

An underwater photograph showing a nudibranch with a yellow and black striped pattern on a rock. In the foreground, there is a large, pink nudibranch with a ruffled, shell-like appearance. The background is a blurred underwater environment with blue water and some rocks.

Labuan Marine Park **Total Economic Value &** **Management Effectiveness**

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2016



Total Economic Value & Management Effectiveness Assessment Tool

Pulau Labuan Marine Parks, W. Persekutuan Malaysia



Labuan Marine Parks

Total Economic Values and Management Effectiveness, 2016

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PART A: TOTAL ECONOMIC VALUE



TOTAL ECONOMIC VALUE OF PULAU LABUAN MARINE PARK, WILAYAH PERSEKUTUAN. MALAYSIA

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EXECUTIVE SUMMARY

Total economic value (TEV) is a concept in cost benefit analysis that refers to the value derived from a natural resource, a man-made heritage resource or an infrastructure system, compared to not having it. It is most widely used framework to identify and quantify the contribution of ecosystem services to human well-being. In view of TEV, this study employed TEV mathematical model that concentrates on the cost and benefit analysis.

This study was conducted to investigate the total economic value of the Pulau Labuan Marine Park (PLMP) which reflects waters surrounding three islands namely Pulau Kuraman, Pulau Rusukan Besar and Pulau Rusukan Kecil. The Marine Park Centre is located at Kampung Pantai, Pulau Labuan (JTLM, 2016).

It is found that PLMP coast provides substantial values significance to the wealth of the nation. The values involved can be summarized as follows:

- Capture Fisheries – In this study the capture fisheries (economic value of fish caught) contributes 20% from the MPA along Pulau Labuan coast line was valued at RM31.496 million per year. This value is estimated to be around RM299.639 million in 20 years with a 10% discount rate.
- Tourism – The total of 1,015,427 visitors had visited Pulau Labuan in year 2015. However, it was estimated that only around 0.05% or 500 tourists had visited the PLMP without any conservation fees charged. Due to small number of tourist, benefits from tourism are not included into the perspective.
- Aesthetics Values – This element was confined to the coral reefs and coral fish values. The coral reef value and coral fish value surrounding 1 nautical mile of the PLMP as per year is estimated at RM160,945,033.38 and RM366,861,741.13 respectively. At 10% discount rate, the present aesthetic value over 20 year period is expected to be RM1,531,160,830.47 (coral reef) and RM3,490,162,551.00 (coral fish).
- Biological Support Values – Turtle from Agar and Karah species had contributed significantly to the biological support in the PLMP at which it was valued at RM12,649.50. The present value at 10% discount rate is RM120,341.82 over 20 year period.
- Coastal Protection – In this study, coastal protection was measured using the Benefit Transfer Method. For an estimated 0.72 km² of coral reef surrounding PLMP, the

approximate value of coastal protection by coral reef per year is estimated at RM625,581.40. The present coastal protection value over the 20 year period with 10% discount rate is estimated at RM5,951,508.53.

- Carbon Sequestration – The estimation of carbon sequestration value in PLMP was made based on Benefit Transfer method. As a result, the value of carbon sequestration from coral identified in PLMP is valued at RM614,207.19 per year. At 10% discount rate, the carbon sequestration is valued for 20 year period by RM5,843,299.28.
- Management Costs – the management cost, including maintenance and research and education incurred on PLMP was approximately RM459,000.00. Thus, over the 20 year period, the present value of maintenance and research and education cost is expected at RM3,424,882,939.00 for the same time period at 10% discount rate.

Conservatively estimated, using the findings reported in the preceding chapter, it is estimated that the Total Economic Value (TEV) of Pulau Labuan Marine Park for year 2016 is RM560,096,212.60 a year and over a 20 year period, using a discount rate of 10% is RM5,328,511,007.81.

Moving forward, this study also highlights critical challenges that need to be addressed and put forward recommended means and ways to overcome them. Among issues stipulated are about: 1) minimizing impact of marine biodiversity damages, 2) building environmental and cultural awareness and respect, 3) providing positive experiences for both visitors and hosts, 4) providing direct financial benefits for conservation, 5) providing financial benefits and empowerment for local people and 6) raising sensitivity to host countries' political, environmental, and social climate.

CHAPTER 1: INTRODUCTION



1.0 INTRODUCTION

Island Marine Park is the island located in waters which are gazetted as marine parks. Marine Park is a sea zoned area for a distance of two nautical miles from the lowest sea level. Until now, 42 islands in Malaysia have been gazetted as Marine Park. However, Kapas Island in Terengganu, Kuraman Island, Rusukan Besar Island and Rusukan Kecil Island in Labuan are zoned for a distance of 1 nautical mile from the lowest sea level (JTLM, 2016). The main goal of the establishment of marine parks in Malaysia is to protect, conserve and manage marine ecosystems continuously. The islands are protected under the regulations fishery (Areas) Act 1994. Activities such as collecting shells, coral and mollusks or fishing activities without a license is not allowed.

1.1 Study Site: Pulau Labuan Marine Park (PLMP)



Figure Part A: 1.1 Study Site: Pulau Labuan Mark (PLMP)

Labuan Island itself is situated at the west coast of Sabah and is about 8 km from the nearest point of Sabah and about 123 km from Kota Kinabalu which is the State Capital of Sabah. Labuan is assessable by air from Kuala Lumpur and Kota Kinabalu. The time taken is about 2½ hours and 20 minutes respectively. Waters surrounding 3 small islands, stretching until two nautical miles from the shore of these islands, have been declared as Marine Park since 1994. The three islands concerned are Pulau Kuraman, Pulau Rusukan Kecil and Pulau Rusukan Besar, which are situated at the south-west of Labuan Island.

Pulau Kuraman is the main island within the cluster. This island is situated about 14 km from Victoria Harbour, Labuan and is about 5.2 sq kilometres in size and well known for its long beautiful sandy beaches and clear waters. It has two beautiful white beaches, perfect for picnicking and sun-bathing. The island is surrounded by hard corals; the most conspicuous species of the coral reef is the *Acropora tubinaria*. The corals are found in water 8 - 13 meters deep.



Figure Part A: 1.2 Activities at Pulau Labuan Marine Park

Pulau Rusukan Kecil is situated near Pulau Kuraman and it has a land area of only 8 ha. The coral reefs nearby consist of mostly *Acropora* and *Platygyra* species (JTLM, 2016). The water surrounding this island is very suitable for snorkeling and swimming. There are places for camping and picnicking as well.



Figure Part A: 1.3 View of Pulau Rusukan Besar

Pulau Rusukan Besar is about 14 ha. in size and is situated just next to Pulau Kuraman, and about 15km from Victoria Harbours. There is a turtle hatchery on Pulau Rusukan Besar which has been operating since the 2011 with the cooperation of Petronas Carigali. The centre also provides areas for the turtles to lay eggs and this also ensures that the turtles keep returning to the place. Among the turtles that land on the islands are the greenback and hawksbill. Throughout 2012, the centre had set free 2,068 young turtles after hatching 2,225 eggs and the figure was much higher compared with 2011 where 1,163 eggs were hatched and 796 hatchlings released to the sea. The turtle landings happen in two seasons with the hawksbill coming in from July to November while the greenback coming in from December to May (The Malaysian Times, 2014).



Figure Part A: 1.4 Turtle Hatchery on Pulau Rusukan Besar

Turtle Hatchery on Pulau Rusukan Besar

Pulau Rusukan Besar is also the choice for those who like snorkeling especially at the southern and western part of the island. The water east and south of the island is very good for snorkeling and viewing from glass-bottom boats, as well as scuba diving.



Figure Part A: 1.5 Spotted Shark Also Found In Labuan Marine Park

Besides these 3 islands, visitors to Labuan can also make trips to some "wreck" for diving where corals, especially soft corals and marine lives are found in abundance. These wrecks are known as "Cement Wreck", "American Wreck", "Australian Wreck" and "Blue Water Wreck". There are 3 Dive-tour operators in Labuan bringing visitors to these 3 islands and wrecks for snorkeling and diving. However, there is scarcity to determine the total number of visitors to Labuan Marine Park since there is no specific entrance to the marine park. It is estimated that the visitors are around 500 visitors for this year.

CHAPTER 2: LITERATURE REVIEW



2.0 INTRODUCTION

Marine Park is a park consisting of an area of sea (or lake) which is protected for recreational use and to preserve a specific habitat so as to ensure the ecosystem is sustained for the organisms that exist there. In Malaysia, protecting special biological and environment values have been the main objectives behind the establishment of marine parks in the country. Under the Fisheries Act 1985 (Act 317), a marine park is defined as any area or part of an area in Malaysian fisheries waters established as a marine park or marine reserve under Part IX of the Act. In general it is an area of the sea zoned (i.e., 2 nautical miles from the shore), as a sanctuary for coral reef community (Law of Malaysia, 2006).

Marine Park is an integral part of the natural environment, its surrounding waters and the occupant ecosystems, and any cultural or historical resources that require the preservation or management. Complex issues such as social, economic and political aspects of relationships between biodiversity and human activities are monitored and placed under some restrictions in the interest of protecting and preserving the Marine Park. This chapter is dedicated to review the concept and related issues to the total economic value.

2.1 Total Economic Value

There are two well-differentiated paradigms for valuation: biophysical methods and preference-based methods. The first method constituted by a variety of biophysical approaches while preference-based methods are more commonly used in economics (Pascual & Muradian, 2010). This study deals primarily with preference-based approaches, and the terms total economic value was used. Total economic value (TEV) is a concept in cost benefit analysis that refers to the value derived from a natural resource, a man-made heritage resource or an infrastructure system, compared to not having it. It is most widely used framework to identify and quantify the contribution of ecosystem services to human well-being. According to Pagiola, Von Ritter, and Bishop (2004), economists typically classify ecosystem goods and services according to how they are used. Undeniably, the assessment of total economic value has become pragmatic and popular approach in nature valuation (Admiraal, Wossink, Groot & Snoo,

2013). The main framework used in assessing Total Economic Value (TEV) is developed by Pearce and Warford (1993).

According to previous researchers (Spurgeon & Aylward, 1992; Munasinghe & Lutz, 1993; Renzetti, Dupont & Bruce; 2010) total economic value is divided into two major components which are, use value and non-use value, and further divided into four sub-components such as direct uses, indirect uses, option value and existence value. Figure Part A 2.1 shows total economic values and its components. However, it should be noted that some terminologies or terms that we used may be varies among the researchers. Hence, in the following section we offer detailed discussions on each component and sub-component of TEV.

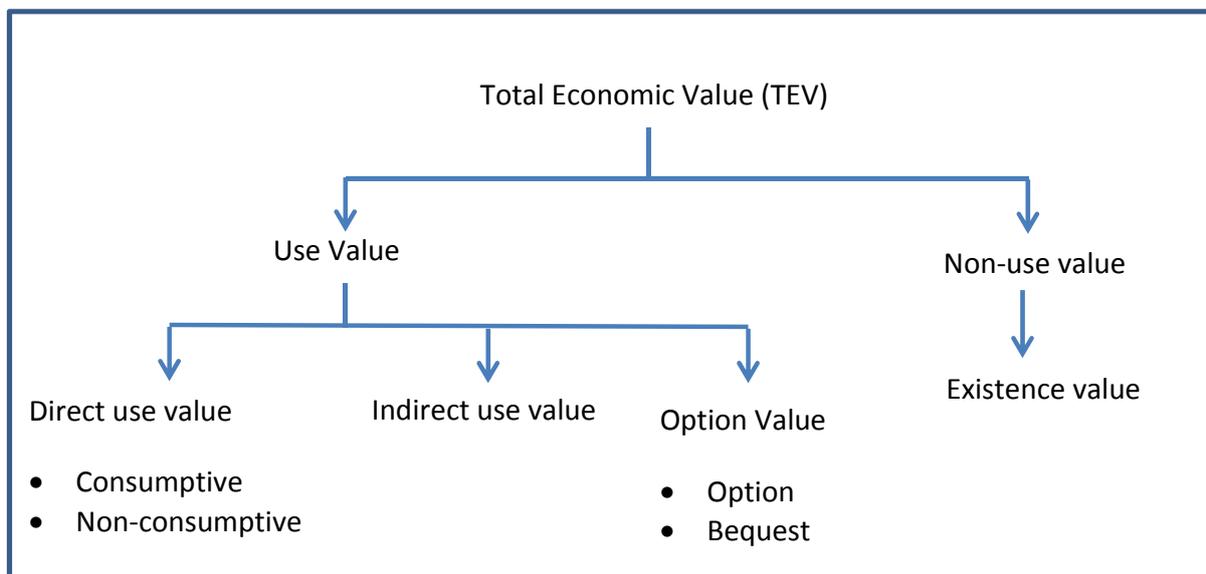


Figure Part A: 2.1 Total Economic Value and Components

Source: Adapted from Munasinghe (1992)

2.1.1 Use Value

The benefit obtained by individual by directly using the natural resource is defined as use value. In another word, the use values are values related to the forms of activity and (time and money) expenses. The values associated to the outdoors recreation are use values, which are given as example (Adamowicz, 1995). In this case, it is seen that the use values from the main components of TEV are arisen from the physically use of environmental resources such as visiting a national park and recreational fishing. In addition, the benefits

obtained from productive activities such as agriculture, forestry and fishing are also considered as use values. In this study, the use values are divided into three sub-components as direct, indirect and option values.

2.1.1.1 Direct Use Value

Direct use values are produced in consequence of an immediate or mediate contact with the resource, the environmental goods. They include the value of consumptive uses such as harvesting of food products, timber for fuel or construction, and medicinal products and hunting of animals for consumption (Pagiola et al., 2004) or the use of goods and services extracted from the marine ecosystem such as fish, aggregates and energy (Saunders, Tinch, & Hull, 2010). Meanwhile, non-consumptive uses are such as the enjoyment of recreational and cultural activities that do not require harvesting of the product.

2.1.1.2 Indirect Use Value

Indirect use values are derived from ecosystem services that provide benefits outside the ecosystem itself. Examples include natural water filtration, which often benefits people far downstream, the storm protection function of mangrove forests which benefits coastal properties and infrastructure, and carbon sequestration which benefits the entire global community by abating climate change.

2.1.1.3 Option Value

Option values are derived from preserving the option to use in the future ecosystem goods and services that may not be used at present, either by oneself (*option value*) or by others/heirs (*bequest value*). Provisioning, regulating, and cultural services may all form part of option value to the extent that they are not used now but may be used in the future.

2.1.2 Non-use Value

Non-use values refer to the enjoyment people may experience simply by knowing that a resource exists even if they never expect to use that resource directly themselves. This kind of value is usually known as *existence value* (or, sometimes, *passive use value*). One of the non-use values that included in this study is existence value. Existence values

refer to the value associated with the actual existence of an asset (e.g. ecosystem, cultural heritage) independent of one's use of the asset. For example, many people donate towards saving the tiger or the rainforest without ever expecting to see or visit either a tiger or a rainforest. Hence, non-use values refer to the value attached to a resource, independent of one's use of it or in other word "what they value".

2.2 Total Economic Values of Malaysian Marine Parks

The Total Economic Value (TEV) of the Marine Parks in Malaysia is varied according to the uniqueness of the individual island. However, variables involved generally covered capture fisheries, tourism, research and education, aesthetics, biological support (in certain marine parks), coastal protection, carbon sequestration and bequest value. In previous studies conducted in Pulau Payar, Pulau Redang and Pulau Tioman, Pulau Tinggi and Pulau Perhentian Marine Parks, each island has form unique strengths in view of biodiversity and tourism attractions. The following sections illustrate each of the variables' values and the findings of its Present Value (PV) presented in the previous studies.

2.3 TEV for Designated Years

The economic value per year for each of the TEV components extracted from previous studies in the Malaysian Marine Parks is shown in Table Part A 2.1. The results reflect the uniqueness of the islands in view of the variables under study. In terms of the values contributed by the marine biodiversity components, all visited islands are similarly hosting, in general, capture fisheries and aesthetics (corals and fish). These two elements are the highest contributors to the economic values of designated islands. For instance, the 2015 TEV for Pulau Perhentian was largely contributed by the value of coral reefs and coral fish which reflected more than 92% of overall values (Wagiman et al., 2015)

The uniqueness of individual island offerings were well reflected by the WTP values such as that of Pulau Tinggi which stands in 2014 at RM 4,439,363.50 (higher bound) – the highest compare to those of the other three islands (RM2,663,866.44 for Pulau Tioman, RM2,492,508.00 for Pulau Redang and RM1,268,480.40 for Pulau Payar). It is seen that, the WTP for Pulau Redang (2012) and Pulau Tioman (2013) almost doubles that of Pulau

Payar (2011). However, in the current study in 2015 found that WTP for Pulau Perhentian is valued at RM3,236,860.90 by tourists.

In view of the TEV's, due to certain constraints during the data collection process, the value for corals in Pulau Payar was not accounted for which affected the TEV significantly. TEV for Pulau Payar for 2011 rests at RM174,852,396.68 compared to that of Pulau Redang (2012), Pulau Tioman (2013), Pulau Tinggi (2014) and Pulau Perhentian (2015) at RM354,371,864.71, RM3,441,001,375.79, RM3,667,107,990.61 and RM1,050,590,324.00 respectively.

Table Part A 2.1: Economic Values per Year

No.	COMPONENT OF TEV	P Payar (2011) (Hasnan, Ibrahim, Osman et al, 2011)	P Redang (2012) (Ibrahim, Osman, Ahmad, Abdullah & Chan, 2012)	P Tioman (2013) (Osman, Ahmad, Yusoff et al, 2013)	P Tinggi (2014) (Wagiman, Osman, Juli, Ahmad, Zulkifli & Chan, 2014)	P Perhentian (2015) (Wagiman, Osman, Juli et al, 2015)
1	Capture Fisheries	123,332,493.34	85,682,000.00	195,274,000.00	95,142,000.00	75,404,000.00
2	Tourism	384,485.00	538,545.00	1,009,410.00	1,100,750.00	1,043,670.00
3	Research / Education	(1,200,000.00)	(2,800,000.00)	(2,800,000.00)	(490,000.00)	(280,000.00)
4	Aesthetics (Coral reef)		265,510,297.54	3,220,034,137.50	3,511,954,616.14	534,222,814.38
5	Aesthetics (Fish)	50,636,375.68				432,764,631.20
6	Coastal protection (coral reef)	217,256.19	1,032,018.82	12,516,033.75	13,650,706.99	2,076,484.44
7	Coastal protection (mangrove)				26,695,420.53	
8	Carbon sequestration (Coral)	213,306.08	1,013,254.85	12,288,469.50	13,402,512.32	2,038,730.18
9	Carbon sequestration (Mangrove)			15,458.60	1,190,334.14	
10	Biological support (Turtle)		403,240.50		37,287.00	83,133.00
11	Biological support (Bird's nest swift lets)		500,000.00			
12	Bequest Value	48,048.50	2,077,090.00	1,072,410.00	1,177,550.00	2,096,752.00
	min WTP	1,268,480.40	2,492,508.00	2,663,866.44	4,439,363.50	3,236,860.90
	avg WTP					
	TOTAL		353,956,446.71	3,439,409,919.35	3,663,846,177.11	1,049,450,215.00
	LOWER BOUND					
	UPPER BOUND		354,371,864.71	3,441,001,375.79	3,667,107,990.61	1,050,590,324.00

Table Part A 2.1 summarizes the value of each subcomponents that are feasible to be measured during the period of study for each Marine Park in Peninsular of Malaysia from 2011 to 2015.

