Household's Participation in Recycling Behaviour towards Creating Sustainable Environment

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Abstract: The paper aims to statistically analysis the relationship between the determinants of household's participation in recycling Behaviour. The study proposes to add new constructs that affect Behaviour in the existing TPB framework, which is the relationship between attitude, convenient of segregation, perceived recycling knowledge, and availability of public policy, perceived Behavioural control and social pressure towards participation in recycling Behaviour. Data was collected by distributing questionnaires to targeted households in Selangor. The sampling frame of this study comprise of households randomly selected from the twelve municipal councils in Selangor. A total of 800 questionnaires were distributed to respondents. The model was validated and tested using partial least square modelling. The findings showed that attitude, perceived recycling knowledge, perceived Behavioural control and social pressure positively contribute to high participation towards recycling Behaviour. The results generated from the path analysis indicate the model applied in this study, has a moderately good model fit with R2-value of 0.542 for the relationship between the six determinants and participation in recycling Behaviour. The findings suggest that 54.2 per cent of the variance in participation in recycling Behaviour can be explained by attitude, convenient for segregation, recycling knowledge, public policy, perceived Behavioural control and social pressure. It is recommended that government policies are tighten as the recycling activities is gaining more important foothold given that the future sustainability of mother nature begin now. If the practice is not enforced now, the trend of global warming and other extreme severities will take a toll on the life of all living creatures.

Keywords: Environment, recycling behaviour, sustainability, theory of planned behaviour

I. INTRODUCTION

The exponential growth of the world population has created a huge impact towards the natural environment. The negative correlation between the two was created by over-farming, deforestation, water pollution and global warming (LeBlanc, 2018). This has thus led to the dire needs of various stakeholders to address the issue of environment sustainability especially issue which relates to environmental conservation Behaviour such as recycling. After years of research and policies set, yet the result is rather disappointing. With less than 2 years to the target set by the government of having 22% of recycling Behaviour among the nation's citizen, the Solid Waste Management and Public Cleansing Corporation (SWCorp) in 2017 reported that only about 17.5% of household are involved in recycling. Waste separation which is also known as waste classification or waste segregation involve the process at which the household are required to separate the waste based on different elements. These elements include paper, plastic and glass bottles, aluminium cans, leftover foods and etc (Xu, Ling, Lu, & Shen, 2017). Malaysians were reported to be producing on average of 30,000 tons of waste everyday but only a mere 5% of it were recycled. All these collectively remains a major challenge to the government bodies as it leads to environmental degradation and health issues.

Even though, the Malaysian government through various agencies and local municipal councils have and been implementing various strategies such as equipping each household with waste bins and scheduling special collection of recycle waste, these efforts remains insufficient to motivate householders to recycle. For instances, Noor (2016) reported that there are many reasons for the lackadaisical Behaviour of householders to practice recycling in their daily life. She found that there is ineffectiveness in the implementation of the 2+1 system collection; lack of information about how to recycle efficiently; weak legal instruments aimed at recycling enforcement and lack of awareness on the proper recycling processes or methods.

Past studies have examined the recycling behaviours (Wan et. al, 2014; Botetzagias, Dima & Malesios, 2015) using Theory of Planned Behaviour (Ajzen, 1991) which was well accepted in explaining and forecasting human Behaviours. Wan and Shen (2015) proposed that having an effective policy may further encourage recycling. Yet, there were lack of empirical evidence to support such claim.

Hence, the current study would incorporate the availability of public policy in order to examine the effectiveness of having such policy in leading to more positive recycling Behaviour. Besides, it is important to examine further the householders' attitude and Behaviour towards recycling.

In the light of the discussion above, this paper attempts to examine the determinants of recycling Behaviour among residents in Selangor. The study proposes to add other constructs that affect Behaviour in the existing TPB framework.

