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Research paper

Factors Affecting the Awareness of Biodiversity Conservation Among Students in Malaysia Private University

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Abstract

Recently, biodiversity loss has become direr international. Human behavior is one of the causes that harm the biodiversity richness. Malaysia which is known as the megadiversity country also facing with the similar problem. Conservation of the biodiversity must be taken seriously and importantly by people to maintain the relationship between human and nature because we are affecting each other. Thus, this research was aiming to evaluate the relationship between human attitude, experience and knowledge toward the awareness of biodiversity conservation. The research was conducted using 4 variables from Ajzen's Theory of Planned Behavior (TPB) which are behavior, perceived behavioral control, subjective norms and attitude. This study was carried out in Malaysia by conducting a survey of 30 students from a private university. The findings of this study indicate that the mentioned have given the positive effect to the awareness of biological diversity conservation. In addition, the relation of knowledge and attitude also show the great correlation between themselves. Therefore, knowledge, experience and attitude are the factors that could increase peoples' awareness towards the biodiversity conservation and knowledge is the greatest influence in creating peoples' awareness.

Keywords: *Attitude; Awareness; biodiversity conservation; experience; knowledge*

1. Introduction

There is no limit about the biodiversity research where it should be done continuously. Biodiversity is referring to the biological diversity which means the variation of living things on earth and including the ecological as well. Nevertheless nowadays, the world is suffering the sixth mass extinction after 600 million years ago [1]. The 6th mass extinction is an erratic event because the extinction did not occur normally where it change the environment drastically [1]. Malaysia is one of the countries that have the biodiversity richness, but it also affected with the species extinction.

There are various causes that give threat to the biodiversity loss. Low public awareness on the biodiversity conservation is the main cause of the biodiversity loss [2]. The foremost to engage people concern about the biodiversity issues is the biodiversity awareness [3]. All this while and in the future, biodiversity plays their essential role in suppling human wellbeing and existence. If people still have low awareness level of the biodiversity conservation, earth will continue facing with the rapid extinction level and human will seriously affected.

In 2007, Convention on Biological Diversity have planned a draft and did the survey of Communication, Education and Public Awareness, CEPA. CEPA toolkit have been established in 2010 where this tool could assist in creating an instrument in studying about the biodiversity issues, raise public awareness and integrate biodiversity world widely into education system [5]. In addition, Strategic Plan for Biodiversity 2011-2020 and Aichi Targets created by the United Nation have encourage all countries and stakeholder to safe biodiversity and enhance its benefits to human. From the plan, there are 5 goals and 20 targets that need to accomplish which are people awareness of the biodiversity values, its conservation and sustainability, fragmentation and degradation reduction and lowering the extinction rate of biodiversity loss.

Today, Malaysia National Policy on Biological Diversity (NPBD) stated that government and non-government taking this biodiversity conservation issue seriously and many efforts that have been taken but the awareness level of biodiversity conservation still in poor level [2,6]. Less human knows and concern about the biodiversity important which is very significant to the human life. In addition, through NPBD, Malaysia has come out with the goal in raising Malaysian awareness towards the biodiversity conservation to achieve sustainably country in 2025 [6].

From the above problems, this research is significant in determine the awareness level of biodiversity conservation from the Malaysia's netizen and act as the reaction towards world and nation policy. Consequently, this research also enables the government and other agencies concentrate on the factor that enables human become more aware the biological diversity.

2. Background

2.1. Awareness of Biodiversity Conservation

Awareness can be defined as concern about and well-informed interest in a situation or development or knowledge or perception of a situation or fact or sensitivity towards the environment and its problems (Oxford dictionaries) [4]. Biodiversity conservation awareness means people knows the impact of human behaviour on the biodiversity [5,6]. Thus, the awareness of biodiversity conservation is referring to the people apprehension about the biodiversity issue and steps to be taken in conserve them.

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National Policy on Biological Diversity have been introduced by government in April 1998. The main objective and vision of this policy is "to transform Malaysia into a world centre of excellence in conservation, research and utilization of tropical biological diversity by the year 2020" [2]. Institutional and public awareness are the best strategies in managing biodiversity conservation [2].
Since exploring biodiversity conservation awareness of Malaysian is highly significant, it is important to understand its concept. Through National Policy [6] and Jose Luiz [7] stated that ethics, philosophy, economics and social science are the sources of awareness in saving the variety of life. Accordingly, this research focus on the social science where the factor in determine the awareness level through knowledge and attitude [2,7, 8] while in [9] quantified that human experience also related to the issue.