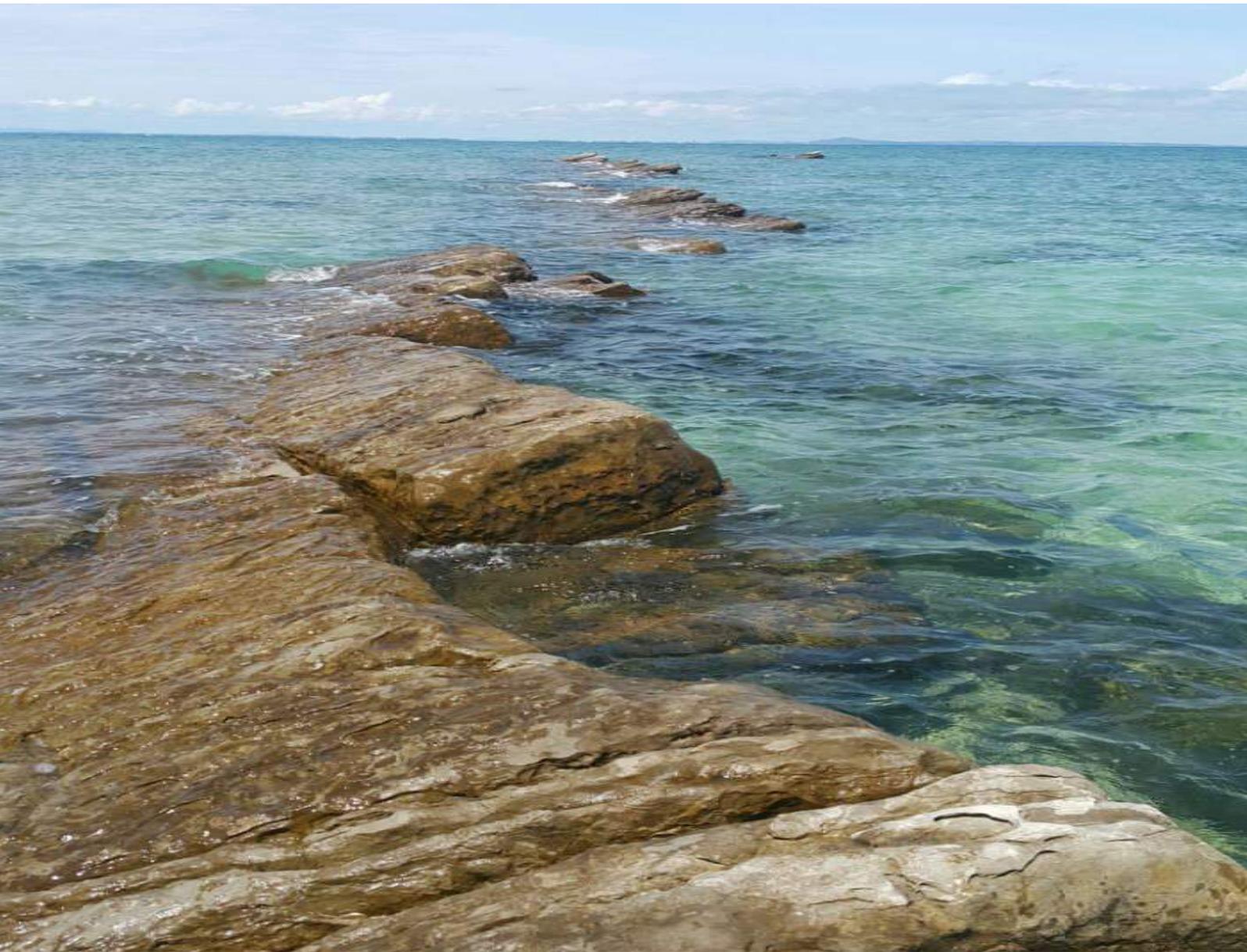
2.4 TEV for 20 years period

In addition to the above, the previous study reveals that in the next 20 year period, TEV for Pulau Payar (2011), Pulau Redang (2012), Pulau Tioman (2014), Pulau Tinggi and Pulau Perhentian (2015) were estimated at RM1,663,469,417.39, RM3,371,339,315.45, RM32,736,185,848.36, RM34,887,265,535.95 and RM9,994,857,992.00 respectively with 10% discount rate which can be viewed in Table Part A 2.2.

Table Part A 2.2 : Total Economic Values, $i = 10\%$, $n = 20$ years

No.	COMPONENT OF TEV	P Payar (2011) (Hasnan, Ibrahim, Osman et al, 2011)	P Redang (2012) (Ibrahim, Osman, Ahmad, Abdullah & Chan, 2012)	P Tioman (2013) (Osman, Ahmad, Yusoff et al, 2013)	P Tinggi (2014) (Wagiman, Osman, Juli, Ahmad, Zulkifli & Chan, 2014)	P Perhentian (Wagiman, Osman, Juli et al, 2015)
1	Capture fisheries	1,173,331,534.11	815,141,166.64	1,857,751,641.81	905,139,479.40	717,360,758.70
2	Tourism	3,657,822.55	5,123,482.17	960,308.60	10,472,055.27	9,929,021.05
3	Research & education	(11,416,276.46)	(26,637,978.42)	(26,637,978.42)	(4,661,646.22)	(2,663,797.84)
4	Aesthetic (coral reef)		2,525,949,133.93	30,633,999,946.90	33,411,204,021.55	5,082,362,785.11
5	Aesthetics (Fish)	481,732,386.57				4,117,133,894.58
6	Coastal protection	2,066,880.58	9,818,176.85	119,072,084.60	129,866,870.76	19,754,767.01
7	Carbon sequestration (coral)	2,029,300.94	9,639,664.54	116,907,137.61	253,968,584.24	19,395,589.43
8	Carbon sequestration (mangrove)			147,066.38	127,505,654.92	
9	Biological Support (Turtle)		3,836,254.19		354,732.25	790,891.09
10	Biological support (Bird's nest swift lets)		4,756,781.86			
11	Bequest value	457,112.47	19,760,528.07	10,202,440.87	11,202,696.96	19,947,583.76
	min WTP					
	avg WTP	12,067,769.11	23,712,633.68	25,342,863.12	42,234,167.53	30,794,082.42
	LOWER BOUND	1,651,858,760.75	3,367,387,209.83	32,721,045,426.11	34,856,234,065.38	9,984,011,493.00
	UPPER BOUND	1,663,469,417.39	3,371,339,315.45	32,736,185,848.36	34,887,265,535.95	9,994,857,992.00

CHAPTER 3: METHODOLOGY



3.0 INTRODUCTION

This study is an action based research constructed on one setting as a case study approach. Pulau Labuan Marine Park (PLMP) is selected to be investigated through complete observation, thus bringing a clear understanding of aggregating and evaluating the valuable inventories of the marine biodiversity either in the tangible or intangible manner. This study includes both qualitative and quantitative data in explaining and analyzing the case in the perspective of economic valuation.

3.1 Research Design

As the study aimed to understand the efforts that drive the PLMP towards sustainability and greater competitiveness, it was vital to explore areas that contribute to the economic value of the PLMP through various sources and multi stages of data collection, as explained in the following section.

In maneuvering all resources towards achieving the research objectives, a Balanced Approach was used as the strategy to balance the trade-off between control, realism and generalizability. For that, research activities were conducted in a few stages in which specific intentions were realized as described in Appendix 1: Research Design.

3.2 Research Framework

This study utilized the Total Economic Value (TEV) as a framework. There were a few models capable of describing similar valuation processes. Basically, TEV model categorized all the elements under two main components; use value and non-use value. The TEV model relevant for PLMP environment and applied in this research is illustrated by Table Part A 3.1 termed as LI-TEV. This model is an adaptation of Payar Island TEV model (Hasnan, Ibrahim & et al, 2011), Redang Island TEV model (RI-TEV) (Ibrahim, Osman, Ahmad, Abdullah & Chan, 2012), Tioman Island TEV model (Ti-TEV)(Osman et al, 2013), (Tgl –TEV) (Wagiman, Osman, Juli, Ahmad, Zulkifli & Chan, 2014) and Phn – TEV (Wagiman et al, 2015).

Table Part A 3.1 : LI-TEV Model

Pulau Labuan TEV Model (LI-TEV)		
USE VALUE	NON-USE VALUE	
Direct Use	Indirect Use	Bequest Value
Extractive	Biological Support:	
Capture fisheries	Turtle	preserving the future ecosystem goods and services
Non-Extractive	Physical Protection:	
Tourism	Coastal protection by coral reef	
Research & education	Global Life Support:	
Aesthetic by coral reef	Carbon sequestration by coral reef	
Aesthetic by coral fish		

3.2.1 TEV Mathematical Model

This study employed a mathematical equation (1) proposed by O’Garra (2007) as a measurement for LI-TEV. This mathematical equation reflected the cost-benefit analysis, which took into account, the gross benefits, cost, discount rate and number of years that significantly explained the areas of study. The mathematical equation can be seen as follows:

$$NPV = \sum_0^n \frac{B_n}{[1+i]^n} - \sum_0^n \frac{C_n}{[1+i]^n} \tag{1}$$

Subject to:

- NPV = net present value
- B = gross annual economic benefits, over n years, at a discount rate of *i*
- i* = discount rate
- C = cost per year
- n = number of years that we are interested

This study utilized three different discount rates ranging from 5% to 15% as suggested by Gustavson (2000) in evaluating the marine resources.

3.2.2 Type of benefits /costs

Based on our preliminary study, we found that nine (9) elements under Use Value components and one (1) element under Non-Use Value components were feasible to be measured using TEV mathematical model. All these ten elements consisted of capture fisheries, tourism (tourism fees, maintenance cost), research/education, aesthetic (coral reef, coral fish), biological support, coastal protection, carbon sequestration and bequest value. These elements were considered as either benefits or costs to the Pulau Labuan stakeholders.

For each of these elements, there were several ways in getting the data and a few valuation techniques were adopted in measuring these element values. Table Part A 3.2 described the categories of each component, sub-components, type of benefit or cost, source of data and the valuation technique which had been considered in this study.

Table Part A 3.2: Type of benefits, source of data and valuation technique

COMPONENTS	SUB-COMPONENTS	TYPE OF BENEFIT / COST	SOURCE OF DATA	VALUATION TECHNIQUE
USE VALUE	Direct Uses	1. Capture fisheries	Fishery Dept., A series of TEV report JTLM LEK report, Reef Check Malaysia	} Production Approach
		2. Tourism		
		• Entrance fees		
		• Maintenance cost		
	Indirect Uses	3. Research & education	JTLM Secondary data based on empirical study	} Production Approach
		4. Aesthetic		
		• Coral reef		
		• Coral fish		} Benefit transfer
		5. Biological Support		
		• Turtle		
		6. Coastal Protection		
		• Coral reef		
		7. Carbon Sequestration		
		• Coral reef		
NON-USE VALUE	Bequest Value	8. Willingness To Pay	Survey in PLMP	Contingent Valuation

3.3 Variables Used (Operational Definitions)

3.3.1 Capture fisheries

The capture fisheries were defined as the catchment done outside the two nautical mile sea zone from Pulau Labuan and its island group shore measured at the lowest low tide. The percentage contribution from PLMP is estimated based on a study done by de Morais (2012).

3.3.2 Tourism/recreational

The tourism elements considered in this study were the number of tourists per year, the fee charge and the maintenance cost incurred by the JTLM.

3.3.3 Research/education

There are many research activities had been carried out in PLMP either scientific study or economic valuation and involved many parties. However, for the purpose of this study and within the time given we used an assumption on the value of research budget given for the year 2015.

3.3.4 Aesthetic

Aesthetic value is one of the sub-components under Use Value, but has been classified as non-extractive. This aesthetic value is very valuable and is the main reason that attract tourist all over the world to visit MPA including PLMP.

3.3.5 Biological Support

Generally, it is agreed that the major functions of marine park area are to protect species, habitat and biodiversity. According to Constanza et. al. (1997), these functions in turn provides the goods and services which benefit human populations. Hence, biological support is considered under non-use values that are valued in as much as they provide goods and services for human use. This study identifies turtles as one of biological support found in PLMP.

3.3.6 Coastal protection

This study evaluated only the economic value of the natural coastal protection in the PLMP. It was estimated using benefits transfer approach. Empirically, coastal protection is valued by the contribution of the coral reef per km².

3.3.7 Carbon sequestration

Carbon sequestration is very important component in supporting the life of community globally by lessening climate change. Carbon dioxide can be sequestered thru coral reef and mangrove and balance CO₂ emissions, whilst assists to decelerate the greenhouse effect. However for this study carbon sequestration value is derived based on the area of coral reef.

3.3.8 Bequest value

Bequest value is intangible value and classified as Non-Use Value. The value is measured from the perspective of the tourist on how far their desire in conserving the future ecosystem of goods and services that is not going to be used at present. The measurement is being proximate on the monetary value which, considering their willingness to pay in the future towards all the goods and services provided in PLMP.

3.4 Valuation Techniques

In evaluating each type of benefits/costs that has been identified as feasible components of PLMP, three valuation techniques that had been used in previous study were still applicable in this study, namely production approach, benefit transfer approach and willingness to pay. The description of each technique is as show in Table Part A 3.2.

3.4.1 Production Approach

Production approaches estimated the value of each variable obtained from an ecosystem by subtracting all costs associated with the production of goods or services, from the total revenue obtained. Total revenue was typically calculated using market prices for the good in question. If the good or service was not sold on the market, but was used for subsistence purposes, then one may appropriately define the economic value of the goods using the market price of a substitute product.

3.4.2 Benefit Transfer Approach

Benefit transfer is an application to a set of data developed for addressing one particular environmental or natural resource valuation question to another context. Benefit transfer could be a reasonable method for determining such values by estimating values of non-market natural resources and services. Benefit transfer applications for this study was done using estimation through proxy values. These proxy values were used in a relative manner based on the similar geographic area.

3.4.3 Willingness to Pay

Contingent valuation method (CVM) is a survey method using a questionnaire-based approach that is deliberated to estimate the economic value of non-market goods. Willingness to pay (WTP) is one of the most important concepts in CVM. WTP is the maximum quantity consumers are ready to pay for a good or service. More specifically, WTP is the amount of money that a person is willing and able to pay to get pleasure from recreational facilities. This study used the mean and mode value of the WTP multiply by number of tourists to PLMP per year in getting the value of component non-use value, specifically bequest value.

3.5 Illustration of Mathematical Calculation

Table Part A 3.3 is an emulation finding of one subcomponent of TEV in PLMP. This table demonstrates mathematical simulation of one of the aesthetic value which contributed to the highest estimation of TEV, which is coral reef. Present value for 10 years at 10% discount rate. However, this study utilized three different discount rates, i.e. 5%, 10% and 15%.

Table Part A 3.3: Calculation of Aesthetics (Coral Reef) PV at 10% discount rate for 10 years

coral reef trading price / hectare =		2226856.25
coral reef area =		72.27
discount rate =		0.10
		10.00
$B_0 / (i + 1)^0$	=	160945033.38
$B_1 / (i + 1)^1$	=	146313666.71
$B_2 / (i + 1)^2$	=	133012424.28
$B_3 / (i + 1)^3$	=	120920385.71
$B_4 / (i + 1)^4$	=	109927623.38
$B_5 / (i + 1)^5$	=	99934203.07
$B_6 / (i + 1)^6$	=	90849275.52
$B_7 / (i + 1)^7$	=	82590250.47
$B_8 / (i + 1)^8$	=	75082045.88
$B_9 / (i + 1)^9$	=	68256405.35
$B_{10} / (i + 1)^{10}$	=	62051277.59
PV (10,10%)	=	1,149,882,591.34

All results for each subcomponent are discussed further in following chapter.

CHAPTER 4: FINDINGS



4.0 INTRODUCTION

This chapter reports the Total Economic Value (TEV) findings of the research. The valuations for each sub-component of the TEV, which involve eight (8) variables, are measured through TEV mathematical model. The results for all research variables are discussed based on their present value for 10 and 20 year periods at three different discount rates; 5%, 10% and 15%. Finally, this study comes out with the economic value per year and TEV for PLMP for the next 20 years at 10% discount rate.

4.1 Total Economic Valuation of Pulau Labuan Marine Park

The total economic value (TEV) of PLMP is estimated based on eight (8) values of research variables. The TEV are summation of these values, namely: 1) capture fisheries, 2) tourism (cost), 3) research and education, 4) aesthetics (coral reef), 5) aesthetics (coral fish), 6) biological support (turtle), 7) coastal protection (by coral reef), 8), and carbon sequestration (by coral reef). The following section describes the values and the findings of its present value (PV).

4.1.1 Capture Fisheries

Department of Fisheries, Malaysia (2015), reported that in 2015, the capture fisheries in water off Federal Territory of Labuan coastline were valued between RM157.48 million (in shore), and RM15.38 million (deep sea). It is estimated that the existence of Marine Park would able to contribute around 20% of the capture fisheries in the surrounding area (Osman *et al*, 2012). Whilst for year 2015, the capture fisheries contributed by PLMP is RM31.50 million. Table Part A 4.1.1 indicates the only one extractive value under TEV component associated with present values (PVs) at three different discount rates for two consecutive periods.

Table Part A 4.1.1. : Present Value of Capture Fisheries

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV of gross benefits over 10-year period (RM)	274,699,763.33	225,025,285.56	189,567,136.64

PV of gross benefits over 20-year period (RM)	424,005,776.95	299,639,202.92	228,639,904.10
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The PV is estimated to be within RM228.6 million to RM424 million in 20 years at 15% and 5% discount rate, respectively.

4.1.2 Value of Tourism (Cost)

In year 2015, Labuan Marine Park has attracted a total of some 500 visitors (JTLM Labuan, 2016). Until to date, there is no tourist conservation fee being charge. However to preserve and monitor the environment the PLMP, JTLM had spent almost RM360,000 for year 2015.

Thus, the valuation carried is only for maintenance cost. The PV of the maintenance cost over 10 and 20 year period are within RM2.17 million and RM2.16 million (at 15% discount rate), to RM3.14 million and RM4.85 million (at 5% discount rate) for the same two periods. The detail PVs are shown in Table Part A 4.1.2.

Table Part A4.1.2 Present Value of Tourism (cost)

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV of cost over 10-year period (RM)	3,139,824.57	2,572,044.16	2,166,756.71
PV of cost over 20-year period (RM)	4,846,395.72	3,424,882.94	2,613,359.33

4.1.3 Research and Education Cost

Based on a financial year 2015, the research and education budget allocated by JTLM to Labuan MPA was around RM99,000 which RM49,000 for turtle conservation and RM50,000 for education program (JTLM Labuan, 2016). Table Part A 4.1.3 indicates PVs of the research and education cost.