Specifically, this study examines the relationship between attitude, convenient of segregation, perceived recycling knowledge, and availability of public policy, perceived Behavioural control and social pressure towards participation in recycling Behaviour. It is only through the understanding of householders recycling Behaviour and attitudes that helps to develop programs aims at increasing their participation of recycling activities.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Previous studies have recorded the use of Ajzen and Fishbein's (1980) Theory of reasoned Action (TRA) and Ajzen's (1991), Theory of planned Behaviour (TPB) as main theories in examining Behaviour towards recycling. This present study is based on TPB, which is the most commonly used intention-based model and have been tested in the domain of recycling Behaviour (Xu, Ling, Lu & Shen, 2017). To add on, TPB were also been applied effectively by scholars like Chan (1998), Shaw (2008), Begum et al, (2009), Ramayah (2012), Wan et al., (2014), and Botetzagias, Dima, & Malesios, (2015) on research relating to recycling. Moreover, TPB was also further applied by many scholars in explaining and forecasting human Behaviour in the studies related to waste management (Tonglet, Philips & Read, 2004; Wan, Shen & Yu, 2014). The extended TPB theory hypothesizes further by including perceived Behavioural control as a new antecedent to enhance the predictive power of TRA. TPB states that attitude, subjective norms, and perceived Behavioural control, together shape an individual's Behavioural intentions and Behaviours. However, past research has also shown that the TPB framework failed to predict recycling Behaviour, and therefore, alternatives to this measure were suggested (Davies, Foxall, Pallister. 2002). Thus, the present study has incorporated additional variables, i.e., perceived policy effectiveness, ease of sorting and perceived recycling knowledge to predict individual's recycling behaviour.

The existence of a relationship between attitude and participation in recycling behaviour is supported both empirically and theoretically. Although, attitude thus does not predict behaviour perfectly; however, it is one contributor to behavioural intentions, potentially tempered by inconsistent normative or control-related psychological constructs. Moreover, the TPB allows for perceived control to affect behaviour directly, regardless of the behavioural intention that is formed. If the individual perceives that she or he lacks the capacity to perform the behaviour, this may override any intention to act. In the present study by Poskus (2015), recycling moral norms and attitudes were found to form two distinct factors and did not show convergent validity, which is quite different from what Chan and Bishop (2013) had found.

On the other hand, Xu et al. (2017) stated in his study that subjective norms, perceived behavioural control, past behaviour and intention significantly predict household waste separation behaviour. Theoretically subjective norms are defined as the perceived social pressure of others referent to perform or not to perform a behaviour (Ajzen, 1991). In the present context, subjective norms are related to both moral obligations and normative beliefs that emerge from the expectations of significant individuals or groups to imply a perceived social pressure over an individual who intends to perform a certain behaviour that is, recycling (Ajzen, 1991). In a study by Mamun et.al (2018), moral obligation has a positive effect on subjective norms among low-income households in Coastal Peninsular Malaysia.

A study conducted in Hong Kong found that, recycling intention is influenced by subjective norms, perceived behavioural control, moral norms, and awareness of consequences, as well as a newly proposed construct, namely perceived policy effectiveness. This is also supported in a study by Wan et. al (2014) informing that self-reported recycling behaviour (direct behaviour) and support for policy measures (indirect behaviour) are influenced by recycling intention. A recent study by Xu, et.al. (2017) indicated that consumer positive attitude towards perceived effectiveness of government policy implementation do affect the outcome of recycling behaviour such as waste separation rate. This support study by (Wan, Shen, & Yu, 2015) survey conducted in Hong Kong showed that consumers with better perceived policy effectiveness would be more motivated to support government's policy to improve waste separation behaviour.

In fact, Grazhdani (2016) study also supported that public policy could be helpful in waste management to improve consumer's recycling education and provides the convenience of recycling. Likewise, if government did not impose any policy on waste management, consumers will not control their waste management behaviour. Besides, to improve consumer's perceived policy effectiveness can be to make the public known about government's actions taken to solve waste problems and the results they got through these actions (Wan, Shen, & Yu, 2014a, 2014b). The way how the government inform and educate the public regarding new recycling policies and at the same time allow for opinions from public are also important (Wan & Shen, 2013). Moreover, recycling behaviour should start from home. It plays a prime role as households have the capability to segregate solid waste e.g. what to recycle, how to sort, where to bring the recyclables and so on. Recent study by Wan, Shen, and Choi (2018) notified that a substantial number of earlier studies by (Guidotti & Abercrombie, 2008; Mueller, 2013; Xiao et al., 2017) have ascertained that dearth of knowledge and understanding relating to segregation methods is a barrier to engage participants in recycling practices. In Malaysia, Malik et al., (2015) study findings on solid waste segregation indicated that inconvenient in segregation such as time constraint, limited space and bin and the distance from home to recycling facilities were the obstacles that prevent the community participation to segregate the solid waste. Studies of prior researchers have illustrated that, respondents prefer without segregation of solid waste as the process was very fast, easy and less burden (Moh & Manaf, 2017).

