Environmental-friendly food products' packaging: Women's purchasing preferences

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Abstract*: Plastic pollution is a recent global issue. Its utilisation has increased tremendously in all aspects of life. Marine wildlife is a major threat group. As a result of these environmental degradation caused by plastics, there are various effort to manage it sustainably. This includes innovation in plastic-based product packaging. There are increasing interests in the field of ethical/responsible consumption as many campaigns are driving the environmentally-friendly consumerism. This paper is focusing on explaining women's purchasing preference in the environmental-friendly product packaging. Cross-sectional data were collected through a web-based survey. The research population consisted of women consumers who are working in Klang Valley, Malaysia. A three-part questionnaire was used as an instrument; demographic profiles, purchasing patterns and purchasing preference. Only 3.5% of respondents preferred to buy grocery items made from environmental-friendly packaging materials. This result complicates the food packaging waste pollution problems, as 70% of the purchasing of the grocery items is made on a weekly basis which will intensify the non-biodegradable plastic pollution problems.

***Keywords*: environmental-friendly product packaging, consumer behaviour, plastic pollution, purchasing preference.**

I. INTRODUCTION

Plastic pollution is a recent global issue. Its utilisation has increased tremendously in all aspects of life due to material versatility [1, 2]. Plastics are synthetic organic polymers which existed for just over a century [3]. They are light in weight but strong, long-lasting and inexpensive [2]. These criteria contributed to the wide range of product manufacturing [4]. It was reported that the global plastic production is increasing, 280 million tons in 2011 [5]. Since it has a broad application, for example from households use, office, and even for food packaging its disposal becomes a problem. Literatures highlighted on plastic debris in the ocean as the major threat to marine life worldwide [4]. There are efforts to deal with the issue among governments and NGOs, such as plastic ban, recycling programs and others. But, how impactful are these programs to marine life? Marine wildlife is the major threat group by plastic debris pollution [2, 6]. However, information on the impact on the marine ecosystem is still lacking.

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This is due to limited media coverage of such incidents worldwide that slowing down awareness among public communities. Some impacts that were recorded are the ingestion of the plastic debris and the entanglement [7, 8]. Among the reported marine wildlife affected are; whale, turtle, and seabirds [9].

Other than marine, plastics are also contributing to soil pollution. In particular, the sources of pollution were varies; plastic mulching (2.38 – 1200 mg plastic per kg), plastic concentration of sewage sludge (between 1000 to 24000 plastic items per kg), irrigation with treated and untreated wastewater (1000–627,000 and 0–125,000 plastic items m−3, respectively), flooding with lake water (0.82–4.42 plastic items m−3), river water (0–13,751 items per square km), littering along the roads, landfill, and illegal waste disposal. These could reach a vast range of soil organic carbon [10].

As a result of this degradation caused various effort has been conducted. This includes innovation in plastic-based product packaging from woody, and non-woody, or also known as agro-based materials. This is because plant fibres with polyethene (PE) can be an alternative technique for producing water-resistant paper [11], which very resistant for food packagingMoreover, single-use plastics are among the major source of the pollution, such as, plastic bags, products' packaging, and others [12]. Consumer packaging represents about 70% to 80% of the value of total packaging [13, 14]. It deserved the attention to understand the purchasing preference by the consumer. This study is focusing on explaining the factors which contributed to women's purchasing preference in the environmental-friendly products' packaging.

Ethical consumption behaviours are gaining the researchers' interest as it supported socially responsible practices undertaken by organizations [15]. This is stimulated by the media reports which highlighted the significant impacts of human consumption behaviour towards the environment. It drives the consumers' awareness towards purchasing products with 'green', 'environmentally friendly', or 'sustainable' image.

Packaging waste from non-biodegradable plastics caused serious environmental problems. Its production and disposal consume an immense amount of energy, water, and generating emissions which lead to worsening the climate change [16, 17].

