

**INCOMAR 2023**  
**The 9<sup>th</sup> International Conference on Marketing and Retailing****FACTORS AFFECTING COMMUNITY GARDEN LEADERS'  
INTENTIONS TO SUSTAIN COMMUNITY GARDENS IN  
MALAYSIA**

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**Abstract**

Community garden programs are widely claimed to play a role in food security and create social interaction among communities worldwide, including Malaysia. Community garden leaders have a vital role in managing the community garden successfully. To sustain the community garden program, it is crucial to understand the factors influencing community garden leaders' continued participation. This study involved quantitative methods, and the primary data were collected through a structured face-to-face interview with 154 community garden leaders between September 2021 and January 2022. Based on the theory of planned behaviour, the structural equation modelling was used to analyse factors affecting the community garden leaders' behavioural intentions. The results showed that the key influencing factor was awareness which positively impacted the community garden leaders' intentions towards the continuity of the program. The results of this study will provide design recommendations for the government and community to develop more successful programs for the long-term survival of community gardens.

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*Keywords:* Behavioural intentions, community garden leader, community garden, structural equation modelling, theory of planned behaviour

## 1. Introduction

Urban farming is an agricultural tradition brought to the city that includes all aspects of agricultural production, from intensive food distribution and cultivation to waste management and employment creation. Farmers grow crops and livestock in and around cities to produce fresh food, generate income, and increase the resiliency of the city against climate change (UN-Food and Agriculture Organization, 2020). This urban farming concept was adopted by the community and is called a community garden. Community garden (CG) brings numerous benefits, particularly in terms of food security specifically for people from low-income groups, employment opportunities and education for disadvantaged and marginalised communities (Siegener et al., 2018). In addition, CG allows surrounding residents easy access to fruits and vegetables. Some major cities in Asia have implemented CG programs that help contribute to a consistent local vegetable production system (Akaeze & Nandwani, 2020). For example, cities in South Korea, Japan, China and Singapore have been listed as areas where CG that focuses on self-sufficiency in food production is practised (Giriwati et al., 2018). In addition, reduced transportation, processing, and packing costs, community and social capital building, a reduction in gender inequality, sustaining self-sufficiency, and increasing local resilience are also advantages of CG (Orsini et al., 2013; Van Veenhuizen & Danso, 2007). CG production is characterised by close proximity to markets and high degrees of specialisation, yet it may be constrained by available area, a lack of farmer groups, and competition for land (Van Veenhuizen & Danso, 2007). In order to address complicated community concerns and enhance the quality of urban living, focus has been paid to CG food system improvement because of the economic, social, environmental, and health benefits it provides (Daftary-Steel et al., 2015).

In general, there are four categories of CG in Malaysia: (1) individual, (2) community, (3) school, and (4) institution (private and governmental) (Othman et al., 2017). The CG's performance has received widespread attention for its potential to ensure food safety, food diversity, employment opportunities and environmental sustainability. From 2014 to now, there are at least 124,998 participants in the CG program, which involves 5,065 sites from across the country. Malaysia has acknowledged and lately increased the development of CG as an effective means of ensuring food security (World Bank, 2020). Ensuring and stabilising a high-quality and safe food supply is achieved through an increase in production.

In spite of the success of CG, CG leaders play a significant role in CG food systems, and consequently identifying factors that lead to CG leaders' intention to continue farming is very important. Besides, one of the important aspects for the survival of the CG is the lack of participation due to the lack of interest of the gardeners over time, especially the group leaders (J. H. Lee & Matarrita-Cascante, 2019). It is crucial to note that there is a limited number of studies that have been conducted to determine CG leaders' intention to continue CG. Therefore, there is a need for further research on this topic and this study was undertaken to begin addressing the knowledge gap.

The purpose of this study was to describe the intention of CG leaders to continue producing food in community settings. The specific objectives that guided the study were to describe factors that influence CG leaders' attitude, perceived behavioural control, subjective norms, awareness towards continuity in managing CG, and also the usefulness of CG towards the continuity of managing CG. The

findings of this study are hoped to help the government and community as it could be a solution to myriad problems such as food security for the community, employment opportunities and environmental sustainability.

## 2. Literature Review

There are various theoretical developments and approaches that have been carried out to explain human behaviour. The development of this theory is due to different human behaviour. Ajzen and Fishbein (1975) developed a framework to overcome the problem of attitude-behaviour relationship, which is the Theory of Reasoned Action (TRA). This TRA has been further developed with improvements through the Theory of Planned Behaviour (TPB) by Ajzen (1985).