A recent study by Xu, et.al. (2017) stated that, some of the factors that facilitate household waste separation behaviour among residents are recycling infrastructure and freelance rubbish collector going house to house. However, the level of inconvenience perceived by an individual should not outweigh his/her utility of conforming to social norms. Therefore, the minimum level of convenience has to be provided to ensure recycling behaviour (Bernstad, 2014; Boonrod et al., 2015; Miafodzyeva and Brandt, 2013). Recycling knowledge such as procedural knowledge, general background and performance expects is relatively more important to induce recycling behaviour (Tucker, 2001). Lack of such knowledge generally inhibits recycling or leads to poor recycling performance (Tucker. 2001). Therefore, waste reduction educational approach is an important tool to propagate understanding on recycling behaviour (Malik et al., 2015). Preceding study by Tonglet, et.al. (2004) using Theory of Planned Behaviour (TPB) has concluded that people are optimistic to recycling behaviour when they have enough knowledge towards it. A study by Keramitsoglou and Tsagarakis (2013) pointed out that when people gain a lot of knowledge about the consequences of recycling, they tend to be aware on the importance which will eventually make them to be merely responsible to achieve recycling objectives.

Based on the above discussion on recycling behaviour, the following hypothesis were established. The relationship between the constructs is shown in **Fig. 1**.

- **H₁:** There is a positive relationship between Attitude and Participation in Recycling Behaviour
- **H₂:** There is a positive relationship between Convenient Segregation and Participation in Recycling Behaviour
- **H₃:** There is a positive relationship between Perceived Recycling knowledge and Participation Recycling Behaviour
- **H₄:** There is a negative relationship between Availability Public Policy and Participation in Recycling Behaviour
- **H₅:** There is a positive relationship between Perceived Behavioural Control and Participation in Recycling Behaviour
- **H₆:** There is a positive relationship between Social Pressure and Participation in Recycling Behaviour
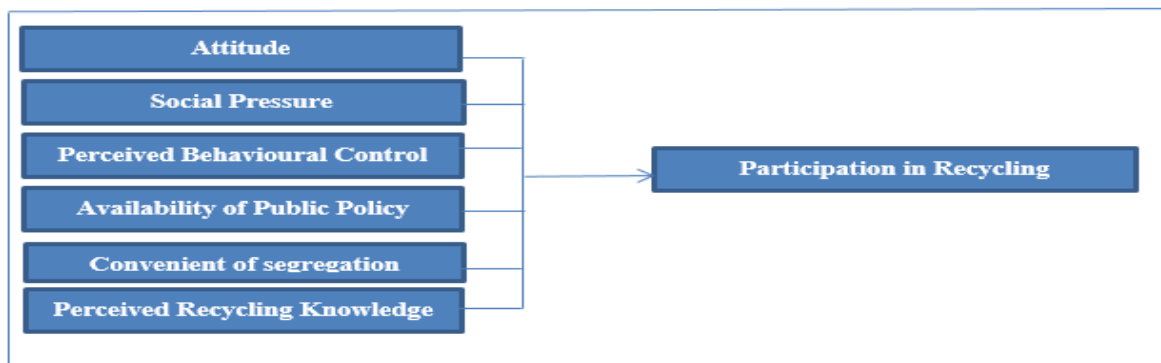

Fig. 1: Research framework

III. RESEARCH METHODOLOGY

The present study adopted the quantitative questionnaire survey method. Surveys were used as it is a fairly popular research strategy within business and management research (Saunders et al., 2009). A 7-point Likert scale was implemented to allow the respondents to indicate their level of agreement for the exogenous and endogenous variables.

The questionnaire was targeted at residents in Selangor. The study focuses in the state of Selangor for few reasons: (i) it was one of the pioneer states to implement "No Plastic Bags Day" policy early January 2017.; (ii) among all the states in Malaysia, it has been the one that leading the recycling campaigns, setting-up recycling policies and setting up facilities on recycling (Hassan et al., 2000; Agamuthu, 2001); (iii) it has the highest amount of waste generation compared to other states in the country (Nagendran, 2009); (iv) the state of Selangor is the most developed and urbanized state in Malaysia. The sampling frame of this study comprise of households randomly selected from the twelve municipal councils in Selangor. A total of 800 questionnaires were distributed to respondents from March 2018 to August 2018. A total of 612 surveys were returned among which 514 were valid with all the questions answered while the rest of the questionnaires which were invalid had responses that with some of the questions unanswered.