Table Part A 4.1.3 : Present Value of Research and Education Costs

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV over 10-year period (RM)	863,451.76	707,312.14	595,858.09
PV over 20-year period (RM)	1,332,758.82	941,842.81	718,673.82

By using three discount rates, the estimated PVs over 10-year and 20-year are ranging from RM863, 452 to RM718, 674.

4.1.4 Value of Aesthetics by Coral Reef

This study measured one of the aesthetics value components, namely the coral reef area. According to JTLM database, the marine park area for Pulau Labuan Marine Park which consist of Pulau Rusukan Kecil, Pulau Rusukan Besar dan Pulau Kuraman is 158.15km² (15815 hectares). Coral reef area is expected around 0.00457 times over total reef area (Ibrahim et al., 2013), hence the coral reef coverage for these three islands is 15815 X 0.00457 = 72.27 hectares.

While the value for coral reef itself is ranging from US\$115,000 to US\$1.13 million per hectare (Reef Check Malaysia, 2012). Thus, the average value for coral reef in PLMP is estimated to be at RM160.95 million. Table Part A 4.1.4 illustrated the estimated PVs for 10 and 20 year period.

Table Part A 4.1.4: Present Value of Coral Reef

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV over 10-year period (RM)	1,403,719,919.34	1,149,882,591.34	968,690,917.42
PV over 20-year period (RM)	2,166,675,892.99	1,531,160,830.47	1,168,353,346.38

The present values (PVs) over 10-year period are RM 1.40 billion, RM1.15 billion and RM968.69 million, and for 20-year period are RM2.17 billion, RM1.53 billion and RM1.17 billion at 5%, 10% and 15% discount rates respectively.

4.1.5 Value of Aesthetics by Coral Fish

The aesthetics value by coral fish for PLMP is valued using Pulau Perhentian fish biomass study by Zainuddin et al. (2015). The estimated average density of coral fish population in km² is 67,000kg / km² and using the minimum market price for coral fish as in Hasnan et al. (2011), which is RM34.62/kg, the coral fish value surrounding the circumference of 1 nautical miles of PLMP as per year is valued at RM 366.86 million. The estimated PVs for 10 and 20 year period are illustrated in Table Part A 4.1.5.

Table Part A 4.1.5 : Present Value of Coral Fish

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV over 10-year period (RM)	3,199,670,861.75	2,621,068,327.98	2,208,055,937.51
PV over 20-year period (RM)	4,938,769,925.66	3,490,162,550.53	2,663,170,983.86

At 10% discount rate, the present value of coral fish to be ranging from RM2.6 billion to RM3.5 billion in 10 to 20 years ahead.

4.1.6 Value of Biological Support by Turtle

Currently, Pulau Rusukan Kecil dan Pulau Rusukan Besar is one of the main attractions to the turtle especially Agar and Karah species to lay eggs. This scenario contributed to the biological support in conserving the MPA. In year 2015, it was recorded that total turtles’ eggs were around 2811 units with RM4.5 per egg. (Note: turtle eggs from MPA are not traded). Based on this information, the estimated biological support in terms of turtle is valued at RM12,649 a year and their discounted rate value is shown in Table Part A 4.16.

Table Part A 4.1.6: Present Value of Biological Support by Turtle

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV over 10-year period (RM)	110,325.59	90,375.20	76,134.41
PV over 20-year period (RM)	170,290.23	120,341.82	91,826.91

Further, at 10% discount rate, the present value for biological support to be around RM90,357 and RM120,341 in 10 to 20 years onward.

4.1.7 Value of Coastal Protection by Coral Reef

The coastal protection in PLMP is measured naturally thru coral reef. Based on two parameters; coral reef area which is 0.72 km² and the value of coastal protection by the coral reef per km² per year which is USD275,000 (O’Garra, 2007). Using RM865,562.50 as at USD3.1475 per RM (currency base year 2011), the total value of coastal protection by coral reef per year is around RM625,581. Table Part A 4.1.7 indicates the present values over 10 and 20 year periods.

Table Part A 4.1.7: Present Value of Coastal Protection by Coral Reef

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV over 10-year period (RM)	5,456,155.16	4,469,508.31	3,765,229.71
PV over 20-year period (RM)	8,421,708.42	5,951,508.53	4,541,302.76

The PVs over 10-year period are ranging from RM 3.77 million to RM 5.46 million, and for 20-year period are from RM 4.54 million to RM 8.42 million at three different discount rates.

4.1.8 Value of Carbon Sequestration by Coral Reef

Considering the benefit of carbon sequestered by coral reef which is valued at USD2700 (RM8,498.25) per hectare per year (Emerton & Kekulandala, 2003), this study transferred this benefit as a parameter in calculating the value of carbon sequestration. Thus, for 72.27 hectares of coral reef area, the estimated value of carbon sequestration thru coral reef is measured by benefit transfer method, which is amounted at RM614,207. Table Part A 4.1.8 illustrates the PVs for 10 and 20 year periods.

Table Part A 4.1.8: Present Value of Carbon Sequestration by Coral Reef

Present value	Discount rate (<i>i</i>)		
	<i>i</i> =5%	<i>i</i> =10%	<i>i</i> =15%
PV over 10-year period (RM)	5,356,952.34	4,388,244.52	3,696,770.99
PV over 20-year period (RM)	8,268,586.45	5,843,299.28	4,458,733.62

The carbon sequestration is valued for 20 year period by RM 8.27million, RM 5.84 million, and RM 4.46 million at 5%, 10%, and 15% discount rate respectively.

4.1.9 Bequest Value

Due to a very small number of visitors (500 visitors for 2015) and considering the free entrance in to the marine park, presumably, the contributions of bequest value is not significantly affecting the total paradigm of TEV. Thus, for the purpose of cost and benefit calculations, this perspective is excluded from TEV paradigm.

4.2 TEV for 20 years period

The total economic value (TEV) for Pulau Labuan Marine Park is approximately around RM560.096 million per year. By next 20-year period, TEV is estimated to amount nearly

RM 5.328 billion at 10% discount rate. This study found that the largest portion of TEV is contributed by the aesthetic values (coral reef and coral fish) which are 94.24%, followed by 5.62% of capture fisheries, then by other components for the remaining percentage of total economic value per year.

Table Part A 4.2 Economic Values of Pulau Labuan Marine Park (PLMP)

COMPONENT OF TEV	Economic Value per Year (RM)	PV (20-year period, i=10%) (RM)
capture fisheries	31,496,000.00	299,639,202.92
Tourism –cost	(360,000.00)	(3,424,882.94)
Research & education - cost	(99,000.00)	(941,842.81)
Aesthetic - coral reef	160,945,033.38	1,531,160,830.47
Aesthetic - reef fish	366,861,741.13	3,490,162,550.53
Biological support - turtle	12,649.50	120,341.82
Coastal protection - coral reef	625,581.40	5,951,508.53
Carbon sequestration-coral reef	614,207.19	5,843,299.28
TOTAL	560,096,212.60	5,328,511,007.81

CHAPTER 5: DISCUSSIONS AND RECOMMENDATIONS



5.0 INTRODUCTION

5.1 Source of Information

This chapter discusses the outcomes of the research in line with the results interpreted from the data analyzed. The analyses are guided by information obtained from the following sources:

Table Part A 5.1 Source of Information

COMPONENT OF TEV (Pulau Labuan MP)	LOCAL SOURCES			EXTERNAL REFERENCES
	JTLM	OTHER DEPARTMENT	RESEARCH	
Capture fisheries		X		
Tourism –cost			X	
Research & education	X		X	
Aesthetic - coral reef			X	X
Aesthetic – coral fish			X	
Biological Support – turtle	X		X	X
Coastal protection -coral reef			X	X
Carbon sequestration-coral			X	X

In the PLMP, the most important variable involved in this study which provides a very meaningful insight of the biodiversity’s wealth is coral fish value which belongs to aesthetic value category. This study reveals that the coral fish value in Pulau Rusukan Besar, Pulau Rusukan Kecil and Pulau Kuraman contributes more than that of coral reefs. However, combining the values of the two, their total contributions amount to 94.24% of TEV. However, previous studies conducted in Pulau Redang, Pulau Tioman and Pulau Tinggi MPA’s (excluding Pulau Payar and Pulau Perhentian) did not proceed with evaluating coral fish value due to the infeasibility of the data. For Pulau Payar and Pulau Perhentian MPA’s, the values of fish biomass for this component were derived from Alias (2008) and Zainuddin et al. (2015) respectively. Thus, it is crucial to explore the local coral coverage in order to value and appreciate quintessence of conservation.

5.2 Vital Information

The quests for vital information throughout this study relied heavily on the outputs of the following studies either in the Pulau Labuan Marine Park itself or in the surrounding MPA vicinity. It is crucial to note that the following endeavors had contributed to 99% of total TEV of the PLMP:

- 1) Coral reef area mapping
- 2) Biomass of reef fish
- 3) MPA contribution toward landed capture fisheries

As for this study, due to the absence of the local coral reef area mapping and the biomass of reef fish measure in the surrounding water of Pulau Rusukan Besar, Pulau Rusukan Kecil and Pulau Kuraman, researchers had to resort to the benefit transfer approach using equivalent parameters and conventional constances. Furthermore, a scientific research on the contribution of MPA towards landed capture fishes is also important to be conducted in this MPA to provide a more precise value of the capture fisheries. Besides that, such study could also be critical in getting the insights of the future food security as discussed in the Pulau Perhentian TEV study (Wagiman et al., 2015).

There should be increased initiatives and incentives in exploring these frontiers so that a lot more precise and localized information can be added up into the knowledge management repository for the benefits of JTLM, scholars, policy makers and other relevant stakeholders. By exploring these frontiers, the marine parks department might be benefitted by the development and transfer of new knowledge and technologies into the Malaysian marine environment.

5.3 Ecotourism in the PLMP

The Pulau Labuan Marine Park (PLMP), consists of Pulau Rusukan Besar, Pulau Rusukan Kecil and Pulau Kuraman, is an uninhabited island owned by a few individuals. In 2015, the arrival of tourists was recorded at merely 500 people even though this group of islands has a lot of tremendously unique attractions to be experienced. At present, there is only one operator (Emma Glorious Tour) offering tourist packages to local and foreign visitors in Pulau Rusukan Besar in which many tourism activities are included. However, the tourism environments and attractions in the PLMP are not yet well developed as those of other MPA's in Malaysia.

The establishment of the PLMP was expected to become an important catalyst to boost the tourism industry, specifically ecotourism, in the region (Ecotourism, defined by TIES (1990) as ***responsible travel to natural areas that conserves the environment and improves the well-being of local people***). In line with supporting conservation activities, besides the PLMP, all other Malaysian MPA's have already imposed a designated conservation fee on tourists.

Principally, ecotourism is about uniting conservation, communities, and sustainable travel. Thus, in implementing and participating in ecotourism, adhering to these six (6) principles (Table Part A 5.2) is very crucial. The principles in table part A 5.2 are some of the critical issues in the Pulau Labuan Marine Park that need to be carefully addressed.

Table Part A 5.2: 14 Principles of Ecotourism

No.	Principles	Lessons Learned	Challenges	Way Forward
1	Minimize impact of marine biodiversity damages	Marine inventory's growth is directly related to Marine biodiversity protection programs	To move toward well integrated partnerships biodiversity protection	To establish more funds and better biodiversity protection instruments and approaches
2	Build environmental and cultural awareness and respect.	Knowledge helps create a more sustainable environment	To educate and induce local community to participate	To move all entities toward a united conservation goal
3	Provide positive experiences for both visitors and hosts	Experience management is crucial	To localize visitors' experience	To add more values and higher local contents to tourism spots
4	Provide direct financial benefits for conservation	Increase in the number of tourist leads to a more formidable conservation fund	To enhance the wealth of marine treasures	To increase R&D and scientific endeavors
5	Provide financial benefits and empowerment for local people.	Tourists are looking for unique products and unique experience	To make ecotourism as an important mean for socioeconomic growth and stability	To create an integrated entrepreneurial, environmental and conservation leadership program for young marine community
6	Raise sensitivity to host countries' political, environmental, and social climate.	Well informed guests are seamed harmonically into the surrounding	To disseminate information more effectively	To establish effective information centers, physically and virtually

In order to bring ecotourism forward, this study had identified six critical approaches (as listed in the above table) for the beneficiary stakeholders including local communities and related government agencies to drill upon. Specifically, for the JTLM Labuan as the custodian of the PLMP to operate effectively and more efficiently, a strategic infrastructure such as a marine center at a strategic location in any of the three islands is in a grave need to be established.

CHAPTER 6: CONCLUSION



This study was conducted to investigate the total economic value of Pulau Labuan Marine Park which reflects waters surrounding three gazette islands namely Pulau Kuraman, Pulau Rusukan Besar and Pulau Rusukan Kecil. The Marine Park Centre is located at Kampung Pantai, Pulau Labuan (JTLM, 2016).

This study was undertaken to explore and build an effective framework and method that could quantitatively estimate the economic and financial value of biodiversity inventories and activities undertaken within the PLMP for the financial year of 2015 - 2035. For that, this study works with the Total Economic Value (TEV) as the research framework which comprises elements of direct use value, indirect use value and non-use value. In addition to that, this study also examined the management and opportunity costs associated with the PLMP.

In this study, the data was collected through structured questionnaire that covered direct use, indirect use and non-use value in terms of awareness and bequest value in view of willingness to pay. A survey was carried out with a target group of respondent that is the tourists. 500 questionnaires have been distributed among the tourists.

In view of TEV, this study employed TEV mathematical model that concentrates on the cost and benefit analysis. It is found that the PLMP coast provides substantial values significance to the wealth of the nation. The values involved can be summarized as follows:

- Capture Fisheries – In this study the capture fisheries element is based on the published report on landed fish at the access point surveys, the catches attribute to the presence of fishes in the PLMP was valued. The resultant economic value of fish caught contributed by 20% from MPA along Pulau Labuan coast line was valued at RM31.496 million per year. This value is estimated to be around RM299.639 million in 20 years with a 10% discount rate.
- Tourism – The total of 1,015,427 visitors had visited the Pulau Labuan in year 2015. However, it was estimated that only around 0.05% or 500 tourists had visited the PLMP without any conservation fees charged. Due to small number of tourist, benefits from tourism are not included into the perspective.

- Aesthetics Values – This element was confined to the coral reefs and coral fish values. The coral reef value and coral fish value surrounding 1 nautical mile of the PLMP as per year is estimated at RM160,945,033.38 and RM366,861,741.13 respectively. At 10% discount rate, the present aesthetic value over 20 year period is expected to be RM1,531,160,830.47 (coral reef) and RM3,490,162,551.00 (coral fish).
- Biological Support Values – Turtle from Agar and Karah species had contributed significantly to the biological support in the PLMP at which it was valued at RM12,649.50. The present value at 10% discount rate is RM120,341.82 over 20 year period.
- Coastal Protection – In this study, coastal protection was measured using the Benefit Transfer Method. For an estimated 0.72 km² of coral reef surrounding PLMP, the approximate value of coastal protection by coral reef per year is estimated at RM625,581.40. The present coastal protection value over the 20 year period with 10% discount rate is estimated at RM5,951,508.53.
- Carbon Sequestration – The estimation of carbon sequestration value in PLMP was made based on Benefit Transfer method. As a result, the value of carbon sequestration from coral identified in PLMP is valued at RM614,207.19 per year. At 10% discount rate, the carbon sequestration is valued for 20 year period by RM5,843,299.28.
- Management Costs – the management cost, including maintenance and research and education incurred on PLMP was approximately RM459,000.00. Thus, over the 20 year period, the present value of maintenance and research and education cost is expected at RM3,424,882,939.00 for the same time period at 10% discount rate.

Conservatively estimated, using the findings reported in the preceding chapter, it is estimated that the Total Economic Value (TEV) of Pulau Labuan Marine Park for year 2016 is RM560,096,212.60 a year and over a 20 year period, using a discount rate of 10% is RM5,328,511,007.81.

This study has provided a thorough outline of the role of Total Economic Value analysis in promoting the sustainable management of marine protected areas in the PLMP. The study started from a broad overview of issues surrounding marine ecosystems and narrowed its focus to the PLMP. Strategies used to combat these problems were discussed, including all components of Total Economics Value measurement. In particular, marine protected areas were identified as having high conservation value despite a number of underlying problems such as conflicts between conservation and development needs, a lack of well-defined boundaries and scientific rationale and insufficient funding sources.

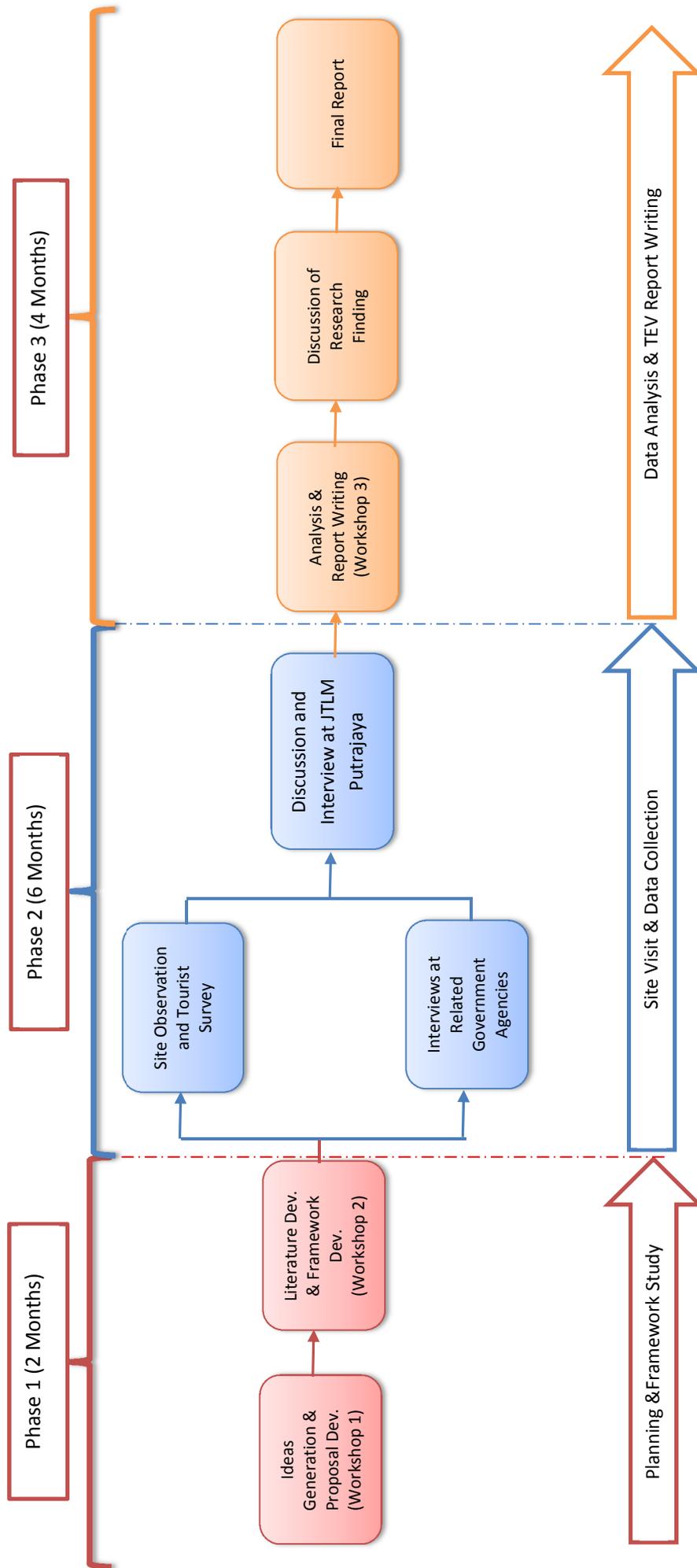
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APPENDIX 1: RESEARCH DESIGN



PART B: MANAGEMENT EFFECTIVENESS



MANAGEMENT EFFECTIVENESS ASSESSMENT TOOL (MEAT)

PULAU LABUAN MARINE PARK, WILAYAH PERSEKUTUAN. MALAYSIA

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EXECUTIVE SUMMARY

Management effectiveness (ME) measures the level of effectiveness of an institution in managing a protected marine park area. This study assessed the effectiveness of the Jabatan Taman Laut Malaysia (JTLM) in managing the Pulau Labuan Marine Park (PLMP). A tool known as the Management Effectiveness Assessment Tool (MEAT) was utilized. In addition, the Management Effectiveness Customer Assessment Tool (MECAT), and the Management Effectiveness Staff Assessment Tool (MESAT) were also used to bring about a more comprehensive assessment of management effectiveness.

