

The Significant Factors Influencing Landscape Satisfaction among Residents Towards Home Garden Landscape in Puchong, Selangor

Siti Nor Nadrah Muhamad^{1*}, Nur Illani Abd Razak², Nur Afiqah Norman³, Nur Syuhada Muhammad Pazil⁴, Wan Nurshazelin Wan Shahidan⁵, Nor Azriani Mohamad Nor⁶

^{1,5,6} Faculty of Computer & Mathematical Sciences, Universiti Teknologi MARA Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia

^{2,3} Faculty of Agrotechnology and Plantation, Universiti Teknologi MARA Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia

⁴ Faculty of Computer & Mathematical Sciences, Universiti Teknologi MARA Melaka Branch, Jasin Campus, 77300 Merlimau, Melaka, Malaysia

Corresponding author: * nadrahmuhamad@uitm.edu.my

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HIGHLIGHTS

- The descriptive statistical analysis for frequency amount of money spends for home garden landscape among residents.
- Regression analysis was employed between environmental awareness, plant diversity, garden inconvenience, and satisfaction with the home garden landscape.
- Positive relationship between environmental awareness and plant diversity towards satisfaction with the home garden landscape using Pearson's Correlation Analysis.

ABSTRACT

Landscape satisfaction towards home garden landscape is vital to preserving home garden ownership. This study was conducted to determine the factors influencing landscape satisfaction towards home garden landscape as there is an insufficient number of studies regarding the subject. This study also focused on residents who own a home garden and mainly live in a residential area in Puchong, Selangor, as the respondents. Quantitative data through a survey questionnaire was collected among them. The Snowball sampling technique was used as the sampling technique. SPSS software was deployed to conduct frequency analysis, reliability analysis, correlation analysis, and regression analysis for the data analysis. The research study found that plant diversity was most significant to landscape satisfaction since the p-value of plant diversity was 0.000 and followed by the environmental awareness factor with a p-value of 0.011. It can be concluded that plant diversity and environmental awareness were influential variables in the landscape satisfaction toward the home garden landscape. The independent variable could be varied to explore other factors influencing the landscape satisfaction towards home garden landscape in Puchong, Selangor, for future research.

Keywords: significant; regression; p-value; home garden landscape; environmental awareness

INTRODUCTION

The world population is probably to reach over 9 billion in 2050 (United Nations, 2017). Population of Puchong, Selangor are around 192, 389 and was classified as an urban area because it had a population of



10,000 with at least 60% of the population were involved in non-agricultural activities (Department of Statistics Malaysia, 2020). As such, home garden was suggested as one of the strategies to encounter problems related to food security and nutrition which is increasing food shortages for a constantly growing world population (Palar et. al., 2019). Home gardens are grown usually for the private used and easily found whether in rural or urban area nowadays as it has a multifunctional role and provides numerous benefits to the owner (Ortiz-Sánchez et. al., 2015). Thus, residents in Puchong, Selangor usually tends to own a home garden landscape for their private used and benefits.

Satisfaction consists of multiple meanings and it is varied to the application in disciplines such as in economics, psychology and among others. According to (Sirgy, 2012), satisfaction is defined as expectations, cherished values and beliefs among others. Satisfaction can also be defined as either an emotional or cognitive experience, and its assessment is focused on what was intended to be obtained (Paul & Folorunso, 2015). There are many factors that can influence satisfaction of an individual. For example, research done by (Jo, 2018), found that efficiency and responsiveness were the factors that influence customers' satisfaction among the undergraduate students in a Nigerian University. Hence, landscape satisfaction be described as an affection or an emotional reaction towards a landscape. In doing so, this study is sought to address the gap in the literature regarding the present knowledge of landscape satisfaction which influenced by the selected factors towards home garden landscape.