The data collected was then analyzed by using Partial Least Squares Equation Modeling (PLS-SEM). The primary reason for the choice of PLS-SEM as the statistical analysis tool was due to the nature of the constructs and latent variables of present research. Following Henseler et al., (2014) and Henseler (2017) when construct is derived from theoretical thought, created by and for the research, and it is an artefact collected from elemental components, it is named as a "design construct". Henseler et al. (2016) recommended the use of composites. As such, PLS-SEM estimates by composites were utilized for this research. In this regard, a two-stage approach was performed and the reporting of the result in measurement model and structural model are presented in subsequent sections after the respondents' profiles.

IV. DATA ANALYSIS AND FINDINGS

Among the total respondents of 514, the descriptive analysis in Table 1 showed the gender distribution of males and females, in which males constitute 50.58% (260) and females 49.42% (254). This indicates that males are the majority in the field of study.

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The ages of the respondents ranged between 25 to 67 years. In this regard, the descriptive analysis in XX showed that the age group of between 25 – 34 years old was 8.75% (45), 35 – 44 years old were 49.03% (252), and 45 – 54 years old were 42.22% (217). This indicated that the respondents in that age category of 35 to 44 were more than the other age levels. With regard to the respondents' ethnicity, the distribution is 38.52% (198) are Malays, 35.60% (183) are Chinese, 25.29% (130) are Indians and 0.58% (3) are those who fall under the category of others. The results also indicated that majority of the respondents, which is 77.43% (398) are owners themselves while the rest 22.57% (116) are tenants.

Table 1: Profile of respondents (N = 514)

Variables	Frequency	Percentage (%)
Gender		
Male	260	50.58
Female	254	49.42
Age Group		
< 25 years	0	0
25-34 years	45	8.75
35-44 years	252	49.03
45-54 years	217	42.22
> 55 years	0	0
Ethnicity		
Malay	198	38.52
Chinese	183	35.60
Indian	130	25.29
Others	3	0.58
Type of Residence		
Owner	398	77.43
Tenant	116	22.57

Partial Least Square (PLS) was used to examine the six hypotheses developed in this study. The data were analysis in two stages using Smart-PLS.

A. Measurement Model

Stage 1 involves the measurement model assessment. The variables of present research are reflectively specified construct. As such, the measurement model assessment entail assessing the factor loadings, composite reliability (CR) and average variance extracted (AVE). The result of measurement model is shown in Table 2 and Figure 2. All the item loadings exceed the recommended value of 0.5, Cronbach's α values are above 0.8, the construct ρ_A, and the CR are higher than 0.70 and below 0.95 and the AVE values exceed the threshold value of 0.5 (Byrne, 2013; Hair et al., 2017; Nunnally & Bernstein, 1994).

Table 2: Measurement Model Results

Construct	Items	Loading	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude	Attitude 1	0.831	0.899	0.904	0.923	0.667
	Attitude 2	0.875				
	Attitude 3	0.727				
	Attitude 4	0.853				
	Attitude 5	0.829				
	Attitude 6	0.778				
Ease of Sorting	ConvenientSeg1	0.767	0.811	0.858	0.872	0.631
	ConvenientSeg2	0.806				
	ConvenientSeg3	0.878				
	ConvenientSeg4	0.718				
Perceived recycling Knowledge	Knowledge1	0.842	0.821	0.827	0.882	0.653
	Knowledge2	0.787				
	Knowledge3	0.729				
	Knowledge4	0.866				
Participation	Participation1	0.906	0.858	0.869	0.914	0.780
	Participation2	0.917				
	Participation3	0.822				
Perceived Policy Effectiveness	Public Policy1	0.714	0.948	1.017	0.951	0.662
	Public Policy10	0.782				
	Public Policy2	0.807				
	Public Policy3	0.833				
	Public Policy4	0.861				

