RESPONSIBLE TOURISM SYSTEM DYNAMIC PLANNING
MODEL FOR RURAL AREA

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Abstrak

Pelancongan Luar Bandar di Malaysia mempunyai potensi untuk berkembang dan memberi sumbangan besar kepada pembangunan Malaysia. Walaubagaimanapun, kemampuan adalah halangan dalam pembangunan sektor pelancongan. Pelancongan yang bertanggungjawab adalah sebuah gerakan baru yang mendakwa bahawa akan meningkatkan kemampuan dalam industri pelancongan Malaysia. Model simulasi dinamik telah dibangunkan untuk membantu pembuat keputusan dalam pembangunan pelancongan yang bertanggungjawab (Responsible Tourism). Lundu dipilih sebagai destinasi dalam penstrukturkan gambar rajah gelung sebab dan akibat untuk memahami hubungan dinamik antara alam sekitar, pelancongan dan penduduk tempatan. Model simulasi dibentuk oleh persamaan matematik dilaksanakan ke gambar rajah gelung sebab dan akibat. Dalam model ini, beberapa senario digunakan untuk simulasi data yang diperolehi dan hasil yang dijana sedang dianalisis. Pengesahan model dalam kebolehgunaan model dilakukan oleh beberapa pegawai penyelidik dalam bidang pelancongan. Penunjuk utama pertu diperhatusi dalam model untuk meningkatkan keberkesanan dan keselarasan dengan realiti. Kajian ini menunjukkan bahawa sistem pemodelan dinamik adalah alat yang berkesan dan berkuasa untuk membantu dalam memudahkan sistem pelancongan kompleks dengan mengemukakan imej hubungkait yang lebih besar yang berkaitan dengan industri. Ia membantu dalam membuat keputusan untuk mencapai hasil yang diingini.
Abstract

Rural Tourism in Malaysia has potential to grow and contribute significantly to the development of Malaysia. However, sustainability is the barrier in the tourism development path. Responsible Tourism (RT) is a new movement which claims to improve sustainability in Malaysia tourism industry. A dynamic simulation model has been developed to assist decision makers in RT development. Lundu is chosen as a destination in structuring the causal loop diagram to understand the dynamic relationships between environment, tourism and local population. A simulation model is formed by implementing mathematical equations into the causal loop diagram. In this model, several scenarios were used to simulate the data obtained and results generated were being analyzed. Validation of the model in usability is done by a few research officers in tourism field. Key indicators have to be refined in the model to improve the effectiveness and consistency with reality. This study shows that system dynamic modelling is an effective and powerful tool to help in simplify the complex tourism system by presenting a larger interrelation image associated with the industry. It helps in decision making to achieve desirable outcomes.
Chapter 1 Introduction

1.1 Introduction

Rural Tourism in Malaysia has potential to grow and contribute significantly to the economic, environmental and social development of Malaysia. These significant results will enable Malaysia to be a leading country in rural tourism destination. However, there is one crucial challenge that will be face by the rural tourism development in Malaysia which is sustainability. "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts, the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs." (WCED, 1987). It is the key indicator for rural tourism, which is same with the concept of quality. Tourism development will be safeguarded and the quality of the tourist experience nurtured, the beauty of the natural environment as well as the quality with of life of the inhabitants by making the best use of the resources available without over-stretching or exhausting them. The destination will thus be allowed to respond successfully to the present and future needs of both visitors and the locals (EUKN, 2010).

"Responsible Tourism” or “RT” is a new movement which claims that will improve sustainability in Malaysia tourism industry. RT is about taking action and also about identifying the economic, social and environment issues which matter locally and tackling them, bringing the stakeholders together to exercise responsibility. “A better places for people to live in and better places for people to visit” is the best to illustrate a RT. It is about using tourism wisely by identifying locally significant issues and act to deal with them (Goodwin, 2012). Multi-
stakeholders are required to participate in responsible tourism as this is the interaction among the tourists, local communities, the environment, different industry sectors, government etc. RT relies on the responsibility of the stakeholders for creating better forms of tourism and realizing these aspirations.

