

A Study of Environmental Literacy Among Malaysians

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Abstract

Environmental is one of the oldest ecosystems on earth. However, due to the rapid development in the world, it has caused severe damage to the ecosystem which leads to global warming, environmental degradation, loss of natural resources, natural disaster etc. For decades, plastic bags have become synonymous to our lifestyle and culture as it helps consumers in many ways. To curtail plastic bags consumptions, the government imposed regional plastic bag levy on selected supermarkets and major retailers which yield mixed results and reactions from the public. With nationwide plastic bag banning on the horizon, it is crucial to understand public awareness towards the proposed approach, including potential alternatives for the impending ban. The issue of environment on its challenges and importance are gaining attention over the years around the world. Environmental literacy covers several issues such as climate change, biodiversity, recycling etc. Nevertheless, this study focuses on the recycling awareness and various knowledge among Malaysians such as the various signs, codes, etc. This study aims to study the literacy of Malaysians on the recycling issues and the results of this study will be able to highlight the awareness level among Malaysians and the future actions to be taken by the government to gauge this issue in Malaysia.

Keywords

Literacy, Environmental, Recycling, Plastic Bags

Received: April 7, 2021 / Accepted: May 15, 2021 / Published online: June 2, 2021

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1. Introduction

Environmental issues can be seen by long term ecological effects, some of which can demolish whole environments. The usage of plastic bags too plays a negative effect to the ecosystem. Many environmentalists have realized the severity of this issues and many awareness pertaining to the environmental issues has been made.

Plastic bags have been playing a vital role in human's daily life due to improved standard of living over the years. Human relies heavily on the usage of plastic bags and due to this heavy reliance on plastic bags, the amount of plastic produced from 2000 - 2010 exceeds the amount produced

during the entire last century [30] and an estimated of 8.3 billion metric tons of plastics had been produced as of mid-2017. As of 2015, approximately 6.3 billion metric tons of plastic waste had been generated, only about 9% of which had been recycled, 12% incinerated, and 79% accumulated in landfills or the natural environment [12].

Plastics have been the main source of ocean pollutant and an estimated 9 million tons of plastic enter our oceans each year from land-based sources; range is 4.8 to 12.7 million metric tons [16]. Once plastic enters the marine environment, it breaks into tiny fragments that are crippling marine ecosystems, disrupting the food chain and accelerating climate change [23]. There are many marine lives lost their

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lives due to plastic bags because plastic bags are problematic in the litter stream because they float easily in the air and water, traveling long distances and never fully breaking down in water. Besides that, there are marine lives see plastic bags as their food- plastic bags look like jelly fish under water). Seabirds are also at high risk of plastic consumption that the level of plastics in their stomachs is used as an indicator of ocean ecosystem health. As of 2017, 60 percent of fulmar seabirds have 0.1 grams plastic or more in their stomachs, which is six times the target threshold [24].

Due to the rising awareness of the severity of damage by plastic bags by the public, many countries have started “No Plastic Bags” campaign and many sellers are supporting it by providing paper bags or charges for plastic bags. Malaysia is echoing the call for “no plastic bags” and many states in Malaysia started to introduce the “No Plastic Bag Day” in stages, such as Negeri Sembilan Selangor, Penang, Perak etc.

Specifically, the research objectives are:

- 1) To obtain the level of literacy on environmental issues among Malaysians
- 2) To determine the factors (socio-economic demographics, attributes, and perceptions) that might affect consumer's literacy on environmental issues.

2. Literature Review

Recycling is a process where unused materials are converted or processed into a reusable material such as newspapers, water bottle or cans can be recycled and be reused again. Efforts from individual or households are required to recycle as it needs the effort, time, space etc. People are hinder from this positive effort because of the “inconvenience” in their life. Therefore, if recycling can be more convenient, less time consuming and cheaper to the people, it can increase their motivation to adopt recycling practice easier [8].