In general, the MEAT score is higher than that of the MESAT and the MECAT. Overall score of the MEAT is 80 (out of 84) indicates that the performance of the JTLM in managing the MPA was excellent. The score of 80 points (96%) showed that the JTLM has given full commitment and dedication in managing the Pulau Labuan Marine Park. With these continuous efforts, the Pulau Labuan Marine Park can potentially be sustained in the long run.

While the MEAT results show an excellent level of management effectiveness, the average score for the MESAT and the MECAT were relatively low as at 63.44% and 44.7% respectively. In other words, the staff of the JTLM perceived that there is a relatively large gap exists in between the successful execution of marine park management in view of the 9 Management effectiveness dimensions.

Furthermore, the MEAT score shows that one (1) dimension is mostly effective, while the MESAT score shows that four (4) dimensions are partially effective and the other five (5) dimensions are mostly effective. Consequently, the MECAT score shows that eight (8) of the nine (9) dimensions involved in this study are partially effective.

Finally, this study has identified critical challenges that need to be addressed and put forward recommended means and ways to overcome them. Among issues stipulated are customer satisfaction, social balance, employee satisfaction, ecotourism and institutionalization of MPA.

CHAPTER 1: *INTRODUCTION*



1.0 Introduction

A marine park is a type of marine protected areas (MPA) where a section of the ocean has been established to place limits on the human activity especially fishing and development. The creation of the MPA was mainly to address biodiversity loss in coastal and marine environment, increasing the abundance and/or biomass of target species or allowing the recovery of more “natural” population with positive effects on local fishery through biomass exportation to surrounding non protected area (Camuffo, Soriani & Zanetto, 2011). The MPAs should be also regarded as fundamental experiences of participatory planning and management, integrated with a social and economic framework at broader scale to ensure their sustainability (Cicin-Sain & Belfiore, 2005).

Hence, this has brought to the marine park's ecotourism objectives as to stipulate both the protection of the ecological integrity of ecosystems and opportunities for recreation and tourism (International Union for Conservation of Nature, 2008). In order to meet these objectives, a marine park should be managed effectively. Managing an MPA will highly demands for continuous, iterative adaptive and participatory processes from all the stakeholders in ensuring it remains relevance to the community and sustain.

Due to the paramount importance of the management aspects, this research interested to assess the management effectiveness and the level of service satisfaction among Malaysia Marine Park Department's (JTLM) staff and stakeholders. The Pulau Labuan Marine Park (PLMP) has been chosen for the study site.

The PLMP is located in the Federal Territory of Labuan, an International Offshore Financial Centre and duty free port. Labuan island is located 115 km away from the Kota Kinabalu and is accessible by air or ferries. The marine park is located just 8 km off the coast of Sabah at the mouth of Brunei Bay. The PLMP comprised of three islands namely Pulau Kuraman, Pulau Rusukan Kecil and Pulau Rusukan Besar, located at the south-west of Labuan Island. These beautiful islands, known as the “Jewels of Labuan”, have been declared as Marine Park since 1994.

With regards to the management plan, as part of an overall strategy for the PLMP ecotourism is in itself a model and a demonstration of the importance of the process. It

sets out very clear objectives, for both the short and long terms. It deals with what is needed now to safeguard the eco-tourism park from immediate threats, addresses how resources should be managed, the flora and fauna; research undertaken, the interests of indigenous peoples safeguarded, and the public informed about the eco-tourism park. It is also pertinent to ascertain the importance of the eco-tourism park and its contribution to the social, environmental and economic development of Labuan.



Figure Part B 1.0 *Source: Department of Marine Park Labuan*

Likewise, the benchmarks that have been set by International Union for Conservation of Nature (IUCN) for the maintenance of ecotourism parks to be addressed and the relevant procedures that must be put in place for conformity. A proper analysis matrix is developed by considering local requirements and limitations. These findings would enable them to safeguard its future and at the same time ensuring that the prior considerations and national considerations are taken into account.

1.1 Management Effectiveness Assessment Tools

Any protected area managers around the world are seeking the best way to monitor and evaluate the condition of (and pressures on) protected areas, and to determine how

effectively these areas are being managed. This information is vital for park managers so that they can learn from past practices and for the future improvement. Therefore, management effectiveness assessment is very critical to provide the management with diverse information sources including planning documents, research and monitoring results, community and specialist opinion, corporate data and their own expert experience.

In other words, management effectiveness can be regarded as the assessment of how well a protected area is being managed, primarily the extent to which it is protecting values and achieving goals and objectives. The International Union for Conservation of Nature (IUCN) World Commission on Protected Areas has developed a framework for assessing management effectiveness, which has been widely applied around the world to develop specific assessment systems designed to meet the need to evaluate management effectiveness in different circumstances.

Effective management needs to be founded on a thorough understanding of the individual conditions related to protected areas, be carefully planned and implemented, and include regular monitoring, leading to changes in management as required. The management cycle (input, process, and output) identifies important elements in this process that should, ideally, all be assessed if effectiveness of management is to be fully understood. Table 1.1 describes the system view of effective management from this management cycle perspective.

Table Part B 1.1 System View of Management Effectiveness

No	Dimensions	Descriptions
1	Context	JTLM begins with understanding the context of the protected area, including its values, the threats it faces and opportunities available, its stakeholders, and the management and political environment.
2	Planning	JTLM progresses through planning : establishing vision, goals, objectives and strategies to conserve values and reduce threats
3	Inputs	JTLM allocates inputs (resources) of staff, money and equipment to work towards the objectives.
4	Processes	JTLM implements management actions according to accepted processes
5	Outputs	JTLM eventually produces outputs (goods and services, which should usually be outlined in management plans and work plans)
6	Outcomes	JTLM produces results in impacts or outcomes , hopefully achieving defined goals and objectives.

1.1.1 MEAT, MECAT and MESAT

As indicated earlier, the current study aims to assess the management effectiveness of the PLMP. Hence, management effectiveness of the PLMP was assessed by deploying the above management cycle with some modifications. First, Management Effectiveness Assessment Tool (MEAT), originally developed by the Coral Triangle Initiative (2011), was the main tool used to assess the effectiveness of the JTLM in terms of context and planning dimensions. Second, Management Effectiveness Staff Assessment Tool (MESAT) was used to evaluate the staff perspective in terms of input and processes. Finally, the output and outcome dimensions were assessed through Management Effectiveness Customer Assessment Tool (MECAT). These assessments would enable the JTLM to:

- a) improve MPA effectiveness through understanding and implementation of good governance of processes, system and standard through objective assessment,
- b) see what works based on complementation of enforcement and level of awareness and commitment of stakeholders,
- c) gauge and highlight important threshold indicators and processes that help promote and achieve MPA management effectiveness outputs and outcomes, and

- d) be more transparent and make adjustments by responding to stakeholders' feedbacks timely and accurately.

MEAT, MESAT and MECAT were designed based on the Marine Park Area Management Effectiveness Assessment Tool (MPA MEAT), a modified version of the Philippine Environmental Government Project 2 (EcoGov2). The MPA MEAT tool enables marine parks to assess governance in terms of enforcement, implementation and maintenance. MPA MEAT can be utilized to assess three main aspects, namely governance, biodiversity and socioeconomic factors. However, the current study only focused on the governance perspective. Therefore, the MPA MEAT was aimed to assess in terms of physical management, direct and indirect uses, threats, people and the systematic interaction between people and resources. There are two types of outputs:

- 1) Output 1 – Measures the level of effort devoted to MPA management through overall score. Higher scores mean greater effort put into MPA management and can potentially increase MPA effectiveness.
- 2) Output 2 – Highlight important activities called “thresholds” that MPA management bodies must undertake to enable effective governance of an MPA.

1.2 Study Site: Pulau Labuan Marine Park (PLMP)



Figure Part B 1.2 Study Site: Pulau Labuan Marine Park (PLMP)

Labuan Island itself is situated at the west coast of Sabah and is about 8 km from the nearest point of Sabah and about 123 km from Kota Kinabalu which is the State Capital of Sabah. Labuan is assessable by air from Kuala Lumpur and Kota Kinabalu. The time taken is about 2½ hours and 20 minutes respectively. Waters surrounding 3 small islands, stretching until two nautical miles from the shore of these islands, have been declared as Marine Park since 1994. The three islands concerned are Pulau Kuraman, Pulau Rusukan Kecil and Pulau Rusukan Besar, which are situated at the south-west of Labuan Island.

Pulau Kuraman is the main island within the cluster. This island is situated about 14 km from Victoria Harbour, Labuan and is about 5.2 sq kilometres in size and well known for its long beautiful sandy beaches and clear waters. It has two beautiful white beaches, perfect for picnicking and sun-bathing. The island is surrounded by hard corals; the most conspicuous species of the coral reef is the *Acropora tubinaria*. The corals are found in water 8 - 13 meters deep.



Figure Part B 1.3: Activities at Pulau Labuan Marine Park

Pulau Rusukan Kecil is situated near Pulau Kuraman and it has a land area of only 8 ha. The coral reefs nearby consist of mostly *Acropora* and *Platygyra* species (JTLM, 2016). The water surrounding this island is very suitable for snorkelling and swimming. There are places for camping and picnicking as well.



Figure Part B 1.4: View in Pulau Rusukan Besar

Pulau Rusukan Besar is about 14 ha. in size and is situated just next to Pulau Kuraman, and about 15km from Victoria Harbours. There is a turtle hatchery on Pulau Rusukan Besar which has been operating since the 2011 with the cooperation of Petronas Carigali. The centre also provides areas for the turtles to lay eggs and this also ensures that the turtles keep returning to the place. Among the turtles that land on the islands are the greenback and hawksbill. Throughout 2012, the centre had set free 2,068 young turtles after hatching 2,225 eggs and the figure was much higher compared with 2011 where 1,163 eggs were hatched and 796 hatchlings released to the sea. The turtle landings happen in two seasons with the hawksbill coming in from July to November while the greenback coming in from December to May (Borneo Post, 2014).



Figure Part B 1.5: Turtle Hatchery on Pulau Rusukan Besar

Pulau Rusukan Besar is also the choice for those who like snorkeling especially at the southern and western part of the island. The water east and south of the island is very good for snorkeling and viewing from glass-bottom boats, as well as scuba diving.



Figure Part B 1.6: Spotted Shark Also Found in Labuan Marine Park

Besides these 3 islands, visitors to Labuan can also make trips to some "wreck" for diving where corals, especially soft corals and marine lives are found in abundance. These wrecks are known as "Cement Wreck", "American Wreck", "Australian Wreck" and "Blue Water Wreck". There are 3 "Dive-tour" operators in Labuan bringing visitors to these 3 islands and wrecks for snorkeling and diving. However, there is scarcity to determine the

total number of visitors to Labuan Marine Park since there is no specific entrance to the marine park. It is estimated that the visitors are around 500 visitors for this year.

1.3 Research Objectives

The general objective of the research is to identify pertinent practices that will enable effective management of the Pulau Labuan Marine Park ecotourism destination in accordance with international, regional and national aspirations and expectations. The findings enable the establishment of management policies to achieve the appropriate strategic management plan with the stated objectives of social, economic and environmental development and sustainability. The specific objectives of the research are:

1. To identify the current management practices of the PLMP
2. To benchmark the current management effectiveness practices with the global standards
3. To develop a management effectiveness analysis matrix for the PLMP
4. To identify critical areas aligned with the contemporary management policy for the PLMP

1.4 Research Outputs

The output of the research provides valuable insights especially to the policy makers and the administration to include the following recommended strategies for management effectiveness:

1. Better integrating terrestrial and aquatic environmental management as they relate to development in the ecotourism zone.
2. Improving the management of existing federal and state protected areas, particularly as related to regulating ecotourism.
3. Build environmental and cultural awareness and respect.
4. Provide positive experiences for both visitors and hosts.
5. To increase value-added of the PLMP as a global ecotourism destination.

CHAPTER 2: LITERATURE REVIEW



2.0 Introduction

The current study has adopted a descriptive case research approach whereby qualitative and quantitative data have been gathered through the method of interviews and questionnaires. This mixed-method approach enabling understanding of a certain issue in depth. The Pulau Labuan Marine Park was chosen as the case to be investigated due to higher concern for sustainability of the island. Research activities were conducted in stages in which specific objectives were realized as described in the research design in Appendix 1.

2.1 Management Effectiveness Framework

Management effectiveness refers to the assessment of how well a protected area is being managed — primarily the extent to which it is protecting values and achieving goals and objectives. The International Union for Conservation of Nature (IUCN) World Commission on Protected Areas has developed a framework for assessing management effectiveness, which has been widely applied around the world to develop specific assessment systems designed to meet the need to evaluate management effectiveness in different circumstances.

According to Fisheries and Oceans Canada (<http://www.dfo-mpo.gc.ca/oceans/publications/>), management effectiveness is the evaluation of the outcomes of a particular marine protected area measured against specific objectives. It requires that specific objectives relevant to a marine protected area be identified, which may include ecological, governance, social, economic and/or cultural objectives depending on the nature of the area. Monitoring of appropriate indicators for various objectives will then be undertaken to determine if objectives are being met. Management effectiveness can be measured through the satisfaction of the customers or stakeholders (Kaplan and Norton, 1993).

The JTLM management effectiveness was assessed via three tools, namely MEAT, MESAT, and MECAT. Furthermore, these three tools reflect three important management cycle, namely strategic (design), operation (process), and outcome (delivery) levels

respectively. Figure 2.1 depicts the three levels of assessment of management effectiveness.

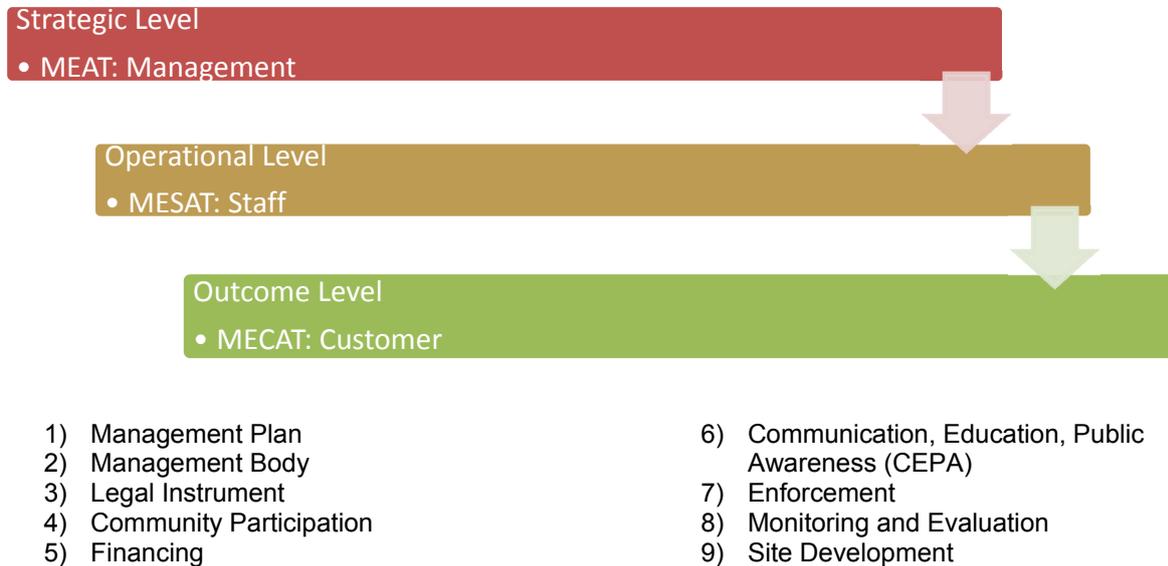


Figure Part B2.1: Assessment levels and dimensions

These tools covered nine (9) areas as depicted in Figure 2.1 which included (1) management plan, (2) management body, (3) legal instrument, (4) community participation, (5) financing, (6) CEPA, (7) enforcement, (8) monitoring and evaluation, and (9) site development. The following section discusses these elements in greater depth.

2.1.1 Management Effectiveness Assessment Tool (MEAT)

Management Effectiveness Assessment Tool (MEAT) originally developed by the Coral Triangle Initiative (2011) was the main tool used to assess the effectiveness of the JTLM in terms of context and planning dimensions. The 48-items MPA MEAT aimed to assess the JTLM governance in terms of enforcement, implementation and maintenance. This instrument was originally developed by the National Coral Triangle Initiative (CTI) Coordinating Committee of Philippine. Management effectiveness was defined according to four different levels: (1) established, (2) strengthened, (3) sustained, and (4) institutionalized. These levels in the MPA MEAT had certain criteria and activities that needed to be satisfied. The thresholds indicated with an asterisk (*) were given higher points. The minimum score including all the scores of the thresholds should be satisfied

to pass the level. For levels 3 and 4, the age of the MPA was also considered as a prerequisite for proving “sustainability” and “institutionalization”. The cumulative score was used to measure the MPA management rating. The minimum number of years of MPA operation in the Levels 3 and 4 must be satisfied in order to pass these levels. Figure 2.2 below depicts these four levels and its respective thresholds in detail.