There is a serious question on consumer perception and decision-making on environmentally friendly

packaging. The research towards this question is dated twenty years ago [18, 19]. The focus of those research inclined towards whether the environmentally-friendly packaging influences consumer purchasing decisions and how strong is the influence.

In 2016, the data showed 18% of the Malaysian household expenditures are for food and non-alcoholic beverages, which are the grocery items [20]. In the urban area in the state of Selangor and Kuala Lumpur, where the Klang Valley is situated, women constitute 41% and 42% respectively in the labour market. It is a well-known assumption that women in the labour market have higher purchasing power towards grocery items. This is due to the cultural norm which women dominated the house chores activities. However, there is no solid argument about it. Our hypothesis is working women should prefer to purchase products with environmental-friendly packaging. Therefore, the study was designed a survey to test purchasing preferences among working women in Klang Valley.

II. MATERIALS AND METHODS

The questionnaire was designed to collect information on purchasing preferences among working women in Peninsular Malaysia. The study was targeted for women consumer who is working in Klang Valley, Malaysia. Klang Valley was chosen as it comprises three major states, Wilayah Persekutuan Putrajaya, Wilayah Persekutuan Kuala Lumpur, and Selangor where each state recorded the highest percentage of labour force participation rate for women in the year 2016, 75%, 65%, and 57% respectively [21]. The higher labour force participation rate is assumed to have higher purchasing power in the marketplace.

In Malaysia, highly educated women are the consumer group who have high motivations in purchasing green products [22]. There is a similar finding on women are more likely to be pro-environmental and have higher intention towards green products [23-27].

It has three main sections; (i) Demographic profile, (ii) Purchasing patterns, and (iii) Purchasing preferences. We referred this to a study where they constructed the questionnaire to understand consumers' behaviour on the packaging and the importance of the environmentally-friendly characteristics of packaging material in their purchasing [18].

A cross-sectional data were collected through a web-based survey, a Google Form. Respondents were selected through non-probability judgmental sampling i.e. population elements were selected [28] based on the personal judgement of the researcher. The survey was undertaken for 2 weeks started on 1st July 2018. The survey was commenced and shared via online channels.

Web-based was chosen because of its convenience to answer at the fingertips and cost-saving. The study is designed to get the baseline information on the purchasing patterns and preferences. Based on this baseline information, proper and structured interviews can be planned in the future.

A three-part questionnaire was constructed as a survey instrument. In the first part of the questionnaire, socio-demographic characteristics namely age, occupation, monthly income, education background, marital status, and a number of children were recorded. Subsequently, in the second part, the question covered consumers purchasing pattern for buying the grocery items (canned food, cooking ingredients, pasta/noodles, rice and snacks), their frequency of this purchase, and places of the purchases made, (close-ended question format). All working women were asked to indicate the range amount of spent for each time of purchases (open-ended question format). In addition, they must rank the purchasing frequency of different grocery items on a 3-point scale. In the third part, respondents were asked to fill in the purchasing preferences according to the given products' for each grocery items packaging characteristics [18]. Figure 1.0 shows a complete conceptual framework employed for this study. The study assumed the three parts of the questionnaire could contribute to the purchasing behaviour of environmentally-friendly packaging of food products which will be benefitted to be included in other similar studies.

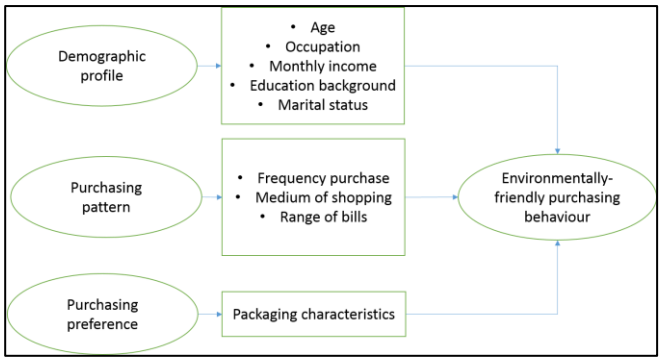

Figure 1.0: Conceptual framework of the study

The obtained data set was statistically analysed with Statistica 12.0 for Windows software. The data collected were analysed based on appropriate statistical tests as this is the baseline study to understand the initial stage of purchasing preference by the targeted group.