According to Nair and Azmi (2008), RT is providing more authentic and pleasurable holiday experiences for tourists while preserving the local environment and culture to deliver benefits for local communities in the future. It is about taking responsibility, responding, taking action to address the social, economic and environmental issues of sustainability that arise in tourist destinations. Social responsibility is practiced by respecting the integrity of local cultures and prevent negative effects on social structures while conserving the local cultural heritage. Economic responsibility in tourism is the commitment in cooperating with the local communities to maximize the revenue of the locals. Environmental responsibility is referring to the responsible use of natural resources, prevention of pollution and waste, conservation of the biodiversity and natural heritage as well.

1.2 Problem Statement

With the global trend towards itinerant travelling, back to nature and authenticity, responsible tourism showed a growing spur in the tourism industry. Malaysia which is covered by rainforest, surrounded by the sea and beaches on the biosphere is slowly positioning itself as a travel destination for those who wish to live life as a local Malaysian in rural area. However, the sustainability of RT in Malaysia’s rural area is questionable. There is no clear solution or approach to support RT in terms of sustainability. The important aspects of RT will be analyzed in this research is tourist, tourism industry, government and local community.

This research project is to provide an initiative to support sustainability of RT in Lundu. Lundu is one of the tourist attractions in the northwest of Kuching Division of Sarawak and
borders with the Indonesian Province of West Kalimantan. Lundu which is known for its natural attractions and cultural environment is still under the government’s constant development. Past tourism research on Lundu has focussed on identifying tourism potential of villages with the concept of sustainable tourism. There has not been an adequate focus on understanding of sustainability issues in the aspect of local communities, government and tourism industry in Lundu despite the district is rich in natural resources and culture.

1.3 Objective

The aim of this research is to propose an approach which helps stakeholders’ decision-making in order to sustain the RT development in Lundu. Therefore, the objectives of this study are:

1. To investigate the level of sustainable tourism in Lundu in terms of tourist, tourism industry, government and local communities as per the RT concept.
2. To identify and investigate the interrelationship and impact of different indicators in RT of Lundu.
3. To design and develop a system dynamic model for data simulation of different indicators in RT of Lundu.

1.4 Brief Methodology

This research involved a few steps of the methodology that is based on both qualitative and quantitative descriptions. Background study is the first step to begin the research. The study includes RT for rural area in Malaysia and model designing. It needs to be done to ensure a full understanding of the research. After the background study, a literature review on related topics will be carried out. System thinking approach and dynamic model design which has been applied on different field will be covered in this task. Data collection will be done before proceeding to the next task. Design and development is the next task. This is an important step
because the dynamic model formed is to be used in the dataset. Once the model is developed, the collected data will be tested on the developmental model to simulate the dataset. The result will then be analyzed and evaluated. The purpose is to visualize how useful the dynamic model can be used in RT tourism in rural area.

1.5 Scope

The research scope was clearly defined. This research will only involve analysis, design, and development. The strategic dynamic model will be designed and developed using available software and the illustrated framework from an extensive review of literature on how integrating and structuring the mental models of different stakeholders will lead them to perceive different components and interactions between different variables in the system.

1.6 Significance of Project

There is a number of significance that add value to it. This proposed system dynamic model not only could be used as a platform for dialogue, communication, collaboration and decision making among relevant stakeholders for the tourism destination. A "bigger picture" in understanding the complex tourism system and how different factors dynamically linked is illustrated through the development of the system dynamic model as well. It is a potentially powerful tool that could assists in the sustainable development of responsible tourism for rural area in Malaysia.

