Forest Quality Perception at Relau Hill, Penang

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Abstract- Forest destruction is a significant problem in every country with economic gain in forest products. Equilibrium point between forest resources and human development regularly results in devastating forest resources, as well as the forest near the urban area. This study purposely to understand the perception towards the forest quality among visitor to visit the forest. The quantitative research method used to signify the theory and fieldwork, seven (7) essential element namely 'feeling unease and insecurity,' 'trespassing issue,' 'well-signposted walk,' 'feel close to nature,' variety of attraction,' 'a good place for social activity.' Research instrument structurally designs with three (3) phases consist of the respondent profile, visiting purpose, and agreeable index towards forest quality. General statistics, namely min, mode, and crosstabulation, as well as frequency in agreeable index use to enlighten the gathering data. Preliminaries' findings revealed that a variety of attractions dictated the forest quality perspective with a high number of strongly agreeable, followed by 'feel close to nature,' and at the bottom, rank is 'Well signposted walk.'

Index Terms- Forestry, Forest Quality, Visitor Perception,

I. INTRODUCTION

Forestry contributes to an infinite value of biodiversity [1] , providing a landscape visual quality [2] and known as an essential element to prolong the life cycle of every aspect of the living organism in the forest and its surrounding. Striking a balance between economic development and maintenance of biodiversity is increasingly challenging in the face of climate change, rapid human population growth, and the concomitant demand for natural resources [3] Moreover, conservation in forestry is an act to maintain the existence of flora and fauna in the world to balance the ecosystem between humans and nature. Sustainable forest management [4] is a very critical concept to promote, especially at a rainforest hill. Identified forest hills in Penang called Relau hill surface with its significant value of natural heritage resources.

II. LITERATURE REVIEW

Introducing a proper forest management policy [5] can be useful as matured trees have to remove so that young trees can grow to replace them. Tree felling creates gaps internally to the forest canopy and poses a severe threat to sustainability if no appropriate for easing the recovery of logged areas is carried out, especially in forest hill. Specific tree species that proliferate identified should be planted immediately to cover the surface of the earth that is dead as a result of logging. The reducing productivity of the lands also jeopardizes rural livelihoods, compromises human welfare, and reduces ecosystem services, creating a lose-lose scenario of global proportions for humans and nature [6]. Forest conservation [7] and environmental awareness[8], is an activity and motivation to restore forests that have damages so that the wood is not damaging the ecosystem and its surroundings. Many adverse effects can occur if the forests destroy. Therefore, effective measures should be taken to ensure that the forests in the hills of the furnace are not damaged. Introducing the Reforestation concept can offer a means by which biodiversity can restore degraded forests, lands, [9]. Moreover, at the same time, expanding reforestation to generate a productive ecosystem[10]. Forest is the most important natural treasures to humans and all other native inhabitants. Forests are also crucial to the heritage of future generations

A. Penang Forest

Penang island trend analysis forecasted a forest area smaller than the current forest reserves by the year 2039 and the impact analysis revealed a rapid biodiversity loss with increasing landslides [11], [12] mudflows, water pollution, flash flood, and health hazard[13]. Clearing of lands in the name of development is occurring in most of Malaysia densest hill forest [14] or deforestation[15]. Deforestation is a significant concern for the develop and developing countries of the tropics[16]–[19], as it is shrinking areas of the tropical forests, as well as causing loss of biodiversity and jeopardize the surrounding ecosystem. The development pressure continually pushes towards the forest area in meeting the supply and demand for the shelter and other public utilities.

A way of moving forward to mitigates the consistent pressure from the development sectors. Gathering the aggregate information from the users is crucial, especially to the potentially destructive forest. The visitor's' perspective research approach is one of the robust tools to strengthen barricade against development. The forest quality perception by visitors will initiate a movement to create awareness to

the public and the relevant authority. Table 1 indicates the required forest quality highlight by the previous researcher nationally and internationally:

