



UNIVERSITI PUTRA MALAYSIA

***WATER SECURITY AND SUSTAINABLE TOURISM AS ANTECEDENTS
OF LOCAL COMMUNITY'S QUALITY OF LIFE IN MABUL ISLAND,
MALAYSIA***

FATIN NORNAJLA BT KHAIRUDDIN

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MALAYSIA**

By

FATIN NORNAJLA BT KHAIRUDDIN

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

October 2019

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DEDICATION

Every challenging work needs efforts as well as the guidance of elders especially those who are very close to our heart.
My humble effort I dedicate to my sweet and loving.

My beloved parents **Khairuddin Bin Abu Nipah Halijah Bt Ismail**

My Friend
Siew Kar Man

Who taught and helped me during the time of thesis writing

And all my supportive friends Who have given me support all the way

With appreciation

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

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By

FATIN NORNAJLA BT KHAIRUDDIN

October 2019

**Chairman: Assoc. Prof. Sridar Ramachandran, PhD
Institute: Agricultural and Food Policy Studies**

The purpose of this study is to assess the perception of local communities in Mabul Island towards water security and sustainable tourism in order to improve their quality of life. The study area is at Mabul Island, Sabah. The problem statement highlighted is based on personal communication with tour operators in Mabul Island combined with the theoretical gap from past studies. Thus, this study aims to bridge the research gap by investigating the influence of perception on water security and sustainable tourism towards the quality of life. The objectives of this study are (1) to identify the socio-demographic characteristics of communities in Mabul Island, (2) to identify underlying factors of water security and sustainable tourism, and (3) to determine the causal relationships of perceived water security and sustainable tourism on the quality of life of the communities in Mabul island. A census technique was executed to get the data from all 504 households of the indigenous communities in Mabul Island. A structured questionnaire was designed and used as the instrument to gather the data on the Bajau, Suluk, Bajau Suluk and Bajau Laut communities who were residing in Mabul Island, Sabah; the face to face interview technique was used to collect the data. Descriptive analysis, factor analysis, and multiple regression analysis were used to analyze the collected data.

This study analyzed the causal relationships of water security, sustainable tourism and quality of life. The exploratory factor analysis on the perception of the communities produced seven new indicators of water security and sustainable tourism. The results of multiple regression showed that five variables including increased job opportunities for the community, employment in tourism, male members of the communities influenced the quality of life. In addition, the result of the study also found that the

awareness on water safety and awareness on quality and quantity of water were significant in influencing the quality of life.

It is hoped that the findings of this study will encourage the communities in Mabul Island to be more concerned about water security. Besides, this research will contribute to existing literature on the determinants of quality of life with respect to the awareness of communities in sustaining the tourism development in Mabul Island. The findings of the study are consistent to the generalization of the social exchange theory which emphasizes that the local communities who get improvement in quality of life will support water security enhancement and sustainable tourism. Besides by knowing the perceived level of awareness of the communities on water security and sustainable tourism the relevant agencies can take initiatives to further develop the awareness of the communities on water conservation and sustainable tourism to improve quality of life of the communities in Mabul Island.

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

**KESELAMATAN AIR DAN PELANCONGAN MAMPAN SEBAGAI
PENGARUH KUALITI HIDUP KOMUNITI TEMPATAN DI PULAU
MABUL, MALAYSIA**

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Tujuan kajian ini adalah untuk menilai persepsi komuniti tempatan di Pulau Mabul terhadap keselamatan air dan pelancongan lestari bagi meningkatkan kualiti kehidupan mereka. Kajian ini dijalankan di Pulau Mabul, Sabah. Kenyataan masalah yang diketengahkan adalah berdasarkan komunikasi peribadi dengan pengendali pelancongan di Pulau Mabul dan jurang teori yang terjadi di dalam kajian terdahulu. Kajian mengenai kesan tahap keselamatan air dan pelancongan lestari menjadi penting untuk meningkatkan kualiti hidup masyarakat di Pulau Mabul. Oleh itu, kajian ini bertujuan untuk menghubungkan jurang penyelidikan tentang pengaruh persepsi terhadap tahap keselamatan air dan pelancongan lestari keatas kualiti hidup. Kajian ini mempunyai tiga objektif, iaitu (1) untuk mengenalpasti ciri sosio-demografi komuniti di Pulau Mabul, (2) Untuk mengenal pasti faktor asas keselamatan air dan pelancongan lestari, dan (3) untuk menentukan pengaruh faktor persepsi terhadap keselamatan air dan pelancongan lestari yang keatas kualiti hidup masyarakat di Pulau Mabul. Teknik banci dilaksanakan untuk mendapatkan data daripada keseluruhan 504 keluarga yang tinggal di Pulau Mabul. Soal selidik berstruktur direka dan digunakan sebagai instrumen untuk mengumpulkan daripada komuniti di Pulau Mabul yang terdiri daripada ethnic Bajau, Suluk, Bajau Suluk dan Bajau Laut; data dikutip melalui wawancara bersemuka. Analisis deskriptif, analisis faktor, dan analisis regresi berganda digunakan untuk menganalisis data yang dikumpulkan.

