DETERMINANTS OF THEORY OF PLANNED BEHAVIOUR (TPB) MODEL IN MEASURING SUSTAINABLE BEHAVIOUR AMONG STUDENTS OF PUBLIC UNIVERSITIES IN MALAYSIA

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Abstract :The purpose of the study was to examine the factors that influencing sustainable behaviour among students in public universities in Malaysia. Theory of Planned Behaviour (TPB), as a supportive framework is used to measure the influence of the students' experience towards determinant of sustainable behaviour. This study was conducted at the University Utara Malaysia (UUM) among students. The stratified random sampling method was used in sample selection for this study. Survey data collected from 100 respondents were examined using Statistical Package for the Social Sciences Version 22 (SPSS 22.0). The cross sectional data were collected through a survey and the data analysed by means of factor analysis, correlation and multiple regression analysis. The findings indicate that subjective norm and perceived behaviour control were significantly direct determinant of sustainable behaviour.

Keywords: Theory of Planned Behaviour (TPB), Subjective Norm, Perceived Behaviour Control, Sustainable Behaviour, Student
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Introduction

Sustainable Behaviour (SB) is a great challenge for all mankind to guarantee a viable future and it can be defined as a series of actions intended at protecting both the physical and the social environment (Leeuw et al., 2014). The instability of the environment is now evident to even the most casual observer. The global environment is changing rapidly and more dramatically than ever expected. Climate has become unpredictable with the UK and USA experiencing the coldest winter in a hundred years during their last winter season, and this has far reaching effects

on people across the world. Population growth, increased industrialization and improper utilization of resources have negatively impacted on the ecosystem. This has resulted in a disrupted natural cycle of global resources and have destabilized environmental sustainability (Andries, Plessis, & Al-shamaa, 2012).

Furthermore, the previous periods have witnessed to the fast economic growth through increasing customers' consumption globally. This situation will affect environmental decline through exploitation of natural resources and over-consumption. Thus, the effects of degradation in environmental are desertification, acid rain, noise and light pollution, pollution of sea and rivers, reduction of stratospheric ozone layer, and global warming (Tan, Nasreen-Khan, Hong, & Lam, 2015).

In the Holy AI-Quran, in verse 41 of Ar-Rum, Allah Say "mischief has appeared on land and sea because of (the need) that the hands of men have earned, that (Allah) may give them a taste of their deeds: in order that they may truly back (from Evil)" (www.alquranic.com). This verse refers to the environmental problems which we are experiencing globally due to indisputably function of human behaviour. Islam forbids the use of environmental resources irresponsibly and as a responsible human being, we are responsible for and have a duty towards nature and towards the world as a whole.

Problem Statement

One of major environmental problems faced by most municipalities in Malaysia is solid waste (Latif, Omar, Bidin, & Awang, 2013) and the amount of waste generated continue to increase in response to rapid increase in population and accelerated urbanization and industrialisation processes. These activities are increasingly causing more damage and are due to the human actions which cause irreversible harm on the environmental condition. It has been almost 40 years since the first Earth Day and the birth of the environmental movement, but despite widespread support for the environmental cause and increased awareness of the problems, human behaviour has hardly changed even with the information about the consequences of human actions, such as climate change, pollution, or diminishing natural resources (Sawitri, Hadiyanto, & Hadi, 2015). In other words, the root causes of environmental problems are related to human activities and the irresponsible human behaviour (Said, Azura, & Fakhru'l-Razi, 2011).

There are inconsistent findings in previous studies especially with respect to the predictors and actual sustainable behavior. For example, Matthies et al. (2012) and Han (2015) found that subjective norm had a positive and direct effect on actual behavior, while Onwezen et al. (2013) found SN to have an insignificant effect on actual behavior. While most previous studies found the relationship between attitude and actual behavior is significant (Abd-Ella, Somaa, & Mohammed Ebad-Allah, 2012; Tan, Nasreen-Khan, Hong, & Lam, 2015). Abdullah & Manaf (2014) found it to be insignificant. Inconsistent findings are also found in the relationship between PBC and actual behavior. For example, de Leeuw, Valois, & Seixas (2014) and Han (2015) found that PBC had a positive and direct effect on actual behavior, while Onwezen et al. (2013) found PBC to have an insignificant effect on actual behavior. In view of the inconsistent findings of previous studies, the inconclusive status of sustainable behaviour research in general, and the lack of adequate evidence in Malaysia, it is difficult for sustainable behaviour researchers to design appropriate interventions that would enhance the diffusion of

sustainability. Therefore, this study attempts to investigate the possible predictors of sustainable behavior.