2.2. Theoretical Framework

People awareness toward the biodiversity conservation is influenced by a variety of factors- attitudes, social influences, relationships human and nature and others [10]. Based on the multiplicity of factors that influences the awareness, different approach of the effect of these factors are assessed. Theory of Planned Behavior (TPB) is used for this research. TPB was introduced by Icek Ajzen in 1985 by adding a new variable called "perceived behavioural control" to the Theory of Reasoned Action by Fishbein and Ajzen in 1975. Theory of planned behaviour is based on the result of individual's intention to react on a particular behaviour and their ability to make a conscious decision about it [11].
There are three factors that directly influenced the intention to undertake the behaviour: personal attitude, subjective norm and perceived behavioural control. *Personal attitude* means individual's belief toward the link between behaviour to the specific outcomes, consequences or other attributes either it is favourable or unfavourable [11, 12]. *Subjective norms* refer to the individual's belief about the certain behaviour that comes out from related people or important person whose support, approve and motivate the individual to do so [11,12]. *Perceived behavioural control* refer to the individual's abilities and sense to control the certain situation with the presence of the necessary resources and opportunities [11,12].

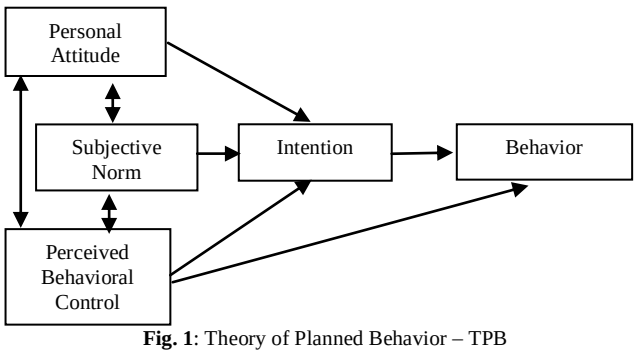


Fig. 1: Theory of Planned Behavior – TPB

The theory pf planned behaviour is used in numerous fields and has demonstrated its effectiveness over time in predicting actual behaviour in many areas such as health, care practices, educational behaviour, sexual behaviour, pro-environmental behaviour, the use of internet and in tourism [12, 13].
In addition, many researchers have used this theory as a solid framework for many empirical researches specialised in the field of pro-environmental behaviour such as energy conservation behaviour, green purchasing behaviour, recycling behaviour and environmental activism. [11]. Based on the good results shown in many previous studies on pro-environmental behaviour, and great prediction power of individual's intention to behave in environmental manner, the Theory of Planned Behavior will be further used as the main framework for this study regarding the biodiversity conservation behaviour.

2.3. Research Framework

Theory of Planned Behavior by Ajzen is the main framework which will be used to predict student's awareness towards the biodiversity conservation. Slight modification has been made for this framework, where the variables: attitude, subjective norm and perceived behavioral control were directly link to the behaviour without use the intention as the mediator. It is because, the main objective of this study is to determine the direct relationship between independent variables with the dependent variables.
Thus, the independent variables are attitude, experience as the subjective norms and knowledge act as a perceived behavioral control. Subjective norms refer to the social pressure for the person to engage or not to engage in specific behaviour and experience could act as a factor involve in process of undertaking certain behaviour [12]. Perceived behavioral control refer to the control and resources factors such as time, money and knowledge [6].

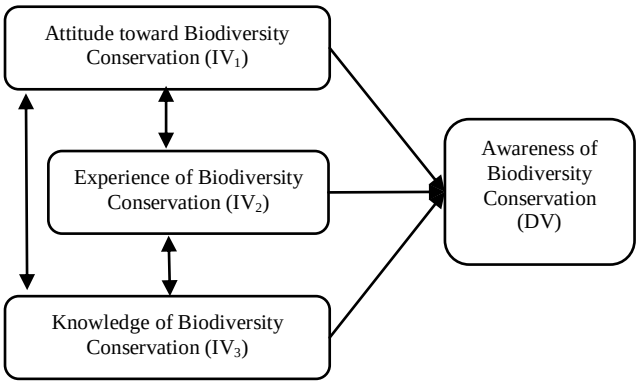


Fig. 2: Research framework on the relationship of independent variables and dependent variable.