There are many different types of gardens in landscape and one of them is home garden landscape. In Puchong, home gardens are commonly used at the housing area for a different purpose such as household's consumption, plants cultivation and for increasing aesthetic value of the house. Landscape is an important component of the environment especially in this urbanization and modern time. According to (Kannan, 2019), the Prime Minister of Malaysia, Tun Dr Mahathir Mohamad urged Malaysian to keep their surroundings clean and beautiful, and said if landscaping becomes a Malaysian culture, Malaysia would change into a beautiful garden country during the launched of 2019 National Landscape Day. Topography, vegetation and associated plants and soil, water bodies and their spatial configuration are included in landscape and it is one of the furthestmost visual needs of individuals (Zheng, Zhang, & Chen, 2011). In addition, they also added that interactions between human and nature assist human beings to have a distinct preference for the surrounding landscape and environment as a pleasant landscape can increase people's mental and physical wellbeing.

Landscape design is the practice of designing property for its full use and enjoyment. Landscape elements which are hardscape and softscape perform an important role in order to make the environment joyful and appealing. Presence of plants, also known as soft landscaping, enable relaxing mind from the hardscape such as concrete, brick or stone and it is also providing chances to establish an outdoor room which offer an interactive area (Abdelrahman, Al-Hagla, & Saadallah, 2018).

According to (Shahli et al., 2014), the role of hardscape and softscape, particularly in Malaysia's housing area, gives an affectionate value and provide to the development of images and contemporary landscape character. Besides, hardscape often plays a role in setting the landscape as appealing components that stabilize the natural environment. In particular, people tended to be more satisfied with a good home garden landscape that consists of more native plants as it provides relaxation to the viewers.

Home gardens are practised worldwide, especially in developing countries. There is the vast attention to the home garden as it is an approach to enhancing domestic food safety. The home garden provides various benefits, such as reducing stress and boredom (Adekunle et.al, 2013), reducing anxiety, increasing self-esteem and improving healthy eating behaviour (Raymond et.al 2019). It also plays a vital role in urban and suburban areas (Eigenbrod, C. & Gruda, N., 2015). Besides that, gardening also provides an opportunity to



improve physical activity and exercise for older adults as they actively engage in preserving their home gardens (Scott et.al, 2015). The author also stated that regular, moderate to heavy intensity of gardening activity caused a significant reduction in morbidity risk and a reduction in mortality rates among older adults with cardiovascular disease. However, none of these studies mentioned landscape satisfaction toward the home garden landscape.

The previous studies regarding the home landscape highlight the need for further research and empirical data regarding home gardens (Galhena et.al, 2013) . The use-value of a plant and the time spent on maintenance of a home garden are determined by the satisfaction of individuals, particularly about the direct use and marketing of goods by households (F. J. Blancas et.al, 2016). Satisfaction is beneficial in understanding the relationship between the home garden and its owner (J. Cruz-Cárdenas & N. H. Oleas, 2018)

Hence, to address this gap, this research was aimed to study the factors influencing landscape satisfaction towards home garden landscapes in Puchong, Selangor. This study is vital to know the factors responsible for creating satisfaction among the residents towards their home garden to preserve the home garden ownership among the residents in Puchong, Selangor. Three factors in this study are environmental awareness, plant diversity and garden inconvenience. In addition, (J. Cruz-Cárdenas & N. H. Oleas, 2018) studied that environmental awareness of an individual is considered in predicting the satisfaction of gardens as the individual tends to own a home garden if he is aware of the environment.

A study by (Haws et.al, 2014) concluded that environmental awareness incorporates principles of environmental protection in behaviour. People with higher environmental awareness are more in touch with nature (Kiesling, F., & Manning, C.,2010). Hence, people with higher environmental awareness are expected to utilize more from their gardens and often interact with the garden for an extended time (Lin et.al, 2016).

