SIGNIFICANT INDICATORS IN THE ASSESSMENT OF ENVIRONMENTAL TOURISM CARRYING CAPACITY (ETCC): A CASE STUDY AT ROYAL BELUM STATE PARK, PERAK DARUL RIDZUAN

BY

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A thesis submitted in fulfilment of the requirement for the degree of Master of Science (Built Environment)

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ABSTRACT

Carrying capacity concept is viewed as a weak concept in tourism management and planning although the original theory was seen as a remarkable solution in controlling the impacts of tourism towards the environment. However, due to its complexity and vagueness in indicating attributes and criteria to govern the framework, this theory received big criticism among scholars. Hence, this study was carried out to evaluate the importance of indicators over another to produce a hierarchical structure of environmental tourism carrying capacity (ETCC) framework for Royal Belum State Park (RBSP). ETCC is a site-specific way of implementation, where the indicators should be developed to solve the issues occurring on the site rather than being generalized for all sites. The methodology applied in this study is through triangulation approach which involves a process of identifying relevant indicators via content analysis, indicator screening via questionnaire survey, determining appropriate stakeholders via stakeholder analysis and evaluating the significant indicators via structured interview. The data collected were then analysed by using analytic hierarchy process (AHP) method rooted in the multicriteria decision making (MCDM) process. MCDM creates, evaluates and implements strategic decision deals with the procedures of choosing, ranking and sorting. The AHP technique is chosen amongst other available methods because it is widely applied in MCDM domains and has the ability to unveil relative priorities through pairwise comparison. From the study, it has been discovered that biophysical environment dimension (0.369) is the most important against tourism facility management (0.361), social-cultural (0.167) and political-economics dimension (0.103). Likewise, the top four indicators representing the four dimensions are wildlife threatened species (0.186), tourist satisfaction level (0.259), policy and regulations by park manager (0.300) and community profits (0.528). Based on these findings, it can be concluded that prioritizing the indicators could enhance the efficiency of ETCC, particularly in the implementation stage, by engaging appropriate stakeholders to participate in the data collection. This study also proved the theory that ETCC is a tailor made framework that works according to the issues and problems encountered at a specific site.

ملخص البحث

يعتبر "مفهوم قدرة التحمل" مفهوما ضعيفا في الإدارة والتخطيط السياحيين، هذا بالرغم من أنه كان ينظر إلى النظرية الأصلية كحل ملحوظ في التحكم في تأثير السياحة على المحيط. ولكن نظرا لتعقيدها وغموضها في تبين الصفات والمعايير التي تحكم الإطار، فقد تلقت هذه النظرية انتقادات كبيرة من طرف العلماء. ولذلك فقد أتت هذه الدراسة لتقييم أهمية مؤشرات ما على أخرى والخلوص إلى تركيبة هرمية لإطار لقدرة تحمل السياحة البيئية لحديقة "بلوم" الملكية. إن قدرة تحمل السياحة البيئية تعتبر طريقة تنفيذ ذات موقع محدد، أين ينبغي وضع مؤشرات لحل القضايا التي تحدث على الموقع بدلا من تعميمها على جميع المواقع. لقد اتبعت منهجية الدراسة مقاربة التثليث التي تنطوي على كل من: عملية تحديد المؤشرات المناسبة من خلال تحليل المحتوى، وفحص المؤشر باستعمال الاستبيان، وتحديد أصحاب المصلحة المناسبين عبر تحليل أصحاب المصلحة، وأخيرا تقييم المؤشرات المعتبرة عبر مقابلة منظمة. وقد تم تحليل البيانات التي تم جمعها باستخدام منهجية عملية الهرم التحليلي المتجذرة في عملية صنع القرار متعدد المعايير، والتي بدورها تنتج، وتقيم، وتنفذ القرار الاستراتيجي الذي يقوم بإجراءات الاختيار، والترتيب، والفرز. وقد تم اختيار تقنية عملية الهرم التحليلي من بين الطرق الأخرى المتاحة نظرا لأنها مطبقة بشكل واسع في مجالات عملية صنع القرار ذات المعايير المتعددة، كما أنه لديها القدرة على كشف الأولويات المناسبة من خلال المقارنة الزوجية. ولقد اكتشف من خلال هذه الدراسة أن بعد البيئة الفيزيائية الحيوية (0.369) هو الأكثر أهمية مقارنة بـــ: إدارة المرافق السياحية (0.361)، والبعد الاجتماعي والثقافي (0.167)، وبعد الاقتصاد السياسي (0.103). وبطريقة مماثلة، فإن المؤشرات الأربعة الأعلى التي تمثل الأبعاد الأربعة هي أنواع الحيوانات البرية المهددة (0.186)، ومستوى ارتياح السائح (0.259)، و سياسة وتنظيمات مدير الحديقة (0.300)، وأخيرا أرباح المجتمع (0.528). بناء على هذه النتائج، فإنه يمكن استنتاج أن ترتيب المؤشرات على حسب الأولوية يمكن أن يعزز كفاءة "قدرة تحمل السياحة البيئية" خاصة في مرحلة التنفيذ، من خلال إشراك أصحاب المصلحة المناسبة للمشاركة في جمع البيانات. كما أثبتت هذه الدراسة النظرية القائلة بأن" قدرة تحمل السياحة البيئية" هو إطار مصمم خصيصا يعمل وفقا للقضايا والمشاكل التي يواجهها موقع معين.

APROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as thesis for the degree of Master of Science (Built Environment).

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Khairuddin Bin Abdul Rashid
Dean, Kulliyyah of Architecture and Environmental Design

DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Noorul Iffa Binti Mohd Nayan

Signature …….. Date: …….

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Affirmed by Noorul Iffa Binti Mohd Nayan.

……. …….

Signature Date

I dedicate this thesis to my beloved parents & family, for understanding my goals;
To forever-be-my-inspiration, Dr. Khalilah Zakariya for words of encouragement;
To my colleague, Syakir Amir who never stopped believing in me;
To all my best friends whose push and tenacity rings in my ears.
Thank you.

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LIST OF ABBREVIATIONS

AHP	Analytic Hierarchy Process
BE	Biophysical Environment
BTFC	Belum Temenggor Forest Complex
CCE	Carrying Capacity of Ecotourism
CI	Consistency Index
CR	Consistency Ratio
DAR	Driving force-state-response
DPSIR	Driving force-pressure-state-impact-response
ECC	Environmental Carrying Capacity
ETCC	Environmental Tourism Carrying Capacity
GDP	Gross Domestic Product
ILAM	Institute of Landscape Architect Malaysia
LAC	Limit of Acceptable Change
MCDM	Multicriteria Decision Making
MNS	Malaysian Nature Society
MOTOUR	Ministry of Tourism Malaysia
NGO	Non-Governmental Organization
PE	Political-Economic
RBSP	Royal Belum State Park
RI	Random Inconsistency Index
SA	Stakeholder Analysis
SC	Social-Cultural
TCC	Tourism Carrying Capacity
TM	Tourism Facility Management
WTO	World Tourism Organization

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Tourism is one of the world's fastest expanding industries in terms of scale and magnitude. In the last 50 years, there has been remarkable growth in this industry worldwide. More than 689 million people, about 10% of the world's population, were involved in tourism activities and accounted for more than US$575 billion in the year 2000 (World Tourism Organization [UNWTO], 2003). International tourist arrivals rose to 982 million people, and tourism receipts surpassed US$ 1 trillion for the first time in 2011 (UNWTO, 2012). The tourism industry has also been identified as the largest job-creating sector throughout the world. However, the sector is also like an "engine" that generates both negative and positive impacts as a result of its activities. A known positive impact is that the tourism industry can be a generator of economic revenue, whilst stimulating a transition of resources both within a country, and across its borders. However, a negative impact is that tourism activities can also lead to the exploitation of the environment and a country's natural resources. One aspect of the tourism industry involves the falsification of a natural environment as a channel for the promotion of and source of income to a country. This branch of tourism that manipulates the environment as its product is known as ecotourism. It has been promoted as an initiative to minimize adverse impact on the environment by offering low impact activities with minimal development and alteration to the site. However, overuse and over exploitation towards these resources may cause severe problems not only to the environment, but also to human life and consequently, the economy. Thus,