The Theory of Planned Behaviour (TPB), predicts that planned behaviour is determined by the behavioural intention which is partly influenced by the individual's attitude towards the behaviour, subjective norms and their perceived behavioural control over the individual's behaviour (Ajzen & Fishbein, 1975). This TPB model has developed the TRA model by including another additional variable which is the variable of perceived behaviour control (perceived behavioural control). Ajzen and Fishbein (1980) proposed the Theory of Reasoned Action (TRA) which is an extended theory from the Theory Acceptance Model (TAM). Ajzen and Fishbein (1975) researched the relationship between beliefs, attitudes, and behaviour by developing a structural model of attitudes. This theory is based on several assumptions namely that humans generally do things in ways that make sense, humans consider all available information and that explicitly or implicitly, humans consider the implications of their actions. TRA says that human attitudes influence behaviour through a careful and reasoned decision-making process. TRA also says that behavioural decisions are the best predictors of intentions. The intended intention refers to subjective attitudes and norms.

In this TPB, confidence is influenced by attitudes towards certain behaviour, on subjective norms and on behavioural control that is experienced. The three components are interdependent and determine the intention that will finally determine whether the behaviour will be done or not. Furthermore, in TPB too, the control of behaviour will directly affect the intention to perform a certain behaviour and is likely to directly affect the behaviour in a situation where the user intends to perform a specific behaviour but is prevented from performing the action (Ajzen, 1985).

Referring to this TPB model, an individual's behaviour can be explained based on the person's behavioural intention (behavioural intention) which is also influenced by attitude, subjective norms and the perception of behavioural control (perceived behavioural control). Attitude refers to the evaluation of an individual whether the implementation of a certain behaviour is positive or otherwise (Ajzen & Madden, 1986). While the subjective norm refers to an individual's perception that the person who is important to him thinks that the individual should or should not perform a certain behaviour in a certain context (Ajzen, 1985).

Applying the TPB to this context, CG leaders would be likely to intend to continue CG if they believe the outcomes of doing so would be positive, if they feel they have the ability (i.e., skills, knowledge, autonomy) to continue CG, and believe the people important to them expect them to do so.

An understanding of these factors that influence CG leaders' attitudes, subjective norms, and perceived behavioural control could play an important role in urban food production and contribute to food security.

Furthermore, the TPB is a very parsimonious model that allows researchers to include additional predictors associated with a particular behaviour (H.-S. Lee, 2016). Recent interpretations of the theory suggest that the original TPB model is extended through new factors if behavioural intention or practice achieve a significant amount of the variance by including these predictors (Ajzen, 2006). Since the CG program in Malaysia has evolved over the year 1997, it is believed that more Malaysians are aware on the benefits of this program and most of the leaders practising CG in Malaysia have knowledge of the urban farming techniques in CG (Rasmuna & Suhaimie, 2015). Based on this literature, it was found that the awareness and usefulness of consequences have important and direct effects on individuals, social elements, and intentions in the TPB and indirectly affect behaviour (Bamberg & Möser, 2007) and that a high level of awareness of positive consequences will help foster a more favourable attitude (Rezaei et al., 2019). Moreover, research has shown that an awareness of consequences precedes attitudes, perceived behavioural control, and subjective norms (Zhang et al., 2017). These results suggest that an awareness of beneficial (or harmful) consequences may influence behavioural intention and real action through individual and social variables.

