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Comparative Analysis of Community Perceptions on Socioeconomic Impacts of Tun Sakaran Marine Park, Malaysia

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Abstract

The study aims to investigate the perceptions of the local community of Semporna with regards to the establishment of the Tun Sakaran Marina Park. Specifically, the present paper compares the opinions on socioeconomic impacts of its establishment of two community groups: ocean-dependent community versus all the others. Structured questionnaire was used and purposive-sampling method was carried out. More than 200 respondents participated and data were analyzed using SPSS. The results generally indicated the local community had benefited socioeconomically from the marine protected areas. They were feeling proud of having the park. Despite recorded mostly favourable perceptions, significant opinion differences in certain aspects were observed between the two groups. An important aspect of concern was job opportunity, where the ocean-dependent group felt there was not much job opportunity. On the contrary, the rest of the local community thought differently as they generally agreed employment opportunity was good. Significant gap was also recorded in term of activities that can be done in Semporna, in which the former was showing a lower degree of optimism. These results seemed to suggest there may be disparities in term of economic opportunity or resource distribution among the community in Semporna, which may explain a much lower self-reported monthly income of the ocean-dependent community group. In terms of marine conservation and preservation, the ocean-dependent community also expressed stronger perceptions on ineffectiveness. Moving forward, the paper recommended some suggestions to narrow the opinion gaps between the two community groups.

Keywords: *marine protected areas, socioeconomic impacts, Tun Sakaran Marine Park, Borneo*

1.0 Introduction

The establishment of marine parks in Malaysia began in 1994. Motivated primarily by the declining of fishery resources, the setting up of marine protected parks is one of the government's initiatives to protect the coral reefs, of which are the habitats for fishes to breed and grow. Its creation was also meant to control overfishing and other activities that could lead to marine resource exploitation. In 2004, Tun Sakaran Marine Park (TSMP) was made Malaysia's the seventh marine park and also the largest in term of size. Semporna is the natural gateway to the park due to its strategic proximity to TSMP. By boat, the park is approximately 45 minutes away from the township.

The establishment of TSMP is expected to yield much ecological benefits on its floras and faunas, both on land and the sea. The area is expected to provide conducive habitats for fishes and other sea creatures (shellfish, sea-cucumbers, sea-turtles, etc.) to grow and to regenerate that eventually increase marine stocks (Polacheck, 1990; Dugan & Davis, 1993; Roberts, 1998; Palumbi, 1999). Marine protected parks also provide a venue for marine biologists to study sea creatures in their natural habitats, thus, acting as an important educational hub with regards to marine studies as well as a catalyst for other social and economic activities (Bohnsack, 1993; Sobel, 1993). Over the long-run, marine parks would enhance biodiversity and marine resources.

The conversion of a marine area into a protected park, however, very likely to have direct and immediate effects on its surrounding communities, socially, economically and culturally. The closure of sea area for fishing as well as restriction on other forms of marine resource harvesting would immediately and adversely affect the livelihood of many nearby residents, and income would drop as evidenced by Mangi, Rodwell and Hattam (2011). Badalamenti et al. (2000) cautioned that neglecting of socioeconomic marine park impact on the surrounding community may result in poor local consensus if not aggression. Motivated by these concerns, the study examined the opinions of the local community on the socioeconomic impact of the establishment of the TSMP.

Since its establishment, the TSMP has become increasingly visited. Thus, Semporna and its surrounding areas are being developed as a tourism destination. As protected area tourism has massive implications on the local communities and their perceptions have not been explored, this study investigated the perceptions with regard to socioeconomic impacts brought the TSMP. Specifically, this study undertook to compare the perceptions of those who are earning their living directly from ocean-dependent activities (such as the boatmen, fishermen, and seaweed farmers) and those who are generating their income through other means. The findings of the study can be used as early indicators because the overall success and sustainability of protected areas are closely dependent on the supportive attitude of the entire local communities.

2.0 Literature Review

The MPAs are the key management tools to promote diverse and effective conservation of ecological and socioeconomic outcomes (Agardy et al., 2002). Christie (2004) suggested that MPAs should be designed to meet multiple social and biological goals. More recently, the establishment of MPAs establishment has increased mainly due to international movements of a global network of MPAs (Pita, Pierce, Theodossiou, & Macpherson, 2011). The MPAs gazettement has impacted the livelihood of the local people. In many places, researchers reported that the local citizens, non-governmental organizations, and national governments have conflicting views of the management of MPAs (Heinen, Roque, & Collado-Vides, 2017).