The Theory of Planned Behaviour (TPB) provides a theoretical framework for systematically investigating the factors which influenced behavioural choices. This study uses TPB as the theoretical basis to identify the factors, which are the antecedent of sustainable behaviour among students in public universities. Previous studies on the application of the TPB were focusing on intention rather than actual behaviour. In this study, Ayed (2010) found that most of the studies on the TPB used intention as a dependent variable. This was supported by other researchers that examined intention rather on the actual behaviour (Conner, Sandberg & Norman, 2010; Kovac & Rise, 2011; Truelove, 2010).

Due to current widespread ecological degradation and a lack of ethical considerations in a world where resources are unequally distributed, Higher Educational Institutions (HEI) worldwide is beginning to include sustainable behaviour concepts in their activities. Efforts in education for sustainable behaviour may be traced back several decades (Rai, Srivastava, & Shukla, 2014). Presently, teaching and research on ethical, social and environmental issues do not occur in business schools and universities (Sahin, Ertepinar, & Teksoz, 2012). Therefore, business students seem to hold a weak pro-environmental orientation.

In addition, previous research has addressed sustainable behaviour of public and consumer (Kumar, 2012; Li-ming & Wai, 2013; Onwezen, Antonides, & Bartels, 2013), while more studies need to be focusing on university students. The emphasis on university students is relevant as they will grow and develop to become future leaders who are responsible for 'environmental stewardship and sustainability'. Furthermore, the development of stance, obligation and ability to sustain and look after the environment starts at an early age (Kalsum & Isa, 2016) Therefore, future studies need to be extended of sustainable behaviour among university students (Alias, Hashim, Farzana, & Mariam, 2015; Syed Idros, 2014).

Objective

The purpose of the study was to examine the factors that influencing sustainable behaviour among students in public universities in Malaysia. The specific objectives of this research are:

1. To determine the significant relationship between subjective norm (SN) and sustainable behaviour among students in Malaysian Public Universities

2. To determine the significant relationship between perceived behaviour control (PBC) and sustainable behaviour among students in Malaysian Public Universities

Literature Review

Underpinning Theory

This study is constructed based on two particular beliefs of Theory of Planned Behavior (TPB) theory namely; subjective norm (SN) and perceived behaviour control (PBC). This study adopted the TPB model to evaluate sustainable behaviour among students. Several scholars used the SN and PBC to measure sustainable behaviour of different context or different unit of analysis (Sawitri et al., 2015; Terrier & Marfaing, 2015).

Therefore, this study aims to evaluate the independent variable of TPB; subjective norm and perceived behaviour control significantly influence the dependent variable; sustainable behaviour. The framework for this research is given in Figure 1.
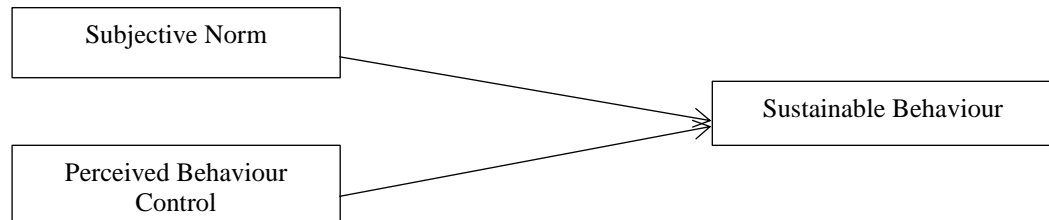
Figure 1: Research Model

In the next section, it is certainly recommendable to discuss on the theory that can be used as a guide to establish the theoretical model. In this study, the Theory of Planned Behavior (TPB) has been widely applied in the analysis.