Kajian ini menganalisis hubungan antara kualiti kehidupan, keselamatan air, dan pelancongan lestari. Analisis faktor eksploratori menghasilkan tujuh faktor baru berkaitan persepsi tentang keselamatan air dan pelancongan lestari. Selain itu, analisis regresi berganda menunjukkan bahawa lima

pemboleh ubah termasuk persepsi terhadap peningkatan peluang pekerjaan untuk masyarakat, peluang pekerjaan dalam bidang pelancongan dan jantina lelaki mempengaruhi kualiti hidup. Di samping itu, kajian juga telah mendapati bahawa kesedaran masyarakat terhadap keselamatan air dan kesedaran terhadap kualiti dan kuantiti air mempunyai pengaruh penting keatas kualiti hidup.

Diharapkan penemuan kajian ini akan menggalakkan komuniti di Pulau Mabul untuk menjadi lebih prihatin terhadap keselamatan air. Penemuan kajian ini akan menyumbang kepada penulisan karya sedia ada dalam bidang pemasalahan kualiti kehidupan yang dapat membantu meningkatkan kualiti hidup masyarakat dalam membangunkan industri pelancongan di Pulau Mabul. Penemuan kajian ini juga konsisten dengan teori pertukaran sosial. Teori ini menekankan bahawa komuniti tempatan yang mendapat faedah atau kelebihan dalam kualiti kehidupan akan menyokong usaha keselamatan air dan pelancongan lestari. Selain itu, penemuan ini boleh membantu pihak berkuasa yang berkaitan untuk mengetahui tahap kesedaran komuniti mengenai keselamatan air dan pelancongan lestari supaya pihak berkuasa dapat mengambil inisiatif untuk meningkatkan kesedaran komuniti mengenai keselamatan air dan kelasterian pelancongan bagi meningkatkan kualiti hidup masyarakat di Pulau Mabul.

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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 Master of Science. The members of the Supervisory Committee were as follows:

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TABLE OF CONTENTS

		Page
	ABSTRACT	i
	ABSTRAK	iii
	ACKNOWLEDGEMENTS	v
	APPROVAL	vi
	DECLARATION	viii
	LIST OF TABLES	xiii
	LIST OF FIGURES	xv
	LIST OF ABBREVIATIONS	Xvi
CHAPTER		
1	INTRODUCTION	1
	1.1 Background of the Study	1
	1.1.1 Sustainable Development Goals (SDG)	1
	1.1.2 Government Policy	2
	1.1.3 The National Water Resources Policy (NWRP)	3
	1.2 Water Security	4
	1.3 Sustainable Tourism	5
	1.4 Quality Of Life	7
	1.5 Problem Statement	8
	1.6 Research Questions	12
	1.7 Purpose Study	12
	1.7.1 Main Objective	12
	1.7.2 Specific Objectives	12
	1.8 Significance of the Study	13
	1.9 Scope of the Study	13
	1.10 Definition of Key Terms	14
	1.11 Organization of the Thesis	14
2	LITERATURE REVIEW	
	2.1 Review of Related Studies	16
	2.2 Community Awareness	16
	2.3 Water Security	19
	2.4 Sustainable Tourism	23
	2.4.1 Economic Sustainability	25
	2.4.2 Social Sustainability	26
	2.4.3 Environmental Sustainability	27
	2.5 Quality of Life	29
	2.5.1 Impacts of Water Security to Quality Of Life	32
	2.5.2 Impacts of Sustainable Tourism to Quality Of Life	33

2.6	Mabul Island	35
2.7	Island Tourism	35
2.8	Theories related to Quality of Life	37
	2.8.1 Stakeholders Theory	37
	2.8.2 Social Exchange Theory (SET)	38
2.9	Summary	39
3	METHODOLOGY	
3.1	Operational Framework	40
3.2	Data Sources	41
3.3	Data collection	43
	3.3.1 The Case Study Area	43
	3.3.2 Questionnaire Design	44
3.4	Measurement	49
3.5	Data analysis	49
	3.5.1 Reliability Test	49
	3.5.2 Descriptive Analysis	50
	3.5.3 Factor analysis	51
	3.5.4 Multiple Regression Analysis	52
3.6	Summary	52
4	RESULT AND DISCUSSION	
4.1	Descriptive Analysis	54
	4.1.1 Nationality of households	54
	4.1.2 Gender of households	55
	4.1.3 Age of households	56
	4.1.4 Marital Status of households	56
	4.1.5 Ethnicity of household	57
	4.1.6 Religion of households	58
	4.1.7 Education of households	59
	4.1.8 Occupation of households	60
	4.1.9 Income of households	61
4.2	Factor Analysis	61
	4.2.1 Measure of Sampling Adequacy and Correlation Matrix Significance	62
	4.2.2 Communality	63
4.3	Multiple Regressions	74
4.4	Summary	85
5	CONCLUSIONS AND RECOMMENDATIONS	
5.1	Introduction	86
5.2	Summary of Main Findings	86
5.3	Limitations of the Study	87
5.4	Theoretical Contributions	89
5.5	Practical Contributions	90
5.6	Recommendation for future study	91
		92