Many studies have debated the success rate of the MPAs or its effectiveness in marine resource conservation and economic benefits to local communities. The MPA is not just an effective conservation and management tool, but it can also positively and negatively impact social, economic, cultural, and political communities. MPAs often cause dissimilar livelihood and socioeconomic results for local communities (Benett, & Dearden, 2014). Evidently, in Nepal for example, a majority of the communities surrounding protected parks had benefited from income generation activities due to the economic returns gained through their community development programmes (Karki, 2013). However, the impacts depend on factors such as resource availability, conservation incentive characteristics, and environmental-livelihood patterns and interactions. The notion was supported by Clements, Suon, Wilkie, and Milner-Gulland (2014) in their study on the outcomes after the gazettement of MPAs in Cambodia. They found that the MPAs have significantly improved the household livelihood due to greater access to town and better services. Meanwhile, in Thailand, those fishing around MPAs have positively impacted on their profitability (Bennet, & Dearden, 2014). This positive impact refers to conventionally to a higher volume of catch per fishing day that consequently contributed to higher proceeds of their catches.

The impacts associated with protected parks are not without controversy as some adverse impacts were found. Among others, Sowman and Sunde (2018) cautioned based on South Africa's experience, the lack of adequate and practical mechanisms for the local community to engage had impaired local governance rights and processes. After gazettement of the protected areas, marginalized communities have experienced lower household income and negatively impacted their culture, lifestyle and sense of place. They concerned that failure to address historical relics and social difficulties or unfairness would undermine the MPAs objectives and legitimacy. The notion is consistent with earlier findings by Brondo and Woods (2007) that led them to suggest the importance to aid local residents such by offering seed money in order for them to develop alternate sources of income.

From a different perspective, Bennet and Dearden (2014) suggested that ocean dependents are less exposed to income variations compared to those fishing remotely from the MPA. They believed it was the negative perceptions on governance and management processes that the MPAs consequently impacted on fisheries, agricultural livelihoods. They forwarded several factors which they argued, could contribute positively to ecological and socioeconomic outcomes. The factors are managers' capabilities to provide the necessary governance, management, and local development inputs required by micro to macro level contextual factors. Perruso, Johnson, Baertlein and Johnson (2015) concluded that in the short term the negative socioeconomic consequences impacted on the fishing industry and dependent communities would outweigh the short-term benefits of marine protection. However, in the long run, the benefits in the future would outweigh the short-term displacement costs to industry and dependent communities.

3.0 Methodology

The study collected data using survey instrument. According to Shaughnessy and Zechmeister (1997), survey method is appropriate when seeking respondents' thoughts and perceptions. As this method is structured, it also allows researchers to yield similar information from all who are taking part in the survey (Kumar, Abdul Talib, & Ramayah, 2013). Respondents were asked to furnish their perceptions according to the questions. The study produced statistics using a relatively large-scale survey of more than 200 respondents. All items included in the research questionnaire were adapted from Oberholzer, Saayman, and Slabbert (2010). In sum, 29 items, excluding those meant for demographic variables, were used. All items employed to measure the community perception were operationalized using a 11-point Likert's scale (0 = strongly disagree; 10 = strongly agree). Questions were translated from English to the Malay Language for the benefit of the targeted respondents. Prior to the actual survey, all items were pretested for validity. The population frame for the research was unidentifiable. Thus, the study employed convenience purposive-sampling method. Although non-probability sampling, when performed correctly, it too can provide a good approximation of probability sampling (Kumar et al., 2013). The survey targeted adult income-earners at Semporna (mainland) as well as the largest inhabited island facing the township i.e., the Bum Bum Island.

4.0 Results and Discussion

Table 1 tabulates the descriptive statistics of the data. Out of 217 questionnaires collected, a total of 208 useable questionnaires were entered for analysis, of which

88 were respondents whose livelihoods were dependent mainly on coastal resources (boatmen, fishermen, and seaweed farmers). All the others were either employed at the public and private sectors or running own businesses. Majority of respondent were males. Respondents were mainly from the area of Semporna, with the exception of eight individuals; therefore, the perceptions garnered herewith truly represent the viewed of the local community. The age profiles of the two groups under investigation were comparative similar (mean age around 47 years) as depicted in Table 1. However, the same cannot be said for self-reported monthly income. The income of the coastal-dependent community was much lower, with a mean of just RM974.21, than the other group (mean = RM1,604.62). The income disparity between the two groups was significant based on *t*-test for equality of mean ($t = 3.787, p = 0.00$).