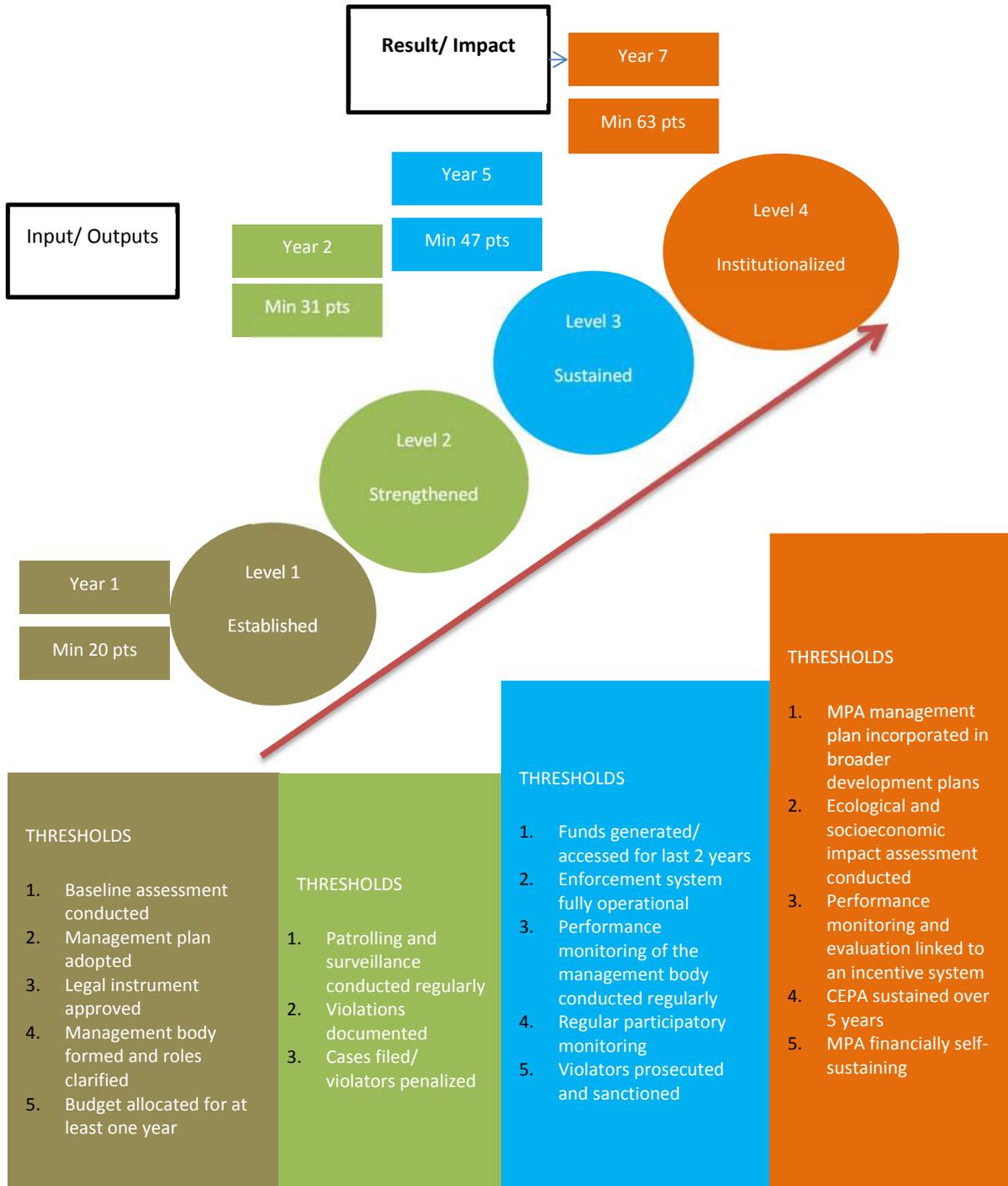


Figure Part B 2.2: Levels of Management Effectiveness and Thresholds

Source: Coral Triangle Initiative

The MEAT allowed objective evaluation of the Pulau Labuan Marine Park. The customized Malaysian version of the MEAT questionnaire was the result adaptation of the original MEAT. The respondents, the top managers of the JTLM in the Pulau Labuan Marine Park, were interviewed and asked to provide related documents as evidence of completion of the MPA targets.

The MEAT results would be interpreted in three ways: (1) Overall score, (2) Management effectiveness level (MEL), and (3) Management focus. The overall score was the average score of all the nine dimensions. The highest possible score for the overall score was 84 points. The higher scores mean greater effort put into the MPA management and can potentially increase the MPA effectiveness. As mentioned earlier, the management effectiveness levels were based on the activities known as “thresholds” to determine the effective governance of the Pulau Labuan Marine Park. The score would determine the level of the Pulau Labuan Marine Park either at the established, strengthened, sustained, or institutionalized level. Finally, the management focus was the score for each 9-dimension. The score of each dimension would provide information on the strengths and weaknesses of the JTLM in managing the Pulau Labuan objectively and would enable identification of the specific areas for improvement.

2.1.2 Management Effectiveness Staff Assessment Tool (MESAT)

In addition to the MEAT, the MESAT was developed to assess the perception of the JTLM staff (excluding the top management) regarding the nine dimensions of the MEAT. Management Effectiveness Staff Assessment Tool (MESAT) was used to evaluate the staff perspective in terms of input and processes. The data from the MEAT was only from the top management and other supporting evidences from the JTLM. In other words, the MEAT used an audit checklist without considering other stakeholder perception. Therefore, the main reason for the MESAT development was to examine the MEAT from the perspective of the staff. The MESAT had similar nine (9) dimensions with only simplified 21 items. The scale was anchored by a Likert scale of 1 to 4, ranging from low to high. Mean scores were calculated to see how the JTLM staff perceived the level of management effectiveness for each of the 9 dimensions. Additionally, the overall and

management focus scores were also calculated similarly to the MEAT. However, there was no score for thresholds and management effectiveness levels for the MESAT.

2.1.3 Management Effectiveness Customer Assessment Tool (MECAT)

Finally, the output and outcome dimensions were assessed through Management Effectiveness Customer Assessment Tool (MECAT). The MECAT was developed to assess management effectiveness of the JTLM from the perspective of the customers. Similar to the MEAT and MESAT, the 9 dimensions were assessed using simplified 21-items questionnaire with 1-4 Likert Scale. Mean scores were also calculated to comprehend the customer's perception of the level of management effectiveness for each of the nine (9) dimensions. However, the overall and management focus scores were calculated without considering thresholds and management effective levels.

The MEAT, MESAT and MECAT were designed based on the Marine Park Management Effectiveness Assessment Tool (MPA MEAT), a modified version of the Philippine Environmental Government Project 2 (EcoGov2). The MPA MEAT tool enables marine parks to assess governance in terms of enforcement, implementation and maintenance. MPA MEAT can be utilized to assess three main aspects, namely governance, biodiversity and socioeconomic factors. However, the current study only focused on the governance perspective. Therefore, the MPA MEAT was aimed to assess in terms of physical management, direct and indirect uses, threats, people and the systematic interaction between people and resources. There are two types of outputs:

- 1) Output 1 - Measures the level of effort devoted to MPA management through overall score. Higher scores mean greater effort put into MPA management and can potentially increase MPA effectiveness.
- 2) Output 2 – Highlight important activities called “thresholds” that MPA management bodies must undertake to enable effective governance of an MPA.

2.2 Management Focus Dimensions

This section will discuss the definitions of the nine (9) dimensions of management effectiveness. These dimensions include: (1) management plan, (2) management body, (3) legal instrument, (4) community participation, (5) financing, (6) communication,

education, & public awareness, (7) enforcement, (8) monitoring & evaluation, and (9) site development.

2.2.1 Management Plan

A management plan is a blueprint for the way an organization is run, both day-to-day and over the long term. It includes the standard methods for doing various things - handling money, dealing with the actual work of the organization, addressing the way people in the organization do their jobs (Kansas University Work Group for Community Health and Development, 2013).

2.2.2 Management Body

Management body means a body or bodies of an institution, appointed in accordance to the national law, which is empowered to set the institution's objectives and overall direction, and which oversees and monitors management decision-making. This shall include persons who effectively direct the management of the organization (The Futures and Options Association, 2013).

The management body of marine parks shall possess adequate collective knowledge, skills and experience to be able to understand the marine park development and conservation activities. Each member of the management body shall act with honesty, integrity and independence of mind to effectively challenge the decisions of the senior management where necessary and to effectively oversee and monitor management decision-making. Also, members of the management body shall have adequate access to information and documents which are needed to oversee and monitor management decision making.

2.2.3 Legal Instrument

A legal instrument is a formally executed written document (Wikipedia, 2013). A legal instrument states some contractual relationship or grants some right. It formally expresses a legally enforceable act, process, or contractual duty, obligation, or right. Additionally, a legal instrument evidences the act and the process of preparing a legal instrument or an agreement. A legal instrument secures a legal right.

2.2.4 Community Participation

Community participation occurs when a community organizes itself and takes responsibility for managing its problems. Taking responsibility includes identifying the problems, developing actions, and putting them into the right place.

Community Participation is defined as a continuous two way process which involves promoting full public understanding of processes and mechanisms through which environmental problems are investigated and solved (Cheetham, 2002).

Community Participation involves both information feed forward and feedback. Feed forward is the process whereby information is communicated from public officials to citizens concerning public policy. Feedback in this context is the communication of information from citizens to public officials regarding public policy.

2.2.5 Financing Sustainability

Protected area financing is about more than money; it involves mobilizing and managing funds to address a range of challenges associated with biodiversity conservation.

Securing adequate funds is a necessary but not sufficient condition for the protected areas (PA) to be managed effectively and financed sustainably. It is also necessary to consider the quality, form, timing, targeting, uses and sources of funding. PA financial sustainability requires that funds are managed and administered in a way that promotes cost efficiency and management effectiveness, allows for long-term planning and security, and provides incentives and opportunities for managers to generate and retain funds at the PA level.

Considering indirect and opportunity costs as well as local development benefits as key elements of PA funding needs; targeting cash and in-kind support to groups who incur PA costs, while also securing fair contributions from PA beneficiaries, is critical to PA financial and economic sustainability. Making PAs financially sustainable also means identifying and overcoming the broader market, price, policy and institutional distortions that act as obstacles to PA funding and financial sustainability (Emerton, Bishop, & Thomas, 2006).

2.2.6 Communication, Education & Public Awareness (CEPA)

CEPA stands for Communication, Education and Public Awareness. CEPA deals with the processes that attract, motivate, and mobilize individual and collective action for biodiversity (Hesselink, Goldstein, Kempen, Garnett, & Dela, 2007). CEPA comprises a broad range of social instruments including information exchange, participatory dialogue, education and social marketing.

CEPA provides the means to develop networks, partnerships and support knowledge management also the ways to manage the processes of multi stakeholder dialogue, and to gain cooperation of different groups. CEPA also provides the tool to develop the capacity to support biodiversity includes action learning or action research as a mean to learn reflectively from experience, such as in an adaptive management.

2.2.7 Enforcement

Enforcement (in the environmental context) has been defined by Wasserman (1992) as “... the set of actions that governments or others take to achieve compliance within the regulated community and to correct or halt situations that endanger the environment or public health. Enforcement by the government usually includes inspections, negotiations and legal action. It may also include compliance promotion.”

On that basis, an assessment of the effectiveness of, and deficiencies in, environmental enforcement might be expected to consider the entire process from ‘inspection’ – which may be generalized as ‘detection’ – through to legal action and its outcomes. For enforcement to be effective, the actions taken should be sufficient:

1. To encourage offenders to modify their behavior and not re-offend.
2. To deter others from offending.

In the more diffuse situations, involving larger regulated communities and less regular contact between regulated and regulator, the activity of ‘compliance promotion’ (Wasserman, 1992) becomes increasingly important, and typically includes providing

clear information, motivating, and ensuring that compliance is something the operator can reasonably be expected to do.

2.2.8 Monitoring & Evaluation

Monitoring can be defined as a continuing function that aims primarily to provide the management and main stakeholders of an ongoing intervention with early indications of progress, or lack thereof, in the achievement of results (United Nation Development Programme, 2009). An ongoing intervention might be a project, program or other kind of support to an outcome.

Evaluation is a selective exercise that attempts to systematically and objectively assess progress towards and the achievement of an outcome. Evaluation is not a one-time event, but an exercise involving assessments of differing scope and depth carried out at several points in time in response to evolving needs for evaluative knowledge and learning during the effort to achieve an outcome. All evaluations—even project evaluations that assess relevance, performance and other criteria—need to be linked to outcomes as opposed to only implementation or immediate outputs.

2.2.9 Site Development

Site development can be referred to the installation of all necessary improvements, (i.e. installment of utilities, grading, etc.), made for a marine park before a building or project can be constructed upon (Marine Parks and Researve Unit, 2001). It includes site selection, site planning, site analysis, layout, construction, and environmental protection. Other than that, site development includes all measures required to provide access to and circulation within a site, including the building of access roads, streets and footpaths and the provision of parking spaces, parks and squares.

Although development within marine protected areas is essential for sustainable financing of MPAs, such developments should ensure sustainable use of resources. In order to ensure that is done, the marine parks and reserves authorities have to ensure that the proposed investments/development projects or activities within the protected areas comply with the following:

- Do not compromise the special sensitive and fragile ecosystems typical to marine parks and marine reserves, and other valued ecosystem components.
- Meet all the requirements of the approved.
- Do not contradict the purpose and objects of marine parks or reserves.

In permitting development in a marine park, the management authorities should be mindful of their commitment to sustainable development, including protection of biodiversity, promotion of the use of best available technology and best environmental practices, and maximizing sustainable benefits, especially for the residential communities.

The current study aimed to assess management effectiveness from the above nine (9) dimensions. The following rating scale (shown in Table 2.1) was used to measure the level of management effectiveness for each dimension/area discussed above:

Table Part B 2.1 Scale of management effectiveness level

No	Score	Level of management effectiveness	Color to remark level of management effectiveness
1	86-100%	Effective	
2	66-85%	Mostly Effective	
3	40-65%	Partially Effective	
4	0-39%	Ineffective	

CHAPTER 3: *RESEARCH METHODOLOGY*



3.0 Introduction

A descriptive case research approach whereby qualitative and quantitative data have been gathered through the method of interviews and questionnaires. This mixed-method approach enabling understanding of a certain issue in depth. Other than that, including both quantitative and qualitative data helps to explain both the process and outcome of a phenomenon through complete observation, reconstruction and analysis of the cases under investigation (Tellis, 1997). In assessing the JTLM Labuan governance total performance, three tools, namely Management Effectiveness Assessment Tool (MEAT), Management Effectiveness Staff Assessment Tool (MESAT), and Management Effectiveness Customer Assessment Tool Research activities were conducted in stages in which specific objectives were realized as described in the research design in Appendix 1. (MECAT) were assessed.

This study applied qualitative data through the method of interview in capturing data on MEAT. A structured-interview was formulated to management team of the JTLM in Pulau Labuan. Meanwhile, quantitative data been gathered using survey technique and questionnaire was an instruments to obtain data on the MESAT and the MECAT. A self-administered questionnaire was distributed to respondents in four selected areas in Pulau Labuan. These four selected area which are Patau-patau 1, Patau-patau 2, Bebuluh and Kiamsam were chosen by the JTLM, as they are the nearest village to four marine parks and could provide ample information pertaining to the marine parks.

3.1 Management Effectiveness Framework

The JTLM management effectiveness was assessed via three tools, namely MEAT, MESAT, and MECAT. Furthermore, these three tools reflect three important management cycle, namely strategic (design), operation (process), and outcome (delivery) levels respectively.

These tools covered nine (9) areas which included:

- (1) management plan
- (2) management body

- (3) legal instrument
- (4) community participation
- (5) financing
- (6) CEPA
- (7) enforcement
- (8) monitoring and evaluation
- (9) site development.

The following section discusses these elements in greater depth.

3.1.1 Management Effectiveness Assessment Tool (MEAT)

The 48-items MPA MEAT aimed to assess the JTLM governance in terms of enforcement, implementation and maintenance. This instrument was originally developed by the National Coral Triangle Initiative (CTI) Coordinating Committee of Philippine. Management effectiveness was defined according to four different levels: (1) established, (2) strengthened, (3) sustained, and (4) institutionalized. These levels in the MPA MEAT had certain criteria and activities that needed to be satisfied. The thresholds indicated with an asterisk (*) were given higher points. The minimum score including all the scores of the thresholds should be satisfied to pass the level. For levels 3 and 4, the age of the MPA was also considered as a prerequisite for proving “sustainability” and “institutionalization”. The cumulative score was used to measure the MPA management rating. The minimum number of years of MPA operation in the Levels 3 and 4 must be satisfied in order to pass these levels.

The MEAT allowed objective evaluation of the Pulau Labuan Marine Park (PLMP). The customized Malaysian version of the MEAT questionnaire was the result adaptation of the original MEAT. The respondents, the top managers of the JTLM in the PLMP, were interviewed and asked to provide related documents as evidence of completion of the MPA targets.

The MEAT results would be interpreted in three ways: (1) Overall score, (2) Management effectiveness level (MEL), and (3) Management focus.