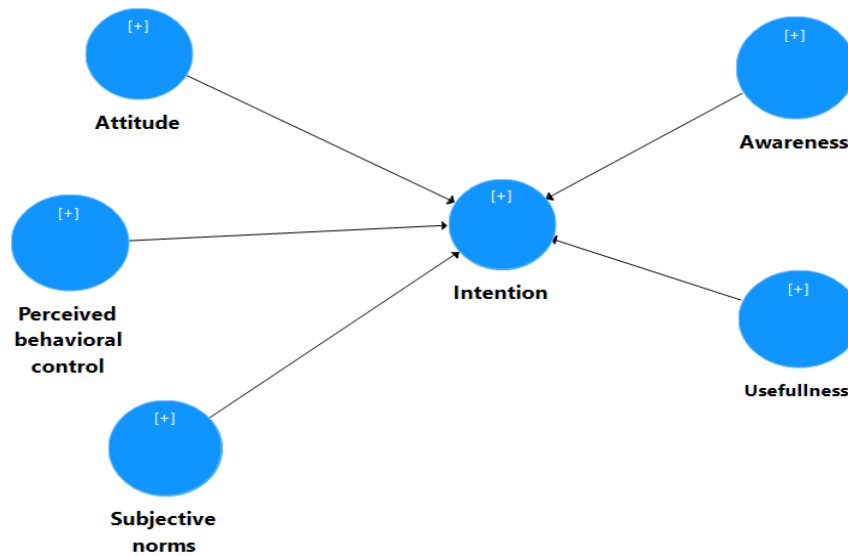
### **3. Methodology**

#### **3.1. Questionnaire Design and Data Collection**

The primary data for this study were acquired through a structured face-to-face interview with 154 CG leaders, which took place between September 2021 and January 2022. Statistical Package for Social Science (SPSS) Version 23 and SmartPLS were used for quantitative descriptive and inference analysis. In this paper, two types of analyses were used. The descriptive analysis method was used for preliminary analysis, understanding of the data, and determining the demographic profile of the respondents. Structural Equation Modelling (SEM) was used as a tool in identifying the factors that influence CG leaders' intentions to continue the CG in the future.

#### **3.2. Measurement**

Measures in the survey included CGs' intention to continue in CG, their attitude, perceived behavioral control, subjective norms, awareness towards CG and the usefulness of CG as in Figure 1. All measures included replication of indicators previously used in empirical research. A 5-point response scale (1 = strongly disagree to 5 = strongly agree) was used in the questionnaire.



**Figure 1.** The conceptual framework

### 3.3. Structural Equation Modelling (SEM)

Partial least squares (PLS) modeling using the SmartPLS 3.2.8 version (Ringle et al., 2015) was used as the statistical tool to examine the measurement and structural model as it does not require normality assumption and survey research is usually not normally distributed (Chin et al., 2003). Since the data were collected using a single source, we first tested the issue of Common Method Bias by following the suggestions of Kock and Lynn (2012), and Kock (2015) by testing the full collinearity. In this method, all the variables will be regressed against a common variable and if the  $VIF \leq 3.3$  then there is no bias from the single source data. The results in Table 1 showed VIF less than 3.3 thus single-source bias is not a serious issue with our data.

**Table 1.** Full collinearity testing (VIF)

Usefulness	Awareness	Perceived Behavioural Control	Subjective Norms	Attitude	Intention
1.829	2.289	1.574	1.461	1.493	2.162

## 4. Result and Discussion

### 4.1. Respondent's Profile

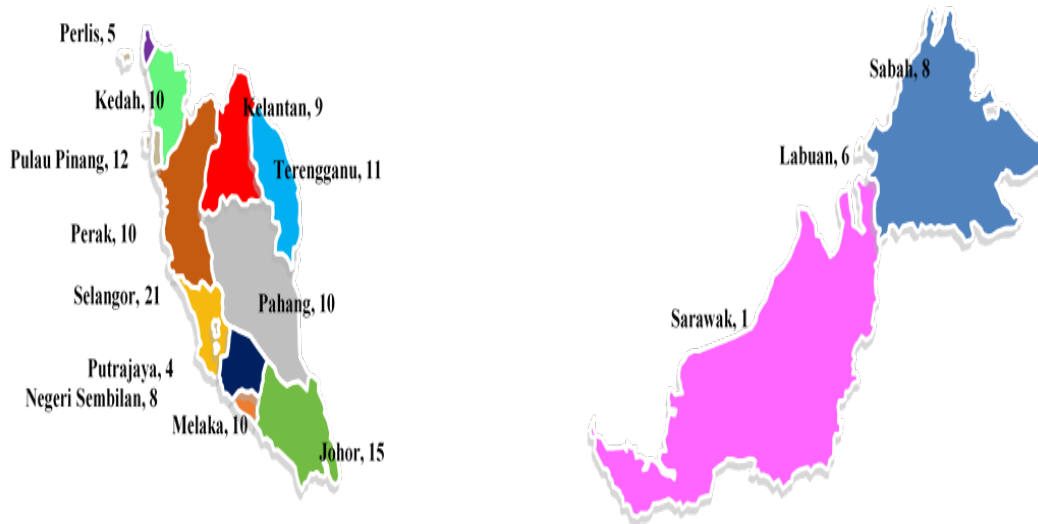
The data analysis was carried out on 154 respondents (CG leader), 79.2% of the respondents were males and 20.8% were females. About 56.2% of the respondents were on the age scale between 41 to 60 years old. The majority of the respondents were Malay which was 87.7%, 3.9% were Chinese and the rest were Bumiputera Sabah and Sarawak. The findings showed that the education level of the majority of the respondents was tertiary education (46.8%). Besides that, the percentage for the secondary school education category was around 43.5%. At least 26.6% of the respondents work as government staff. Even