Table 1 : Forest Quality Perception by previous researcher

Forest Quality	General remark	References
Variety of attraction	The attractive element that is creating desire and wants in visitors. Many attractions physiologically will attract more to come and visit the places.	[20]–[25]
Pleasant setting	Structurally the area creates comforts to the visitors to take part in doing an activity in the area.	[9], [23], [26]–[29]
Well signposted walk	Informative and interactive signage humbly will help the visitors to understand the area with the most excellent approach.	[23], [30], [31]
Trespassing issue	It is referring to illegal activity by individuals or groups that disturbing the ecosystem surrounding, namely cutting trees, earthwork, etc.	[13], [32], [33]
Feeling unease and insecurity	Physically and emotionally threatening by existing activity or structure within the area	[9], [34], [35]
A good place for a social activity	Technically the area consists of required utility internally and externally to strategically embraces the individual or group to activate their desires social activity.	[23], [36]–[38]
Feel close to a nature	Naturally, the emotional perception is where we fall in love and bond with the area.	[4], [34], [39]–[41]

Source: Author, (2020)

B. Study Area

Bukit Relau or Relau Hill locates at Relau under the state of Penang. Relau surrounded by a few mountains, namely Penara hill forest reserve, Kukus hill, Bakar Arang hill, and the greenbelt area, is connected up to Penang Hill. It is very suitable for ecotourism [42]–[44] activity, namely sightseeing, birds watching, hiking, jungle tracking activities, and other related product.

Relau Hill Forest also has a beautiful view from the peak of the hill. The hill forest is very strategic regarding its location, existing infrastructures, and most interesting is that still surrounding by greenwood with the fresh air to breathing. Scientifically, the lot of trees in the forest can carry out photosynthesis [45], and the process is essential in human life for oxygen demand yet to reduce temperatures combating the greenhouse effect. Economically [46] forest resources in Relau Hill can also boost the national income itself, by offering a lot of flora and fauna to attract tourists to the park locally and internationally.

Figure1: Map of study area

Source: https://www.google.com/maps, 2020

Visitors or travellers [47] who prefer an adventure with the area that rich in natural resources can visit the region as well as to generate economies of local people who use the forest products such as fruits, herbs, and others. They play a significant role in indicates the level of motivation to come back or not too.

III. Methodology

The questionnaires used as an instrument of the data collection towards respondents at Relau Hill Forest. Random sampling method[48]–[50] and technique to do the sampling in optimum time, up to a constant factor [51] uses to assist the data collection process. A total of 96 questionnaires returned. Following screening and cleaning of the data, only 88 completed surveys use for the analysis. Frequency, mode, median, cross-tabulations [52], and Kruskal-Wallis [53], [54] test is a core mediator to interpret and strengthens the research finding. Finally, the agreeable index analysis towards the forest quality will confirm and strengthen the research subject validation on the visitors' perspective.

IV. Analysis and Finding

Descriptive and inferential statistics [55] use to enlighten the finding from the analysis. A cross-tabulation method uses to the joint frequency distribution of cases based on two or more categorical variables and known as contingency table analysis and is one of the more commonly used analytic methods in the social sciences [56].

Table 2: Visitors Profile (n=88)

Item	Frequency	(%)	Item	Frequency	(%)
Gender			Education Background		
Male	65	73.9	Masters/PhD	5	5.7
Female	23	26.1	Diploma/Degree	40	45.5
			High School Education	31	35.2
Age			Elementary Education	4	4.5
18-24	2	2.3	No Formal Education	8	9.1
25-34	4	5.7			
35-44	49	54.5	Occupation		
45-54	13	13.6	Government	21	23.8
55-64	17	18.2	Private	54	61.4
65 and above	5	5.7	Other	13	14.8
Race			No Income		
Malays	25	28.4	> RM 1000	-	-
Chinese	46	52.3	RM 1,001 – RM 3,000	16	18.2
Indian	17	19.3	RM 3,001 – RM 5,000	45	51.1
Others			RM 5,001 - RM 8,000	22	25.0
			< RM 8,001	5	5.7
Marital Status					
Single	23	26.1			
Married	63	71.6			
Widowed/Divorce	2	2.3			

Source: Author, (2020)

About 73.9% of the respondents were male. Regarding age distribution, more than half of the respondents (54.5%) were between 35 and 44 years old, followed by 18.2% between 55 and 64 years old. Table 2 indicates that more than half of the respondents work in the private sector (61.4%), followed by the government sector (23.8%). About 51% of the respondents were middle-income earners, with a monthly income ranging from RM3001-RM5000 (USD721-USD 1201).