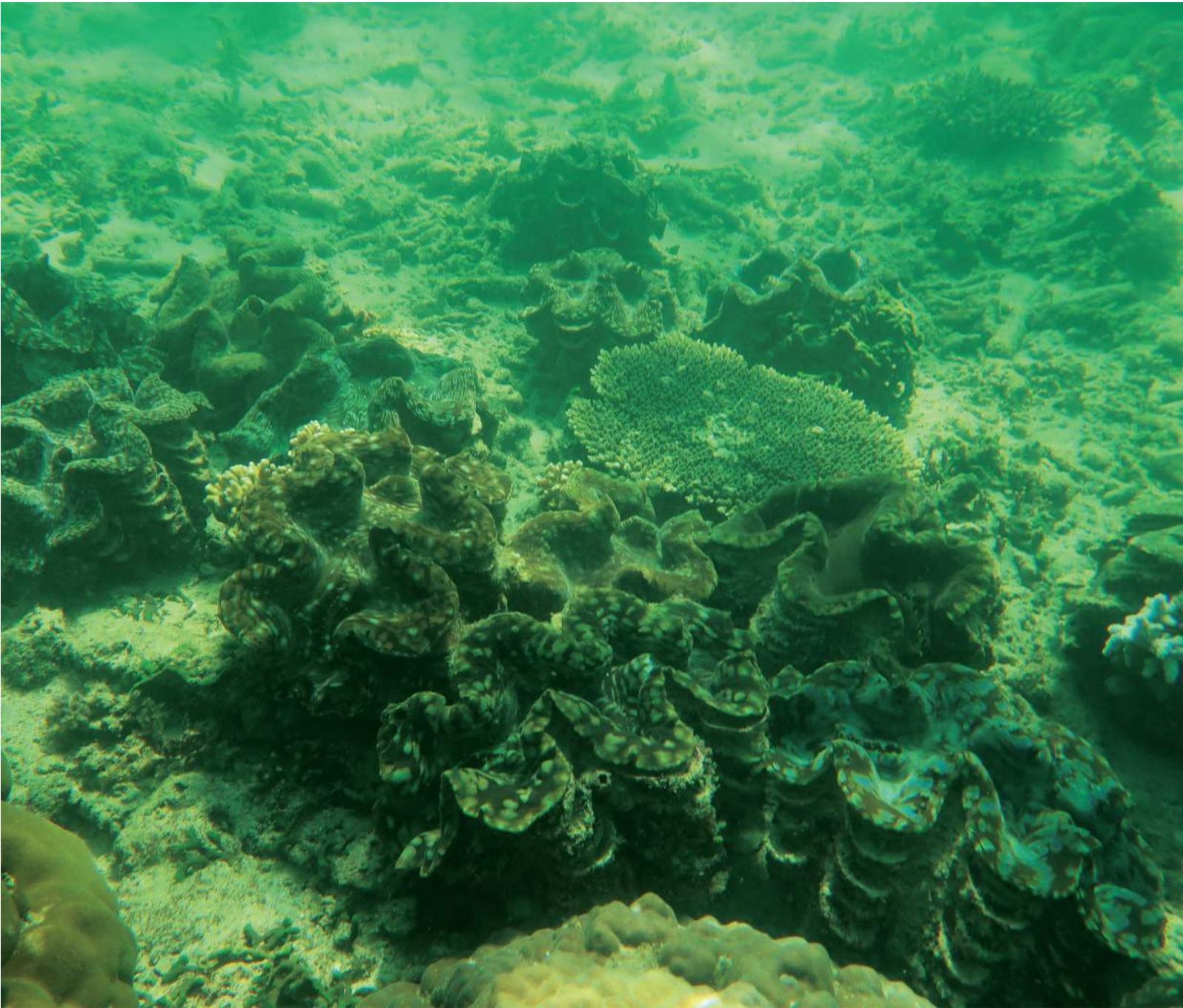
3.1.2 Management Effectiveness Staff Assessment Tool (MESAT)

In addition to the MEAT, MESAT was developed to assess the perception of the JTLM staff (excluding the top management) regarding the nine dimensions of the MEAT. The data from the MEAT was only from the top management and other supporting evidences from the JTLM. In other words, the MEAT used an audit checklist without considering other stakeholder perception. Therefore, the main reason for the MESAT development was to examine the MEAT from the perspective of the staff. MESAT had similar nine (9) dimensions with only simplified 21 items. The scale was anchored by a Likert scale of 1 to 4, ranging from low to high. Mean scores were calculated to see how the JTLM staff perceived the level of management effectiveness for each of the 9 dimensions. Additionally, the overall and management focus scores were also calculated similarly to the MEAT. However, there was no score for thresholds and management effectiveness levels for the MESAT.

3.1.3 Management Effectiveness Customer Assessment Tool (MECAT)

The MECAT was developed to assess management effectiveness of the JTLM from the perspective of the customers. Similar to MEAT and MESAT, the 9 dimensions were assessed using simplified 21-items questionnaire with 1-4 Likert Scale. Mean scores were also calculated to comprehend the customer's perception of the level of management effectiveness for each of the nine (9) dimensions. However, the overall and management focus scores were calculated without considering thresholds and management effective levels.

CHAPTER 4: *FINDINGS AND DISCUSSIONS*



4.0 Introduction

This chapter discusses the findings of the study. The discussion is reported into three main sections, namely (1) findings of the MEAT, (2) findings of the MESAT, and (3) findings of the MECAT. Note that the MEAT analysis is different than the MESAT and the MECAT. Even though these tools were used to assess the nine (9) management practice areas, the MEAT is a documentation audit, while the MESAT and the MECAT are perception-based surveys of the JTLM staff and the stakeholders of the Pulau Labuan Marine Park. In addition, the outcome of the MEAT assessment would also determine the level of establishment of management effectiveness. The four-level outcomes or also known as thresholds were categorized into level 1 (established), level 2 (strengthened), level 3 (sustained), and level 4 (institutionalized). Due to these differences, the comparison between the three tools must be made with caution. The next sections elaborate the findings in relation to the three tools used for the assessment.

MEAT

4.1 Finding 1: MEAT

4.1.1 Level 1: Established

Table 4.1 shows the documentations needed for the establishment level of the MEAT audit. Overall, basic requirements needed for the establishment of MPA had been well documented by the JTLM. In other words, critical activities that enable effective governance of an MPA have been undertaken. The result of the audit shows that the JTLM has the capacity to comply with the needs and requirements of MPA establishment.

Table Part B 4.1: Results of document audit for level 1 (Established)

REQ. NO.	DOCUMENTS	SCORE	EXISTS (Y/N)
1.1.1	Minutes of consultations or public hearings	1	NA
	Activity report / proceedings of the consultation		Y
1.1.2	Minutes of meeting (Exco Meeting/ meetings with stakeholders)	1	Y
	Reports of consultation activities		Y
	Biophysical assessment report		Y
1.1.3	Technical reports of consultants	3	Y
	Names of local participants		Y
1.2.1	Any draft of management plan	1	Y
	Zoning plan		Y
1.2.2	Documentation of public consultation	1	Y
	MPA plan		Y
1.2.3	CEPA materials	1	Y
	Communication plan		Y
1.2.4	Management Plan	3	Y
1.3.1	Draf of final Federal Gazette or State Gazette	1	Y
1.3.2	Minute of public consultation	1	NA
	Activity report / proceedings of the consultation		Y
1.3.3	Federal Gazette or State Gazette	3	Y
1.4.1	Federal or State Government Agency. National Advisory Council for Marine Park and Marine Reserve	1	Y
	Minutes showing cimmittees		Y
1.4.2	Organization chart with clear roles	3	Y
	Enabling documentation (i.e: Waran Penjawatan)		Y
	Approved work and finacial plan		Y
1.4.3	RMK document, RKT document, Federal/State Tresury budget approval, Board of Trustee Budget Approval, National Advisory Council Budget Approval	3	Y
	CEPA plan or similar document		Y
1.4.4	Minutes showwing CEPA activities	1	Y
	Report on CEPA activities		Y
	Photographs of billboards/signboard and CEPA materials		Y
	Photograph of marker buoys showing status		Y
1.4.5	Maps on billboards, banner, posters and signboards	1	Y
	Status monitoring report		Y
1.4.6	Document showing names of management, protection and park operation officers	1	Y
	Biophysical monitoring report		Y
1.4.7	Annual work plan	1	Y
	Biophysical monitoring SOP		Y
TOTAL SCORE		27	

4.1.2 Level 2: Strengthened

Table 4.2 shows the documentations needed for the strengthening level or second level of the MEAT. Overall, all documents related to the improvement or strengthening the MPA activities had been well documented as well. This means critical activities that enable improvement of an MPA have also been undertaken. The result of the audit shows that the JTLM has the capacity to comply with the needs and requirements for strengthening the Pulau Labuan Marine Park.

Table Part B 4.2: Results of document audit for level 2 (Strengthened)

REQ. NO.	DOCUMENTS	SCORE	EXISTS (Y/N)
2.1.1	Enforcement / Marine Park Protection Manual (i.e., schedules, SOP, etc.)	1	Y
	Fisheries Act 1985		Y
	Surat Kuasa Perlantikan Anggota oleh Menteri MOA		Y
2.1.2	Surat Arahan Ketua Pengarah	1	NA
	Training report with names of participants		Y
	Certificate of attendance to training(s)		Y
2.1.3	Mission order	3	Y
	Attendance of patrollers		Y
	Patrol logs		Y
	Back to office reports (after patrols)		Y
	Minutes of Blue Ocean Strategy (Multi agency Cooperation)		Y
	Operation log book		Y
2.1.4	Preliminary field inspection report	3	NA
	Back to office reports (after patrols)		Y
	logbook of apprehensions/ report violations		Y
	Patrolling report		Y
	Manual/SOP on patrolling/ Patrolling Form		Y
2.1.5	Case report	3	Y
	Legal document		Y
	List of violation penalized		Y
	Logbooks		Y
	Record of fines collected		Y
	List/picture of gear confiscated		Y
	Expenditure report/Financial statement		Y
2.1.6	Operating budget report	1	Y
	Development budget report		Y
	Marine Park Trust Fund		Y
2.1.7	Photograph of infrastructure showing their condition	1	Y

	Expenditure reports on maintenance of infrastructures		Y
	Status of Asset Report		Y
	Maintenance Report		Y
2.1.8	Documentation of CEPA activities	1	Y
	CEPA materials		Y
	CD		Y
	Video		Y
	Pamphlet/Poster/Signage		Y
	Stakeholder Engagement		Y
	Training to community		Y
2.1.9	Data or report over over the last three years	1	Y
	Monitoring, control and surveillance monthly report		Y
	DMPM annual report		Y
	MPMIS (Marine Park Management Information System)		Y
TOTAL SCORE		15	

4.1.3 Level 3: Sustained

Meanwhile, Table 4.3 shows the documentations needed for the third level or sustained level of the MEAT. Overall, all documents in this category had also been well documented. This evidence showed that the critical activities that enabled the JTLM to sustain the MPA have been implemented. The results of the audit also show that the JTLM is able to comply with the needs and requirements in sustaining the Pulau Labuan Marine Park.

Table Part B 4.3: Results of document audit for level 3 (Sustained)

REQ. NO.	DOCUMENTS	SCORE	EXISTS (Y/N)
3.1.1	Updated management plan or amendments to the plan	1	Y
	Minutes of meeting that reviewed the plan		NA
3.1.2	Fisheries Act 1985	3	Y
	Enactment (Park Enactment 1984)		NA
	Wildlife Conservation Enactment 1987)		NA
3.1.3	Audited expenditure report for every years	1	Y
	Letters with reply from partner for technical assistance		Y
	Reports with other partners		Y
3.1.4	Minutes of meetings w/ action points	3	Y
	National Advisory Council Annual Report		NA
	Board of Director Annual Report		NA
3.1.5	Logbook with records of patrolling apprehensions	1	Y
	Annual enforcement reports (for 5 years)		Y
3.1.5	Logbook/Patrolling (Preliminary Field Inspection) Form	1	Y
	Annual Report		Y
3.1.5	Investigation papers	1	Y
	CEPA Program Progress Report		Y

Total Economic Value & Management Effectiveness

	Update CEPA materials		Y
	Sabah/Johor Park Annual Report		NA
	Annual CEPA Report for Marine Park		Y
	Pamphlet, flyers, bulletin, signage		Y
	Marine Park Management Plan		Y
3.1.6	RKT KPI Strategic Plan	3	Y
	Research Strategic Plan		Y
	Monitoring data showing trends		
3.1.7	Attendance sheets showing names of locals participated in monitoring activities	3	Y
	Marine Park Total Economic Value Report		Y
	MPMIS (Marine Park Management Information System)		Y
3.1.8	Socioeconomic data showing trends	1	NA
	Total Economic Value (TEV) Report		Y
	Resolution or ordinance imposing fees		NA
	Financial guidelines		Y
3.1.9	Private -public partnership agreements	1	NA
	Malaysia Plan Document		Y
	Minutes of Marine Park Trust Fund Committee Meeting		Y
	Minutes of Meeting (Board of Trustees Meeting)		Y
	Appearance in court or court decision		Y
3.1.10	Other sanctions implemented	3	Y
	Fisheries Act 1985		Y
	Fisheries Rule and Regulation		Y
	Minutes of public hearing presentations		NA
3.1.11	Complaint report	1	Y
	Client Charter		Y
TOTAL SCORE		21	

4.1.4 Level 4: Institutionalized

Institutionalized level is the highest level of the MEAT. Table 4.4 shows the documentations needed for the institutionalized level of the MEAT. Overall, the documents to show the capability of the JTLM to institutionalize its MPA had been properly documented. The findings show that the Pulau Labuan Marine Park has achieved the institutionalized level.

Table Part B 4.4 Results of document audit for level 4 (institutionalized)

REQ. NO.	DOCUMENTS	SCORE	EXISTS (Y/N)
	Annual Investment Plan (for DMPM,SABAH PARK)		NA
4.1.1	Dokumen tentang penubuhan State Steering Committee – SSC (JK Pengurusan) Taman Laut di Pahang, Terengganu and Johor, NSC dan CCC.	1	Y

	Higher level plans where the MPA is integrated		NA
	Rancangan Fizikal Negara 2		Y
4.1.2	Environmental Impact Assessment Guidelines For Development of Tourist And Recreational Facilities on Islands In Marine Parks	3	Y
4.1.3	Proposals submitted (received copy)	1	Y
	Grant agreements entered into by the management body		N
4.1.4	Memorandum of Agreement	0	N
	Partnership contracts / documents		N
4.1.5	Trends and temporal assessment of ecological and socio-economic impacts	3	
	Impact assessment report		Y
4.1.6	Awards/ Recognition received	3	Y
	Announcement of competition/ performance incentives		Y
4.1.7	CEPA program progress reports for 7 years	3	Y
	Document Marine Education Kit		Y
4.1.8	Akta Perikanan 1985 (Seksyen IX)	1	Y
4.1.9	MPA coverage Reports	1	Y
	Coral reef restoration schedule		Y
4.1.10	Photographs of infrastructure	1	Y
4.1.11	Audited financial report for the last seven years	0	NA
TOTAL SCORE		17	

4.1.5 Overall Score of the Management Effectiveness in the Pulau Labuan Marine Park

OUTPUT 1: Overall Score

Table 4.5 shows the overall score of the MEAT. Total cumulative score of 80 (out of 84) indicates that the performance of the JTLM in managing the MPA was excellent. The score of 80 points showed that the JTLM has given full commitment and dedication in managing the Pulau Labuan Marine Park. With these continuous efforts, the Pulau Labuan Marine Park potentially can be sustained in the long run.

OUTPUT 2: Management Effectiveness Level (MEL)

Minimum number of years since the establishment and minimum overall score had been achieved by the JTLM. All “thresholds” questions were satisfied from level 1 up to level 3. However, “thresholds” questions for level 4 were not satisfied. Hence, the management effectiveness level (MEL) for the JTLM in Pulau Labuan was considered to be at the level 3 or sustained level.

Table Part B 4.5: Overall score of the MEAT

	Score	Accumulative Score	Acc. Scores Requirement	Acc. Scores meet?	Threshold Scores	Threshold Requirement	Threshold meet?	Established Year Requirement	Established Year?	MPA level satisfied?
Level 1 - Established	27	27	20	Yes	15	15	Yes	1	Yes	Yes
Level 2 - Strengthened	15	42	31	Yes	9	9	Yes	3	Yes	Yes
Level 3 - Sustained	21	63	47	Yes	15	15	Yes	5	Yes	Yes
Level 4 – Institutionalized	17	80	63	Yes	12	15	No	7	Yes	No
Total Cumulative Score	80	(out of 84 points*)								

OUTPUT 3: Management Focus

The MEL finding indicates that the “thresholds” requirements have been carried out by the JTLM to enable effective governance of the Pulau Labuan Marine Park. The detail of the results is shown in Table 4.6.

Table Part B 4.6: Results of the Management Focus Dimensions

MPA Management Focus	Item Numbers in MPA MEAT Form	Total Available Points	Actual Score Per Management Focus	Actual Score divide by Total Available Points
Management Plan	1.2.1 + 1.2.2 + 1.2.4 + 3.1.1 + 4.1.2	9	9	100%
Management Body	1.2.3 + 1.4.1 + 1.4.2 + 3.1.3 + 3.1.6 + 4.1.1 + 4.1.4	11	10	91%
Legal Instrument	1.3.1 + 1.3.2 + 1.3.3	5	5	100%
Community Participation	1.1.1 + 1.1.2	2	2	100%
Financing	1.4.3 + 2.1.6 + 3.1.2 + 3.1.9 + 4.1.3 + 4.1.11	12	9	75%
CEPA	1.4.4 + 2.1.7 + 2.1.8 + 3.1.5 + 4.1.7	7	7	100%
Enforcement	1.4.5 + 1.4.6 + 2.1.1 + 2.1.2 + 2.1.3 + 2.1.4 + 2.1.5 + 3.1.10 + 4.1.8	20	20	100%
Monitoring & Evaluation	1.1.3 + 1.4.7 + 2.1.9 + 3.1.7 + 3.1.8 + 3.1.11 + 4.1.5 + 4.1.6	16	16	100%
Site Development	4.1.9 + 4.1.10	2	2	100%

MESAT

4.2 Finding 2: MESAT

4.2.1 Profile of The Staff

The MESAT is the assessment of management effectiveness from the perspective of the JTLM employees. 15 employees who worked in the Pulau Labuan Marine Park at the point of study were surveyed in this study. Out of that, the majority (93%) were male staff. 53.3% of these staff worked for 6-10 years and 53.3% of them were the supporting staff 2. The detail of this profiling is illustrated graphically in Figure 4.1.

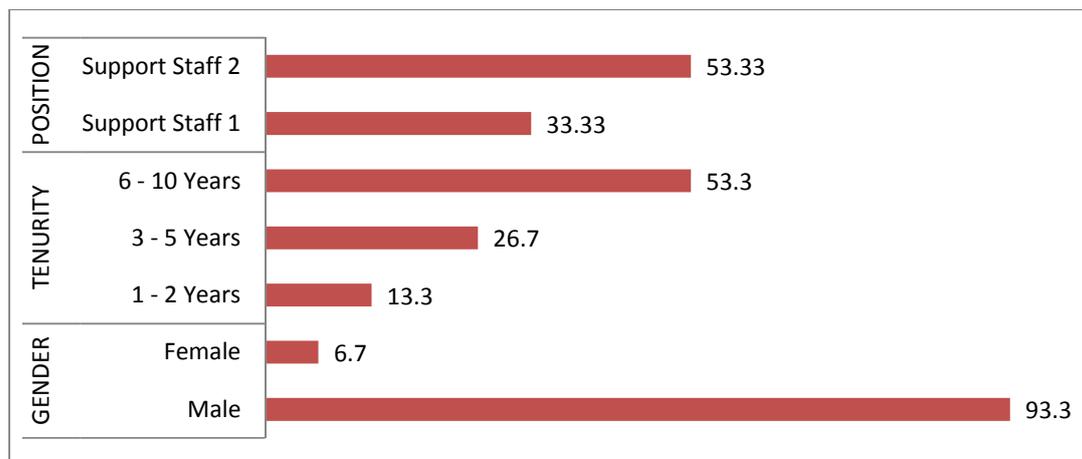


Figure Part B 4.1: Figure 4.1: Profile of the JTLM Staff at Pulau Labuan Marine Park

Similarly, to the MEAT, the MESAT assesses the management effectiveness of staff in the nine (9) dimensions. The mean scores of these dimensions were computed to see the level of effectiveness with respects to these dimensions. The findings of the MESAT are shown in Figure 4.2. In summary, the scores for all dimensions were relatively considered at low to moderate level. The highest score was achieved on the enforcement, while the lowest score was on the site development aspect. The average score for the

MESAT was 63.44%. In other words, the staff of the JTLM perceived that the current management was partially effective in performing their duties.