5.7 Summary

REFERENCES	93
APPENDICES	105
BIODATA OF STUDENT	118
LIST OF PUBLICATIONS	119



LIST OF TABLES

Table		Page
1.1	Relation of Problem Statement and Research Objectives	11
2.1	Literature review from various authors	16
2.2	The most common attributes used for Awareness studies	18
2.3	The most common attributes used for water security studies	22
2.4	The Most Mentioned Attributes Used in Sustainable Tourism Studies	28
2.5	Past studies of QOL	31
2.6	The most common attributes used for Overall Quality of Life	34
3.1	The Variables of Each Attributes of Sustainable Tourism	45
3.2	The Variables of Awareness of the Water Security	47
3.3	The Variables of perception on Quality of Life	48
3.4	The Variables of Each Attributes of Social Demographic	48
3.5	Reliability Test	50
4.1	Frequency and Percentage of Nationality	54
4.2	Frequency and Percentage of Gender	55
4.3	Frequency and Percentage of Age	56
4.4	Frequency and Percentage of Marital	56
4.5	Frequency and Percentage of Ethnic	57
4.6	Frequency and Percentage of Religion	58
4.7	Frequency and Percentage of Education	59

4.8	Frequency and Percentage of Occupation	60
4.9	Frequency and Percentage of Income	61
4.10	Reliability, Kaiser Meyer-Olkin (KMO) & Bartlett's Test	62
4.11	Communalities for items	63
4.12	Components with Eigenvalue More Than 1	66
4.13	Mean for Dimension in Factor Analysis	67
4.14	Rotated Component Matrix	69
4.15	Overview of the Variables for Regression Analysis	75
4.16	ANOVA	78
4.17	Multiple Regression Result	78
4.18	Equation for Occupation	81
4.19	Equation for Gender	83

LIST OF FIGURES

Figure		Page
1.1	Attributes of Smart Communities 2050	3
2.1	Integrative model of QOL	30
3.1	Operational Framework	41
3.2	Mabul Island Map from Sabah Tourism Board Official Website, 2017	43
3.3	Flow of Research Process	53
4.1	The predicted model for factors influencing quality of life of local community in Mabul Island	85

LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CEE	Community Engagement and Education
DV	Dependent Variable
EPA	United States Environmental Protection Agency
IV	Independent Variable
ISA	Information Security Awareness
JKKK	Village Development and Security Committee
NWRP	The National Water Resources Policy
NGO	Non-Government Organization
NRE	Natural Resources and Environment
PPT	Pro-Poor Tourism Approach
QOL	Quality of Life
RMK 10	10th Malaysia Plan
SDG	Sustainable Development Goal
SET	Social Exchange Theory
SIDS	Small Island Developing States
SME	Small to Medium Enterprise
SPSS	Statistical Package for the Social Sciences
ST	Sustainable Tourism
STI	Science, Technology and Innovation
TN50	National Transformation 2050
WCA	Water Protection Mindfulness
WCED	World Commission on Environment and Development
WHO	World Health Organization

WTO

World Tourism Organization

WWF

World Wildlife Fund



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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The purpose of this study is to assess the perception of local communities in Mabul Island, towards water security and sustainable tourism, in order to improve their quality of life. The emphasis of this study is on the local community because they are major stakeholders in the tourism industry. By 2050, the country's population is expected to increase to 43 million; this means that together with the expected economic growth, the demand for daily consumption of water would increase substantially (National Water Resources Policy, 2012). To fulfill this demand, the Tenth Malaysia Plan proposes the establishment of a National Water Resources Policy. As water provides the basic function to people, country, and environment, this policy ensures that water resources are used properly and sustainability. Besides that, as a national development vision and strategy, the government has launched a policy for national development goals, namely the TN50, which includes environmental resources. At the world level, a policy called The Sustainable Development Goal (SDGs) has been introduced, containing 17 goals to be achieved; in the present thesis, three key elements of SDGs are given as the main focus and would be explained further later in the chapter. Besides that, this research covers elements like sustainable tourism, water security, water security awareness/perception, quality of life and Mabul Island. All these key terms are discussed in more detail, in this thesis.

1.1.1 Sustainable Development Goals (SDG)

The SDG stands for Sustainable Development Goals. In 2015, member states of the United Nations agreed upon the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. Together with the United Nations, governments, organizations and common society work for hands in hand to accomplish the Sustainable Development Agenda by 2030. The main Agenda of the SGD 2030 is for all nations to take comprehensive actions to enhance the lives of individuals around the world. The Sustainable Development Goals (SDGs), also called the Global Goals, are an all-inclusive invitation to take action to end destitution, secure the planet and guarantee that all individuals appreciate peace and thriving (Assembly, 2015). In achieving these 17 sustainable development goals, nations have to ensure that the awareness of the 2030 Agenda is increased and the accomplishments of the SDGs place emphasis on people with disabilities.

These 17 Goals expand on the accomplishments of the Millennium Development Goals by including new components, like environmental change,

financial imbalance, advancement, manageable utilization, peace, and equity, among different needs. The objectives intersect regularly so that the progress on one specific objective would not exclude other important issues, such that all the general goals are connected with one another. The SDGs work in an atmosphere of association with realism, to ensure that the correct decisions are generated to enhance lives reasonably, for present and future generations. This creates clear rules and focuses on all nations to clarify their needs. The comprehensive motivations of the SDGs become the main drivers to ensure all participants are able to generate constructive improvements for all individuals on the planet. The Agenda establishes an extraordinary chance to put the entire world on a more prosperous and reasonable path towards advancement. Of the 17 goals of SDG, this thesis focuses on Goal 3: Good health and well-being, Goal 6: Clean Water and Sanitation, Goal 12: Ensure sustainable consumption and production patterns and Goal 8: Eligible Work and Economic Growth. As Malaysia is in agreement with the SDGs in maintaining the quality of life of all citizens, the government has produced a similar policy as envisioned in the TN50.