People with strong sense of concern for the environmental are more likely and keen to recycle [8]. According to Meneses *et al.* [20], household members with positive attitudes towards ecology and who are motivated to protect the environment shared a greater burden of the recycling. However, there are studies that stated differently as there is no significant different between recyclers and non-recyclers in terms of their ecological attitudes and beliefs and it does not increase the recycling activities although they are environmentally aware [27]. Previous studies has shown several plastic bag attributes that most appeal to consumers, namely environmental impact, cost/levy, material used, and time to reuse (see [11, 3, 27, 6, 1, 30, 16]). However, appropriate levels and suitable attributes can be refined and revised using focus group studies and further literature review.

Nyamwange [22] stated that recycling is positive behavior because the usage of new resources, energy and sanitary landfill can be reduced as well as reducing the air and water pollution apart. According to Conserve Energy Future [8] states that the benefits of recycling (i) Reduce the Size of Landfills (ii) Conserve Natural Resources (iii) more employment opportunities (iv) Reduce Greenhouse Gas Emissions (v) Prevents Loss of Biodiversity. According to Hansmann *et al.* [14], people choose to participate in recycling for a variety of reasons. Recycling behavior is usually associated with defining the characteristics of the “recycler” and “non-recycler” [2]. There are many studies that investigate the motivating reasons behind the people’s recycling behaviors. According to Schultz *et al.* [29], personal matters such as attitude, knowledge, demographic variables and personality variables were identified in many studies.

In order to sustain and instill the recycling habit among people, it is vital to ensure to have the knowledge of the characteristics of the participants where a proper guideline can be implemented. According to Clarke [7], environmental knowledge is important and it can be accumulated through learning. It tends to have a positive relationship between environmental knowledge and the tendency to recycle [5]. On the other hand, people who often express their social and civil duty for the environmental and value to be a “civil citizen” tend to have higher tendency to recycle habits (see [28, 15, 23]). According to News Straits Times [21], a survey was conducted in year 2012 by the Solid Waste Management & Public Cleaning Corporation’s (PPSPPA) Recycling & Public Awareness Division and it showed that a high percentage of awareness of the recycling programmes (99%) but only 68.8% would put this awareness into practice.

Conventional plastic bags are cheap and readily available. However, the disposal of plastic bags represents a massive hazard to the environment as they are non-biodegradable and easily mistaken by animals as food [32]. According to Malaysian Plastics Manufacturers Association (MPMA), the average Malaysian uses 300 plastic bags per year [4], which can translate to billions of plastic bags output for the country. Although the No Plastic Bag Day program was pioneered at Penang State back in 2009, the result and reactions from the public is mixed citing low public awareness, lack of statutory support and clear guidelines on alternative (see [1, 34, 18]).

One to note that plastic bags have been overused by consumers for their daily life and this has caused an alarm to the environmentalists for many years. Nevertheless, most consumers are not in the mind for environmental-awareness state for the past few decades. Today, the usage of plastic bags has caused many negative remarks and hence the recycling concept came about. There have been many recycling and

environmental awareness campaigns over the years. Recycling needs strong participation and contributions from the public specifically recycling domestic waste. It has been reported that over 80% of the 2400 recycling bins nationwide has been misused. Consumers are throwing things regardless of what the bins are meant to hold and whether items are recyclable or not [9]. Therefore, increasing public awareness for conserving the environment via recycling is one major step to be achieved to make recycling a lifestyle of choice among households in Malaysia. This is especially true as household participation in recycling is still very low despite the rigorous campaigns conducted by the government.

Environmental awareness which includes recycle articulate one's personal responsibility where it involves one's thoughts, feelings, and behaviours which would lead to

Section	Descriptions
A	Respondents Demographic
B	Consumer's awareness on the issue of environmental issues in Malaysia
C	Consumer's understanding on the issue of environmental issues in Malaysia
D	Consumer's behaviours on the issue of environmental issues in Malaysia

The questionnaires were written in three languages; English, Chinese and Bahasa Malaysia. This is to ensure that respondents will have better understanding on the questions with the intention to get honest and feedback from the respondents.

4. Results and Analysis

The summary of the socio-economic profile of respondents for this study is presented in Table 1. Most of the

willingness to be responsible for their actions and behaviours (see [17]; [19]; [25]).

