 2012	Taman Lembah Kiara, Kuala Lumpur	Quick Release Adventures
Langkawi International Mountain Bike Challenge (LIMBC)	October 2012	Langkawi Island, Malaysia	Human Voyage Sdn. Bhd.

Around Malaysia, there are many cyclist-friendly routes that consist of both road and off-road biking routes. More specifically around Kuala Lumpur, there are five most common mountain bike trails namely (1) Bukit Kiara Forest Reserve, which is known as the 'urban legend' route, (2) Kota Damansara Community Forest (KDCF), (3) Forest Research Institute of Malaysia (FRIM), (4) Shah Alam Extreme Park, and (5) Putrajaya Challenge Park (PCP). PCP entails 30.33 hectares of customised terrain for MTB. There are 9.1 km of challenging MTB trails, tracking along ridges, up switchbacks, and down steep hills through former rubber and palm oil forest. The trails are graded as easy, moderate, and difficult and include core trail loop, cross country loop, downhill, downhill fun ride, free cross, and slope style line.

1.4 Importance of Valuing Mountain Biking Activity

At present, recreation has been accepted as one of the basic requirements for daily life. Participation in recreation is beneficial for humans as it satisfies basic human needs, promotes health, develops leisure skills and interest, reduces the pressure of modern life, and builds up a pleasant society (Mohd Azmi, 1996). Usually, people seek for benefit or satisfaction from any recreational participation when they engage in recreational activities. The recreationists might get some form of benefits when they get involved in recreation. However, the benefits from recreational participation are a subject to individual judgement and perspective (Syamsul, 2010).

As population, income, and standard of living are increasing, participation in outdoor recreation also increases (Syamsul, 2010) thus leading to the development of more recreational sites. However, at the same time, other sectors for instances industrial, agricultural, educational, health and medical, business services, and many others are also seeking to expand. As a result, a competition for land among all the sectors arises. Thus, a quantitative measurement must be applied towards recreational services/products in order for planners/managers to properly justify the allocation of land area for the recreational purposes. Planners/managers should thus take visitation demand and value of MTB into account.

MTB is one of the various types of recreational activities that can be considered as nonmarket good similar to the other recreation activities (McTernan, 2011). MTB can contribute to economic growth as reflected by the expenditures incurred by the bikers for engaging in MTB. As MTB is a relatively new activity compared to other types of outdoor recreation (Fix and Loomis, 1998), economic valuations of mountain biking are very limited compared with the volume of studies directed to other outdoor recreational

activities (Chakraborty and Keith, 2000). The reason for the discounting of recreational benefits is that it is concerned with non-market public goods that provide the users with no service charge and as a result, it is difficult to evaluate their economic value (Iamtrakul, Teknomo and Hokao, 2005).

1.5 Theoretical Framework

The theoretical framework in this study is based on utility theory and demand theory. Utility is a measure of the satisfaction gained from a good or service and it can be derived by an individual or a group towards the goods and services that they consume. According to Silberberg (1978), it is assumed that the people will maximise their satisfaction or utility by consuming a bunch of goods that include environmental goods and services in formulating consumer demand functions. However, the maximisation of the utility is based on the time and income of the consumer. Therefore, the decisions must be made about the choice of the products to be consumed (Ahmad, 1994).

Demand theory forms the basis for the demand curve, which relates consumer desire to the amount of goods available. In other words, it can be described as the relationship between consumer demand for goods/services and their prices. Income levels and satisfaction (utility) can give impact towards the demand of goods/services. In terms of recreation product and services, recreation demand models are used to forecast demand for recreational activities as well as to determine the value that recreationists place on the various factors that affect their choices (Train, 1998). In this study, demand models are used to forecast the demand for MTB activity at PCP and more specifically to estimate the value of MTB activity at PCP.

1.6 Problem Statement

PCP has been used for recreational purposes for only a few years since 2010, but its popularity among recreationists is increasing gradually especially for MTB. It is shown by the increasing number of events organised and its popularity as a MTB destination in Malaysia is growing quickly. An example of the event is the Langkawi International Mountain Bike Challenge (LIMBC), which has been held annually since 2010 by Human Voyage (M) Sdn. Bhd. The number of participants in LIMBC 2012 was 131 while for 2013 was 167. This statistic presumably shows an increasing number of demands for MTB trip.

