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# Measuring the likeliness among young adults to green their homes

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**Abstract.** It requires a team effort to reduce our overall impact on the planet earth. If each of us would do our parts, we could preserve the environment well and give our future generations a clean and comfortable place to live. Sustainability starts at home. Ways to green our homes have been suggested by people from all walks of life and are easily available as well. However, very little attention has been paid to the extent to which the people would take the initiative to green their homes. With the intention to explore the topic of home greening, this research aims to measure the likeliness among young adults to green their homes. Young adults are targeted because they are future leaders and their actions today will have an effect on the quality of the environment for the next fifty to one hundred years. The data needed are collected using a self-administered structured questionnaire. Eighty-eight young adults living in the Klang Valley of Malaysia have responded to the survey form but only eighty-five sets of it are analysable after detecting outliers. Mean ranking analysis is performed to rank the home greening efforts made by the respondents. The results show that the respondents have highest tendency to use energy-efficient appliances and water-saving devices, fixtures, and technologies for their homes to save the environment. On the contrary, the respondents have lowest tendency to find creative ways to recycle household goods at their homes to save the environment. In general, there is no significant difference in the home greening tendency levels of males and females.

## 1. Introduction and methods

Every one of us shares the responsibility to preserve and protect the environment as resources from the environment are belonged to the society. We owe our next generations a clean and green environment so they would have a cleaner and brighter future. Sustainability begins at home [1,2]. Guides to green living including green home solutions are readily available and they are often very informative [3,4,5]. Nevertheless, very few researches have been done to investigate the extent to which the people would green their homes. In order to explore the topic of home greening, this research aims to measure the likeliness among young adults to green their homes. Young adults are studied since they will be future policy makers and that whatever they do today will have an impact on the planet and ecosystem for the next fifty to one hundred years.

A questionnaire survey has been conducted in one of the cities in Klang Valley, Malaysia to collect the quantitative data needed in achieving the research objective. Eighty-eight young adults who know about green living and green buildings answer the self-administered structured questionnaire but only eighty-five sets of the survey form are analysable after detecting outliers [6]. A mean ranking analysis, bivariate analysis on means and gender, and the Mann-Whitney U test are done to generate the results.



## 2. Results and discussion

There are 45 males and 40 females out of the total of 85 respondents. This means that 52.94% of the total number of respondents are male and 47.06% of the total number of respondents are female. All of the responses from these 85 respondents have been analysed statistically. Table 1 shows the ranking of overall respondents' levels of tendency in home greening efforts in Klang Valley, Malaysia. 'Use energy-efficient appliances and water-saving devices, fixtures, and technologies for your home to save the environment' that achieves a mean of 4.08 is ranked first. 'Switch to compact fluorescent light bulbs for your home to reduce electricity use to save the environment' that achieves a mean of 4.01 is ranked second. 'Reduce energy use at your home to save the environment' that achieves a mean of 3.82 is ranked third. 'Reduce water use at your home to save the environment' that achieves a mean of 3.78 is ranked fourth. 'Install motion detectors at your home to switch off lights if there is no one in the room to reduce electricity use to save the environment' that achieves a mean of 3.47 is ranked fifth. 'Select products made from recycled materials or designed to be safer for the environment for your home to save the environment' that achieves a mean of 3.38 is ranked sixth. 'Use reusable products or borrow, rent, or share items used infrequently for your home to save the environment' that achieves a mean of 3.05 is ranked seventh. 'Install a photovoltaic system for your home to generate electricity for household use to save the environment' that achieves a mean of 3.04 is ranked eighth. 'Install a rainwater harvesting system for your home to collect rainwater for household use to save the environment' that achieves a mean of 3.01 is ranked ninth. 'Find creative ways to recycle household goods at your home to save the environment' that achieves a mean of 2.95 is ranked last.