|	Public Policy5	0.854				
	Public Policy6	0.704				
	Public Policy7	0.894				
	Public Policy8	0.819				
	Public Policy9	0.848				
Perceived Behavioural Control	Recycling Factor1	0.752	0.915	0.925	0.932	0.661
	Recycling Factor2	0.858				
	Recycling Factor3	0.842				
	Recycling Factor4	0.827				
	Recycling Factor5	0.847				
	Recycling Factor6	0.810				
	Recycling Factor7	0.749				
Subjective Norms	Social Pressure1	0.821	0.921	0.924	0.935	0.644
	Social Pressure2	0.776				
	Social Pressure3	0.845				
	Social Pressure4	0.841				
	Social Pressure5	0.789				
	Social Pressure6	0.833				
	Social Pressure7	0.744				
	Social Pressure8	0.763				
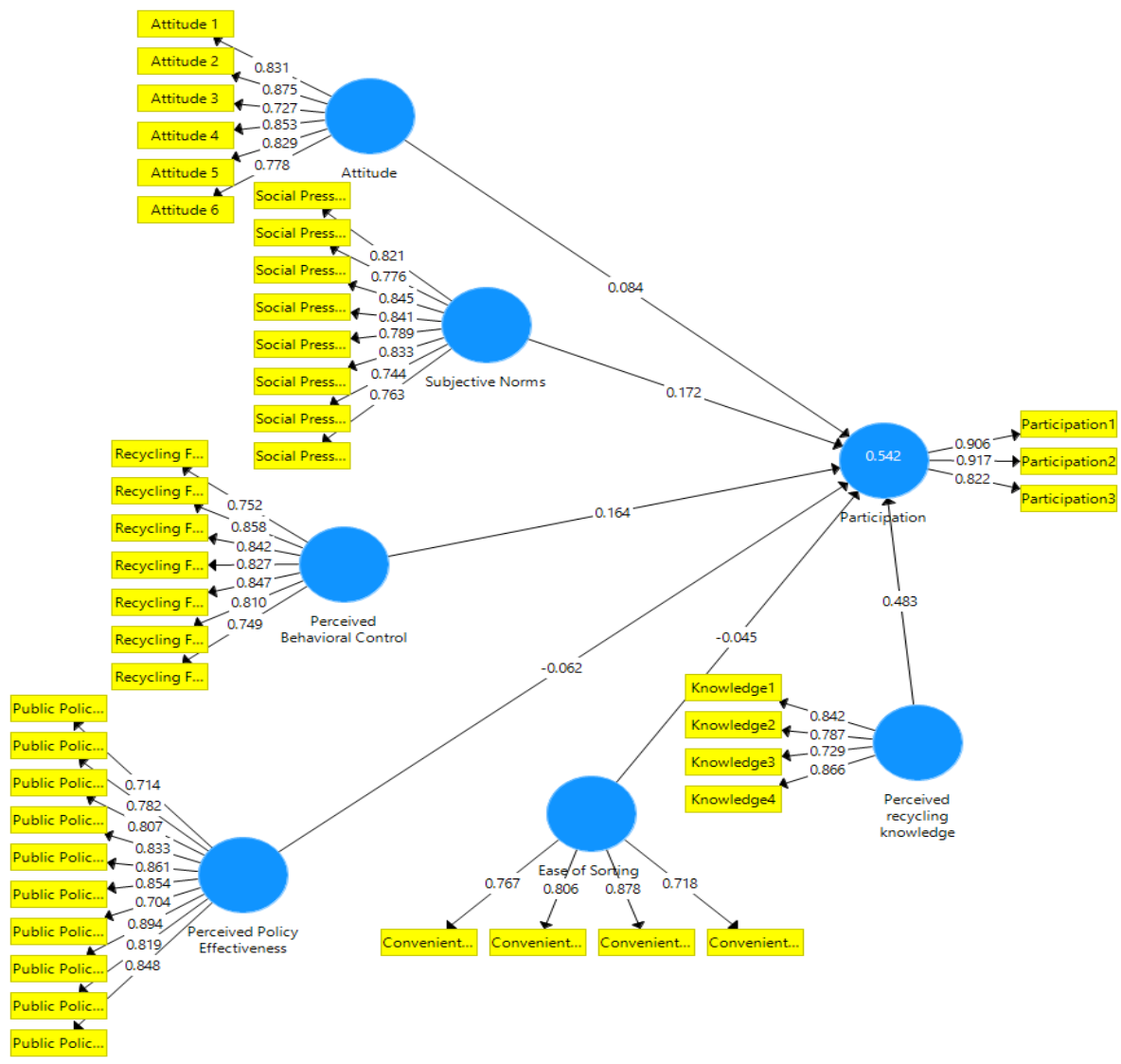
Fig.2: Measurement Model

In assessing the discriminant validity, HTMT criterion by Henseler, et al. (2015) was adopted. HTMT is defined as the mean value of the indicator correlations across constructs (i.e. the heterotrait-monotrait method correlations) relative to the (geometric) mean of the average correlations of the indicators measuring the same construct. When the value of HTMT values are high, it indicates a problem with discriminant validity. Henseler et al. (2015) suggested that HTMT values should not exceed 0.90 if the path model includes constructs that are conceptually similar. When the constructs are conceptually more distinct, a more conservative, threshold value of 0.85 is recommended. Discriminant validity is achieved with its results found in **Table 3**.