an identification of the carrying capacity of the natural environment to subsidise these tourism activities is of great importance in justifying its continuity.

Generally, carrying capacity is a concept of the capacity of the earth to absorb or endure burdens imparted upon it at global, regional and local scales, and also to measure its ability to accommodate these stresses without significant long-term damage. Carrying capacity is assessed for each individual type of environmental impact or effect based on the generated trigger of the stress. The concept of carrying capacity as a tool to measure the amount of stress that a tourist destination can endure is viewed as flawed by its opponents. This is because the carrying capacity prototype aims to determine the number of visitors that a tourist destination can accommodate at one time whilst still maintaining equilibrium between the quality of experience, its products, as well as its resources. As time goes by, this concept is evolving into a broad range of definition, as its theoretical overview and implementation as the authentic basis underlying the theory is undeniable. To achieve sustainable tourism management planning, its conflicting aspects should be measured concurrently, in order to find the meeting point for a win-win situation. Tourism is a money generator, while the environment is the reason for tourism to continue growing. Thus, these two facets integrated together form a concept called Environmental Tourism Carrying Capacity (ETCC). Even though the concept is not new, its structural framework, which engages myriads of indicators and criteria, contributes to the hindrance of the success of its implementation. Research has been done worldwide on ETCC; however the results diverge due to different locations, local conditions, climates, and socio-cultural conditions. In this respect, this study aims to identify, analyse and verify the importance of ETCC indicators and the criteria to be used for tourism planning and management.

The process of identifying ETCC indicators and criteria can be challenging, as the integration of the two carrying capacity indicators (tourism and the environment) present many criteria leading towards the choices and alternatives, that is, the problem solutions or goals. The process of Multi-criteria Decision Making (MCDM) consists of several methods and techniques, which can be incorporated for this exercise. A few methods and techniques associated with MCDM are: state space method, fuzzy set theory, Simple Multi-attribute Rating Technique (SMART), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), Analytic Hierarchy Process (AHP), Analytic Network Process (ANP), systematic dynamics theory, and their hybrids. The application of these methods and techniques in ETCC have been developed by many scholars around the world; however AHP has been the favourite decision tool for research in many fields (Sipahi & Timor, 2010). MCDM does not only involve multiple conflicting criteria and attributes; it also entails multi-participatory decision makers, recognised as stakeholders. When a decision problem incorporates social interaction between humans, there is always a presence of disagreement and cognitive contretemps, which leads to failure in achieving the goal. A stakeholder analysis is one of the techniques to identify appropriate participants for a decision making process, implementing stakeholder classifications according to the interests of the stakeholder. Stakeholders basically have to make judgments to decide the best solution of an identified problem by considering a set of attributes underlying the objectives. Although numerous studies have globally struck the factors and criteria in measuring the ETCC, little analytic attention has been paid to the relative importance of each individual indicators resulting in equal consideration for all. All indicators identified in the framework are presented as equally important, which makes the application appear impracticable in reality.