III. RESULTS AND DISCUSSION

There are 91 women respondents who are currently working in various sector responded to the structured web-based questions in 2 weeks of data collection. The average respondents' age is 37 years old with an income of RM 5,967 (Table 1). As reported in the Department of Statistics of Malaysia (2019) median monthly household income for Malaysian increased to RM5,228 in 2016 compared to RM4,585 in 2014 which very near to this survey findings. Seventy-eight per cent are married and have a Bachelor's degree.

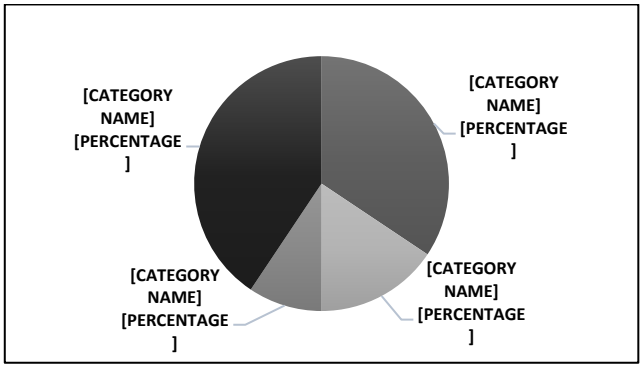

Figure 2.0: Frequency of grocery shopping

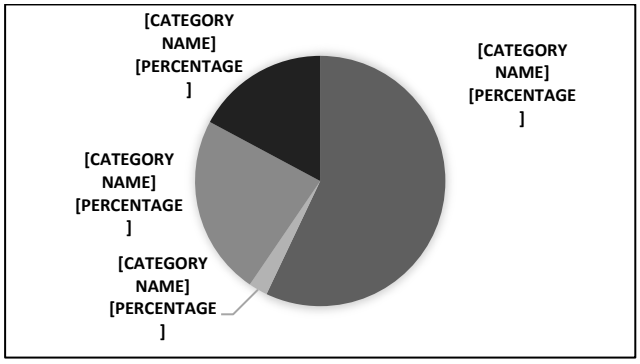

Figure 3.0: Grocery shops chosen by working women in Klang Valley

In purchasing patterns, majority of the respondents (41%) purchased grocery items for once in a week, 34% purchased for two to three times in a week, 16% purchased grocery items once in a week and the rest, about 9% purchased for once in a month. This particularly true because a study by Selamah et al., [30] found most people in Malaysia expend their monthly salary for food home and outside. In conjunction to that, the study recorded a 44% of the respondents who purchased grocery for two to three times a week have larger family size compared to a smaller family size which they purchased less 4% or 40%. Particularly, the study recorded 40% of the respondents who are purchasing grocery items for once in a week are married with smaller family size (1-2 children), and 34% have a larger family size (3-5 children). Here, we found a link between frequencies of grocery shopping with the size of the household, the bigger the size of the family, the more frequent the grocery shopping is made.

The purchasing patterns results showed food packaging waste pollution problems can be worsened if the product packaging is not environmental-friendly as 75% of the purchasing of the grocery items is made on a weekly basis.

However, another possibility should be considered also, for example, year-end sale or during the festival, which people can consume more than average value. The online shopping festival has gained much attention in Malaysia which various e-commerce players promoting attractive and extravagant promotions [31]. This unusual sale may alter the usual Malaysian purchasing habit soon. Jeremy (2018) described again that during 2018 Singles' Day sale, there was a 47% increase in online traffic on 11 November when compared with a similar period in the previous month. Peoples were encouraging to stay early as 9:00 PM on 10 November, a day before Singles' Day, compared to consumers in 2017 who only began searching for 11 November sale deals after 11.00pm.