1.1.2 Government Policy

The Malaysian government concurs with the SDGs and wants to prove to the world that today, as and compared to other countries in the region, the country embraces a healthy economic and political environment, which would continue to be stable and strong for the period of 2020 to 2050. As declared by the current Prime Minister of Malaysia, Tun Mahathir Mohamad, the revised Vision 2020 has included a guideline and framework for the formation of a truly developed Malaysia by the year 2030. One of the objectives of new Vision 2030 is to ensure Malaysia grows, not only in economic aspects but must include all other aspects comprehensively -- politically, mentally, psychologically and culturally, the rule of government, quality of life, social life and national pride. To achieve these objectives, the government has also established the National Transformation Policy (TN50). This policy, introduced in 2010, puts Malaysia on the right track to achieve Vision 2020, which is only less than one year from today. The main aim of National Transformation 2050 (TN50) is to elevate the country among the top 20 nations in the world. In order to fulfill this aim, Malaysia needs to increase its economic growth, improve its happiness index and enhance its creativity and innovation. One of the proposed visions in TN50 is Smart Communities 2050, which encompasses the promotion of human well-being and sustainability. According to ASM (Attributes of Smart Communities 2050), one of the important attributes to proper well-being or quality of life is water (Figure 1.1). So this present study explores the relationships between water security, sustainable tourism, and quality of life.

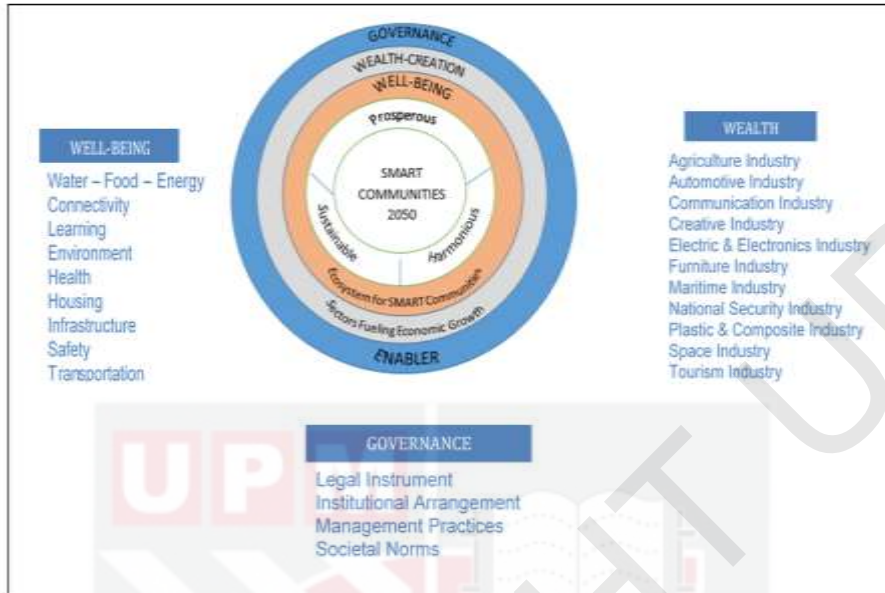


Figure 1.1: Attributes of Smart Communities 2050
(Source: ASM)

There are nine key drivers of change in smart communities in 2050. These are people and values, population and demographics, leadership and governance, talents, education and training, green sustainable practices, urbanization and rise of megacities, economic growth and equitable distribution and STI (Science, Technology, and Innovation) capacity and competency (Academy of Sciences Malaysia, 2017). With respect to the rural island communities, the provision of enough water should be an important requirement to meet the TN50 goals. It is important as island communities are also major contributors to national economic development. Water vulnerability would have undesirable impacts on the achievement of TN50 goals; thus awareness on water security is a prerequisite to help sustain the development of tourism on islands and to enhance the well-being of local communities situated on them. To support proper water resource management, the Ministry of Natural Resources and Environment has established a National Resource Policy.

1.1.3 The National Water Resources Policy (NWRP)

The effectiveness and efficiency of water resource management are important for conservation and sustainability of water resources, to avoid issues of droughts, floods, pollution, and climate change. Malaysia has always emphasized the importance of water resources for the sustenance of human life. The National Water Resources Policy (NWRP) formulated by the Ministry of Natural Resources and Environment (MNRE) set the direction and framework for strategic actions to ensure that water resources are used and developed in a sustainable manner, to benefit the nation, both people and the

environment as a whole, while also fulfilling TN50 aims. A study conducted in Samoa identified several challenges that a country would have to face in order to sustain and manage water resources (Taua'a, 2008). The challenges may lead to become unresolved problems, especially in communities that have little understanding of the importance of conserving water resources. When a community does not participate in the management of water resources, it may create excess demands for water, shortages in supply and may lead to declines in the water quality. To mitigate this, the National Water Resources Policy (NWRP) has been formulated to emphasize policies and procedures, so that the water resources can be managed systematically and can provide benefits. The content includes:

- To create public awareness on water resource management
- To attract people and communities to join in events of water resource management
- To create public attention to protect water catchment area and water sources
- To preserve water resources from the negative impacts of human activities
- To develop ways to improve the quality of water resources