1.2 PROBLEM STATEMENT

The rapid growth of world population has raised brisk attention on environmental awareness, triggering the emergence of the term sustainability in any kind of development. The World Population Data Bank estimates that the world population will reach up to 7,241.9 million in 2015. Consequently, on 31 October 2011, the world welcomed the 7^{th} billion person on earth (Isabelle Lai, 2011). This over-population phenomenon is worse than expected, as over populated means more people are going to be hungry because the current food supply is not enough to serve all. When a large number of people keep increasing in a limited amount of land, major problems such as poverty crisis and environmental degradation will come to pass because individuals struggle for basic needs to survive. The World Development Indicators (WDI, 2011) delineated millennium development goals, which is to ensure environmental sustainability with the target of; integrating the principles of sustainable development within country policies, reversing the loss of environmental resources, and reducing biodiversity loss. By 2010, there was a significant reduction in the rate of these losses.

The massive challenge for tourist destinations to diversify their products in order to keep their clientele expanding may also put pressure on environmental and cultural resources. Many policies have been pursued to control the growth of tourism, but the emphasis is still on short-term management, investing priority on costly infrastructure, but less managing on the grounds. For instance, an ETCC theory outlines many criteria and attributes to be measured in determining an acceptable amount of alteration to a tourist destination with the intention of making the effort as holistic as possible. However, these bulky sets of indicators are unmanageable, which caused the theory to become objectionable by some scholars. It is also time consuming for each of the indicators to be implemented since any change in the environment

engages with time. An implementation of this Limits of Acceptable Change (LAC) process at USDA Daniel Boone National Forest, Kentucky, USA (United States Department of Agriculture, 2012), for example, requires more than 10 years to become a long-standing policy with regulations to be applied. The damage that the environment is suffering during this long period of time is beyond what can be seen through our naked eyes.

Malaysia is bestowed with a lavish tropical rainforest, serving as a habitat to many wildlife species, including endangered flora and fauna, as well as a source of living for indigenous people. However, protected areas in Malaysia vis-à-vis forest reserve or national parks have commonly become a focal spot for intruders to make profits, which shows the lack of strict law enforcement in these areas. In the Royal Belum State Park (RBSP) particularly, there have been many illegal logging and poaching cases reported by the management, some of which were published in the media. There have been cases where indigenous people were caught being involved with illegal hunting; however, a majority of these cases showed that the indigenous people were manipulated by middlemen. Despite this, the influx of tourist arrivals to RBSP increased remarkably from the year 2008 to 2012. Currently, the management is upgrading their facilities to accommodate the needs of bigger crowds coming in. This is seen, however, as a prelude of deterioration to the environment and its natural setting because big crowds mean that big destruction may occur to the site. Furthermore, an adjustment in the classification of the gazetted area in RBSP – previously comprising Upper Belum and Lower Belum – has drawn intense attention to the park's management failure. Lower Belum was set out from the state park and downgraded to a Forest Reserve. This is evident of a failure on the part of the park's

management to control the extent of damages to the park's environment either by permitted or prohibited activities.

Conducting this study could benefit the management of RBSP by identifying criteria that would contribute to the further success of the park on which they could concentrate, rather than placing an equal importance on every criterion, which is the current practice. The conventional carrying capacity theory that has a bulky set of indicators is not only time consuming, but is also an inefficient means of sustaining the products that the park already has. Therefore this research, which recommends having a hierarchical structure of indicators for ETCC framework, can be imposed on the park for effective management and planning. At the end of this research, it is hypothesized that prioritizing indicators of the framework could result in an enhancement of the park's management strategy. Currently, RBSP does not enforce any policies on the preservation and conservation of their products comprehensively, which has led to the separation case of Lower Belum, believed to be an apparent failure of the management. Most of the area has been exposed widely to uncontrolled logging, illegal hunting and erosion, which can clearly be seen from the air.

1.3 RESEARCH QUESTIONS

In developing the research, several questions have been posed in order to achieve research objectives, which are;

i. What is the definition of ETCC and the relevant indicators governing its structural framework?

ii. Who are the appropriate stakeholders to participate in selecting the significant indicators of ETCC and its importance over another?

iii. What would be the suggestion at the end of this research?