so, the majority of the respondents were pensioners and housewives (29.2%). The highest category for monthly income of the respondents was between RM2001 to RM4000 monthly (56.8%). There were also respondents with a monthly income of less than RM2000 which was about 24% whereas the rest of the respondents earn more than RM4000 per month. The majority of the respondents (48.7%) have 4 to 6 household members. The findings also showed that the majority of the respondents (30.1%) spend about 2 hours working in their garden (Table 2).

**Table 2.** Socio-demographic profile

	Category	Percentage(%)
Gender	1 = Male	79.2
	2 = Female	20.8
Age	1 = 21 to 40	25.5
	2 = 41 to 60	56.2
	3 = 61 to 80	17.6
	4 = 81 and above	0.7
Race	1 = Malay	87.7
	2 = Chinese	3.9
	3 = Indian	0
	4 = Bumiputera Sabah and Sarawak	8.4
Education level	1 = Primary school	5.8
	2 = Secondary school	43.5
	3 = College/university	46.8
	4 = Others	3.9
Job background	1= Government Staff	26.6
	2= Private staff	14.9
	3 =Entrepreneur/Retailing	17.5
	4= Farmer/grower	11.7
	5 = Others (including pensioner and housewife)	29.2
Income	1= RM 0 – RM2,000	24
	2 = RM2,001 to RM 4,000	56.8
	3 = RM 4,001 to RM6,000	18.4
	4 = RM 6,001 to RM 80,000	0.8
Number of households	1 = 0	1.9
	2 = 1 to 3	27.9
	3 = 4 to 6	48.7
	4 = 7 to 9	20.1
	5 = 10 and above	1.3
Garden visiting frequency (hours)	1= Less than 1 hour	3.4
	2= 1 hour	22.6
	3= 2 hours	30.1
	4 = 3 hours	15.1
	5 = 4 hours	15.8
	6 = 5 hours and above	13.0

Figure 2 shows the distribution of CGs involved in this research. The highest number of CG is in Selangor which is 21 (13.6%) CGs involved in this research.



**Figure 2.** Sampling of CG involved in this study

#### 4.2. Community Garden's Profile

Based on Table 3, it was found that the majority of CGs (51.9%) were established before the year 2020 which is before the outbreak of Covid-19 in Malaysia. However, 48.1% of the CGs were established in the year 2020. These percentages are driven by the execution of PENJANA programme by the Ministry of Agriculture and Food Industry Malaysia (MAFI) which focuses to aid on lessening the cost of living during the pandemic.

Majority of CG leaders (39.6%) used investment less than RM2000. There were also CGs which did not invest any capitals where the initial investment was from the government, private institutions and individual person. For the input and utilities cost, majority of the CGs allocate RM500 for a month. The majority of the CGs acquire monthly sales revenue of less than RM1000. This indicates that most of the CG productions are being sold by direct market and sold at a price below the current market price.

**Table 3.** Information on community gardens

	Category	Percentage(%)
Establishment period	1 = Year 2020 till now	48.1
	2 = Before the year 2020	51.9
Initial investment	1 = RM 0	18.8
	2 = <RM 2000	39.6
	3 = RM 2000 to 4000	8.4
	4 = RM 4001 to 6000	8.4
	5 = > RM 6000	24.7
Input cost	1 = RM 0	20.8
	2 = < RM 500	63.6
	3 = RM 500 to RM 1000	7.1
	4 = RM 1001 to RM 1500	1.3
	5 = RM 1501 to RM 2000	5.2
	6 = > RM 2000	1.9
Operation cost	1 = RM 0	22.7

	2 = < RM 500	68.2
	3 = RM 500 to RM 1000	4.5
	4 = RM 1001 to RM 1500	3.2
	5 = RM 1501 to RM 2000	0.6
	6 = > RM 2000	0.6
Sales revenue	1 = < RM 1000	70.5
	2 = RM 1000 to RM 2000	12.5
	3 = RM 2001 to RM 3000	5.4
	4 = RM 3001 to RM 4000	4.5
	5 = RM 4001 to RM 5000	3.6
	6 = > RM 5000	3.6

### 4.3. Measurement Model

The measurement model and structural model were used to apply the SEM. We used a two-step strategy, as suggested by Anderson and Gerbing (1988), to test the model. Following the directions of Hair et al. (2019) and Ramayah et al. (2018), we examined the measurement model to examine the validity and reliability of the instruments employed, and then we ran the structural model to test the hypothesis developed.