1.7 Expected Outcome

By the end of this research, a system dynamic model is developed as a simulation for the dataset in order to transform rural area in Malaysia into a responsible tourism destination. A good strategic dynamic model proposed can be applied in any other rural tourism destination development.
1.8 Project Outline

This research is presented in six chapters. The first chapter is the introduction to the research in order to clarify and have a better understanding of the purpose of this research. Chapter 2 will be the literature review on related topics. The research is done in such a way to effectively present a better concept, better idea in designing and developing the system dynamic model. The next chapter is on methodology. A clearer explanation on the method and steps which is used in this research is stated in this section. Design and development of the system dynamic model are presented in Chapter 4. Simulation of the results and model validation are concluded in Chapter 5. The last chapter will be concluding the entire research, limitation and discussing on future work.
Chapter 2 Literature Review

2.1 Background

2.1.1 Malaysia

Malaysia is located in the Southeast Asia. This country is being separated into two distinct parts which are Peninsular Malaysia to the west and East Malaysia to the east. Peninsular Malaysia is located at the south of Thailand, north of Singapore and east of the Indonesian island of Sumatra. The Strait of Malacca to the west, the Johore Strait to the south, and the South China Sea to the east. East Malaysia is located on the northern portion island of Borneo and shares common borders with Brunei and Indonesia. It is composed of two stated which are Sabah and Sarawak. Both of the non-contiguous regions are separated by about 530 kilometers of the South China Sea (McGinley, 2010).

2.1.2 Rural Tourism

More than half of the Malaysia’s surface is covered by rainforests and this country contain some of the most exotic, tropical beaches on the planet. Malaysia is a multiracial and multicultural country as the population comprises many ethnic groups. Besides the local Malays and the native groups, immigrants from China, India, Indonesia and other parts of the world have all contributed to the multiracial composition of its population (Abazov, n.d.).

The natural beauty of the location in Malaysia and the unique blend of multicultural has made the country as a destination for rural tourism (Thomas, n.d.). As advertised in one of the USA travel website, Malaysia is one of the recreation destination for rural tourism. It offers the opportunity for the tourists to live near or in a relatively isolated rural village, enjoy the quiet life and experience the truly authentic local culture by living among the local villages for a short time. According to Aruna (2013), the Homestay programs which have highly contributed
to Malaysia’s tourism industry has attracted 325,285 participants, with 20.4% of them foreign tourists. It generated an income of RM18.55mil to the rural economy community, which is an increase of 17.90% compared to 2011.

The Malaysian Homestay Experience Program has been awarded the First Prize UNWTO Ulysses Award for Innovation in Public Policy and Governance Homestay. This award was the result of initiative in tourism where it plays a significant role in the economy of Malaysia. Rural tourism not only benefits tourists, but also provides a vital source of income and employment for local communities in rural areas. This shows that rural area is much dependent on the tourism industry as their source of income.

2.1.3 Responsible Tourism

Rural tourism in Malaysia has the potential to grow significantly. However, sustainability is a crucial challenge in rural tourism development. Despite nurturing of the tourist travel experience, the beauty of the natural environment and benefits of the locals are important as well. This has fulfilled the Responsible Tourism (RT) concept which claimed that can sustain the rural tourism industry in Malaysia (EUKN, 2010). According to Azmi (2006), there’s a new wave of tourists who want to have a quality experience in travelling. They want to interact with the locals and experience local offering first hand. They want a holiday that will not damage the natural environment or the livelihoods of the people they are visiting. In short, there’s a “no” to mass tourism, irresponsible operators and resorts that are destroying the local environment. Travel is about relaxation, rejuvenation, adventure, fulfilment, playfulness and sharing experiences rather than just “places and things”.

“A better place for people to live in and better places for people to visit” is the best phrase to illustrate an RT. It is about taking action, identifying the economic, social and environment issues which matter locally and tackle them, in addition to bringing the stakeholders together to exercise responsibility. It is about using tourism wisely by identifying
locally significant issues and acting to deal with them (Goodwin, 2012). Multi-stakeholders are required to participate in responsible tourism as this is the interaction between both local communities and the environment in order to create a better form of tourism.

2.2 Approaches in Sustainable Tourism Development

The following cases illustrate different approaches used in the tourism industry. All the cases have the same goal, which is developing a sustainable tourism. In the first case, a system thinking tool, with the system dynamic concept is applied in the tourism of an island in order to have a clearer view on how the behavior of different variables interact with each other (Mai & Bosch, 2010). In the second case which proposed Pro-poor Tourism in community-based tourism industry, Neto (2003) aims to reduce the poverty group in order to sustain the tourism development of a destination. For the third case, responsible tourism concept is being proposed by Nair and Azmi (2008) for sustainable tourism development in Langkawi, Malaysia.