Figure 3.0 shows the percentage of interviewed working women shops for grocery and shopping for their foods. There are 57% of the respondents purchased their grocery items at grocery shopping malls, including Tesco, Giant, Cold Storage, Hero Market, and others. Apart from that, 23% of the women in Klang Valley did their grocery shopping at neighbourhood grocery stores, such as 99 Speedmart, Kedai Runcit, and others. About 17% went to the wholesale fresh market to purchase their grocery items, and only 3% used online grocery shopping platform. Given the average age of the respondents of this study, the grocery items purchase done online is very low. This figure could be raised in the coming years as marketplaces online shopping was introduced from time to time, for example, Lazada, Shopee, PrestoMall and Lelong [32].

About 49% of the respondents spent RM 100 to 200 per purchase, 22% spent RM 200 to 300, 21% spent RM 50 to 100 and 8% spent above RM300. Those who spent above RM300 are those who have 4-5 children, and the majority of those who spent below RM 100 is not married.

Items that tested purchasing preferences towards environmental-friendly packaging products included selecting as many as possible product preferences that reflect their purchasing. As expected, about 23% of the respondents purchased grocery items based on the *halal* certification status on the product labelling. Malaysia is a Muslim country where most consumers chose *halal* food, and *halal* certification information on products are made compulsory. At the meantime, almost 19% of the respondents chose health benefits as their preference to purchase the products. Respondents chose tastes, affordable price, brand loyalty, and information on the label, at 14%, 14%, 13%, and 10% respectively. About 3.5% of respondents preferred to buy grocery items made from environmental-friendly packaging materials. And only 3% chose to purchase the grocery items based on the design of the packaging.

Based on the results gathered, the study analysed the correlation between the domains and the purchasing behaviour. It is found that the demographic profile gives a very low correlation with the purchasing behaviours towards environmentally friendly food packaging. This

was could be because a low number of respondents interviewed in this study.

Table 1.0: Correlation between demographic profiles and environmental-friendly product packaging purchasing preference

Variable	Correlations Marked correlations * are significant at p < .05000 Means	Age	Income	Education	Status	Environmental-friendly product packaging purchasing preference
Age	37.41	1.00				
Income	5967.23	0.33*	1.00			
Education level	3.43	-0.20	0.25*	1.00		
Marital Status	0.79	0.31*	-0.03	-0.05	1.00	
Environmental-friendly product packaging purchasing preference	0.70	-0.06	0.082	-0.03	0.09	1.00

There is a significant relationship between income and age, the older the more income received. So as the education level, the higher level of degree the higher income received.

However, the study found decision-making towards environmentally friendly purchasing preference is not related to any socio-demographic factor as age, income, education level, and marital status. This is pertinent to [33] which highlighted the preference is related to his or her own behaviour, which environmental concern is perceived as the evaluation of one's attitude towards facts, his or her own behaviour, or the behaviour of others that has consequences towards the environment as reported.

Furthermore, the factor that could contribute to uncorrelated of the results is 40% of them did shopping at neighbourhood grocery stores, such as 99 Speedmart, *Kedai Runcit*, and *Pasar Tani* which have fewer products with environmental-friendly packaging.

IV. CONCLUSION

Our results highlight the purchasing preferences towards environmental-friendly grocery products' packaging. In conclusion, the study found the low rate of preference by working women to purchase products' with environmental-friendly packaging in Klang Valley indicates serious problem ahead. Among the possible causes are; low level of awareness on the issue, economic/financial limitations, unavailability of such packaging, and others.

If the preference is static as reported in the study, it will escalate the non-biodegradable plastic pollution problems. The study, therefore, recommends a holistic and economic effort to increase the preferences to purchase products with environmental-friendly packaging. The targeted location to drive environmental campaign is grocery shopping malls followed by neighbourhood grocery stores which most purchasing is made.

Finally, the study has demonstrated that demographic profiles have a negligible relation to the purchasing preference of the environmental-friendly product packaging.

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