1.2 Water Security

In the past decades, there has been much research covering the issues of water security (Native Title Report 2008; Guthrie, 2010; Water, 2013; Journal of the Institution of Environmental Sciences, 2014; Kujinga et al, 2014; Siska & Takara, 2015 and Dean et al, 2016). The information related to the water security definition should be based on sound and trustworthy procedures, with adequate observation and research structure. According to Nanda and Pring (2012), from a global perspective, the proportion of people living in places that are exposed to the dangers of water security is around 80%. Water security is characterized in terms of accessibility of water of a specific amount and quality that is satisfactory to ensure well-being, life, and future generations, with an acceptable level of hazard (Grey and Sadoff, 2007). Another interpretation of water security is given by Al-Otaibi and Abdel Jawad (2007) that address issues and needs in all segments, with respect to the availability of enough water. The United Nations defines water security as the limit for a populace to defend access to an adequate amount of quality water, to support employment, personal satisfaction, and budgetary headway, ensuring avoidance against water-borne contamination and water-related harm, and for protecting safe natural sources (UN-Water, 2013). The definition of water security by UN-Water (UN-Water, 2013) implies giving acceptable quality water to all, based on rational and strong information on key water-related challenges and organizational issues.

The concept of water security encompasses complex and interconnected challenges that focus on the ability of communities to have access to sources of water that provide sufficient amounts to support, improve and satisfying

lives. The concept extends from biophysical to infrastructural, institutional, political, social and budgetary factors, to accomplish an acceptable level of water security (Imperial Academy of Engineering, 2010). In order to make sure that the available water is of good quality, cooperation from all relevant agencies, local communities, and political organizations is needed (UN-Water Analytical Brief on Water Security and the Global Water Agenda, 2013).

On a small island like Mabul Island, there is a critical shortage of clean water to ensure life satisfaction in daily consumption, agriculture, and tourism. Like many other Small Island Developing States (SIDS), the communities on Mabul face several major problems in managing freshwater supply because of the lack of basic infrastructure, limited financial resources, lack of education, natural threats and limited administrative supports (ECLAC, 2011). Moreover, in many small island communities, natural factors like variable rainfall patterns, unpredictable tropical storms, stormwater runoff, droughts, poor water quality and increasing demand for water due to increasing populations have serious consequences on the economic development and health of the people (Ebi, Lewis & Corvalan, 2006).

According to White et al. (2007), groundwater is an important source of freshwater, for daily domestic consumption and tourism activities. However, on many tropical islands, there is a lack of surface water sources to meet communities' needs. Especially in small islands that are located farther from big islands, there are many other physical, demographic and also economic problems that affect these communities. Various limitations such as land, natural product, energy supply, mineral, and infrastructure have increased the exposure to natural disasters; this is further compounded by problems relating to water resources. As many islands in Malaysia, including Mabul Island, have small or no natural lakes, groundwater supplies in these islands are limited to none. For communities that are living in an island which have no natural sources of groundwater, this becomes a major problem in supplying fresh clean water, since water is one of the most important and crucial resources in daily life. For Mabul Island, which is also famous as one of the best diving destinations in the world, many tourists come to stay on the island to participate in marine-related activities. Thus, if the supply of fresh clean water becomes a major problem, it would, not only affect the livelihoods of the local communities, but also the growth and sustainability of tourism development on the island.

1.3 Sustainable Tourism

In the last 20 years, the tourism industry worldwide has seen tremendous development and rapid growth. For many developing countries, tourism has become an important industry to help the countries' economic development. Generally, depending on the available natural resources, various types of tourism can be developed to contribute to economic development because it produces direct and indirect effects to other industries, markets and also to the citizens. The development of global tourism is seen by strategy creators, as

critical avenues for many developing economies to achieve new and developing roads for aggressive economic specialization (Komlev and Encontre, 2004). Tourism also gives the chance to generate foreign exchange revenues (Kasahara, 2004) which can be used to help in poverty reduction (UNCTAD, 2001). Since the first definitions of tourism were conceived by Guyer Feuler in 1905, the United Nations World Tourism Organization (UNWTO), has become the main global association, with a conclusive and focal role in the advancement of capable, reasonable and universally accessible tourism. The organization has defined tourism, in non-exclusive terms, to cover both demand and supply of touristic resources and activities that include different structures that are utilized throughout the world.

Tourism characterizes peoples as guests. A guest is somebody who makes a visit to a destination for not more than a year, to achieve the desired goal outside his/her routine conditions, with the primary reason of creating satisfaction from activities, like relaxation and entertainment, business, well-being, training or even education. Tourism should be sustained in order to keep economic growth. Sustainability tourism is defined as "tourism that assesses its present and future financial, social and ecological effects, tending to the requirements of guests, the industry, and nature and host groups", (UNWTO, 2005). Sustainable tourism development includes four pillars, which are: "environmental responsibility", "social equity", "economic health" and "cultural vitality". These pillars are one of the useful ways to organize sustainability and all of these elements must relate to each other in order to sustain tourism development.

For long-term, practical and effective tourism development, it should produce an absolute minimum effect on the regular and socio-cultural conditions of the locality while adding to the rural economy. The sustainability component of tourism refers to three factors, which are environmental, economic, and socio-cultural, as part of tourism improvement; it is necessary that appropriate adjustments are made between these three components, to ensure the long-term sustainability of tourism.

For the long run practical and effective tourism development, it should produce an absolute minimum effect on the regular and socio-cultural condition of the locality yet it should add to the rural economy. The sustainability component of tourism refers to 3 factors which are environmental, economic, and socio-cultural as parts of tourism improvement; and it is necessary that an appropriate adjustment is set up between these three components to ensure the long-term sustainability of tourism.