Plant diversity is also known as plant species richness. The study from (J. Cruz-Cárdenas & N. H. Oleas, 2018) stated that individual satisfaction increases as plant diversity increases. Moreover, (Lindemann-Matthies, P., & Matthies, D.,2018) studied the influence of plant species richness on stress recovery in humans. Their studies show that plant species richness can positively influence recovery from stress and provide relaxation. There is also a comparative study about the presence of indoor plants that shortened postoperative recovery periods. It could be observed that the patients were assigned to rooms with plants or flowers with shorter hospitalizations, fewer intakes of analgesics, and more positive feelings and higher satisfaction about their rooms compared with patients of a control group with identical rooms and no plants at all. Based on the previously mentioned facts, it is shown that higher plant diversity can increase the patient's satisfaction and aid in stress recovery.

Garden inconvenience is also known as garden difficulties. There are several studies regarding difficulties and satisfaction. For instance, (Simon et. al, 2014) identified no direct relationship between the difficulties of integration and the constructs of innovation and customer satisfaction. Besides, (Kouser et. al,2012) also studied factors influencing customer satisfaction and switching behaviour in cellular services in Pakistan. They used customer switching behaviour, core service failures, cost and inconvenience as independent variables. The study found a relationship between customer switching behaviour, cost, and core service failure. Meanwhile, there is no relationship for inconvenience shown by the data. This previous study shows that there is no relationship between satisfaction and inconvenience. Hence, it is essential to observe the effect of garden inconvenience on landscape satisfaction towards the home garden landscape.



METHODOLOGY

This study was done among 132 residents that own a home garden in Puchong. According to (Halim & Ishak, 2014), it was stated that a 30 to 500 sample size is appropriate for a study. The Snowball sampling technique was used to select 132 samples of residents. The Snowball sampling technique was done by selecting an initial group of respondents at random. After being interviewed, this respondent was asked to identify others who belong to the target population of interest. This method was continued processing until 132 numbers of respondents were identified. The data collection method used in this study is a direct questionnaire. This questionnaire was constructed into five sections which are stated in table 1 below:

Table 1: Instruments of sections in the questionnaire

Section	Title	Perspective Format
A	Demographics Section	Multiple Choice Answer
B	Environmental Awareness	7 Point Likert Scale
C	Plant Diversity	7 Point Likert Scale
D	Garden Inconvenience	7 Point Likert Scale
E	Satisfaction Towards Home Garden Landscape	7 Point Likert Scale

SPSS software was used to conduct frequency analysis, reliability analysis, correlation analysis and regression analysis.

FINDINGS AND DISCUSSIONS

Frequency Analysis

Table 2 summarizes the demographic of residents in Puchong, Selangor. It could be observed that 68 (51.5%) of the respondents were female, while the rest were male, accounting for approximately 64 (48.5%) respondents, respectively. The highest age group of the respondent was 41 to 50 years old, which was represented by 50 respondents (37.9%), followed by 31 to 40 years old, which accounted for about 38 respondents (28.8%). The number of respondents that was the third large came from the age group between 21 to 30 years old. The number of respondents from the age group 21 to 30 was 23 (17.4%), and the fourth-highest age group was between 51 to 60 years old, with 13 respondents (9.8%). The lowest age group was above 60 years old, with only eight respondents (6.1%).

Apart from that, the number of married respondents was 100 (75.7%). 27 (20.5%) of the respondents were single, while the rest were others, accounting for five (3.8%), respectively. Furthermore, the highest ethnicity group of the respondent was Malay which was represented by 122 respondents (92.4%), followed by Chinese, which made up about five respondents (3.8%). The number of respondents from the ethnicity group others were three respondents (2.3%), while the rest were Indian two respondents (1.5%) respectively.

Moreover, the highest religion group of the respondent was Islam which was represented by 122 respondents (92.4%), followed by Buddha, which made of about four respondents (3.0%). The number of respondents that was the third large came from the religion group Christian. The number of respondents from the religion group Christian was three respondents (2.3%), while the fourth highest religion group was Hindu which was two respondents (1.5%). The lowest religion group was others, accounting for only one respondent (0.8%).