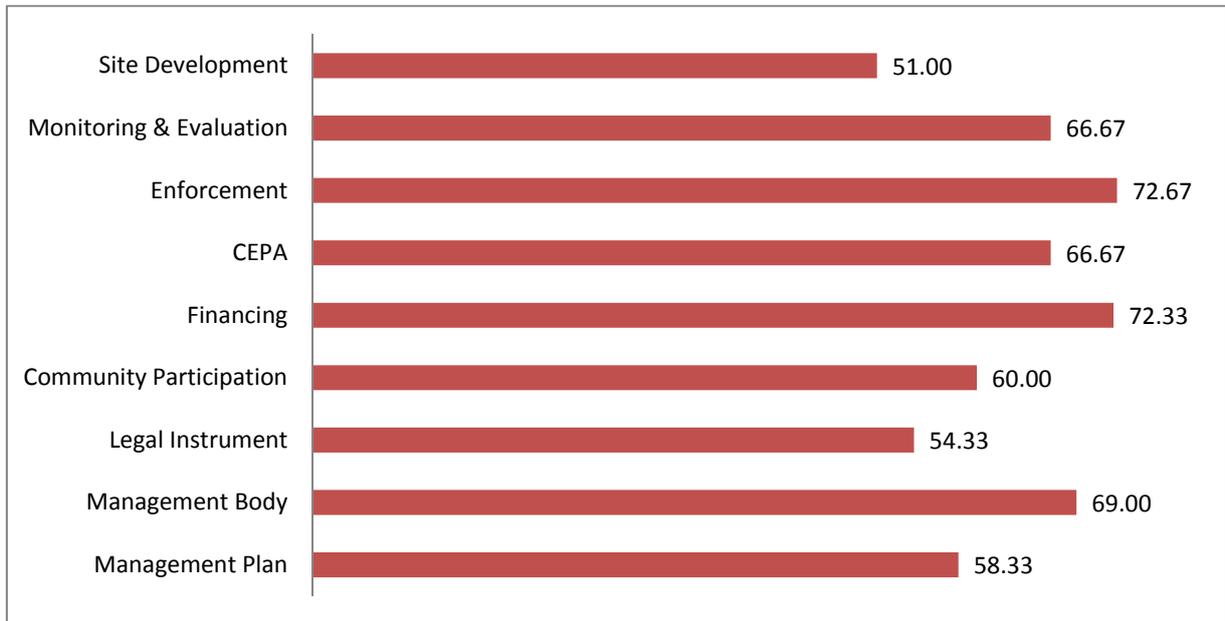


Figure Part B 4.2: Results of the MESAT

MECAT

4.3 Finding 3: MECAT

4.3.1 Profile of The Customers

Due to low turnouts in view of local and foreign visitors, this study only analyzes information provided by local residents.

In addition to the MESAT, another survey on the perspective of customer has also been conducted. In this context, the customers of the Pulau Labuan Marine Park consist of the tourists who have visited the island at the point of the survey and the non-tourists or the community who lived on the island.

The non-tourists category comprised of three groups, namely the Ferry Operators; the Hotel and Resort Operators; and the Labuan Island Community. There are 428 respondents participated in this survey. 97.7% respondents were from the Labuan Island community, 0.9% of the respondents were the Ferry Operators and the remaining 0.7% of the respondents were the Hotel and Resort Operators.



Figure Part B 4.3: Composition of Non Tourist

The respondents were also asked about the duration of their stay at the Pulau Labuan Marine Park, age, and gender. In addition, the respondents also indicated their support to the Marine Park, and efforts that can be done by the JTLM to gain their support. The detail of the profile is shown in Figure .4.

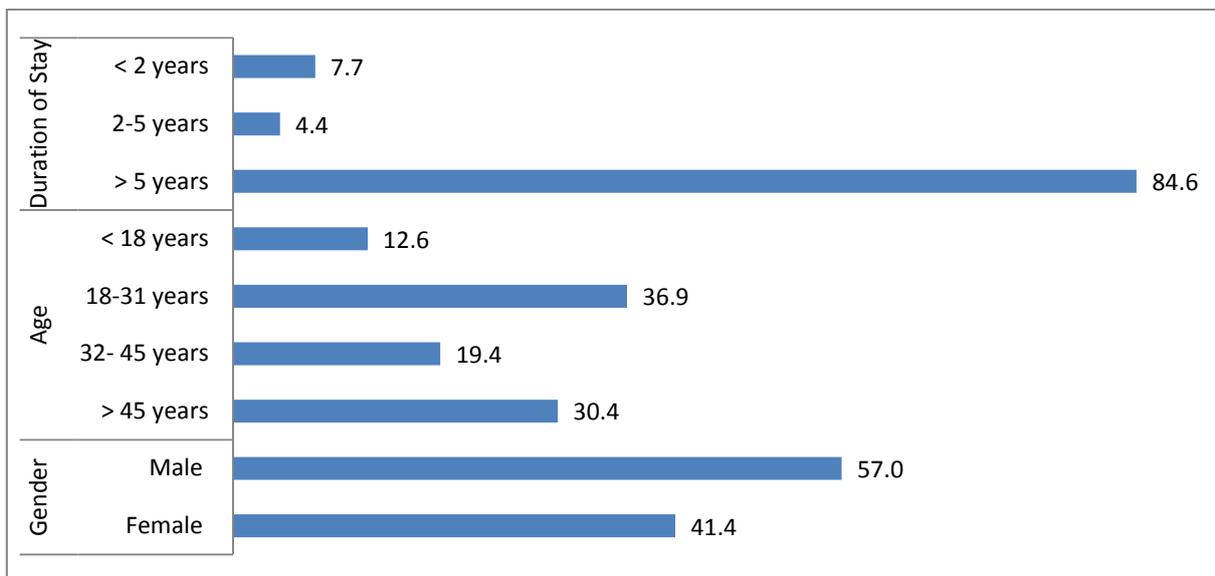


Figure Part B 4.4: Non-Tourists Profile



Figure Part B 4.5: Overall Results of the Non-Tourist Assessment

From the perspective of non-tourist, generally the non-tourist gave lower scores. Specifically, from the perspective of the non-tourist, CEPA aspect received the lowest score. The detail of the assessment by the non-tourist is shown in Figure 4.5.

4.3.2 COMPARISON THE SCORE of MEAT, MESAT and MECAT

The scores of the MEAT, MESAT, and MECAT were viewed to see the differences in terms of management effectiveness from the perspective of management (strategic level), staff (operational level), and customers (outcome level). Table 4.7 and Figure 4.8 show the comparison scores among the three perspectives/ levels. In general, the scores were high for the MEAT compared to the MESAT and the MECAT in all 9 dimensions. The MEAT findings indicated that the financial dimension is to be enhanced, while the external assessment (MECAT) suggested that all 9 dimension to be relooked for improvement. In summary, the scores of three tools showed effective to partially effective in the JTLM management (refer to Table 4.7).

Table Part B 4.7: Comparison results among MEAT, MESAT, and MECAT

MANAGEMENT EFFECTIVENESS	MEAT	MESAT	MECAT
	DOC	STAFF	NON-TOURIST
		Percent	Percent
Management Plan	100%	58.3%	46.0%
Management Body	91%	69.0%	45.0%
Legal Instrument	100%	54.3%	45.0%
Community Participation	100%	60.0%	43.3%
Financing	75%	72.3%	50.3%
CEPA	100%	66.7%	38.0%
Enforcement	100%	72.7%	52.0%
Monitoring & Evaluation	100%	66.7%	40.0%
Site Development	100%	51.0%	43.0%
Total	866%	571%	402.7%
Average ME	96%	63.4%	44.7%

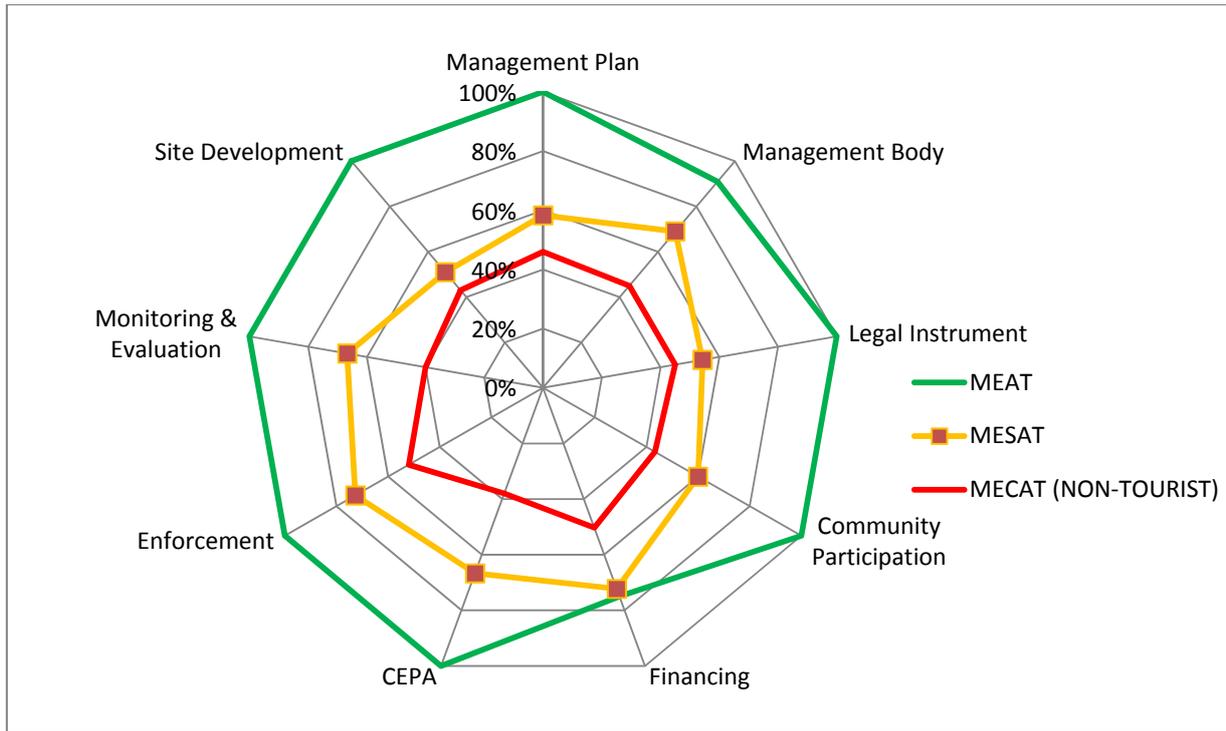


Figure Part B 4.6: Comparison of MEAT, MESAT, and MECAT

CHAPTER 5: *RECOMMENDATIONS*



5.0 Recommendations

5.1 Customer Satisfaction

Management effectiveness of the Pulau Labuan Marine Park (PLMP) is viewed from the management cycle namely input, process and output. In the context of this study, the output is measured from the perspective of customer satisfaction. Those customers include the visitors of the island and the residents of Kg. Bebuloh, Patau-Patau 1, Patau Patau 2 and Kiam Siam. The importance of gathering feedback from the customer's point of view is evidenced in many studies (Eisingerich & Bell, 2006; Zairi, 1992). Even some studies have highlighted the negative impact of customer dissatisfaction to organizations. Business quotes such as "customer is always right", "customer is the king", and "customer is the boss" are some examples that we often hear these days. However, measures of customer satisfaction and its findings are not equally taking into consideration as well as the organizational profit or cost performance. Therefore, customer satisfaction should become a central agenda for many organizations, particularly a service organization such as the JTLM.

Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals" (Farris, Neil, Pfeifer, & Reibstein, 2010). It is usually measured by comparing of what was expected with the actual product or service performance (gap between expectation and perception). In this study, customer satisfaction measures the perception of the visitors and the affected residents of the marine park towards the JTLM.

The findings of the MECAT study shows the non-tourists (the residents of the selected villagers in Pulau Labuan) on average were relatively unhappy with the management of the park (the scores ranges from 38% to 52%). The reasons for this low rating could be explained further qualitatively through interviews carried out with the residents of water villages of Bebuloh, Patau-Patau 1, and Patau-Patau 2. In addition, to Kiam Siam residential, a new settlement built by the government, was also investigated. Among of the main concerns of each villager revealed in the interviews were analyzed as shown in

Table 5.1. The qualitative findings justify for the need for extensive communication, education, and public awareness program to the residents. In addition, management body of the JTLM, should be strengthened by emphasizing its roles and services to the residents as well.

Table Part B 5.1: Results of Qualitative Findings (MECAT)

ISSUES	DIMENSIONS									
	Management Plan	Management Body	Legal Instrument	Community Participation	Financing	CEPA	Enforcement	Monitoring and Evaluation	Site Development	Others
Kampung Bebuloh										
Majority of the residents who were fishermen (about 320 people) expressed dissatisfaction with JTLM even though the cause of the problem may come from other sources. They perceived that they have lost their main source of income due to the marine park establishment.	X						X			
JTLM is viewed as uncaring organization that abandoned their welfare. The Kuraman island was considered as their island and they should obtain benefits from the island.	X		X		X					
JTLM (they sometimes assumed as the government) was unfair to them by giving the Philippines immigrants a new settlement at the Kiam Siam while they were being left out without any compensation. They believed that they had more right than those immigrants.						X			X	
Most of the villagers did not feel any benefits or importance of the marine park. They certainly were not willing to pay for any conservation initiatives.					X					
The villagers were no longer interested to visit the island because they thought they had to pay RM15/head even though that event occurred around 2012.						X				
Most of the villagers did not have any other income generating activities besides being the fishermen. However, there were also some villagers started a small business and some either work with government or oil and gas company.										X
Facilities at the water village include a surau, cement pathway, Tadika, a hall, parking spaces, and a bus stand.										X
Some of the houses were in good conditions, but majority was in bad conditions (poor family). There										X

was a lot of rubbish in the water and surroundings. Hence, from tourism point of view, it was not a good place to visit.

ISSUES	DIMENSIONS									
Kampung Patau-Patau 1	Management Plan	Management Body	Legal Instrument	Community Participation	Financing	CEPA	Enforcement	Monitoring and Evaluation	Site Development	Others
	Majority of the villagers had no idea on the existence and the role of JTLM, Labuan.	X					X			
For the fishermen families, they had some awareness related to JTLM/ the marine park particularly on the fishing zone.	X					X				
There were mixed views received on the sea zoning policy. Few villagers expressed the needs to do the zoning especially to safeguard the local benefits and ecotourism, however, many who claimed dissatisfied with JTLM services. They felt that the local authorities had not being given equal right to protect the local people. Too much privillages had been given to the outsiders especially the Phillipines immigrants.			X	X						
Many villagers were frustrated on the fishing/boat license. The license cannot simply be transferred to their sons. In addition, the process of the license application was really troublesome to them. They had to apply outside of Labuan and it took a long process. This somehow affected the household income which solely rely on the fishing activities.		X					X			
The villagers seem to be confused with the JTLM services with the other local authorities. Examples they regarded the Pesta Air was the only involvement of JTLM and the local folks.	X					X				
Obviously, there was no education or awareness programmes on the marine park been organized by JTLM Labuan.						X				
The young generations had never been to Pulau Kuraman and some of them were mixed up the island with Pulau Papan. Therefore, the perception of their willingness to pay for Pulau Kuraman was based on their expectation of Pulau Papan, which actually can be misleading.						X				
Only the senior citizens had been to Pulau Kuraman where they claimed it was their ancestor's land and they should get compensation from the government if there is a plan for the island development.						X				
In terms of Kg Patau-patau 1 facilities, there are mosque, tadika, dewan and few shops available for the villagers.										X
Overall, the villagers were friendly and approachable. They would be happy to receive tourists and would support any tourism activities and any development which they had a great hope that these activities will help to improve the existing facilities and a better life for the young generations.										X

ISSUES	DIMENSIONS									
Kampung Patau-Patau 2	Management Plan	Management Body	Legal Instrument	Community Participation	Financing	CEPA	Enforcement	Monitoring and Evaluation	Site Development	Others
	<p>There were about 200 families lived in the village. Majority of the villagers fully supported the idea of gazettement the three islands (i.e. Kuraman, Rusukan Kecil and Rusukan Besar) as National Marine Park as they believed they would gain many benefits from it. Most of the villagers were very cooperative and friendly.</p>	X								
<p>Most of the respondents were happy with the National Marine Park due to the positive impact to the development of the village. For instance, their homestay were popular due to the increasing number of tourists who came to Labuan.</p>		X							X	
<p>A respondent mentioned that he could predict the outcome of the study where the result would be pro to support the National Marine Park project since majority of the respondents came from Patau-Patau 1 and Patau-Patau 2. The reason was that the respondents from these two villages had no personal interest at the three islands. In case of Bebuloh, most of the villagers were fisherman that depended on the Kuraman Island. Therefore, they really disagree with the marine park.</p>		X								
<p>The facilities at Patau-Patau 2 was satisfactory. There are surau and cement pathway.</p>										
<p>Majority of the residents worked in private sector and less than 5% of them were fishermen.</p>										X
<p>Overall, most villagers agreed with the marine park but only a small group (fishermen) disagreed with the establishment of the island.</p>						X				X

ISSUES	DIMENSIONS									
Kiam Siam	Management Plan	Management Body	Legal Instrument	Community Participation	Financing	CEPA	Enforcement	Monitoring and Evaluation	Site Development	Others
The residents of Kiam Siam were divided into 3 sections who all of them came from the Phillipines. Residents in two sections were poor and there were limited facilities available. However, residents who lived in the former army base facility lived in a better environment.										X
Almost 90% of the residents were fishermen who caught fish around 20-30 miles from the shore.										X
The fishing activities were not seriously affected after the establishment of the marine park. They strongly supported the park.		X								
TOTAL COUNTS & PERCENTAGE	1 (4%)	8 (30%)	2 (7%)	2 (7%)	0	11 (41%)	2 (7%)	0	1 (4%)	10

5.1.1 Strategies for Improving Customer Satisfaction

Based on the quantitative and qualitative findings, the following strategies are recommended for the JTLM for continuous improvement efforts. These strategies are as follows:

1) Improve CEPA is a must

In the context of Pulau Labuan, lack of CEPA activities implemented by the JTLM is the main reason for residents' dissatisfaction. Being able to communicate with these group of people is vital to being effective manager of the island. Effective communication will not only disseminate key information, but also determine the efforts, attitudes, and thinking of the stakeholders. Ultimately, the stereotype thinking to JTLM services is developed and may be extremely difficult to diminish in the long run.

Currently, there is a strong resistance on the establishment of the marine park, especially from the residence of Kg. Bebuloh. Hence, well organized continuous activities to communicate, educate and increase their awareness of the importance of the island for future generation should be drastically and aggressively implemented. Note that these activities should not be “touch and go” activities. Instead, they should be constantly planned, done, checked, and acted in order to cultivate the feelings of loving and caring towards the marine park and JTLM.