The World Commission on Environment and Development (WCED), or also known as Brundtland Commission 1987 mention the three pillars of sustainability. The mission of the Brundtland Commission is to pursue all countries to unite together in achieving sustainable tourism. Economic growth is normally the column that most countries tend to focus on when planning to

accomplish more practical development and advancement of the tourism industry. The focus on economic impacts of development has led many nations to concentrate their strategies on asset extraction, which has resulted in an unsustainable exertion on natural resources and breakdowns of economic development maintainability. While the Commission encourages nations to change the relationship between economic development and asset extraction, in the long run, the aggregate overall utilization of assets is anticipated to continue to increase. Thus, according to the Brundtland Commission 1987, economic development would eventually damage the environment. In order to reduce the negative impacts on the green environment, governments and businesses have undertaken important initiatives for environmental protection. Not forgetting the third pillar of development, the pillar of social, which is about community well-being and self-satisfaction. The Commission has also cautioned that when income gaps between rich and poor people are not taken into consideration, it may result in unwanted influences on tourism development.

UNWTO (2005) has suggested that sustainable tourism development should properly utilize components of ecological assets in tourism advancement. The first component includes maintenance of fundamental environmental procedures, preservation of common legacy and protection of biodiversity. The second is regarding the socio-cultural genuineness of community - it is necessary to monitor their assembled and living social legacies and conventional esteem so as to guarantee social comprehension and resilience. The third component requires the guarantees of suitable long-haul financial operations, by giving financial advantages to all partners that are genuinely appropriated, by providing stable work and pay, by filling up job openings and social administrations to the have-not groups, and by contributing to poverty mitigation. It is also advocated that sustainable tourism ought to likewise increase people's satisfaction and make sure visitors obtain great knowledge and experiences by raising their mindfulness about maintainability issues while advancing economical tourism practices among them (UNWTO, 2005).

1.4 Quality of Life

Nowadays the Quality of Life (QOL) has an important role in the development of the tourism industry. Many researchers have already work on quality of life. The concept began by Pigou in 1920, but it only became known to people in the 1950s. Quality of life (QOL) can be defined in many ways depending on individual understanding, as it is general knowledge of self-perception. Some of the studies have suggested that the quality of life is the same as life satisfaction. Meeberg (1993) sees it as "a sentiment general life fulfillment, as dictated by the rationally ready person whose life is being assessed"; while Rejeski and Mihalko (2001) recommend that QOL is "a cognizant psychological judgment of fulfillment with one's life". Besides that, some researchers also define life satisfaction as a part or component of quality of life. Cummins, et al., (1994) express that individual esteems and also living conditions as well as life fulfillment, interface to decide QOL. The authors recommend that the importance of either the target or subjective evaluation of a specific living space

should be interpreted, in connection to the significance that the individual places on the quality of life.

In the present study, the understanding about the quality of life is indicated by the ways people view their positions in life, with regards to the way of life and esteem frameworks, in which they live and are in connection to their goals, expectations, standards, and concerns (World Health Organization, 1997). As inferred by WHO (1997) QOL is a flexible idea, highly influenced by the individuals' physical wellbeing, mental satisfaction, level of autonomy, social relationship, individual conviction and their relationship in the improvement of their condition.

1.5 Problem Statement

The problem statement in this study consists of three aspects which are: water security challenges, sustainable tourism development and level of quality of life. According to Uncle Chang, one of the tour operators in Mabul Island, the community in Mabul Island is lacking basic services and infrastructure to manage sewage. As he mentions, "the sewage system is not systematically designed and sewage is channeled directly to the sea. Houses at Mabul Island are designed without proper toilets. This means they think the sewage system is not important and therefore can directly channel to the sea without thinking about the sanitary of the sea (*sic*)" (Uncle Chang, tour operator at Mabul Island, pers. comm. September 29, 2017).

According to Abdullah Ali, Chairman of Pulau Mabul Village Development and Security Committee (JKKK), the volume of water is not enough per individual and the water needs of the communities cannot be met by the currently accessible supplies.

"The population of Mabul Island is about 3000 and the natural water supply (rainwater catchment and untreated groundwater) cannot support all of them. Mabul Island has no clean water supply source and no water treatment facilities as the source of the island's groundwater are adulterated by saltwater. Clean water needs to be purchased and transported from Semporna, which involves a relatively high cost. The majority of the community and hotel industry obtain clean water from Semporna town, which is about 45 minutes away from Mabul by boat. But not all members of the community at Mabul Island can afford to buy clean water every day from Semporna. Water supplies to country territory remain key issues" (Abdullah Ali, Chairman of Pulau Mabul Village Development and Security Committee, pers. comm. September 19, 2017).

One of the serious dilemmas in Mabul Island is that the residents are just excreting directly into the sea. Besides this, there is also a serious problem of disposing of solid wastes into the sea. According to Prabhakaran et al., (2013) due to lack of awareness of marine waste management among the local community, the sewage and solid wastes of those who live on stilt houses are

dumped directly into the ocean. The communities in Mabul Island practice indiscriminate methods of waste disposal; ignorance is one of the reasons as the community of the island claims that the rubbish thrown into the sea will be naturally washed away and cleaned by the waves. Hence, this shows that the island community is not alert to the water security problem at their place. Disposing wastes directly to the sea also causes a negative impact on the sanitary and cleanliness of the seawater, which seeps into the groundwater wells on the island; consumption of adulterated unhealthy water would affect the level of quality of life of the communities.