In terms of education, the highest education background of the respondent was from Bachelor's Degree, which is represented by 43.9% (58 respondents). It is followed by the respondents who obtained the Diploma, with 21.2% (28 respondents). The third highest was among the respondents with their highest education background was from the Malaysia Examination Certificate (SPM) at 17.4% or 23 respondents. It is followed by the respondents who obtained a Master's Degree which was 8.3% (11 respondents). The number of respondents who obtained Malaysia Higher Examination Certificate (STPM), Doctor of Philosophy (PhD) and others were 3.0% (four respondents).

In addition, the highest monthly income of the respondents' group was between RM 3000 to 4499 and RM 1500 to 2999, which both were about 39 respondents (29.5%). Then, it is followed by respondents who had a monthly income above RM 4500 by 36 respondents (27.3%). The lowest monthly income of the respondents' group was RM 0-1499 which was about 18 respondents (13.6%).

Lastly, the respondents' group's highest amount of money spent on the home garden landscape was between RM 0 to 499, which was about 126 respondents (95.5%). It is followed by the respondents' group who spent RM 500 to 999 for the home garden, which was about four respondents (3.0%). The respondents' group's lowest amount of money spent on the home garden landscape was RM 1000 to 1499, with only two respondents (1.5%). No respondent spent on their home garden landscape more than RM 1500.

Table 2: Demographic profile of respondents

Demographic	Frequency	Percentage
Gender		
Male	64	48.5
Female	68	51.5
Total	132	100.0
Age (years)		
21-30	23	17.4
31-40	38	28.8
41-50	50	37.9
51-60	13	9.8
>60	8	6.1
Total	132	100.0
Marital status		
Single	27	20.5
Married	100	75.8
Others	5	3.8
Total	132	100.0
Ethnicity		
Malay	122	92.4
Chinese	5	3.8
Indian	2	1.5
Others	3	2.3
Total	132	100.0
Religion		
Islam	122	92.4
Buddha	4	3.0
Hindu	2	1.5



Christian	3	2.3
Others	1	0.8
Total	132	100.0
Education Level		
Malaysia Examination Certificate (SPM)	23	17.4
Malaysia Higher Examination Certificate (STPM)	4	3.0
Diploma	28	21.2
Bachelor's Degree	58	43.9
Master's Degree	11	8.3
Doctor of Philosophy (PhD)	4	3.0
Others	4	3.0
Total	132	100.0
Monthly Income (RM)		
0-1499	18	13.6
1500-2999	39	29.5
3000-4499	39	29.5
>4500	36	27.3
Total	132	100.0
Amount of Money Spend for Home Garden Landscape (RM)		
0-499	4	3.0
500-999	2	1.5
1000-1499	132	100.0
Total		

Reliability Analysis

Reliability measures the internal consistency of a set of scale items. It raises the question of whether each scale is measuring a single idea. The Cronbach's Alpha was used to measure scale reliability.

Table 3: Reliability analysis

Variable	No. of Items	Cronbach's Alpha	Strength of Association
Satisfaction towards home garden landscape (DV)	7	0.935	Good
Environmental awareness	7	0.790	Acceptable
Plant diversity	7	0.818	Good
Garden inconvenience	7	0.852	Good

Cronbach's Alpha can take values between 0 to 1. The reliability coefficient shows how positively well the items are in a set correlated to another. The analysis was done using Cronbach's Alpha to ensure the reliability of the measurement, which will show the outcome without bias and confirm the consistency of the measurement across the time and many items in the study by (Sekaran U, 2013). In using the analysis, the closer the reliability coefficient to 1, the more reliable the scale of the variable. If the reliability coefficient value is less than 0.60, it is considered poor. Meanwhile, if the value is in the range of 0.70, it is acceptable, and those values that are over 0.80 are considered to be good. From Table 3, it can be concluded that the value obtained in this study was good and acceptable. The Cronbach's Alpha for satisfaction towards home garden landscape was 0.935, which was good for the study. The value for



environmental awareness was 0.790 in value, which was acceptable. The other variable was plant diversity and garden inconvenience at 0.818 and 0.852, respectively, which was good for the study.

Pearson's Correlation Analysis

Pearson's correlation analysis is used to find a correlation between at least two continuous variables. Using the rule of thumb, the closer the correlation to one means a solid relationship between variables.