Table 3: Discriminant Validity using HTMT criterion

Construct	1	2	3	4	5	6	7
Attitude							
Ease of Sorting	0.171						
Perceived recycling Knowledge	0.576	0.159					
Participation	0.521	0.168	0.820				
Perceived Policy Effectiveness	0.127	0.145	0.256	0.167			
Perceived Behavioural Control	0.343	0.207	0.597	0.562	0.539		
Subjective Norms	0.505	0.081	0.587	0.584	0.323	0.585	

After completed the Stage 1 of Measurement Model Assessment with all the results meeting the recommended threshold of reliability and validity, the assessment continues with Stage 2, which is Structural Model Assessment.

B. Structural Model Assessment

Before the evaluation of Structural Model Assessment, it is important to run the collinearity test in order to ensure that there is no issue of full collinearity between the constructs. Kock and Lynn (2012) pointed out that even if the criteria of discriminant validity are fulfilled, lateral collinearity issues such as predictor-criterion collinearity possibly will mislead the findings. Hence, full collinearity variance inflation factors (VIFs) are assessed for identification of multi-collinearity issues. Table 3 presents the outcome of the full collinearity test. The VIF scores for each construct are below the threshold value of 3.30 indicating that the issue of collinearity is not a concern (Diamantopoulos & Siguaw, 2006) in present research.

R^2 value) (Hair et al., 2017; Shanmugam et al. 2019a, 2019b; Shanmugam & Nadesan 2019). The bootstrapping procedure of 1,000 resampling was done to establish the significance of the path coefficient (Hair., et al., 2017). The graphical summary of the structural model results is shown in **Fig. 3**.

Table 4: Variance Inflated Factor (VIF)

Construct	VIF
Attitude	1.483
Ease of Sorting	1.144
Perceived recycling Knowledge	1.760
Participation	1.386
Perceived Policy Effectiveness	1.447
Perceived Behavioural Control	2.071
Subjective Norms	1.798