**Table 1.** Ranking of overall respondents' levels of tendency in home greening efforts in Klang Valley, Malaysia.

| Question   | Mean | Standard Deviation | Rank |
|--|------|--------------------|------|
| Q10 – How likely is it that you would use energy-efficient appliances and water-saving devices, fixtures, and technologies for your home to save the environment?                  | 4.08 | 0.790              | 1    |
| Q09 – How likely is it that you would switch to compact fluorescent light bulbs for your home to reduce electricity use to save the environment?                                   | 4.01 | 0.779              | 2    |
| Q02 – How likely is it that you would reduce energy use at your home to save the environment?  | 3.82 | 0.804              | 3    |
| Q01 – How likely is it that you would reduce water use at your home to save the environment?   | 3.78 | 0.746              | 4    |
| Q08 – How likely is it that you would install motion detectors at your home to switch off lights if there is no one in the room to reduce electricity use to save the environment? | 3.47 | 1.385              | 5    |
| Q04 – How likely is it that you would select products made from recycled materials or designed to be safer for the environment for your home to save the environment?              | 3.38 | 0.963              | 6    |
| Q03 – How likely is it that you would use reusable products or borrow, rent, or share items used infrequently for your home to save the environment?                               | 3.05 | 0.962              | 7    |
| Q07 – How likely is it that you would install a photovoltaic system for your home to generate electricity for household use to save the environment?                               | 3.04 | 1.200              | 8    |
| Q06 – How likely is it that you would install a rainwater harvesting system for your home to collect rainwater for household use to save the environment?                          | 3.01 | 1.277              | 9    |
| Q05 – How likely is it that you would find creative ways to recycle household goods at your home to save the environment?  | 2.95 | 1.079              | 10   |

Table 2 shows the respondents' levels of tendency in home greening efforts in Klang Valley, Malaysia based on gender (male and female). The female respondents have higher tendency than the male respondents to: 'reduce water use at their homes to save the environment', 'reduce energy use at their homes to save the environment', and 'use reusable products or borrow, rent, or share items used infrequently for their homes to save the environment'. But, the male respondents have higher tendency than the female respondents to: 'select products made from recycled materials or designed to be safer for the environment for their homes to save the environment', 'find creative ways to recycle household goods at their homes to save the environment', 'install a rainwater harvesting system for their homes to collect rainwater for household use to save the environment', 'install a photovoltaic system for their homes to generate electricity for household use to save the environment', 'install motion detectors at their homes to switch off lights if there is no one in the room to reduce electricity use to save the environment', 'switch to compact fluorescent light bulbs for their homes to reduce electricity use to save the environment', and 'use energy-efficient appliances and water-saving devices, fixtures, and technologies for their homes to save the environment'. Table 3 shows the result of the Mann-Whitney U test comparing the male and female respondents' levels of tendency in home greening efforts in Klang Valley, Malaysia. The  $p$ -values for Q06 and Q07 are each  $< 0.05$ , indicating significant results. Thus, except for Q06 and Q07, the null hypothesis is accepted at a 95% confidence level and that the alternative hypothesis is rejected as the ( $p$ -values for Q01 to Q05 and Q08 to Q10 are each  $> 0.05$ ). In general, there is no significant difference in the home greening tendency levels of males and females.

**Table 2.** Respondents' levels of tendency in home greening efforts in Klang Valley, Malaysia based on gender (male and female).

| Question | Gender |                    |        |                    |       |                    |
|----------|--------|--------------------|--------|--------------------|-------|--------------------|
|          | Male   |                    | Female |                    | Total |                    |
|          | Mean   | Standard Deviation | Mean   | Standard Deviation | Mean  | Standard Deviation |
| Q01      | 3.71   | 0.727              | 3.85   | 0.770              | 3.78  | 0.746              |
| Q02      | 3.71   | 0.895              | 3.95   | 0.677              | 3.82  | 0.804              |
| Q03      | 2.93   | 1.053              | 3.18   | 0.844              | 3.05  | 0.962              |
| Q04      | 3.49   | 1.036              | 3.25   | 0.870              | 3.38  | 0.963              |
| Q05      | 2.98   | 1.158              | 2.93   | 0.997              | 2.95  | 1.079              |
| Q06      | 3.33   | 1.297              | 2.65   | 1.167              | 3.01  | 1.277              |
| Q07      | 3.36   | 1.300              | 2.68   | 0.971              | 3.04  | 1.200              |
| Q08      | 3.62   | 1.403              | 3.30   | 1.363              | 3.47  | 1.385              |
| Q09      | 4.07   | 0.837              | 3.95   | 0.714              | 4.01  | 0.779              |
| Q10      | 4.11   | 0.804              | 4.05   | 0.783              | 4.08  | 0.790              |