Table 4: Pearson's Correlations

	Satisfactio n	Environmental Awareness	Plant Diversity	Garden Inconvenience
Satisfaction	1	.295**	.540**	-.081
Environmental Awareness	.295**	1	.218*	.044
Plant Diversity	.540**	.218*	1	.029
Garden Inconvenience	-.081	.044	.029	1

* Correlation is significant at the 0.05 level

** Correlation is significant at the 0.01 level

The intercorrelation among the study variables was three independent variables (Environmental Awareness, Plant Diversity and Garden Inconvenience) and a dependent variable (Satisfaction) are shown in Table 4. The aim is to find the strength of the relationship, whether it is positive or negative. The table shows that environmental awareness and plant diversity variables were significant at the 0.01 level with the dependent variable, which is satisfaction. Meanwhile, it shows that garden inconvenience was not significant at the 0.01 level with the dependent variable (satisfaction). Firstly, the R-value for correlation between environmental awareness and landscape satisfaction towards home garden landscape was 0.295 or 29%. According to the rule of thumb, it represents a low relationship ($r = 0.295$, $p < 0.01$). Next, the R-value for correlation between plant diversity and landscape satisfaction towards home garden landscape was 0.540 or 54%. The relationship could be considered strong and significantly correlated to landscape satisfaction towards the home garden landscape. Lastly, the correlation between garden inconvenience and landscape satisfaction towards the home garden was shown that the R-value was -0.081. It indicates a negative relationship between garden inconvenience and landscape satisfaction towards home garden landscape as -1 indicates a perfect negative relationship ($r = -0.081$, $p > 0.01$).

Regression Analysis

Table 5: Regression Analysis

Dependent Variable Landscape Satisfaction Towards Home Garden Landscape			
Independent Variable	Coefficien t	t	Significant Value
Environmental Awareness	0.190	2.578	0.011
Plant Diversity	0.502	6.796	0.000
Garden Inconvenience	-0.104	- 1.443	0.152



R ²	0.336
Adjusted R ²	0.320
F Value	21.565

Table 5 shows the result of regression between environmental awareness, plant diversity, garden inconvenience, and satisfaction with the home garden landscape. Landscape satisfaction towards home garden landscape was the dependent variable, while the independent variables were environmental awareness, plant diversity and garden inconvenience. The coefficient value shows the strength of the relationship between the dependent and independent variables.

The p-value of environmental awareness was 0.01, which is less than 0.05. The value revealed a statistically significant relationship between environmental awareness and landscape satisfaction toward the home garden landscape. Beta 0.190 means a positive relationship, indicated for each 1 unit increase in the independent variable; the dependent variable will increase by 0.190 units. This finding was supported by other research by (B. Supriadi et al., 2017) which found that environmental awareness influences satisfaction. The research concluded that customers' satisfaction was significantly and positively affected by green products. The research found that the higher the usage of Green products in hotels, the level of customer satisfaction will increase. The main reasons are that the green product represents the ideals of the customer experience while staying at the hotel, involves the sensory passion of the customer's enjoyment of environmental awareness. From the research, the hotel's availability of green open spaces with various shady and attractive plants will make the hotel air fresher and cleaner, which influences customers' satisfaction.

For the plant diversity, the p-value was 0.000, which is less than 0.05. The value indicated a statistically significant relationship between plant diversity and landscape satisfaction toward home garden landscape in Puchong, Selangor. The value $\beta = 0.502$ indicated for each 1 unit increase in the independent variable, the dependent variable will increase by 0.502 units. Research by (Southon et al., 2018) supports this finding. The research supported this finding by concluding that the perceived species richness was related to a better connection to nature and enhanced site satisfaction. It was also stated that all perceived species richness metrics such as plants, butterflies and birds were positively connected with site satisfaction.