2.2.1 System Thinking Tool - Cat Ba Biosphere Reserve of Vietnam

From the case study in the Cat Ba Biosphere Reserve (CBBR) of Vietnam, a system thinking approach is used as a unique tool for their sustainable tourism development. While CBBR is experiencing strong growth in tourism, a number of severe and urgent environmental problems pose serious threats to the sustainable tourism development in the Cat Bay region. The dynamic system model is proposed to be used in identifying the root cause of complex problems and the key leverage points of the tourism system in CBBR.

To identify drivers and inhibitors that assist or impede sustainable development of tourism on the Island, the key stakeholders included local community representatives, the management board of the Cat Ba National Park, local authorities, tour operators and international aid agencies were participating in a series of key information interviews and focus group discussions. The main issues are then grouped into three broad categories, which are
tourism economy, social-demography, and natural resources. These stakeholders also participated in the consensus building stage to develop a conceptual tourism system model for the Island. In this stage, diverse and sometimes conflicting views about the important factors to be included in the system model were discussed in a stakeholder workshop (Mai & Bosch, 2010).

Three sub-systems of tourism, which are interrelated between economy and natural resources, interrelation between socio-demography and natural resources, and interrelation between socio-demography and economy were refined into a causal loop diagram based on the outcome of the workshop and validations from tourism experts. The interrelations between the three sub-systems were defined during the stakeholder workshop held in Cat Ba Island in July 2009. Among a number of variables within the sub-systems, only main variables are included in the model (Figure 1). A number of “leverage points” for systemic intervention were also identified by the workshop. The outcome of the workshop was a road map for the development of a systems dynamic model which is the conceptual framework outlined in this paper. The causal loop diagram of the island’s tourism system and key leverage points is presented in Figure 1 (Mai & Bosch, 2010).

Figure 1 Causal Loop Diagram of The Island’s Tourism System and Key Leverage Points (Mai & Bosch, 2010)
Figure 2 is a simple diagram which denoted the interactions between variables is illustrated as below from the causal loop diagram in Figure 1.

Figure 2 Causal Loop Diagram of The Island’s Tourism System and Key Leverage Points (Mai & Bosch, 2010)

It shows that the development of tourism on the island which denotes by “Tourism Infrastructure” creates employment opportunity which will then attract and bring in temporary migrants to the island. This leads to an increase in the island’s population, which in turn leads to an increase in social ills on the island. As a result, this negatively affects the attractiveness of the island. The symbol (+) denotes the same way relationship between two variables, while (-) denote an opposite relationship.

From this study, it addressed tourism as a complex and dynamic system by including many interacting components. Development of a sustainable tourism impinges on and is subject to many different factors. The process of the qualitative modelling (causal loop model) in the development of CBBR of Vietnam will help governmental agencies, managers and planners understand complex relationships. The model uses as a foundation to construct a simulation model that can be used to develop and test the alternative management policies. Besides, it is part of the Cat Ba Biosphere Reserve pilot project. In less than 3 years, Cat Ba Biosphere sustainability has become a notable project in Viet Nam which has involved senior politicians
from district to central government, academics, donor organizations, field officers and managers at various levels of the government as well as villagers and residents.

2.2.2 Pro-poor Tourism

Based on Neto (2003) research, a new approach is being proposed to sustain a tourism industry at both national and international levels, Pro-poor Tourism (PPT). PPT approach differs from other sustainable tourism strategies as its main focus is on the net benefits to the poor. Poverty reduction is the core focus of PPT approach. However, environmental protection is the secondary concern in PPT. The quality of the environment where the targeted poor groups lived in is one of the poverty reduction strategy. Natural Resources may be their only asset to generate income for daily lives.

Tourism is an effective tool in poverty reduction as it offers considerable employment opportunities for unskilled labor, rural to urban migrants and low income women. Besides, there are considerable linkages with the informal sector, which could generate positive multiplier effects to poorer groups that rely on that sector for their livelihoods. Tourism tends to be heavily based upon the preservation of natural capital such as, wildlife, scenery and cultural heritage. As mentioned above, these natural resources are often the assets of some of the poor have even though they might not have any financial resources.