3. Research Methodology

A total of 181 respondents were collected for this study where questionnaires were distributed. There are various questions pertaining to the recycling knowledge were asked such as types of recycling codes on plastics items, colour of recycling bins in Malaysia, different logos on non-governmental organizations (NGOs) etc. The respondents were selected randomly and the questionnaire has four sections as follows:

respondents' age is between 21-25 years old. There is rather even distribution among the gender of the respondents with 45.9% and 54.1% male and female respectively. Majority of the respondents' highest education are with bachelor degree follows with certificate/ diploma and pre-university; 57.9% and 24.85 respectively. A small number of the respondents are with postgraduate certificate and secondary school certificate with 6.75 and 10.65 respectively.



Figure 1. Environmental regulations that were known by the respondents.

Table 1. Socio-economic Profile of the Respondents.

Variable	Percentage (%)
Gender	
Male	45.9
Female	54.1
Education	
Bachelor Degree	57.9
Certificate/ Diploma/ Pre-U	24.8
Postgraduate	6.7
Secondary school or lower	10.6
Age	
<20	17.7
21-25	61.33
26-30	6.08
31-35	2.21
36-40	3.87
41-45	0.55
>46	8.29

Figure 1 shows a rather positive note that majority of the respondents were aware of the zero-plastic bag on Mondays in Penang with 40.3% follows by ban on plastic straws in Selangor eateries with 36.46%. Nevertheless, approximately 12.15% of the respondents do not know about any of the

campaign stated and this shows a rather devastating result. Government may need to find better and reachable avenues to reach the mass regarding the new environmental campaigns and regulations in Malaysia.

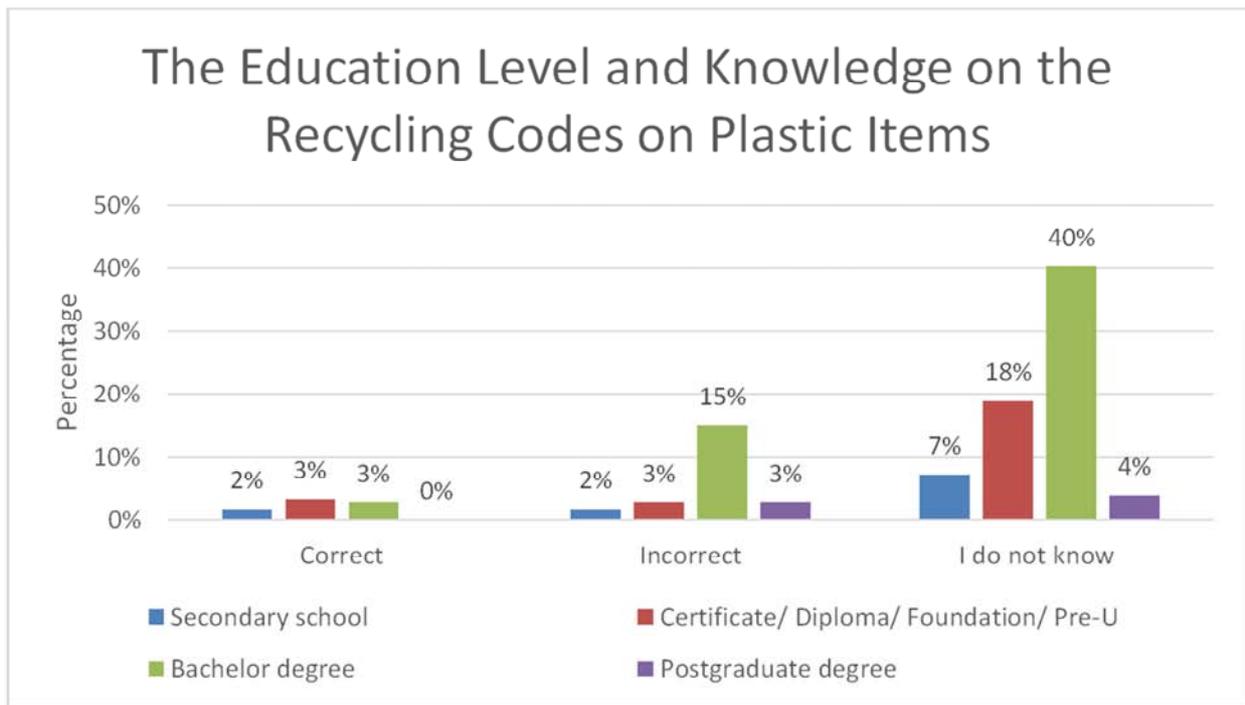


Figure 2. The Education Level and Knowledge on the Recycling Codes on Plastic Items.