Garden inconvenience indicated a statistically insignificant relationship between garden inconvenience and landscape satisfaction towards home garden landscape since the p-value was 0.152, more than 0.05. The value of Beta -0.104 means negative relationship, indicating that for each 1 unit increase in the independent variable, the dependent variable will decrease by 0.104 units. This finding was also supported by (J. Cruz-Cárdenas & N. H. Oleas, 2018) that concluded that satisfaction was negatively related to garden inconvenience. The research was conducted to determine the satisfaction of individuals with their gardens in Quito, Ecuador. This research shows that garden inconvenience does not influence landscape satisfaction among the residents regarding the home garden landscape. Hence, hypothesis three was rejected.

CONCLUSION AND RECOMMENDATIONS

The study was conducted to study the relationship between environmental awareness, plant diversity and garden inconvenience with the landscape satisfaction towards home garden landscape in Puchong, Selangor. The study's objectives were to determine the significant relationship between environmental awareness, plant diversity and garden inconvenience on landscape satisfaction towards home garden landscape in Puchong, Selangor.



The study's independent variables were environmental awareness, plant diversity, and garden inconvenience. On the other hand, the dependent variable of the current work was landscape satisfaction toward home garden landscape in Puchong, Selangor. The literature review was included to formulate the hypotheses, theoretical research and methodology. It also supports the relationship between the independent and dependent variables used in this study.

The focus of the study is the residents in Puchong, Selangor, who owns a home garden landscape. The snowball samplings technique was done to collect the data from the respondent in the study. There were 132 respondents in this study, and the medium of distributing the questionnaires was done using a google form. A few analyses were used in the study, such as the reliability test, descriptive analysis, regression analysis, and correlation analysis.

Based on the total respondent who responded, the total male respondent is 48.5%, while the female respondent is 51.5%. The number of respondents with a Bachelor's Degree as their highest educational background was 43.9%. The highest monthly income group is between RM 3000 to RM4499 and RM1500 to RM2999 as most respondents chose this to represent the monthly income. The highest amount of money spent on a home garden landscape is between RM 0 to RM 499, as most respondents chose this to represent the amount of money spent on a home garden landscape.

The reliability analysis was done to examine the consistency of the data gathered using Cronbach's Alpha. According to (Sekaran U, 2003), if the reliability is less than 0.6, it is considered poor; if the range is between 0.7 to 0.8, it is acceptable, and if it is more than 0.8, it is good. The satisfaction towards the home garden landscape, plant diversity and garden inconvenience obtained good strength of association. The environmental awareness of the residents is the acceptable strength of association.

Pearson correlation was used to show the relationship among the variables. The results show that two independent variables, environmental awareness and plant diversity, are significantly positively correlated with the dependent variable (landscape satisfaction toward home garden landscape). In contrast, the independent variable (garden inconvenience) is an insignificant factor influencing the landscape satisfaction toward the home garden landscape. The regression analysis also showed that the plant diversity and environmental awareness were the most influential variables in the landscape satisfaction toward the home garden landscape.

In conclusion, the research findings can help overcome the problems such as poor satisfaction and lack of home garden ownership among the residents in Puchong, Selangor. Those are the leading factors why the researcher wanted to identify the variables that caused and influenced the satisfaction with the home garden landscape. By determining the influenced factors, the organization that provides home garden landscape services and consultant can improve their services to meet the landscape satisfaction among residents. The study concluded that out of three independent variables, environmental awareness, plant diversity, and garden inconvenience, only two independent variables, environmental awareness, and plant diversity, have a significant relationship with landscape satisfaction towards the home garden landscape.

For future research, the independent variable could be varied to explore other factors influencing the landscape satisfaction towards home garden landscape in Puchong, Selangor. The external factor that could be explored is relative garden size. The relative garden size factor refers to the size of the home garden landscape that owns by the residents. Other than that, the factor that can be explored is neighborhood



likability. The neighborhood likability factor refers to interrelationships between a resident with his neighbors. It is an estimation of the physical aspects of a neighborhood.

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CONFLICT OF INTEREST DISCLOSURE

The authors have no conflicts of interest to declare.

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