Cross-tabulation on marital status and race indicated in table 3 below– The result shows that 71.7% of the Chinese population is married, followed by a single 28.3%. As for Malay, 68.0% is married, follow by widow 4%, and the rest 28% is a bachelor's status. Indian respondent shows that 76.5 % is married and single with17.6% followed by the rest widow status with 5.9%.

Table 3. : Cross tabulation on marital status and race

Race (N =88)	**Single**	**Married**	**Div/Widow**	**Total**
Malay	7	17	1	25
%	28.0	68.0	4.0	100
Chinese	13	33	-	46
%	28.3	71.7	-	100
Indian	3	13	1	17
%	17.6	76.5	5.9	100
Total	30	63	2	88
%	26.1	71.6	2.3	100

Source: Author, (2020)

Table 4 below, highlights that none of the respondents with tertiary education (Dip/Degree) and as well as high education (MSc/Ph.D.) non of them have an income lower than RM3000 (USD721). As for education, most were highly educated, with 45.5% holding a degree and 5.7% having a higher degree.

Table 4.: Cross tabulation on income and education

Income (RM)	Education					**Total**
	Msc/Phd	Dip/Degree	**2nd**	**1st**	**No. Education**	
<1000	-	-	-	-	-	-
1001-3000	-	-	14	2	-	16
%	-	-	87.5	12.5	-	100
3001-5000	-	27	13	2	3	45
%	-	60.0	28.9	4.4	6.7	100
5001-8001	2	11	4	-	5	22
%	9.1	50.0	18.2	-	22.7	100
>8001	3	2	-	-	-	5
%	60.0	40.0	-	-	-	100
Total	5	40	31	4	8	88
%	5.7	45.5	35.3	4.5	9.1	100

Source: Author, (2020)

Table 5 revealed that 76.1% of the respondents were local, and the rest is the outsider. About 51.1% claim that they visit the place more than ten times, and 38.6% emphasis that there consistently visit the area since their childhood. More than half of the visitor visit for the jungle tracking (55.7%) and followed by hiking (23%). 50% of them get information about the place from friends and relatives, only 19.3% is according to their experience. 39% of them accompany family and parents, and 30% prefer to be alone. Just 30.7% use to travel alone, and the rest comes with two or more companions.

Table 5: Type of Visitors (n=88)

Item	**Frequency**	**(%)**	**Item**	**Frequency**	**(%)**
Visitor Origin			Travel Companion		
Local	67	76.1	Alone	27	30.7
Outsider	21	23.9	Friends	17	19.3
			Family and parent	35	39.8

No. of Visit			Spouse	9	10.2
1st times	-	-			
2-5 times	9	10.2	No. of Companion		
6-10 times	-	-	Alone		
>10 times	45	51.1	2 persons(p)	21	23.8
Not sure	34	38.6	Small group (3-10 p)	54	61.4
			Medium group (11-29 p)	13	14.8
Purpose of The Visit			Large group (< 30)		
Sightseeing	5	5.7			
Hiking	21	23.9	Travel Companion		
Jungle tracking	49	55.7	Alone	27	30.7
Birds watch	13	14.8	Friends	33	37.5
Others	-	-	Family and parent	28	31.8
			Spouse	-	-
Source of Information					
Internet and social media	15	17.0			
Friends and relatives	44	50.0			
Past experience	17	19.3			
Magazines and paper	12	13.6			

Source: Author, (2020)

Table 6 revealed that for the jungle tracking purpose, 91.8% is from the local visitor. The difference pattern shows the hiking activity, 61.1% is an outsider. For sigh seen activity, indicates all of them are local. Birdwatch activity dominates by local with 69.2% and the rest by the outsider.

Table 6.: Cross tabulation on purpose and visitor origin

Purpose of visit	Visitors Origin		Total
	Local	Outsider	
Sigh seen	5	-	5
(%)	100.0	-	100
Hiking	8	13	21
(%)	38.1	61.9	100
Jungle tracking	45	4	49
(%)	91.8	8.2	100
Birds watch	9	4	13
(%)	69.2	30.8	100
Total	67	21	88
(%)	76.1	23.9	100

Source: Author (2020)

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Table 7 below, revealed that more than half of the visitor says no, towards knowledge in conservation forestry and the experience visiting the forest for recreation purposes. Further investigation namely, cross-tabulation within variable need to be explored to understand the adverse scenario. The education profile technically plays a significant rule to indicates and establish a visitor perspective towards the study area. As a result, cross-tabulation in visitors perspective for Forest Conservation and education (n = 88) revealed that visitor with a higher degree and elementary education is well known about conservation of forestry.