In the meantime, activities that increase the residents’ participation may also increase the feeling of ownership of the island. The intangible benefits of having the marine park should be emphasized as well as the monetary benefits to the people. For a start, CEPA activities may be targeted to the younger generation who may less resist to the idea of Marine Park than the older generation. However, a more subtle effort to educate the older generation should always be stressed to avoid total rejection from the group.

2) Set the customer expectation early

The source of dissatisfaction should also be carefully further investigated for better understanding of their grievances. At the moment, this study found the residents’ expectation of the island is not being fulfilled at all, which eventually causes the feeling of dissatisfaction. They have been expecting to gain tangible benefits from the establishment of the marine park, but they have received otherwise. Among their demanding claims include the loss of source of income as fishermen and the feeling of injustice due to better treatment gained by the immigrants.

Even though, the residents’ expectation towards the island should be set early before even gazetting the island, efforts to constantly instill their expectation of the benefits of the marine park can also be done from now on. As mentioned earlier, the intangible benefits can be highlighted through quality and continuous CEPA programs. The mind of the residents should be educated to tune from the current individualistic mindset and short-term purposes to a more sustainable goal for the long run. However, they should not perceive the island is being “monopolized” by a particular group. Hence, JTLM or the government should think a way to get to the bottom of this prolong and unresolved issue. One of the way is to acquire the island from the private for public benefits. Although this

option might be very costly, the public and national benefits will be served for years to come.

3) Hold employees or a unit accountable for customer satisfaction

Last but not least, happy customers come from happy employees that deliver their services to customer with their heart. The result of the MESAT indirectly reflects the perception of the employees of the JTLM on the management effectiveness. On average, the effectiveness is rated at 63%, which urges more drastic initiatives to be carried out to improve various aspect of management of the island.

In relation to customer satisfaction, JTLM employees should be assigned to take charge of their customers. A designated unit that handles customer service should be in place. This unit is responsible for its customer relationship management. Since JTLM is a service organization, creating a relationship-centric organization is an excellent way to move forward.

The importance of having a good relationship with the customers is obvious as the image of the JTLM is at stake when customers are not happy. Unhappy customers will spread the bad experience to a lot more people compared to happy customers with good experience. Hence, the treatment provided to customers is crucial. In fact, the reason for the JTLM existence is because of these customers. Therefore, paying attention to their needs will make a real difference.

5.2 Social Balance

The program that strategized for Pulau Labuan Marine Park should be planned to incorporate the community of the Pulau Labuan and JTLM itself. The program that organized should be balanced between the needs of the JTLM and local community as well. In this regards, social balance should be improved and stressed by the JTLM. Social balance refers to the balance of activities or strategies implemented by individual entity towards social forces to analyze the evolution of cooperation (Bosworth, Singer & Snower, 2016). In this study, individual entity refers to the JTLM as one of the organization that planned their management activities that should be balanced with the needs of Pulau Labuan's community. According to Bosworth, Singer and Snower (2016), the

manifestation of social community could be forced by people or community preferences depend on their psychological motives. People have access to multiple, discrete motives, as different motives may be activated by different social settings. In regards of this study, Pulau Labuan community involved with different types of groups, namely Pulau Labuan local community, fishery, homestay/hotel/resort/ferry operators, private organization/government workers, and expatriate working in Pulau Labuan. From this different community preference, organization should strategize their management plan accordingly, and thus enhance lively cooperation of communities towards successfully attaining the organization's mission and vision. Therefore, emphasizes should be taken to tackle all group setting of each community in flourishing the social balance in Pulau Labuan.

In regards of the JTLM strategy in encouraging the cooperation of Pulau Labuan communities, they should integrate their management strategy with the local community's need. The findings of MEAT reported that JTLM did focus on Community Participation activities in their management focus. The MPA management focuses on Community Participation revealed 100% management focus in the JTLM organization strategies and activities towards community. This finding explained that the JTLM as one organization did include the community needs in formulating the management strategy of JTLM. However, contrasting findings were found in the MESAT pertaining to the staff perception in community participation. In fact, the community participation was moderately effective (60%). Therefore, efforts should be done to encourage the involvement of communities in all JTLM activities.

Several measures can be recommended in order to achieve the social balance between the JTLM and communities by focusing on these four categories, namely (i) economy of local community, (ii) livelihood living environment, (iii) safety and security, and (iv) healthy and non-polluted environment of Pulau Labuan.

i) Economy of local community

In regards of economy of local community, JTLM should plan a program that could enhance economic activities of social community. A balanced program that aims to achieve the JTLM objectives and the needs of local community in terms of economic

activities of local community should be emphasized by the JTLM management. For example, entrepreneurship programs can be conducted to encourage the local community participation. JTLM can help to create integration network with entrepreneurship agency that could help local community to open up their business, specifically in homestay activities, and food and fish processing and distribution. Other than that, JTLM could improve current entrepreneurship infrastructure in order to nurture entrepreneurship activities among local community. Entrepreneurial education, especially for second generation can also be programmed to educate the young entrepreneurs among Pulau Labuan's social community. High economic potential also encourage private organization to maintain their business operation in Pulau Labuan.

ii) Livelihood living environment

JTLM can organize social programs such as social carnival and expo to create livelihood living environment in Pulau Labuan. Other than that, formal program in introducing Pulau Labuan, specifically the marine park island could promote Pulau Labuan as one of the tourism destination to the potential tourist. A livelihood living environment could attract social communities in Pulau Labuan to stay happily, especially for local community and expatriate.

iii) Safety and security

The recommended programs in nurturing livelihood living environment should be well planned towards safety and security elements of the Pulau Labuan, thus create a good balance between the JTLM's aims and social needs in terms of creating a secure and safety living environment.

iv) Healthy and non-polluted environment

The programs and activities that been implemented by the JTLM should be balanced in terms of healthy and non-polluted environment, as healthy and non-polluted environment could benefit the social community and Pulau Labuan tourism industry as a whole.

Another issues while conducting the above social balance programs by the JTLM are (1) effective communication and (2) engagement among the JTLM staffs in order to make sure the successful of the programs. Effective and transparent communication from the

JTLM to the social community should be well addressed by the JTLM management. High engagement and involvement from the JTLM staff also encouraged social balance in Pulau Labuan.

5.3 The Employee Satisfaction

Other than understanding the management effectiveness from the external customers views, it is a paramount importance to explore the management effectiveness from the internal perspective as well. Hence, the MESAT has been developed to assess the JTLM staff regarding the nine dimensions of management effectiveness assessment tool (MEAT) namely the management plan; management body; legal instruments; community participation; financing sustainability; community, education and public awareness (CEPA); enforcement; monitoring and evaluation; and site development.

Overall the average result of the MESAT (63.4%) showed that it has a moderate level of effectiveness. Several dimensions had received positives remarks which portrayed the JTLM mostly effective particularly on the aspects of management body, financing, CEPA, enforcement and monitoring and evaluation. Nevertheless, the scores for other dimensions indicate future improvements are needed.

Besides survey, the qualitative findings was gathered through interview with the JTLM staffs are shown in the table below:

Table Part B 5.2: Results of Qualitative Findings (MESAT)

ISSUES	DIMENSIONS									
	Management Plan	Management Body	Legal Instrument	Community Participation	Financing	CEPA	Enforcement	Monitoring and Evaluation	Site Development	Others
Memberi kerjasama apa juga perancangan daripada pihak atasan		X							X	
Membuat pemantauan di kawasan taman laut			X					X	X	
Memberi kerjasama untuk menjayakan dan memantapkan aktiviti penguatkuasaan dan program awam						X	X			
Fokus program kesedaran mengenai Taman Laut kepada golongan sasaran terutama nelayan dan meningkatkan program yang dapat membantu ekonomi mereka				X		X				
Menambahbaik undang-undang sediaada daripada status staf penguatkuasaan dengan menambahkan bil kakitangan	X		X				X			
Pengurusan JTLM yang lebih berkesan dan sistematik memerlukan sumber tenaga yang cekap dan kemudahan infrastruktur yang lengkap dan mempunyai akta sendiri dengan ini Taman Laut bergerak maju	X		X						X	
Melaksanakan setiap program pembangunan dengan baik				X		X			X	
Membuat rondaan secara berterusan dan menyampaikan maklumat tentang kawasan yang dibolehkan untuk memancing				X				X		
sentiasa membuat rondaan dari masa ke semasa, bagi memastikan tiada sebarang aktiviti yang dilarang dilakukan di Taman Laut							X	X		
TOTAL COUNTS & PERCENTAGE	2 (9%)	1 (5%)	3 (14%)	3 (14%)	0	3 (14%)	3 (14%)	3 (14%)	4 (18%)	

Generally, based on the above table, it shows that site development received the highest percentage as compared to the other dimensions. Aligned with the survey result, site development is critical aspect that need to improve significantly. Most of the staff claimed

there are still lack of development and enforcement at the Pulau Labuan Marine Park. There is a need for a better Pulau Labuan Marine Park management to effectively utilize the resources.

As indicated in the previous section, one of the main strategies to improve the JTLM's customer satisfaction is to enhance the employees satisfaction. According to Hoseong and Beomjoon, (2012), the behaviour of satisfied employees plays an important role in shaping customers' perceptions of business interactions. It is also expected that happy or satisfied employees are more inclined to share these positive emotions with customers (Brief and Motowidlo, 1986; and Brown and Lam, 2008). Employee satisfaction is generally described as the feeling of gratification or prosperity that employees procure from their job; whether they are happy to work or not, perceive their jobs as meaningful, or the extent to which their job has a negative physical/ psychological effect on them (Griffin and Moorhead, 2013). Therefore, the below recommendations can be implemented by the JTLM in improving the employees satisfactions, which subsequently enable to enhance the management effectiveness.

1) Improve the climate for actions.

Generally, employees can be satisfied and contributed to the management's effectiveness provided that the working environment can gives them a feeling of worthiness, trust, equity, fairness and compassion. It can be inferred that working environment which respects the employees values and recognizes their merits, enable them to work harmoniously and develop great internal processes. Motivated and competence employees are expected to have a good climate for action. Climate for action, in this context, refers to the ability of the JTLM to mobilise and sustain the process of change required to execute the strategy.

Based on the survey and qualitative results of the MESAT, the lowest score received was the site development, somehow showed that the employees' involvement in the management and decision making related to strategies, goals and policies of the JTLM are still low. The JTLM employees felt they can do much better in performing their tasks especially in developing the infrastructure in the

PLMP. The moderate scores of legal instruments and management plan also indicated that the employees need to have more empowerment and involvement in the decision making processes to the lowest level possible in the JTLM. Therefore, it is recommended that climate of actions to be improved by focusing on:

- *Empowerment and participation*
Empowering employees involves moving decision making to the lowest level possible in the organization. Study indicates that employees should be encouraged to get together in the meetings to discuss reports and measurements and policies. Employee involvement covers information sharing and employee relationships.
- *Working conditions*
Employee satisfactions derives from their job satisfaction can be influenced by the quality of the physical environment and social aspects in which they fulfilled in their work
- *Reward and recognition*
The JTLM must develop formal reward and recognition systems to encourage employee involvement, and support teamwork.
- *Teamwork*
Effective teamwork can motivate employees and improve employee performance and self-efficacy. This increases motivation and self-efficacy through teamwork can be a source of employee autonomy, significance, bonding with team members and satisfaction.

5.4 Ecotourism

The Pulau Labuan Marine Park (PLMP), consists of Pulau Rusukan Besar, Pulau Rusukan Kecil and Pulau Kuraman, is an uninhabited island owned by a few individuals. In 2015, the arrival of tourists was recorded at merely 500 people even though this group of islands has a lot of tremendously unique attractions to be experienced. At present, there is only one operator (Emma Glorious Tour) offering tourist packages to local and foreign visitors in Pulau Rusukan Besar in which many tourism activities are included.

However, the tourism environments and attractions in the PLMP are not yet well developed as those of other MPA's in Malaysia.

The establishment of the PLMP was expected to become an important catalyst to boost the tourism industry, specifically ecotourism, in the region (Ecotourism, defined by TIES (1990) as ***responsible travel to natural areas that conserves the environment and improves the well-being of local people***). In line with supporting conservation activities, besides the PLMP, all other Malaysian MPA's have already imposed a designated conservation fee on tourists.

Principally, ecotourism is about uniting conservation, communities, and sustainable travel. Thus, in implementing and participating in ecotourism, adhering to six (6) principles of ecotourism is very crucial. The following principles are some of the critical issues in the Pulau Labuan Marine Park that need to be carefully addressed:

Table Part B 5.3: Principles of Ecotourism

No.	Principles	Lessons Learned	Challenges	Way Forward
1	Minimize impact of marine biodiversity damages.	Marine inventory's growth is directly related to Marine biodiversity protection programs.	To move toward well integrated partnerships biodiversity protection.	To establish more funds and better biodiversity protection instruments and approaches.
2	Build environmental and cultural awareness and respect.	Knowledge helps create a more sustainable environment.	To educate and induce local community to participate.	To move all entities toward a united conservation goal.
3	Provide positive experiences for both visitors and hosts.	Experience management is crucial.	To localize visitors' experience.	To add more values and higher local contents to tourism spots.
4	Provide direct financial benefits for conservation.	Increase in the number of tourist leads to a more formidable conservation fund.	To enhance the wealth of marine treasures.	To increase R&D and scientific endeavors.
5	Provide financial benefits and empowerment for local people.	Tourists are looking for unique products and unique experience.	To make ecotourism as an important mean for socioeconomic growth and stability.	To create an integrated entrepreneurial, environmental and conservation leadership program for young marine community.
6	Raise sensitivity to host countries' political, environmental, and social climate.	Well informed guests are seamed harmonically into the surrounding.	To disseminate information more effectively.	To establish effective information centers, physically and virtually.

In order to bring ecotourism forward, this study had identified six critical approaches (as listed in the above table) for the beneficiary stakeholders including local communities and related government agencies to drill upon. Specifically, for the JTLM Labuan - as the custodian of the PLMP - to operate effectively and more efficiently, a strategic infrastructure such as a marine center at a strategic location in any of the three islands is in a grave need to be established.

5.5 Institutionalization of the Pulau Labuan MPA toward Greater Sustainability

Institutionalization is a process which translates an organization's philosophy into action applicable to all stakeholders in the surrounding environment. It aims at integrating fundamental values and objectives into the organization's culture and structure. Though having a somewhat uncertain origin, the notion of institutionalizing organizational change appears the best way to describe the relative endurance of change efforts (Cummings and Worley, 1997). Endurance suggests that the change has staying power over a length of time. In the same way, institutionalizing change has come to mean that the change has become part of the ongoing, everyday activities of the organization. In a formal sense, institutionalized behaviors in organizations are those acts that are performed by two or more persons, persist over time, and exist as part of the daily functioning of the organization (Goodman and Dean, 1983).

According to Selznick (1957), the term 'organization' referred to an expendable tool; in other words, "a rational instrument engineered to do a job". On the other hand, the term 'institution' referred to "a natural product of social needs and pressures – a responsive, adaptive organism". Building upon Selznick's work, in 1965, Samuel P. Huntington became the first political scientist to employ this sociological approach to the study of institutionalization and apply it to the field of political science. Through his work, Huntington described institutionalization as "the process by which organizations and procedures acquire value and stability." He also noted that this is a process, which can be measured by the adaptability, complexity, autonomy, and coherence of an organization. When values are acquired and stability is achieved, institutionalization has taken place. (Huntington, 1965).

In view of the Pulau Labuan MPA, there are a few issues highlighted during the course of study that need further attention by immediate authorities as outlined in the following Table:

Table Part B 5.4: Highlighted Issues

No	Issues	Challenge (to acquire values)	The Way Forward (to create stability)
1.	Policy – The needs of dedicated policy on document management that clearly outlines the order in which strategic, tactical and operating documents are kept	To provide greater convenience for MP Department: <ul style="list-style-type: none"> • to plan • to act • to communicate 	Inculcating the culture of managing exclusive explicit knowledge (captured, stored, retrieved, shared and changed) more effectively
2.	Site development – The needs for more scientific explorations or experiments for sustainable management	To cascade to a more specific development plan that focuses on more effective scientific activities to enrich information on biodiversity inventories	Moving toward higher intensity of sustainable scientific initiatives like experiments, technology incubation etc.
3.	Monitoring and Enforcement – The needs for tighter monitoring program and enforcement activities due to intrusions of local and foreign intruders	To equip DMP with stronger force (staffing and climate for actions) to propagate and enhance the value of biodiversity's wealth	Moving toward establishing MPA Act for greater staff empowerment
4.	Community participation – The needs to inculcate sustainable management culture	To synergize local community activities toward retaining and enhancing the volume of biodiversity inventories	Moving toward inculcating MPA friendly culture into the national education syllabus and local community activities
5.	Socioeconomic impact – Creation of 2 nd generation job opportunities	To divert the dependability of the community from marine biodiversity to other marina constancy	Creating diverse portfolio of a more effective eco-tourism products (vertically and horizontally)
6.	Sustainable financing – Generations of income from other than government's fund to support the MPA development (especially infrastructure)	To explore new avenues of income from private funding and fees to fund developments of the community	Enhancing corporate communications toward better understanding of marine social responsibility

CHAPTER 6: *CONCLUSIONS*



6.0 Conclusions

This study aims to assess the management effectiveness of the JTLM in the Pulau Labuan Marine Park (PLMP) by using assessment tools known as MEAT, MESAT and MECAT. The PLMP is located in the Federal Territory of Labuan, an International Offshore Financial Centre and duty free port. Labuan is an island located 115 km away from the Kota Kinabalu and is accessible by air or water transportations. The marine park is located just 8 km off the coast of Sabah at the mouth of Brunei Bay. The PLMP comprises three islands namely Pulau Kuraman, Pulau Rusukan Kecil and Pulau Rusukan Besar, which are located in the south-west of Labuan Island. These beautiful islands, the “Jewels of Labuan”, have been declared as Marine Park since 1994.

In general, comparing the results obtained from this study, the MEAT score is higher than that of the MESAT and MECAT. Overall score of the MEAT is 80 (out of 84) indicates that the performance of the JTLM in managing the MPA was excellent. The score of 80 points (96%) showed that the JTLM has given full commitment and dedication in managing the Pulau Labuan Marine Park. With these continuous efforts, the Pulau Labuan Marine Park can potentially be sustained in the long run.

While the MEAT results show an excellent level of management effectiveness, the average score for the MESAT and the MECAT were relatively low as at 63.44% and 44.7% respectively. In other words, the staff of the JTLM perceived that there is a relatively large gap exists in between the successful execution of marine park management in view of the 9 Management effectiveness dimensions. In other words, the results of the MESAT and the MECAT show that the effectiveness level of the JTLM requires further drive for improvements in all dimensions especially those of CEPA and Site Development. From the perspective of customer, CEPA needs to be significantly transformed due to low level of awareness, while the staff perceives Site Development (the effective infrastructure to perform, vague job definitions etc.) as the main concern for immediate action.

Hence, continuous efforts should be planned and implemented in improving the internal factors related to staff as well as the external factors in view of customer satisfaction. Proactive and cooperative governance of marine parks from all stakeholders are crucial for the benefits of future generations.

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