Stage 2 involves the structural model assessment which specify the causal relationships between constructs in the model (path coefficients and the coefficient of determination,
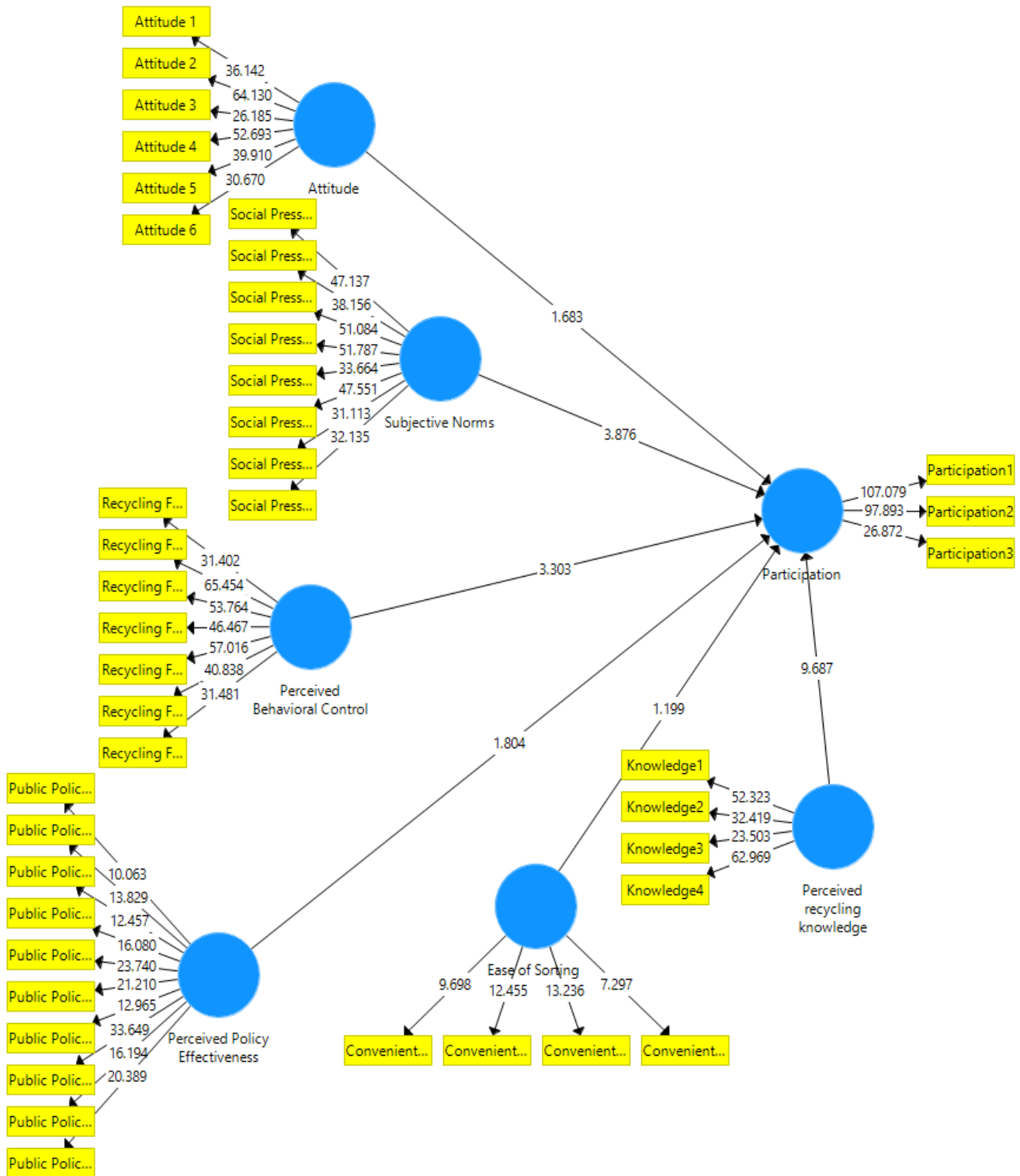
Fig. 3: Structural Model

The examination of path coefficients and their respective significance were carried out in the structural model assessment. The path coefficients are interpreted in the same way as the beta values in a linear regression. Among the six hypotheses formulated, five hypotheses are significant with t-statistics above 1.65 and p values below 0.05, except H2. Among the five significant hypotheses, only H4 is a significant negative relationship with a path co-efficient of -0.062 (t statistics = 1.804). H1, H3, H5 and H6 are significant positive relationship to the participation of recycling behaviour with their respective path coefficients of 0.84 (t statistics = 1.683), 0.483 (t- statistics = 9.687), 0.164 (t-statistics = 3.303) and 0.172 (t statistics = 3.876).

Table 5: Path Co-efficient Assessment

	Path co-efficient	T Statistics	P Values	Decision
H1: Attitude -> Participation	0.084	1.683	0.044	Supported
H2: Ease of Sorting -> Participation	-0.045	1.119	0.130	NS
H3: Perceived recycling Knowledge -> Participation	0.483	9.687	0.000	Supported
H4: Perceived Policy Effectiveness-> Participation	-0.062	1.804	0.045	Supported
H5: Perceived Behavioural Control-> Participation	0.164	3.303	0.000	Supported
H6: Subjective Norms -> Participation	0.172	3.876	0.000	Supported

Table 5 presents the assessment of co-efficient of determination (R^2), the effect size (f^2) as well as the predictive relevance (Q^2) of exogenous variables on endogenous variable in this research. The value for co-efficient of determination (R^2) for participation in recycling behaviour is 0.542. This suggests that all the exogenous variables explain 54.2 percent of variances in participation in recycling behaviour. The Q^2 value of 0.394 which is larger than 0, suggests that the model developed has a predictive capacity over participation in recycling behaviour (Hair, et al., 2014). The graphical illustration of the predictive relevance is shown in Figure 2. The results also show recycling knowledge factor ($f^2 = 0.289$) has medium effect size on participation in recycling behaviour while other factors as such as Attitude, Convenient Segregation, Public Policy, Recycling Factor and Social Pressure are having a small effect size on participation in recycling behaviour with f^2 lower than 0.05.