3. Method

The effect of knowledge, experience and attitude of students towards the awareness of biodiversity conservation were examine quantitatively. The analysis is done with survey data collected from 30 students in Malaysia's University. The survey question included sociodemographic (part A) and related variables (part B). Question for demographic was adopted from Juliani et al [8] and Burke [9] which consists of gender, age, study level, nationality, races and environmental module enrolment.
Part B consist of 4 subsection which are awareness, knowledge, experience and attitude. All these instruments were evaluated using 5-point Likert like scale over the range of 1 "strongly disagree" to 5 "strongly agree". Instrument for the awareness adapted from [10, 11]. Instrument for the knowledge and attitude adapted from the survey developed by Flash Eurobarometer 379 [14], Comhairle Nan Eilean Siar [15] and Scottish Natural Heritage [16]. While instrument for the experience adapted from Buijs et al [17] and Masashi Soga et al [18].
The survey of biodiversity conservation awareness level is carried out through online survey form. A total of 30 respondents have answer the survey through Google Form. The prepare questionnaire was upload to the online survey tool, then the survey link was shared to the social media such as WhatsApp and WeChat. The level of people awareness was analysed using SPSS.

4. Result and Findings

A result from total of 30 data collected was analyses in determined the biodiversity conservation awareness. There are 59 questions answered from each respondent where questions from Part A (demographic profile), 54 questions from Part B where four instruments for awareness, 30 instruments for knowledge, five questions for experience and 14 questions for the human attitude.

Table 1: Respondents' Demographic Profile

Item		Frequency	Percentage (%)
Gender	Male	8	26.70
	Female	22	73.30
Age	18 to 24	4	13.30
	25 to 31	23	76.70
	32 to 38	2	6.70
	39 to 45	0	0.00
	46 to 52	1	3.30
	More than 53	0	0.00
Current Level of Study	Diploma	0	0.00
	Foundation	0	0.00
	Degree	15	50.00
	Master	11	36.70
	PhD	4	13.30
Nationality	Local	26	86.70
	Foreigner	4	13.30
Races	Malay	23	76.70
	Chinese	1	3.30
	India	2	6.70
	Other	4	13.30
Environmental module enrolment	Yes	22	73.70
	No	8	26.70

Table 1 show the data of demographic social of the respondent. Based on the respondent data collected, more than three quartile pf the respondents are female which have the percentage of 73.30% while male only 26.70%. Most of the respondent have the average age of 25 to 31 which is 76.70 %. Half of the respondent are degree holder and the remaining half are master and PhD students and most of them have the experience in enroll the environment module in university. Malaysia's students which is local nationality frequent answer this survey rather than student from other country. Malay as the respondent races is highest compared to the Chinese, India and others

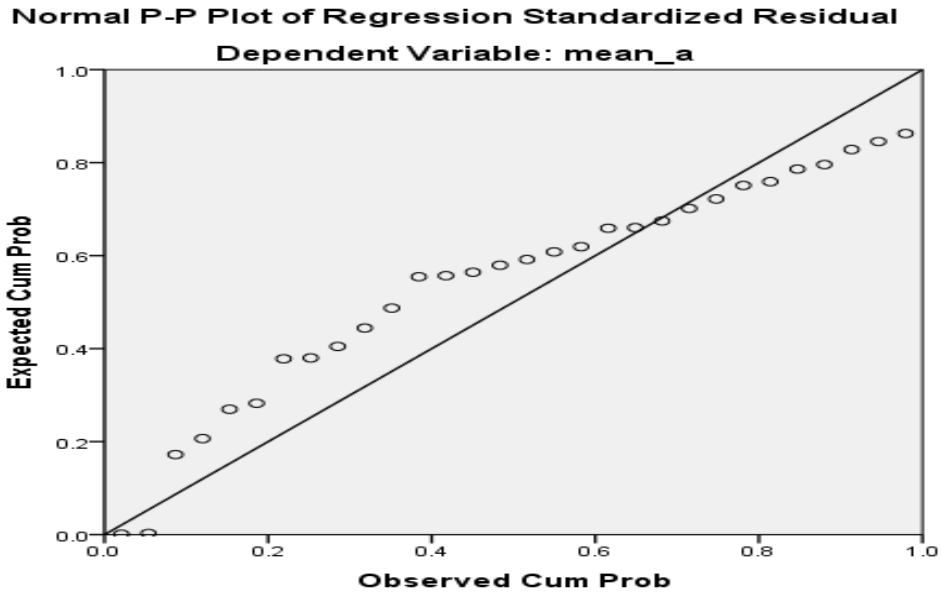


Fig.2: Expected and measured (observed) cumulative probability of awareness of biodiversity conservation (DV)

Table 2: Reliability Analysis

Variables	No of item	*p* or α	interpretation	M	SD
Awareness of biodiversity conservation (DV)	4	0.889	Very Good	4.042	0.974
Attitude towards biodiversity Conservation (IV_1)	14	0.939	Excellent	4.070	0.7729
Experience of biodiversity conservation (IV_2)	5	0.852	Very Good	3.680	0.806
Knowledge of biodiversity conservation (IV_3)	30	0.958	Excellent	3.990	0.717