Table 1 Profile of respondents

Demographic factor	Coastal-dependent livelihood community (n = 88)	All others (n = 120)
<i>Gender</i>		
Male	76	88
Female	12	32
<i>Place of origin</i>		
Semporna	84	116
All other places	4	4
<i>Age (Years)</i>		
Min	18	22
Max	70	78
Mean	47.14	46.75
Standard deviation	12.827	12.529
<i>Reported monthly income (Ringgit Malaysia, RM)</i>		
Min	250	300
Max	5,000	6,000
Mean	974.31	1604.62
Standard deviation	964.715	1278.206

The purpose of the study was to gauge the perceptions of local residents with regards to socioeconomic impact of TSMP establishment, mainly whether whose livelihood depending direct on the sea area would be different from all the others. Table 2 depicts the overall perceptions of all respondents as well as the results of analysis of equality of means of the two groups. Overall TSMP has benefited its surrounding residents economically and socially. The survey found there were more business and community-based activities. Not only that the residents conceded improvement in employment (Q2) and business opportunities (Q14) at Semporna, its economic prospects also served as catalysts for further growth and pull-factor for people entering the area searching for opportunities (Q5, Q16, Q17). One of the most obvious sectors of growth was tourism. Serving as the gateway to many beautiful islands within the TSMP and its neighbouring areas, Semporna is a perfect location by default for the setting up of tourist accommodations, logistic-support centres, as well as all other related services for tourists. As the TSMP benefits to the residents were apparent, they

were feeling positively and proud of its establishment.

Although the communities generally recorded favourable perceptions on various socioeconomic aspects, there were significant gaps especially with regard to job opportunity. Residents depending on the sea area for livelihood disagreed there was more employment opportunity (Q2). The coastal-dependent community had a mean score of 4.99 (less than midpoint of 5.0) while all the others were significantly higher at 5.94 (t -value = 2.034, two-tailed test). The result indicated significant difference in opinions where all the others generally agreed job employment opportunity at the Semporna had improved. The coastal-dependent communities also felt significantly less optimistic in term of activities that can be done in Semporna (Q4) compared to those whose livelihood were not directly tied to coastal resources. The mean score of the former was lower at 6.0 in contrast to the latter which was at 7.10. The mean inequality was significant at 95 per cent confidence interval (t -value = 2.664, p -value = 0.008). The results from these two items suggested there may be inequality with regard to economic benefits brought by the TSMP. Were the coastal-dependent communities deprived of economic resources and business opportunities, or were they less competitive than all the others? Perhaps future research undertaking on the matter may provide clearer insights. It deserves attention as the coastal-dependent community was at a comparatively disadvantage state that contributed to significantly lower income. If the income spread gets wider and unchecked, it would affect their supports and commitment to the TSMP establishment.

Differences in opinions with regards to protection and conservation of sea areas were recorded. Contrarily to TSMP's main objective, i.e., the study's respondents opined the damage to the sea area has increased (Q13). Despite both of the community groups felt marine resources around the TSMP area were not well conserved, the coastal-dependent community demonstrated much stronger unfavourable verdict as evidenced by marginally lower (t -value = 1.809, p -value = 0.072) mean-score of 3.93 for survey item Q3. In response to whether the sea condition has improved since the establishment of TSMP (Q1), again the opinions of the coastal-dependent community were less favourable than the other community group. Responses to a similar item, i.e., Q29, indicated a significant contrast in opinions (t -value = 2.427, p -value = 0.016) where the former opined the marine park was not well maintained (mean-score = 4.13). The latter, however, had a slightly positive opinion as evidenced by above-midpoint mean of 5.18. As the coastal-dependent community can be deemed more knowledgeable on the sea area, all other stakeholders, especially the marine management, should heed the opinions and examine the effectiveness of current procedures and practices toward TSMP conservation. Perhaps the park management could initiate a smart-partnership and leverage on their knowledge on the sea area within and around the boundaries of the TSMP. Both sides may emerge as winners.