Table 1.4: Number of participants in LIMBC for 2012 and 2013

Year	No. of participants
2012	131
2013	167

Furthermore, based on the number of participants for five activities available at PCP (skateboarding, wall climbing, mountain biking, bicycle motor cross, and rollerblading), MTB is one of the top three activities that are popular among PCP's users according to the Manager of PCP, Mr. Bazly. Even though the cost of equipments for MTB is higher compared to other activities, the activity still has its own enthusiasts. Thus, MTB can be assumed as increasing in popularity in Malaysia particularly at PCP and this adds to the demands for more sites and programmes for this special recreational activity.

The Government has spent a hefty sum of RM38 million to build PCP mainly for providing the opportunities for its users in maximising their satisfaction and in gaining experience in recreational activities during their stay at PCP. Therefore, with the aim of justifying the usage of PCP for MTB site, an assessment of the estimated value of benefits from recreational opportunities specifically MTB at PCP must be made. Mountain bikers gain nonmonetary benefits through their enjoyment of riding mountain bikes at PCP and they obtain satisfaction and benefits from their MTB trip. Since the benefits are subjective and may differ from a user to another, each benefit and satisfaction that users gain needs to be transformed into a meaningful quantitative measurement (i.e., in terms of economic value) in order to have a significant measure of benefits and satisfaction. This study only takes into account the MTB activity at PCP and the value estimated is not the total economic value of the overall PCP as there are other activities that take place there.

This study used a well-developed technique of nonmarket valuation of recreational services/products, which is Travel Cost Method (TCM). This method is a revealed preference method that uses actual expenditures by the users of the recreational site for the purpose of deriving a demand curve to estimate the recreational value of benefits from recreational participation. In this study, the actual information on MTB participation by the users who participate in MTB activity (excluded users of other activities) at PCP was used to estimate the recreational value. In this method, the mountain bikers (consumers) were assumed to reveal their preferences based on their total expenses and time spent in both travelling and activity carried out at the

park and by observing their behaviour. A proper demand analysis will be the basic information that could help the management in justifying the financial allocations for the developments of PCP such as for repairing trails, improving the qualities of the recreation site, and expanding the varieties of its potential services.

1.7 General Objective of the Study

The main objective of this study was to estimate the economic value of MTB trip at PCP. However, to better define the aim of the study, the overall objectives were divided into several specific objectives. It is hoped that the achievement of the specific objectives would provide the information for more systematic planning, management, and development of the events/programmes and facilities for MTB at PCP. The specific objectives are as follows:

1.7.1 The Specific Objectives

1. To determine the characteristics of the mountain bikers in terms of socio-demographic backgrounds.
2. To determine the factors influencing the demand for MTB at PCP.
3. To estimate the consumer surplus of the MTB at PCP.

1.8 Significance of the Study

From the assessment of the estimated value of benefits from recreational opportunities at PCP, the financial allocations for development as well as the maintenance of public-funded facilities could be justified. It also supplies the policymakers with information on the usage pattern that may help develop the management plan to maintain or improve the quality of facilities provided at PCP. It can also be a source of financial justification for existing facility expansion and/or upgrading and also establishment of new similar complexes.

The Government can also have the statistics on users at PCP with their trip characteristics, participation pattern, length of stay as well as their motives and preferences. It will help the Government to evaluate how many people take part in MTB or other recreation activities. Based on the statistics, recreation managers and planners will be able to divide users/visitors into subgroups based on demographic, socio-economic, psychographic, and other characteristics. The segmentation based on subgroups provides better explanation on visitors spending patterns and facilitates application of visitor spending averages to economic analysis (Stynes and White, 2008).

Consequently, the findings in this study can be a guide for the Government to construct more world class facilities and sports complexes in Malaysia. According to Brunson and Shelby 1991; Daigle *et al.* 1994; Bowker *et al.* 1999 and Rosenberger and Loomis (2001), breaking the recreationists into subgroups based on their backgrounds is possibly the most widely used categorisation because it relates directly to decisions about facilities and programmes that support particular activity. The measurement of user benefits also provides information to the Government for future planning and development based on the actual demand study that has been carried out. The economic value would suggest that MTB has a significant value in the area, thus the management of PCP should be aware of the relative value of mountain biking when they make allocation decisions for the future development for other recreation sites.

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