**Table 3.** Result of the Mann-Whitney U test comparing the male and female respondents' levels of tendency in home greening efforts in Klang Valley, Malaysia.

| Question | Mann-Whitney U | Wilcoxon W | Z      | Asymptotic Significance (2-tailed) |
|----------|----------------|------------|--------|------------------------------------|
| Q01      | 803.500        | 1838.500   | -0.939 | 0.348                              |
| Q02      | 774.500        | 1809.500   | -1.216 | 0.224                              |
| Q03      | 741.000        | 1776.000   | -1.473 | 0.141                              |
| Q04      | 779.000        | 1599.000   | -1.118 | 0.264                              |
| Q05      | 869.000        | 1689.000   | -0.284 | 0.776                              |
| Q06      | 634.500        | 1454.500   | -2.394 | 0.017 *                            |
| Q07      | 618.000        | 1438.000   | -2.555 | 0.011 *                            |
| Q08      | 768.500        | 1588.500   | -1.195 | 0.232                              |
| Q09      | 820.000        | 1640.000   | -0.759 | 0.448                              |
| Q10      | 866.000        | 1686.000   | -0.320 | 0.749                              |

Grouping variable: gender.

\* Significant as  $p$ -value  $< 0.05$ .

The result of the mean ranking analysis as shown in Table 1 reveals that the respondents are likely to green their homes by changing their lifestyles. It seems that they do not mind spending more money on energy-efficient appliances and water-saving devices, fixtures, and technologies for their homes to save the environment. It is obvious that the young adults studied are aware of the environmental issues surrounding them and committed to reducing the usages of energy and water at their homes to save the environment. Although they may be willing to spend more money on getting the stuffs that are more environmental-friendly, cost remains as a major barrier for the young adults to invest in green building designs that are clearly more expensive than adopting any other green living measures. As we already know, young adults are still students and thus do not have much buying power. Also, they will still be staying with their parents at their parents' houses or perhaps staying at some rented houses at that age so the young adults have no control on the designs of those houses. This can be the reason why 'switch to compact fluorescent light bulbs for your home to reduce electricity use to save the environment' and 'install motion detectors at your home to switch off lights if there is no one in the room to reduce electricity use to save the environment' are ranked higher than 'install a photovoltaic system for your home to generate electricity for household use to save the environment' and 'install a rainwater harvesting system for your home to collect rainwater for household use to save the environment'. The respondents may have concerns over the reliability and durability of products made from recycled materials or designed to be safer for the environment for their homes to save the environment and therefore selecting those products is not as favourable as investing in energy-efficient appliances and water-saving devices, fixtures, and technologies for their homes to save the environment. There is also proof that the young adults use reusable products or borrow, rent, or share items used infrequently for their homes to save the environment. But, it seems difficult for the young adults to find creative ways to recycle household goods at their homes to save the environment. This may be because it is not easy for them to recycle household goods at their homes to save the environment or they may not have good knowledge in this area.

The result of the bivariate analysis on means and gender as shown in Table 2 reflects that the male respondents have more interest than the female respondents in greening their homes even though the female respondents are better off at reducing the usages of water and energy at their homes to save the environment, and using reusable products or borrowing, renting, or sharing items used infrequently for their homes to save the environment seeing that the means of the male respondents for seven out of the total of ten questions, namely, Q04 to Q10 are higher than the means of the female respondents for the same questions.

Nonetheless, the result of the Mann-Whitney U test as shown in Table 3 finds that, in general, there is no significant difference in the home greening tendency levels of males and females. Only two out of the total of ten questions, namely, Q06 and Q07 are perceived differently by the males and females. This signifies that the male respondents have more interest than the female respondents to modify their homes so as to tap natural resources from the environment and exploit them as resources for household use to save the environment.

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