The coastal-dependent community's prides and sense of belongings are enhanced when they engage more activities with the park authority. The park management benefits when these people are playing the roles of surveillance agents that in long run may mitigate issues related to illegal encouragement and usage of harmful marine-resource harvesting.

5.0 Conclusion

The study classified the communities surrounding the TSMP into two groups. Their perceptions with regard to socioeconomic impacts since the establishment of TSMP were analyzed and compared. Generally, the marine park has created much needed agents for growth to the area. One sector in particular, tourism is expanding nicely as visitors to the surrounding islands are increasing. Overall, the local residents not only approved the benefits brought about by the park establishment, they were proud of it too. Nevertheless, inequality in terms of job opportunities and participation in activities (very likely including business) were voiced. The group comprising of those earning their livings based on coastal resources fared less favourable and this may explain their significantly lower reported income. Further study to pinpoint the reason is warranted because persistent-income inequality is undesirable in long run. The coastal-dependent community also expressed stronger perceptions on ineffectiveness on marine conservation and preservation. Their opinions deserve serious attention due to their close link to the ocean. Moving forward, the marine park authority may consider promoting participation of the coastal community in park conservation and preservation works.

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Table 2 Overall and comparison of opinion

Survey items	Overall perceptions of respondents (n = 208)	t-test for equality of means			
		Coastal-dependent community	All others	t-value	Sig. (2-tailed)
Q1 The condition of the area has improved.	6.24	5.76	6.60	1.947	0.053 ⁺
Q2 Job opportunities in Semporna has improved.	5.53	4.99	5.94	2.034	0.043 ⁺
Q3 Marine resources in Semporna are well conserved.	4.27	3.83	4.52	1.809	0.072 ⁺
Q4 More activities can be done in Semporna.	6.63	6.00	7.10	2.664	0.008 ^{**}
Q5 People in the area has increased.	6.87	6.70	7.13	1.110	0.268
Q6 Property prices have increased.	6.43	6.30	6.61	0.747	0.456
Q7 Crime rates have increased.	5.60	5.86	5.39	-1.039	0.300
Q8 Participation in local community has increased.	6.02	6.02	6.03	0.003	0.998
Q9 Prices of goods have increased.	7.13	7.08	7.17	0.190	0.850
Q10 The pride that residents have in Semporna has increased.	6.46	6.49	6.33	-0.378	0.706
Q11 Cost of living has increased.	7.44	7.56	7.36	-0.522	0.603
Q12 Litter in Semporna has increased.	7.33	7.28	7.44	0.339	0.735
Q13 Damage to sea area has increased.	6.50	5.97	6.80	2.066	0.040 ⁺
Q14 Business opportunities for local residents have increased.	5.87	5.93	5.77	-0.351	0.726
Q15 Tourists in Semporna have increased.	8.07	7.85	8.32	1.477	0.141
Q16 More people have moved to Semporna.	6.08	6.20	5.92	-0.719	0.473

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Q17 More people are buying property in Semporna.	6.01	5.86	6.07	0.529	0.597
Q18 Public fund for community activities has increased.	5.50	5.82	4.94	2.035	0.043*
Q19 Roads are better maintained.	4.47	4.71	3.97	1.597	0.112
Q20 Public facilities have improved.	4.63	4.63	4.63	0.011	0.992
Q21 Interactions between local residents and tourists have increased.	7.19	6.95	7.95	1.202	0.231
Q22 Facilities for local residents have increased.	4.61	5.06	4.16	-1.870	0.063+
Q23 Social values have improved.	5.72	5.77	5.70	-0.181	0.856
Q24 Economic conditions of local residents have improved.	5.89	6.00	5.87	-0.315	0.753
Q25 Marine resources of Semporna sea area are over used.	6.07	5.90	6.14	0.651	0.516
Q26 More investors are focusing on developing Semporna.	5.83	5.43	6.00	1.266	0.207
Q27 Marine resources are protected since the establishment of marine park.	4.39	4.05	4.68	1.468	0.144
Q28 The marine park is very beneficial.	7.27	7.01	7.34	0.765	0.445
Q29 The marine park is well maintained.	4.79	4.13	5.18	2.427	0.016*

Note: ** 0.01 Level, * 0.05 Level, + 0.10 Level

Items adapted from Oberholzer et al. (2010)