There are three key components of this PPT approach:

1. Improved accessibility to the economic benefits of tourism
   - Increase employment and business opportunity for the poor
   - Provide adequate training for poverty group to maximize their business opportunities

2. Measures to deal with the social and environmental impact of tourism development
   - To improve living standard by reducing the poverty rate
   - Pollution generation


Damage to ecosystem

3. Policy reform
- Enhance participation of poor planning, development and management
- Encourage partnership between government or private sector with the poor

According to Neto (2003), there is evidence to prove that PPT approach in community-based tourism in Namibia obtained a sustainable economic return, and at the same time promoting environmental conservation and cultural traditions in the rural area. Another rural area which implement PPT in their community-based tourism is Nacomba. Their tourism industry differs from conventional tourism because the local communities both own and manage the tourism enterprises, whose economic benefits flow directly into the community funds. These financial returns substantially lower the poverty rate among the locals.

2.2.3 Responsible Tourism Concept in Langkawi, Malaysia

There is a new wave of tourists which are saying "no" to mass tourism, irresponsible operators, and resorts that are destroying the local environment. Inspired by increasing attention paid to improve the sustainability in the tourism industry around the world, Nair and Azmi (2008) proposed the RT (Responsible Tourism) concept in Langkawi for sustainable development. The aim of this research is to study the understanding of tourists towards RT in Langkawi. For the past tourism research in Langkawi, it only focused on the environment and perception of tourism among the local communities. There has not been adequate focus on understanding the sustainability issues in Langkawi.

A field survey was carried out in Langkawi for data collection with a period of 5 days. It was conducted by 4 researchers and 22 research assistants (RAs) from Taylor’s College, School of Hospitality and Management, Malaysia and Wild Asia, a Malaysian-based company that specializes in supporting conservation initiatives in Asia. The researchers conducted a seminar and workshop on RT for all the research assistants and also developed the survey
In this research, Nair and Azmi (2008) studied the tourists’ profile, expectation, and motivation for visiting Langkawi and the impact of RT on their decisions. Results show that the majority (67%) of the respondent support RT if given an option to do so which showed a good indication, although RT is not commonly practiced in Langkawi by both local communities and tourists.

The research output will guide the tourism development in Langkawi using the ‘consumer’ as the incentive for change towards RT. In order to practice RT effectively, the government, non-government and private sector in tourism industry should co-operate to deliver RT to the public.

2.2.4 Summary of Sustainable Tourism Development

Table 1 Three Cases of Sustainable Tourism Development

<table>
<thead>
<tr>
<th>Description</th>
<th>System Thinking Tool (Mai &amp; Bosch, 2010)</th>
<th>Pro-Poor Tourism (Neto, 2003)</th>
<th>Responsible Tourism (Nair &amp; Azmi, 2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>- A system dynamic approach is used to identify the root cause of complex problems and key leverage points for the tourism system in CBBR (Cat Ba Biosphere Reserve). - Illustrated using a causal loop diagram to show the root cause interrelationship.</td>
<td>- Poverty reduction, which aims in net benefits to the poor is the approach used. - Environmental protection is the secondary concern.</td>
<td>- Tourists perception towards responsible tourism in tourism sustainable development.</td>
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<td>Issues</td>
<td>- Tourism economy. - Socio-demography. - Natural resources.</td>
<td>- Living standard of local poverty group.</td>
<td>- Environmental issues are the main focus in tourism development. - The only local communities’ perception is used for tourism planning.</td>
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Table 1 is the summarization of three sustainable tourism cases applied in different destination. Mai and Bosch (2010) proposed a system dynamic approach for CBBR (Cat Ba Biosphere Reserve) which aims at identifying the root cause of complex problems and key leverage points for the tourism system. They believed that the tourism system is a complicated system which the indicators are having a multi-relationship and dynamically interrelated to each other. Thus, the proposed method is to have a clearer view on how the behavior of a