Figure 2 illustrates the education level and knowledge on the recycling codes on plastic items and majority of the respondents do not know and answers incorrectly on the various recycling codes on plastic items with 92%. Only a small 8% of the respondents answer correctly only. Meanwhile, approximately 40% of them who do not know the various recycling codes on plastic items are with Bachelor Degree and Certificate/ Diploma and Pre-

University, with a percentage of 40% and 18% of the respondents respectively. Other than that, 15% of the respondents with Bachelor Degree answers incorrectly. These results show that majority of the respondents are not aware of the recycling codes on plastic bags and this is a strong indicator that the government needs to implements actions that will increase the literacy on environmental issues among Malaysians.

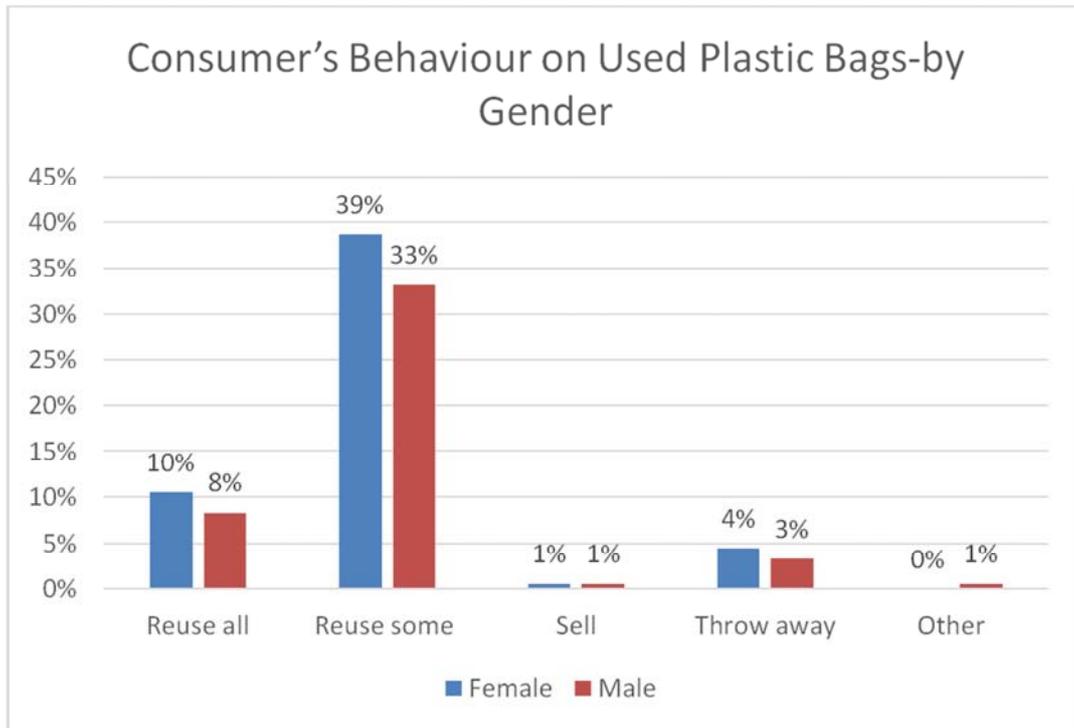


Figure 3. Consumer's Behaviour on Used Plastic Bags-by Gender.

Figure 3 illustrates the actions taken by the respondents on used plastic bags and this shows that the respondents from this study mostly reused some of the plastic bags follows by reuse all the plastic bags with a total of 72% and 18% respectively. For these two categories, female shows a

slightly higher percentage in both categories with a difference of 6% and 2% respectively. A small percentage of the respondents threw the plastic bags away and sell those plastic bags with 75 and 2% respectively.