Besides that, building water funnels and treatment plants in the remote provincial zone such as Mabul Island is prohibitively costly because of the absence of infrastructure and out-of-range natural water sources (Sabah Development Corridor Blueprint, 2013). The lack of proper infrastructure is one of the main problems, thus the majority of people in rural areas live without adequate community infrastructure. Moreover, it is very hard to build water pipes and water treatment facilities as the communities do not have the capital to invest in such projects.

According to Encik Aznin bin Mursin, a local resident in Mabul Island, the socio-demographic conditions are also among the attributes that affect community awareness about water security in Mabul Island. The indiscriminate disposal of rubbish into the sea and the lack of health consciousness in the housing areas indicate that the community is not aware of the health vulnerability around them. If the community becomes aware of the significance of water security, it can indirectly improve clean water supply, which, at the same time, would help in promoting the tourism sector. All the problems of water security above may produce negative impacts on quality of life. Therefore, there is a need to ascertain community awareness on water security, so that the development of tourism will not negatively be affected which will help to enhance the quality of life at Mabul Island. And According to Mohamad & Hamzah (2015), social characteristics is one of the factors influencing the tourism booming in Mabul Island. The group of ethnic in Mabul Island and occupations are affected by tourism development.

Three main pillars of tourism are economic, social and environment; all of which have significant impacts on tourism development in the country. The concept of community resilience refers to the ability of individuals or communities to cope with stress, overcome the difficulties and adapt to changes positively (Ammar et al., 2014). The ability or the capability of an individual or community to return to normal after bitter or negative experience, for example after a natural disaster, would reflect either the natural properties of the individual/community or can be interpreted as the result of learning and experience. The authors also state that this concept of community resilience can be developed and enhanced, regardless of the origin of endurance, and can be used to promote the well-being of life. In a study, Alan (2013) has stated that public security is often associated with disasters. However, in Malaysia, communities' resilience is not usually associated with disasters as severe

natural disasters do not occur in Malaysia (Ammar et al., 2014). Therefore, in the present study, the concept of community resilience is linked to the ability or the capability of community in Mabul Island to adapt and survive new tourism development that is being built in Mabul Island, in light of the fact that this development would change the quality of life, either in positive or negative ways.

Several studies related to tourists' perception towards Physical Environmental Attributes of Tourism Impacts in Mabul Island have already been carried by past researchers, such as Prabhakaran, 2013; Siow, 2014; Ibrahim, 2013; Nair, 2013 and Chia, 2014 but studies on the relationships of water security, sustainable tourism, and quality of life are yet to be done. Although Prabhakaran et al., (2013) have studied the participation of the local community in marine waste disposal systems, they have not included a water security element. A few other researchers have studied the issues surrounding water security at other sites, but none have been conducted in Mabul Island.

Table 1.1: Relation of Problem Statement and Research Objectivism

Research objectives	Problem statement
To identify the socio-demographic characteristics of community in Mabul Island.	<p>1) According to Encik Aznin bin Mursin, a local resident in Mabul Island, the socio-demographic conditions are also among of the attributes that affect community awareness about water security in Mabul Island. The indiscriminate disposal of rubbish into the sea and the lack of health consciousness in the housing areas indicate that the community is not aware of the health vulnerability around them.</p> <p>2) According to Mohamad & Hamzah (2015), social characteristics is one of the factors influencing the tourism booming in Mabul Island.</p>
To identify underlying factors of water security and sustainable tourism.	<p>1) According to Uncle Chang, one of the tour operators in Mabul Island, the community in Mabul Island is lacking of basic services and infrastructure to manage sewage.</p> <p>2) According to Abdullah Ali, Chairman of Pulau Mabul Village Development and Security Committee (JKKK), the volume of water is not enough per individual and the water needs of the communities cannot be met by the current accessible supplies.</p> <p>3) According to Prabhakaran et al., (2013) due to lack of awareness of marine waste management among the local community, the sewage and solid wastes of those who live on stilt houses are dumped directly into the ocean.</p> <p>4) According to Sabah Development Corridor Blueprint (2013) building water funnels and treatment plants in the remote provincial zone such as Mabul Island is prohibitively costly because of the absence of infrastructure and out-of-range natural water sources.</p>
To determine the influence of water security, sustainable tourism and social demographic characteristic factors on the quality of life of the community on Mabul island.	<p>Objective 3 of this study was to study the relationship between independent variables and dependent variables. The problem statement shows a gap in water security, sustainable tourism, and socio-demographics with quality of life. The focus of objective 1 is to make sure either socio-demographics characteristics affect community awareness about water security in Mabul Island and whether it has a positive or negative impact on the quality of life of the locals. For example, is it their level of education, occupation or nationality that will affect their awareness on water security and sustainable tourism or not.</p> <p>Besides that, objective 2 is to identify water security and sustainable tourism factors. The study will show how these new factors affect the quality of life among the local community. Will the quality of life of the locals increase or decrease?. For example, most of the issues mentioned in the problem statement are water sources because in Mabul Island water sources are very limited and untreated. Therefore, the response of the locals to this issue is having a give bad impact on their life or otherwise.</p> <p>Next, tourism in Mabul Island growing faster and developed the social, environmental and economically. Sustainable tourism in Mabul Island increasing the number of tourist arrivals. However, the disadvantage is the scarcity of resources and competition for resources. Locals need competing with tourists for resources. Thus, this relationship will show the level of quality of life among the local's community on Mabul Island.</p>

1.6 Research Questions

This research will be guided by three research questions:

1. What are the socio-demographic characteristics of the community in Mabul Island?
2. What elements are included as indicators of water security and sustainable tourism in Mabul Island?
3. Which among the water security, sustainable tourism, and social demographic characteristic factors have a significant influence on the quality of life of the community in Mabul Island?