Theory of Planned Behaviour (TPB)

Ajzen (1985) proposed Theory of Planned Behaviour (TPB), which is an extension of TRA. The major similarity between TPB and TRA is that both of them put their focus on the individual's intention to perform a given behaviour. But TPB tackles the issue of behaviours that occur without a person's volitional control. In fact, TPB adds the perceived behavioural control (PBC) element which differentiates it substantially from TRA. PBC is the components that accounts for situations where an individual has less than complete control over the behaviour, which can differ according to various situations and actions. TPB has been successfully applied in sustainability studies setting in predicting the actual sustainable behavior (Alias et al., 2015). The main components of the TPB were attitude, subjective norms, perceived behavioral control, intentions, and behavior (Ajzen, 1991).

Subjective Norm

Subjective norm is defined as "a person's perception that others desire the performance or non-performance of a specific behaviour, this perception may or may not reflect its importance what others actually think he/she should do" (Ajzen & Fishbein. 1980). In the context of this study, subjective norm is referred to the student belief that he or she received the social pressure from his or her peer college mate, parents, lecturers and societies in performing recycling activities, conserving the energy and reducing environmental pollution to protect the environment. Previous studies conducted in sustainability setting showed a significant and insignificant influence of subjective norm on actual sustainable behavior (Alias et al., 2015; Sandve & Ogaard, 2014; Han, 2015; Leeuw, Valois, & Seixas, 2014).

Perceived Behaviour Control

Perceived behaviour control (PBC), reflect the extent to which individuals perceived the behaviour to be under volitional control (Leeuw, Valois, Ajzen, & Schmidt, 2015). Ajzen (2012) defined perceived behaviour control in straightforward way as 'a person's belief as to how easy or difficult performance of the behaviour is likely to be'. PCB consists of two component which are 'self-efficacy' and 'controllability'. Self-efficacy component of Perceived Behavior Control is dealing with easiness or difficulty of performing behaviour while controllability involves people belief that they have control over the behaviour (Ajzen, 2012). In the context of this study, perceived behaviour control is referred the belief about the amount of control a student feels he or she has over performing or participating recycling activities in the university, conserving the energy and reducing pollutions. A number of studies carried previously found a significant and insignificant relationship between perceived behavioral control and actual behavior (Alias et al., 2015; Busse & Menzel, 2014; Leeuw et al., 2014; Han, 2015).

Sustainable Behaviour

Literally, sustainable behaviours refer to consumer, for example student's actions that meet the needs of the present without compromising the ability of future consumer generations to meet their own needs (Minton, Kahle, & Kim, 2015). Regarding to (Leeuw et al., 2015), Sustainable behavior can be defined as "a series of considered, effective and estimated activities intended at compliant accountability for preservation and protection of cultural and physical assets. These properties comprise integrity of plant and animal species, as well as individual and social comfort, and protection of present and future human (Ken & Muga, 2014). From the past studies, the sustainable behaviour has been successfully used to explain the factors that predicted this variable in other unit of analysis such as consumers, residents and youth (Han, 2015; Terrier & Marfaing, 2015). In the context of this study, sustainable behaviour is referred as the actions of students aimed at protecting the socio-physical resources of this planet which they focused on aimed at protecting both the natural and the human (social) environments. Their behavior is also proactive (future-oriented) because it considers the needs of future generations coincidently with the satisfaction of present needs. It refers to the practice of recycling, conserve the energy and reduce environmental pollution to protect the environment.

Previous studies have implemented fragmented models of sustainable behaviour from simple to complex (Alias et al., 2015; Crowe, 2013; Terrier & Marfaing, 2015; Li-ming & Wai, 2013; Niaura, 2013; Onwezen et al., 2013; Syed Idros, 2014). The studies were fragmented because of the size of predictors in addition to the absence of agreement on the direct and indirect predictors of sustainability models developed.

Based on above review, it can be seen that the direct predictors of sustainable behaviour models are rather fragmented and diverse. Because of such fragmentation, it is predicted that a conceptual sustainable behaviour model needs further empirical examination.