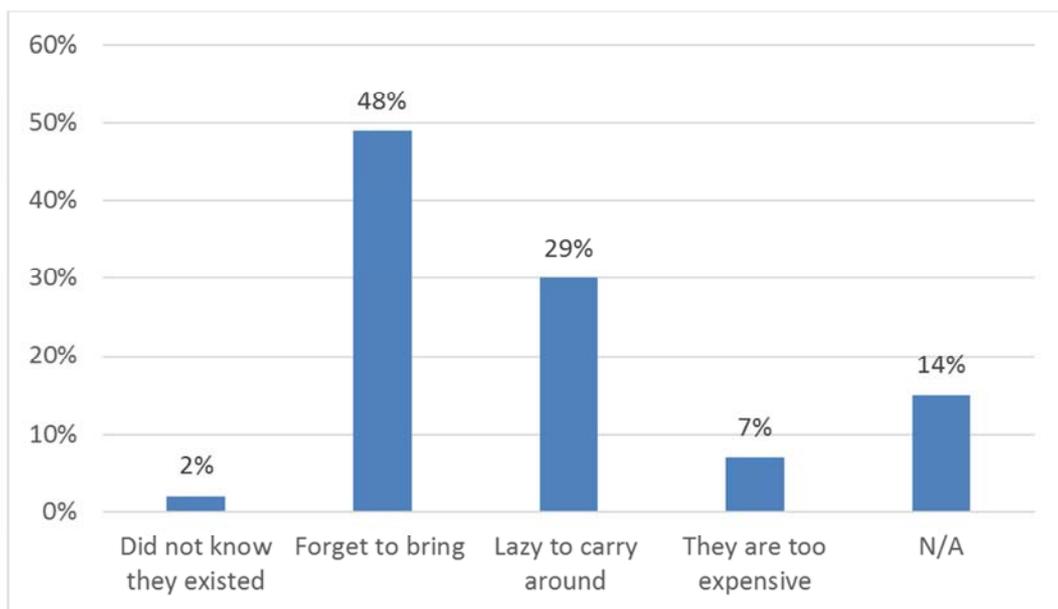


Figure 4. The reasons of not using reusable shopping bags or recyclable containers.

Figure 4 shows that majority of the respondents did not use reusable bags or recyclable containers because they tend to forget and lazy to carry around with 48% and 29% respectively. This result indicates that with the right amount

of awareness and making it a habit to carry around reusable shopping bags and recyclable containers can be instilled in the daily life of consumers.

5. Conclusion and Recommendations

The result of this study may be just a starting point in getting some information on the literacy of environmental issues. The government may focus on making environmental issues a pivotal in the legislation and ensuring the information can reach the level of mass. Other than that, making it a habit among Malaysians to carry around reusable shopping bags as well as recyclable containers may need a slightly longer time to achieve. This study shows that many reuses the plastic bags or use the recyclable shopping bags but did not make it a habit, hence they the reasons they did not use recyclable items are due to their 'forgetful' nature. This may be primarily due to the lack of habits instil in them young or lack of awareness activities and knowledge spread across the people.

Although the initiative taken by the state government in Malaysia in ensuring no plastic bags, no plastic straws but there is some backlash from the consumers that the tendency to purchase may be more than expected or anticipated initially. Other than that, Malaysians do not realise that there are other packaging products in the shopping carts that are made of plastic as well. Although it is an important step in protecting the environment and there are many more actions needed than just banning the usage of plastic bags in order to protect the earth.

Government may consider instilling the environmental issues and academic curriculum starting at the primary level, where the right habit and behaviours can be embedded in the academic syllabus to young children and they may be able to bring small messages to their parents or other at home as well. The results showed that many are not aware of the various plastic bags codes that are available in the market as well as their differences. The result from this study also shows that many are lacked of knowledge on environmental issues especially the usage of single-use of plastic bags- various types of recycling codes on plastic bags. The government can consider having more in-depth reasoning on the new regulations imposed as well as deeper information and knowledge on environmental issues to the people rather than surface knowledge 'No single-use of plastic bags. The usage of various visual aids in promoting such campaigns is encouraged to create more impact to the viewers. Genders and education background do not seem to play a role in the literacy and behaviours of environmental issues in this study as majority of the respondents who are with Bachelor Degree do not seems to have knowledge on various types of codes for recycling bags, however they do portray a positive note to accept recycling actions. Malaysians need to have a strong guidance from the government to lead them to this 'green' path and also instilling the recycling behaviours making it a habit for them.