Table 6: Determination of Co-efficient (R^2), Predictive Relevance (Q^2) and Effect size (f^2)

Construct	R^2	Q^2	f^2	Effect Size
Attitude			0.010	Small
Ease of sorting			0.004	Small
Perceived Recycling Knowledge			0.289	Medium
Participation in Recycling Behaviour	0.542	0.394		
Perceived Policy Effectiveness			0.006	Small
Perceived Behavioural Control			0.028	Small
Subjective Norms			0.036	Small

V. DISCUSSION

This paper studies the determinants that lead to participation in recycling behaviour in Selangor. From the analysis above, attitude, perceived recycling knowledge, perceived behavioural control and social pressure positively contribute to high participation towards recycling behaviour. The results generated from the path analysis indicate the model applied in this study, has a moderately good model fit with R^2-value of 0.542 for the relationship between the six determinants and participation in recycling behaviour. The findings suggest that 54.2 per cent of the variance in participation in recycling behaviour can be explained by attitude, convenient for segregation, recycling knowledge, public policy, perceived behavioural control and social pressure.

The relationship between attitude and participation in recycling behaviour was found to be positive and significant. This is similar to the findings obtained by Ramayah et al. (2012) who explored the recycling behaviour using the theory of planned behaviour. Perceived behaviour control was found to have a positive and significant relation with participation in recycling behaviour. The findings are in line with the results obtained from earlier studies on pro-environmental behaviour by researchers like Straughan and Roberts (1999) and Webster (1975).

Another predictor of recycling behaviour is knowledge. The findings in this study showed that knowledge is positively related to participation in recycling behaviour. As such it is clear that increasing knowledge will translate into a change in Behaviour. However, convenient in segregation is not a predictor of participation in recycling Behaviour in Malaysia. Shaufique (2008) mentioned that knowledge is important to predict waste segregation Behaviour. Therefore, knowledge of household segregation is important rather than having knowledge about recycling activities alone. This is because knowledge of household segregation is about where, what, when and how to practice in a real life.

VI. CONCLUSION

The recycling activities is gaining more important foothold given that the future sustainability of mother nature begin now. If the practice is not enforced now, the trend of global warming and other extreme severities will take a toll on the life of all living creatures. From the current study, it indicates that there are many factors that led to the participation in recycling behaviour. Factors such as attitude, subjective norm and perceived behavioural control from the TPB model was found to be strongly supporting the recycling model which contribute further towards its theoretical contribution. As part of the managerial and policy-maker implications, it is to make the consumers having the habit of recycling as part of their daily life. It would be encouraging for every individual to dissociative themselves from those who are known to be not involving in their daily recycling activities.

Through community pressure, it is hoped to change the mind-set of the individuals in their daily activities. In addition, mind-set alteration can also be done via the compulsory inculcation of civic studies using education starting from pre-school. By having a positive mind-set towards recycling, the spiral effect will have its effects among the wider group and society.

In addition, the perceived policy effectiveness and perceived recycling knowledge was also found to be significant in affecting the participation of recycling activities. This enhances the TPB model by the inclusion of other factors that are relevant within the study of recycling which also contributes theoretically from this study. The government via various initiatives such as No Plastics Day, equipping each household with wastes bin and special collection of recycle waste does not seem to be very effective given the low rate of recycling reported by SWCorp. Thus, it was suggested that harsher and tougher penalty should be enforced. The lack of enforcement is one of the reasons for the lackadaisical attitude of the society in practicing recycling. Hence with both the incorporation of harsher penalty and education in terms of civic studies, the future generation may have a higher hope of getting a better world to live in.

Lastly, the study is not without its limitations whereby the study was only limited to those respondents within Selangor only. However, the future research may want to cover other areas such as Penang and Johor given that they also implemented some of the government initiatives. Thus, a comparison study can be conducted to know any differences in terms of the society attitude towards recycling. Furthermore, this study is a cross-sectional study that only conducted at a period. Future studies may consider longitudinal study to cross check on whether there is really a behavioural change in the society viewpoint towards recycling and its importance. In addition, recycling is a specific context activity whereby the study may not be able to be generalized to another context. Lastly, the sample collected was relatively small in comparison to the population of Selangor. Thus, the study has adopted the PLS with bootstrapping technique to increase the significance of the results regardless of sample size. Yet, it is still suggested that a larger sample size to be collected for future study to further confirm these findings. Lastly, the current study only focuses on household waste, but industrial waste similarly contributes towards waste generation in Malaysia. Thus, it is suggested that future study should include industrial waste.

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