Hypotheses Development

Based on the literature review discussed in this study, a total of two hypotheses statements were constructed to test the relationship for each variables that have been theorized. The formulated hypotheses for this study are listed as follow:

H1: There is a positive relationship between subjective norm (SN) and Sustainable Behaviour (SB)

H2: There is a positive relationship between perceived behaviour control (PBC) and sustainable behaviour (SB)

Research Methodology

Data were collected from Universiti Utara Malaysia (UUM) via distributed questionnaires by hand and online (Google docs). In this study, UUM was chosen based on the large sample of students at this university among others public universities in Malaysia. The stratified random sampling method was used in sample selection for this study. Survey questionnaires were distributed to randomly selected students with different faculty, school or department. The unit of analysis for this study was the individual in which the data were collected from each student. A sample size of 110 students was chosen at random for this study and only 100 questionnaires were returned and successfully collected for further analysis. This is line with the recommendation by Hair et al., (2010) that the sample size for this study is normal using the maximum chance criterion in situations with overall samples less than 100 or the group sizes under 20.

Results and Discussion

This section presents the results and findings.

Overview of data gathered

A total of 110 questionnaires were distributed among sample population and only 100 questionnaires were completed and successfully collected. Therefore, the response rate for this study is 91%. In this study, data were analysed using the Statistical Package for the Social Sciences Version 22 (SPSS 22.0) and the subsequent data analysis were undertaken using statistical approach i.e. reliability analysis, factor analysis, correlation analysis and multiple regression.

Profile respondents

As shown in Table 1 below, 40.0% of respondents were male and 60.0% were female. Most respondents were between 15-29 years old. In term of religion, 95% are Islam, 3% are Buddhist and remaining 2% are Christian. There are four main races took part in this study. These include Malay (94%), Chinese (3%), Indian (2%) and others (1%). Lastly, in term of the year of study that are respondents officially in currently, 56% of respondents in first year, 26% of respondents in second year, 11% of participants in third year and remaining 7% of participants in fourth year.

Table 1: Profile of Respondents

	Frequency	Percentage (%)
Gender		
Male	40	40.0
Female	60	60.0
Age (in years)		
15 – 19	9	9.0
20 – 24	89	89.0
25 – 29	2	2.0
30 – 34	0	0
Above 34	0	0
Religion		
Islam	95	95.0
Buddhist	3	3.0
Christian	2	2.0
Others	0	0
Race		
Malay	94	94.0
Chinese	3	3.0
Indian	2	2.0
Others	1	1.0
Year		
First year	56	56.0
Second year	26	26.0
Third Year	11	11.0
Fourth year	7	7.0
>Fourth year	0	0

Source: Researcher

Factor and Reliability Analysis

The factor analysis using the varimax rotation was conducted to determine variance explained and to extract the construct variables. The items loaded at 0.5 as threshold of primary loading or better with their corresponding constructs, which is considered very significant. The result of the factor analysis revealed three construct. Those result had the factor loadings that ranged from 0.526 to 0.793 as shown in Table 2. Kaiser-Meyer-Olkin (KMO) values presented for subjective norm, perceived behaviour control and sustainable behaviour were 0.823, 0.721 and 0.769 as a result. All the result findings were larger than the recommend value of 0.70 (Hair, Anderson, Tatham and Black, 1998). Besides that, the questionnaire was validated for reliability by using Cronbach Alpha. The results indicated that Cronbach Alpha reliability for the constructs ranged from 0.754 to 0.819 greater than 0.70 thus the measurement of the variables are valid and reliable (Sekaran and Bougie, 2010).

Table 2: Result of Factor Analysis of the construct

Items	SN	PBC	SB	Kaiser-Meyer-Olkin (KMO)	α
SN1	0.618			0.823	0.807
SN2	0.637				
SN3	0.718				
SN4	0.589				
SN5	0.624				
SN6	0.672				
SN7	0.688				
PBC1		0.714		0.721	0.754
PBC2		0.597			
PBC3		0.569			
PBC4		0.682			
PBC5		0.772			
PBC6		0.711			
SB1			0.605	0.769	0.819
SB2			0.652		
SB3			0.538		
SB4			0.793		
SB5			0.526		
SB6			0.743		
SB7			0.741		
SB8			0.736		
SB9			0.626		
SB10			0.629		

All factors loading are significant at P-value < 0.000

Correlation Analysis

In this study, the Pearson Correlation was conducted to determine the strength and direction of the relationship between independent variables and dependent variables. Hair et al. (1998) indicated that the correlation coefficient (r-value) between each pair of independent variables were below 0.90. If the correlation values exceed 0.90, it may be suspected to show multicollinearity problems (Hair et al., 1998). Table 3 shows the result for value coefficients are 0.575 (sustainable behaviour with subjective norm), 0.553 (sustainable behaviour with perceived behaviour control) and 0.645 (subjective norm with perceived behaviour control) which is smaller than 0.90. Therefore, there are no crucial multicollinearity problems in this study.