1.7 Purpose Study

Water security and sustainable tourism are needed to ensure the improvement of the community's quality of life. Sustainable tourism is identified as a tool that can create a low impact on the environment while helping to generate future employment. The main goal of establishing connections between water security and sustainable tourism is to ensure that advancement produces positive experiences to the local community. The water security and sustainable tourism should also be seen as an ongoing process to improve the quality of life of the local community in Mabul Island. The general objective is to holistically understand the factors influencing the quality of life of the community in Mabul Island.

1.7.1 Main Objective

The main objective of this research is to investigate local community perception towards water security and sustainable tourism, in order to know their level of quality of life. In other words, this research attempts to identify and determine how water security and sustainable tourism influence quality of life. To meet the main objective, the specific objectives of the research are produced as follows:

1.7.2 Specific Objectives

- 1) To identify the socio-demographic characteristics of community in Mabul Island.
- 2) To identify underlying factors of water security and sustainable tourism.
- 3) To determine the influence of water security, sustainable tourism and social demographic characteristic factors on the quality of life of the community on Mabul island.

1.8 Significance of the Study

This study would benefit the community and stakeholders within the local community-tourism involvement framework. Many parties would be able to utilize the findings of this study; they include, residents of communities, industry experts, hotel industry, government planner, corporate sectors, academicians and non-government organizations. It is hoped that the would encourage the community at Mabul Island to become more concerned about the impacts of water security on their quality of life. The findings of this research would also contribute to the existing literature on the relationships of community awareness on water resource conservation, in sustaining the quality of life of the community in Mabul Island.

This study has been conducted to analyze the perception of the Mabul community, on water security initiatives and sustainable tourism issues, as well as how these variables would affect the quality of life of the community. Community awareness on various aspects of life is an important element for sustainable tourism development. Tourism is often claimed to be a huge industry in the world, thus creating both opportunities and responsibilities. Tourism can have constructive, as well as destructive outcomes, depending on how it is managed. As the tourism industry grows, communities living in the tourism area would be impacted in many aspects; an important impact of the development is on the quality of life of these communities, which includes changes in socio-culture, economic, environment, politic, health, religion, and education.

1.9 Scope of the Study

The focus of this study is to investigate the perception of water security and sustainable tourism toward the quality of life. The study is limited only to the local community in Mabul Island.

1.10 Definition of Key Terms

A few key terms existing after understanding the concept from past studies, and the key term related to my study.

Awareness = People perception of situation or problem, knowledge and concern about. In this study, awareness focused on local community toward water security and sustainable tourism (Gafoor, 2012)

Local community = People living in a rural place or a gathering of individuals living in a similar place or having a specific trademark in like manner and sharing the same resources (MacQ et al, 2001). In this study, the local community shares the same resources but with different ethnic and different language.

Water security = Water security is divided into 3 categories which are Quality water (supply), healthy water (safe) and usage (demand) (Shrestha, Aihara, Bhattarai, Bista, Kondo, Futaba & Shindo, 2018). In this study, the quality of water supply, the safety of water and the usage of water for local consumptions are investigated as elements of the quality of life the local community.

Sustainable tourism = An industry that focuses on maintaining and having a low effect on nature and nearby culture while creating future work for the local community (Liu, 2003). In this research, sustainable tourism is focused on the participation of the local community in the 3 pillars of tourism which are economic, social and environment.

Quality of life = The things that are needed for good well-being like good health, good social life, good income, comfort, and happiness experienced by people (WHO, 2017). In this study, the perception of the local community towards water security and sustainable tourism are projected to have influences on the quality of life of the local community.

1.11 Organization of the Thesis

This thesis is organized into five chapters. They are chapter (1) Introduction, (2) Literature Review, (3) Methodology, (4) Data Analysis and the last chapter, (5) Discussions and Conclusions. The first chapter covers the introduction of the research topic and the purpose of the study. The sub-topics included in this chapter are the background information on relevant issues of the topic, problem statement that clarifies the identification of research problems, the research questions/objectives, the significance of the study and important terms used in this study. The next chapter elaborates on past literature relating to water security, sustainable tourism, and quality of life. Past studies related to each topic are explained throughout this chapter, to offer better understanding and information about the relationships between water security, sustainable tourism, and quality of life. Chapter 3 discusses the methods used in this research. It includes discussions on the study site, conceptual framework, data collection process, type of survey, and analytical tools. The chapter also explains the process of enumeration and the measurement of the variables. The fourth chapter reports the results of the data analyses. Data processing is done using SPSS software. The analyses carried out include descriptive analysis, an exploratory factor analysis, and multiple regression analysis. The chapter also includes discussions on the results of the statistical analyses of the data, the explanation of the relationships of the variables and tests of significance of the relationships. The last chapter, Chapter 5, provides a summary, conclusions based on the analyses, limitations of the study, and recommendations for policymakers to consider, as well as suggestions for future research.

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PUBLICATIONS

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