References

- [1] Asmuni, S., Hussin, B., Khalili, J. M., & Zain, Z. M. (2015). Public Participation and Effectiveness of the No Plastic Bag Day Program in Malaysia. *Asia Pacific International Conference on Environment-Behaviour Studies 2014* (pp. 328-340). Berlin: Elsevier Ltd.
- [2] Barr, S., Gilg, A. W., and Ford, N. J. (2001). Differences between household waste reduction, reuse & recycling behaviour: a study of reported behaviours, intentions and explanatory variables. *Journal of Environmental and Waste Management*, 4 (2), 69-82.
- [3] Barnes, M., C. Chan-Halbrendt, Q. Zhang, N. Abejon, (2011). Consumer preference and willingness to pay for non-plastic food containers in Honolulu, USA. *Journal of Environmental Protection*, 2 (9): 1264-1273.
- [4] Bavani. M & Wong P. M, (2016). Billions of plastic bags still being used. *The Star Newspaper*. <https://www.thestar.com.my/metro/community/2016/08/22/billions-of-plastic-bags-still-being-used-six-years-have-gone-by-since-the-government-launched-the-n#ctqgOGflqZ6srAm3.99>. Assessed 1 August 2019.
- [5] Bratt, C. (1999). The impact of norms and assumed on recycling behaviours. *Journal of Environmental Behaviour*, 31 (5), 630-656.
- [6] Chan-Halbrendt, D. Fang, and F. Yang, (2009). Trade-offs between Shopping Bags Made of Non-degradable Plastics and Other Materials, Using Latent Class Analysis: The Case of Tianjin, China. *International Food and Agribusiness Management Review*, Vol. 12, pp. 179-198.
- [7] Clarke, M. J. (1999). Introduction to waste prevention and recycling. <http://www.geo.hunter.cuny.edu/~mclarke/Introductiontowaste preventionandrecycling.htm>. Assessed 28 July 2019
- [8] Conserve Energy Future (n.d). Are Benefits of Recycling Worth All The Effort? <https://www.conserve-energy-future.com/benefits-of-recycling.php>. Assessed 29 April 2021
- [9] Domina T, Koch K (2002). Convenience and frequency of recycling: implications for including textiles in curbside recycling programs. *Environment and Behavior*, 34: 216-38. Do Valle PO, Elizabeth.
- [10] Elizabeth, J. & K. T. Chelvi. (2003). Cover story: Recycling makes slow progress. *The Star News*, October 2003.
- [11] Fatimah, A. Z. S., Mohd Rusli, Y., and Alias, R. (2014). Consumers' Response for Price Increment of Biodegradable Shopping Bags in Selected Hypermarkets in Selangor. *Australian Journal of Basic and Applied Science* 8(18):536-544.
- [12] Geyer, R., Jambeck, J. R. & Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Science Advances*, Vol. 3, No. 7.
- [13] Gonzalez-Torre PL, Adenso-Diaz B, Ruiz-Torres A (2003). Some comparative factors regarding recycling collection systems in regions of the USA and Europe. *Journal of Environmental Management*. Vol. 69: 129-38.
- [14] Hansmann, R., Bernasconi, P., Smieszek, T., Loukopoulos, P. & Scholz, R. W. (2006). Justifications and self-organization as determinants of recycling behaviour: The case of used batteries. *Journal of Resources, Conservation & Recycling* 47, 133-159.