Table 7. : Cross tabulation on purpose and visitor origin

Level of Education	1. Have you ever heard about the conservation of forestry		Total
	Yes	No	
Higher Degree Master/PhD	5	-	5
Tertiary Education, Dip/Degree	20	20	40
2nd, High School Education	6	25	31
1st, Primary – Elementary School	4	-	4
No Formal Education	4	4	8
Total	39	49	88
Level of Education	**2. Do you have an experience visiting a forest for a work or recreational purposes**		**Total**
	Yes	**No**	
Higher Degree Master/PhD	5	-	5
Tertiary Education, Dip/Degree	16	24	40
2nd, High School Education	16	15	31
1st, Primary – Elementary School	4	-	4
No Formal Education	4	4	8
Total	45	43	88

Source: Author, (2020)

Cross tabulation in Visitor Perspective for the Forest Conservation and education (n = 88) indicates that visitors with a higher degree and elementary education have experience visiting a forest for recreational purposes. A positive finding from the table indicates that further tests required. For the case, Kruskal-Wallis [57] test result initially bridges the relevant gaps.

Table 8. : Kruska-Wallis Test

The distributions of item is the same across categories of education	Kruska-Wallis Test Sig.	Null Hypothesis
Variety of attraction	.589	Retain
Pleasant setting	.921	Retain
Well signposted walk	.689	Retain
Trespassing issue	.188	Retain
Feeling unease and insecurity	.787	Retain
A good place for a social activity	.385	Retain
Feel close to a nature	.878	Retain
Note - The significance level is .05		

Source: Author, (2020)

The result from table 8 reveals that the education background signifies all seven indicators use to describe the forest quality at the research area, with min calibration at .118 to max calibration at .921 with the significance level at .05. The overall Kruskal-Wallis [57] test calibration for this research carries an exclusive weight to the relevant party to response towards the result positively.

Table 9. : Visitors impression on forest quality

Visitor Impression of Forest Quality	Agreeable Scale (Frequency)				
	SA(1)	A(2)	NO(3)	NA(4)	SNA(5)
Variety of attraction	11	77	-	-	-
(%)	12.5	87.5	-	-	-
Pleasant setting	1	83	4	-	-
(%)	1.1	94.3	4.6	-	-
Well signposted walk	-	82	6	-	-
(%)	-	93.2	6.8	-	-
Trespassing issue	-	85	3	-	-
(%)	-	96.6	3.4	-	-
Feeling unease and insecurity	-	84	4	-	-
(%)	-	95.5	4.5		
A good place for a social activity	1	85	2	-	-
(%)	1.1	96.6	2.3	-	-
Feel close to a nature	1	87	-	-	-
(%)	1.1	98.8	-	-	-
Notes - SA-Strongly Agree, A – Agree NO- No Opinion, NA- Not Agree SNA- Strongly Not Agree					

Source: Author, (2020)

Table 9 above, revealed that the highest agreeable subject by visitors on impressions is a feeling close to nature (98.8%), followed by trespassing issues (96.6%), and the lowest percentages are the variety of attraction (87.5%). The overall agreeable pattern suggested that no require further analysis of the result due to the consistency perception among the respondents

V. CONCLUDING REMARK

This research has demonstrated that the uncertainty surrounding the definition of forest conservation not only a challenge among researchers but also a problem at the end-user level. The principles of forest conservation highlight the importance of afforestation and deforestation, but the insignificant result shows opposites. The findings from the different types of analyses and techniques as described help to enhance our understanding of the relationship between all variables towards the issue related to forest conservation.

Generally, these studies achieve the objective of understanding visitor perspective by looking at their background profile, and they are strict towards forest conservation. A positive result indicates that relevant stakeholders must take urgent action to fill in the gap towards enhancing awareness and knowledge in forest conservation.

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