We evaluated the loadings, average variance extracted (AVE), and composite reliability (CR) for the measurement model. Loadings should be 0.5, AVE should be 0.5, and CR should be 0.7. As shown in Table 4, the AVEs were all higher than 0.5 and the CRs were all higher than 0.7. The loadings were also acceptable with only one or two loadings less than 0.708 (Hair et al., 2019). Since we had 6 constructs which were second order namely 1. Perceived Behavioural Control; 2. Usefulness; 3. Behavioural Intentions; 4. Subjective Norms; 5. Awareness; 6. Attitude. We also assessed the validity and reliability of the second order constructs as shown in Table 4. The second order measurement was also valid and reliable.

**Table 4.** Composite reliability and convergent validity of constructs and factor loadings of indicators

Indicator	Factor Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
PBC1	0.897	0.704	0.87	0.771
PBC2	0.859			
USE1	0.848	0.839	0.892	0.675
USE2	0.774			
USE3	0.853			
USE4	0.808			
BI1	0.845	0.827	0.896	0.742
BI2	0.867			
BI3	0.872			
SN1	0.924	0.834	0.923	0.857
SN2	0.928			
AWN1	0.816	0.929	0.941	0.642
AWN2	0.778			
AWN3	0.867			
AWN4	0.817			



AWN5	0.893			
AWN6	0.82			
AWN7	0.759			
AWN8	0.787			
AWN9	0.649			
ATT1	0.723			
ATT2	0.852	0.684	0.825	0.612
ATT3	0.767			

\*Note: PBC- Perceived Behavioural Control; USE-Usefulness; BI-Behavioural Intentions; SN-Subjective Norms; AWN-Awareness; ATT-Attitude.

Then in step 2, we assessed the discriminant validity using the HTMT criterion suggested by Henseler et al. (2015) and updated by Franke and Sarstedt (2019). The HTMT values should be  $\leq 0.85$  the stricter criterion and the mode lenient criterion should be  $\leq 0.90$ . As shown in Table 5, the values of HTMT were all lower than the stricter criterion of  $\leq 0.85$  as such we can conclude that the respondents understood that the 6 constructs are distinct. Taken together both these validity test show that the measurement items are both valid and reliable.

**Table 5.** Results of HTMT

	Ease of use	Awareness	Perceived behavioural control	Intentions	Subjective Norms	Attitude
Ease of use						
Awareness	0.622					
Perceived behavioural control	0.617	0.621				
Intentions	0.67	0.771	0.587			
Subjective Norms	0.592	0.447	0.45	0.485		
Attitude	0.492	0.585	0.661	0.486	0.56	

#### 4.4. Structural Model

As suggested by Hair et al. (2017) and Cain et al. (2017), we assessed the multivariate skewness and kurtosis. The results showed that the data we collected were not multivariate normal, Mardia's multivariate skewness ( $\beta = 5.115, p < 0.01$ ) and Mardia's multivariate kurtosis ( $\beta = 62.566, p < 0.01$ ), thus following the suggestions of Hair et al. (2019), we reported the path coefficients, the standard errors, *t*-values and *p*-values for the structural model using a 5,000-sample re-sample bootstrapping procedure (Ramayah et al., 2018). Also, based on the criticism of Hahn and Ang (2017) that *p*-values are not good criterion for testing the significance of hypothesis and suggested to use a combination of criteria such as *p*-values, confidence intervals and effect sizes. Table 6 shows the summary of the criteria we had used to test the hypotheses developed.

According to the testing of hypotheses (above), the awareness, passed the test and significantly affected CG leaders' behavioural intentions to continue managing CG. The  $R^2$  was 0.537 ( $Q^2 = 0.353$ ) which shows that all the predictors (awareness) explained 53.7% of the variance in CG leaders' behavioural intentions. The influence coefficient of awareness was 0.513 which is large and its *p*-value

reached a significant level (<0.001) indicating that awareness has a positive impact on CG leaders' behavioural intentions to continue CG.