Table 3: Inter-correlation between variables

	Sustainable Behaviour	Subjective Norm	Perceived Behaviour Control
Sustainable Behaviour	-		
Subjective Norm	0.575**	-	
Perceived Behaviour Control	0.553**	0.645**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Multiple Regression Analysis

The multiple regression analysis was conducted to determine the relationship between independent variables (subjective norm and perceived behaviour control) with the dependent variable (sustainable behaviour). The Table 4 presents the result of multiple regression analysis. It shows that the R^2 value of regression models indicates that all the variables predicted 39% of the variance in sustainable behaviour and 37% can be predicted by other variables. As shown in Table 4, subjective norm (SN) significantly predicted sustainable behaviour (t= 3.594, p<0.05); therefore H1 was supported. Second, perceived behaviour control (PBC) significantly predict sustainable behaviour (t=2.996, p<0.05), providing support for H2. Therefore, the two hypotheses (H1 and H2) representing the relationship among the main constructs (SN and PBC) to sustainable behaviour were accepted in this study.

Table 4: Result of Multiple Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
Constant	1.595	0.544		2.932	0.004
Subjective Norm	0.378	0.105	0.374	3.594	0.001*
Perceived Behaviour Control	0.346	0.115	0.312	2.996	0.003*

Notes: *p<0.01, **p<0.05, *** p<0.10
Adjusted R2: 0.387, F-statistics=30.364, Sig at 0.000

Discussion

The findings of this study, indicates that the variable of subjective norm and perceived behaviour control predicting the sustainable behaviour at the UUM. The results of the multiple regression analysis from this study revealed that the students' subjective norm and perceived behaviour control was positively related to the sustainable behaviour. Results presented in Table 4 found support for the first hypothesis at the 0.01 level of significance ($\beta = 0.374$, t = 3.594, p < 0.01). The results mean that subjective norm was observed to be a significant determinant of sustainable behaviour of students in public universities in Malaysia. Therefore, subjective norm is sturdy predictors and determinants of the level of sustainable behaviour that person finally accomplish (Alias et al., 2015). It has also been found that most of the students in the universities have influenced by college mates, friends, lecturers, parents and societies in

behaviour decision making and action regarding the sustainability aspects. These influences stimulate them with high subjective norm and good surroundings to show the noble behaviour among them. Meanwhile, results presented in Table 4 found support for the second hypothesis at the 0.01 level of significance ($\beta = 0.312$, $t = 2.996$, $p < 0.01$). The results mean that perceived behaviour control was observed to be a significant determinant of sustainable behaviour of students in public universities in Malaysia. The result implies that students in public universities felt they are easy to perform and were in complete control whether they recycle, conserve the energy and reduce pollution or not. This finding is consistent with the previous study (Han, 2015; Alias et al., 2015; de Leeuw, Valois, & Seixas, 2014; Kumar, 2012). Therefore, the table 5 shows the result of hypotheses in this study were supported.

Table 5: Summary of results of hypotheses

	Hypotheses	Decisions
H1	There is a positive relationship between subjective norm (SN) and Sustainable Behaviour (SB)	Supported
H2	There is a positive relationship between perceived behaviour control (PBC) and sustainable behaviour (SB)	Supported

Conclusion and Future Recommendation

This study focuses on the determinants of Theory of Planned Behaviour (TPB) in measuring sustainable behaviour among students in Malaysia Public universities, to verify the objectives of this study. This study has several limitations and deficiencies; firstly, the sample was only collected from one public university in Malaysia which is Universiti Utara Malaysia (UUM). More studies can be conducted in different public universities to improve the generalization of the findings. Secondly, the study only uses the two variables to measure the sustainable behaviour among students; future studies may assess more variables to examine the prospect in enhancing sustainable behaviour in public universities context. Thirdly, the study is limited only to students of the university, not covered the other stakeholders in the university. Thus, for the future recommendation, it should be interesting to find out the factor of knowledge that promoting sustainable behaviour among students. Finally, the future research might also utilize a more established integration model to examine the factors that measuring sustainable behaviour among students.

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