1.4 OBJECTIVES OF THE STUDY

This research aims to evaluate significant indicators in fabricating an Environmental Tourism Carrying Capacity (ETCC) framework for the Royal Belum State Park (RBSP), Perak. To accomplish this aim, several objectives have been identified, which are as follows:

i. To define what is ETCC and to determine relevant indicators governing the ETCC structural framework.

ii. To analyse the appropriate stakeholders to participate in the process of examining the importance of each indicators of ETCC for RBSP.

iii. To suggest a hierarchical structure of indicators of ETCC with relative importance for RBSP.

1.5 SIGNIFICANCE OF THE STUDY

Undoubtedly, the key factor of economic success to a country is measured by how wide the country's wealth is expanding. As an important economic resource, tourism is promoted consistently through immense campaigns. However, the pursuit of this venture has been accompanied by an unprecedented rate of change in the natural environment (Hezri & Nordin, 2006). The same view is appraised by Joshi and Dhvani (2009), which states that even a well-managed ecotourism site causes deterioration of its base resources and culture, regardless of the provision for which the very basic form of tourism this ecotourism site is made. This is because an increase in tourist influx and subsequent development places pressure on the carrying capacity of the destination areas.

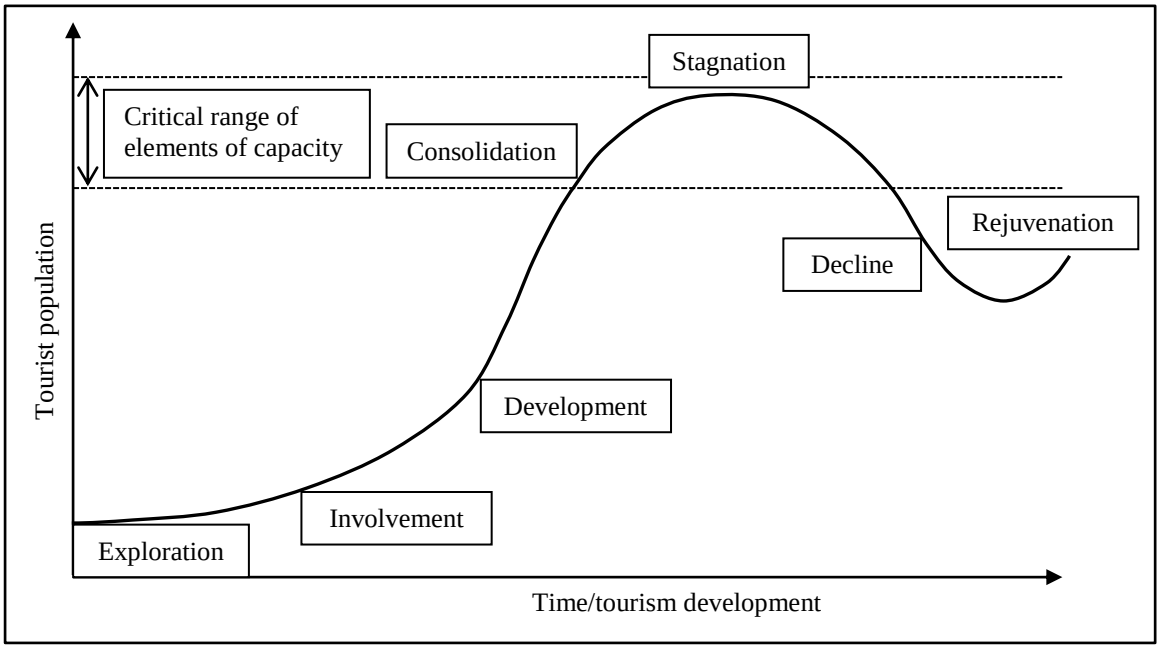

Figure 1.1 Schematic of tourism development adapted from Joshi & Dhvani (2009)

A schematic of tourism process has been studied by Joshi and Dhvani (2009) which incorporated two models from Butler (1980) and Murphy (1991) addressing the