- [15] Hopper, J., & Nielsen, J. M. (1991). Recycling as altruistic behaviour: Normative and behavioural strategies to expand participation in a community recycling program. *Journal of Environment and Behaviour*. Vol 23 (2), 195 - 220.
- [16] Jenna R. Jambeck, Roland Geyer, Chris Wilcox, Theodore R. Siegler, Miriam Perryman, Anthony Andrady, Ramani Narayan, and Kara Lavender (2015). Plastic waste inputs from land into the ocean *Law, Science*: 347 (6223), 768-771.
- [17] Joshi, Y., & Rahman, Z. (2015). Factors affecting green purchase behaviour and future research directions. *International Strategic Management Review* (Vol. 3). Holy Spirit University of Kaslik. doi: <https://doi.org/10.1016/j.ism.2015.04.001>
- [18] Kow, G. C. (2018). Zuraida targets nationwide plastic bag ban within a year. <https://www.malaysiakini.com/news/427123>. Assessed 28 July 2019.
- [19] Manstead, A. S. R. (2018). The psychology of social class: How socioeconomic status impacts thought, feelings, and behaviour. *British Journal of Social Psychology*, 57(2), 267–291. doi: <https://doi.org/10.1111/bjso.12251>
- [20] Meneses GD, Palacio AB (2005). Recycling behavior: a multidimensional approach. *Environment and Behavior*. Vol 37:837–60.
- [21] News Straits Times (2014). Why don't we recycle <https://www.nst.com.my/news/2015/09/why-we-don%E2%80%99t-recycle> Assessed 3 August 2019.
- [22] Nyamwange, M. (1996). Public Perception of Strategies for Increasing Participation in Recycling Programs. *The Journal of Environmental Education*, 27 (4), 19-22.
- [23] Oskamp, S., Harrington, M. J., Edwards, T. C., Sherwood, D. L., Okuda, S. M. & Swanson, D. C., (1991). Factors influencing household recycling behaviour. *Environment and Behaviour*, 23 (4), 494 - 519.
- [24] OSPAR Ministerial. Plastic Particles in Fulmars. <https://www.ospar.org/work-areas/eiha/marine-litter/plastic-particles-in-fulmars>. Assessed 28 July 2019.
- [25] Pan, S., Chou, J., Morrison, A. M., & Lin, M. (2018). Will the future be greener? The environmental behavioral intentions of university tourism students. *Sustainability*, 10(634), 1–17. doi: <https://doi.org/10.3390/su10030634>
- [26] Royer S-J, Ferro'n S, Wilson ST, Karl DM. 2018. Production of methane and ethylene from plastic in the environment. *PLoS ONE*, Vol. 13, No. 8. <https://doi.org/10.1371/journal.pone.0200574>.
- [27] Sanglimsuwan, K., Suanmali, S., Nuchphithak, T., Chotchaisathit, J., Preechawan, A., and Navacharoen, W., (2012). A framework for Assessing the Willingness to Pay in Reducing Plastic Bag Use. 1st Mae Fah Lang University International Conference 2012. (pp. 1-9).
- [28] Smeesters, D., Warlop, L., & Abeele, P. V. (2001). Between green words and green deeds:overview of results and practical implications. Lauven: Department Toegepaste Economische Wetenschappen, Katholieke Universiteit Leuven.
- [29] Schultz, P. W., Oskamp, S., & Mainieri, T. (1995). Who Recycles and When? A Review of Personal and Situational Factors. *Journal of Environmental Psychology*, 15, 105-121.
- [30] Thompson, R. C. (2009). Plastics, the environment and human health: current consensus and future trends. *Philosophical Transactions of the Royal Society B-Biological Sciences*. Vol. 364, No. 1526, Pp. 2153-2166.
- [31] Vining J, Ebreo A. (1990). What makes a recycler? A comparison of recyclers and nonrecyclers. *Environment and Behavior*. Vol. 22: 55–73.
- [32] Worldwatch. (2018). New Bans on Plastic Bags May Help Protect Marine Life. from World Watch Institute: <http://www.worldwatch.org/node/5565>. Assessed September 12, 2018,
- [33] Wright, S. L., Thompson, R. C., Galloway, T. S. (2013). The physical impacts of microplastics on marine organisms: A review. *Environmental Pollution*, Vol, 178, Pp. 483-492. <https://www.sciencedirect.com/science/article/pii/S0269749113001140>.
- [34] Zen, I. S., Ahamad, R., & Omar, W. (2013). No plastic bag campaign day in Malaysia and the policy. *Environment Development and Sustainability* 15 (5), 1259-1269.