**Table 6.** The evaluation results of the SEM model

	STD Beta	STD Error	t-value	p-value	BCI LL	BCI UL
Usefulness -> Intentions	0.215	0.167	1.287	0.099	-0.067	0.471
Awareness-> Intentions***	0.513	0.138	3.734	0.000	0.29	0.738
PBC -> Intentions	0.085	0.071	1.193	0.117	-0.028	0.202
Subjective norms -> Intentions	0.063	0.075	0.845	0.199	-0.066	0.178
Attitude -> Intentions	-0.01	0.071	0.142	0.444	-0.132	0.101

\*\*\* significance at a <.01

Schumeli et al. presented PLS-forecast in 2019, a predictive relevance level model based on case-level predictions that uses a holdout sample-based technique to forecast an item's case level using a 10-fold procedure. According to Shmueli et al. (2019), there is strong predictive power if all item differences (PLS-LM) are lower (negative value); if all are higher, predictive relevance is not determined; if the majority is lower, there is moderate predictive power; and if the minority is lower, there is low predictive power. We can conclude that our model has a reasonable predictive power based on Table 7, which shows that most of the PLS model's errors were lower than those of the LM model.

**Table 7.** PLS-Predict

Item	PLS	LM	PLS-LM	Q <sup>2</sup> _predict
	RMSE	RMSE		
BI1	0.556	0.645	-0.089	0.249
BI2	0.479	0.474	0.005	0.395
BI3	0.499	0.483	0.016	0.302

#### 4.5. Social and Environmental Awareness among CG Leaders

CGs support the growth of knowledge and expertise. It has been discovered through learning various horticultural techniques and procedures, respecting nature and the environment and learning about sustainability and sustainable practices. Furthermore, CG has been seen as improving the education and skills of the community (Abdullah Ayeop et al., 2018). Therefore, it can be proven that CGs contribute to a positive impact on the development of education and skills by educating and enhancing the awareness on sustainability for the leaders.

In addition, findings for environmental awareness influence on CGs leaders' intention to sustain are congruent with other studies. Generally, raising farmers' environmental and ecological awareness is crucial to minimising the drawbacks of agricultural production (Sulewski & Gołaś, 2019). Nguyen and Drakou (2021) strongly proposed raising environmental awareness to promote sustainable agricultural methods while fostering local farmers' social networks and their confidence in scientific information. This has also been explored in recent studies by del Brío González et al. (2022). The results show that environmental awareness significantly and favourably influences intentions among students to become entrepreneurs.

Furthermore, due to interaction effects, farmers' environmental awareness is evolving, which impacts their long-term decisions (sustainability) regarding agricultural activities (Marvuglia et al., 2022). On the other hand, Tama et al. (2021) explore other socio-economic and psychological factors that influence intention. Knowledge and climate threat also shape the intention among farmers. Therefore, to make a constructive contribution to urban farming sustainability, the future urban farming agenda needs to focus on environmental awareness, which leads to positive intention among CG leaders to sustain in UF.

#### **4.6. Insignificant Effect on the CG's Leader Intentions to Continue CG**

This study hypothesized that the usefulness of CG experience significance contributions on CG leaders' intention to continue CG. However, the results did not support the hypothesis, indicating that the CG leaders' intentions not strengthened by the usefulness of CG. Interestingly, it found that attitude, subjective norms and perceived behavioral control which are basic dimensions of TPB were also not significantly influences the CG leaders' intentions to continue CG.

### **5. Conclusion**

Based on the theory of planned behaviour, we developed a reliable scale, and investigated CG leaders from 154 community gardens in Malaysia. We used a structural equation model to test the hypotheses. The results show that the main factor which affects CG leaders' behavioural intentions is awareness. However, attitude, perceived behavioural control, subjective norms and usefulness of CG have no significant impact on CG leaders' behavioural intentions to continue the CG in the future. Therefore, this study concluded that the basic dimensions of TPB were not significantly influence CG leaders' intentions to continue CG in the future. However, the inclusion of the awareness and usefulness variables on TPB led to an increase in the explained variances of CG leaders' behavioral intention.

Since awareness were important for CG leaders who focused to continue gardening, the responsible agencies should pay more attention on the selection of the new CG leaders who are more aware on the benefit of CG. Future studies could also include the awareness of the community on the establishment CG in their community as it is necessary to develop evidence-based theoretical models of changes in CG behavior among community.

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