Table 3: Pearson Correlation Matrix

Variable	DV	IV_1	IV_2	IV_3
DV	1.000			
IV_1	0.391*	1.000		
IV_2	0.268	0.701**	1.000	
IV_3	0.665**	0.830**	0.550**	1.000

*Note** Correlation is significant at the 0.01 level (two-tailed)*

** Correlation is significant at the 0.05 level (two-tailed)*

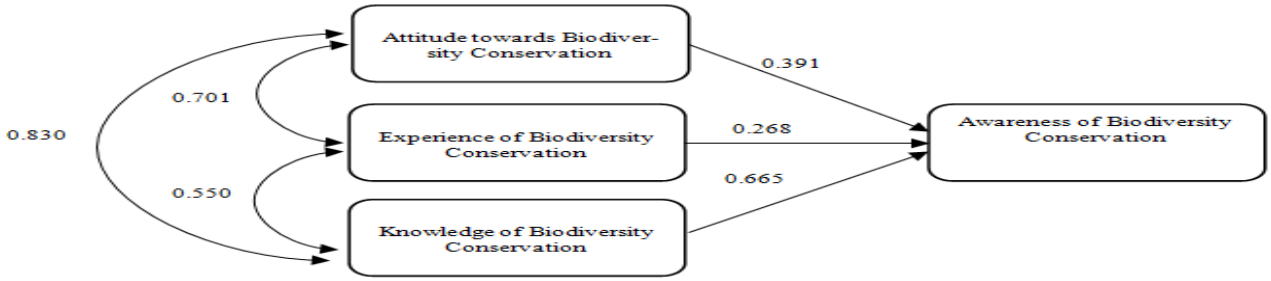


Fig. 3: Relationship of Independent Variables towards Dependent Variable and relationship among Independent Variables

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	0.724[b]	0.524	0.489	0.697

Table 5: ANOVA

Model	Sum Square	Df	Mean Square	F-test	Sig.
Regression	14.411	2	7.205	14.851	0.000[b]
Residual	13.100	27	0.487		
Total	27.510	29			

*Note: ** Correlation is significant at the 0.01 level (two-tailed)*

a. Dependent Variable: Awareness of Biodiversity Conservation (DV)

b. Predictors (constant): Knowledge of biodiversity conservation (IV_1), Attitude towards biodiversity conservation (IV_3)

Based on the result show above, there are 6 analysis that have been done using SPSS version 2.0 which are frequency, normality, factor loading, reliability, Pearson Correlation and ANOVA. Linear graph in figure 2 shows that the cumulative probability of the dependent variable has normal P-P plot of regression. Table 2 shows the Cronbach alpha value that represent the reliability of the variables tested. All variables show good and excellent where the value 0.8 and less than 0.9 indicated good value while 0.9 and above indicate excellence [19]. Hence, all the variables are accepted and attitude toward biodiversity conservation is the highest followed by knowledge, awareness and experience.

The relationship between independent and dependent variable illustrated in figure 3, all the variables correlates significantly and knowledge as the first independent variable have high correlation compared to the attitude and experience. Nevertheless, according to Guildford Rule of Thumb stated that $p = 0.830$ has highest correlation [20] where it is show by relationship among the independent variables which are knowledge and attitude only experience show weak correlation to the dependent variable. More than 50% of the biodiversity knowledge, biodiversity experience and attitude towards biodiversity were explain significantly by 52.40% (R-square) of the variance of the dependent variable (awareness of biodiversity conservation shown in table 4. Furthermore, the model of this study was fit referring to the ANOVA table 5 with the significant value $p<0.05$. In end, the proposed model of pro-environmental biodiversity conservation behavior is validated which having a very good model fit and quality indices.

Previous finding done by Prokop et al and Sayumi support this finding where a positive biodiversity conservation is highly influence by greater knowledge and positive attitude [21]. Torkar et al [22] stated that optimistic environmental behavior which referring to good attitude would build people responsibility and attention to the biodiversity while Mobley et al [23] specified that individual education level tend make people become more concern towards the biodiversity and behave more responsible. Moreover, former study stated that having a good experience with nature could increase people awareness to wards the biodiversity conservation and could create a future generation that have the sensitivity and concern about the environment conservation [4].

5. Conclusion

The following conclusions can be drawn from the present study are knowledge, experience and attitude have affecting the awareness level. Knowledge and attitude are the best factor in raising the awareness level of biodiversity conservation. Taken together, these results suggest that future researcher to conduct an actual sampling and broaden the sample by adding the government university as well. Finally, it is important to increase Malaysian awareness to the biodiversity conservation in maintaining our natural resources that valuable for the human being.

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