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FROM CONVENIENCE TO CONSCIENCE: NUDGING CONSUMER BEHAVIOR TOWARD SUSTAINABLE PLASTIC PRACTICES

Dr. K. R. Sakthidevi¹ and Ms. M. R. Merudhu Subhasini²

¹MFC, M.Phil., M.Com., M.B.A., P.G.D.C.A., Ph.D
Associate Professor & Head, Department of Commerce (Business Analytics)
Vellalar College for Women (Autonomous), Thindal, Erode-12

²M.Com., (NET)
Assistant Professor, Department of Commerce (Business Analytics)
Vellalar College for Women (Autonomous)

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ABSTRACT

Single-use plastic waste, when not properly managed and discarded, threatens both the environment and human health. Over the next 30 years, the global plastics waste crisis will worsen if current consumption and production patterns continue. The plastics crisis is seen as an anthropocentric problem that requires an understanding of consumer consumption patterns in order to encourage its alleviation. Thus, this paper proposes a conceptual framework to examine the predictors for adopting single-use plastics reduction activities among young urban consumers in Malaysia. Rather than assuming the homogeneity of consumers' single-use plastics reduction patterns, the current framework posits that different consumers are at different stages of behavioral readiness and adoption. It also explores the underlying factors and specific social referent groups at each stage using the integration of the Transtheoretical Model and Theory of Planned Behavior. Consumer segmentation based on the theoretical integration could be used to create more targeted behavioral change efforts that align with the characteristics and drivers of each stage. It is hoped that the present research can help to support efforts in reducing single-use plastics.

KEYWORDS: conceptual framework, digital influencers, single-use plastics, social referent groups, theory of planned behavior, transtheoretical model

INTRODUCTION

Since its introduction more than seven decades ago in the 1950s, plastic is arguably one of the greatest human inventions in the modern world. Its cost-effectiveness, versatility, and availability have revolutionized various industries and transformed human life in general. Despite its superior characteristics, the use of plastics is a double-edged sword. Single-use plastics or lightweight plastics, such as a plastic bag or plastic packaging, are typically discarded after a single use. The devastating

impact of poorly managed plastic waste on both the environment and human health has been well documented. Plastic waste is an environmental threat both on land and in the ocean, but it has a distinct impact on marine life, as it largely ends up in the ocean. Plastic debris has harmed several hundred species of animals, including marine life, via entanglement and choking. Moreover, plastic debris disintegrates into microplastics that can enter our food chain via marine life ingestion.

The toxicity of such components has been associated with various health complications in humans. Up until 2015, almost half of the global plastic waste stream consisted of plastic packaging, which is categorized as a single-use plastic. 'Single-use plastics' is a term used to broadly categorize disposable plastic items such as straws, cutlery, plastic packaging, drinking bottles, et cetera. Asia has been one of the major contributors to single-use plastic waste, accounting for almost half of the total global generation. It is estimated that in less than 30 years, the plastic waste crisis will worsen if the current consumption and production of plastic continues. The current waste management system will not be able to sustain the projected 12 billion tons of plastic waste generation.

Consumer behavioral studies have usually been approached from various behavioral theoretical foundations and perspectives. However, Darnton argued that classic behavioral models are too generic for the creation of more targeted interventions. Inspired by such criticism, this study draws on insights from two major social psychology theories, the Transtheoretical Model (TTM) and the Theory of Planned Behavior (TPB), to propose a conceptual framework. The proposed conceptual framework could be applied to examine consumers' single-use plastics reduction according to their stages of readiness and adoption, as well as to determine the underlying drivers at each stage. Based on the TTM, the conceptual framework highlights consumer heterogeneity by proposing that different consumers are at different stages of readiness and adoption with regard to single-use plastics reduction. By integrating the TPB constructs, the framework also posits that the underlying drivers will become differently salient at the different stages. The proposed conceptual framework primarily focuses on young urban consumers. According to the ESCAP (2017) report, the majority of the populace in the Asia Pacific region will dwell in the urban areas by 2050. It will also be home to 60 % of young individuals between the ages of 18 and 40. Due to their sheer number, spending power, and consumption patterns, they are an important demographic group to study.

Furthermore, the different stages could potentially be used to create a more refined basis of population segmentation. From the perspective of social intervention studies, such research would yield information essential to the creation of a targeted message to the population of interest. CEPA (Campaigns, Education and Public Awareness) efforts aligned with the audiences' readiness and adoption stages and psychographic factors could contribute toward an effective behavioral change initiative. Creating targeted messages requires that the population of interest is meaningfully

segmented.

LITERATURE REVIEW

Quoc et al. (2025) found eco-labelling significantly shaped cognitive attitudes among Vietnamese youth, while **Kaur and Siddhey (2024)** and **Reddy et al. (2023)** confirmed strong positive attitudes toward sustainable packaging. Similarly, **Faris and Puad (2024)** demonstrated that awareness of a brand's eco-efforts, such as Coca-Cola's green packaging, influenced consumer purchase intentions. Visual and verbal packaging elements—like color, material, shape, and labels—play crucial roles in forming perceptions, as seen in studies by **Omidiran et.**

Chin and Hong (2023) and **Sruthi (2023)** also showed that visual cues and trust in eco-labels affected Korean and n consumer intentions, respectively. While natural colorants enhanced appeal in **Daltoé et al. (2024)**, **Ketelsen et al. (2020)** and **Herbs et al. (2018)** identified consumer confusion and limited understanding as major barriers to adoption. Socio-demographic variables—such as education, income, and environmental values—were found to influence eco-friendly choices.

Dsouza & Kulal (2023; Harjadi & Gunardi, 2022). Popovic and Bossink (2019) and **Wandosell et al. (2021)** emphasized the importance of bridging the attitude-behavior gap and incorporating external factors like policy and marketing. Studies also underscored the need for clear communication and transparent labelling, while stressing that price and quality often outweigh green attributes in real-world decisions. Overall, these findings highlight the multidimensional nature of consumer decision-making in sustainable packaging. Eco-friendly design, trust-building through labels, and effective awareness strategies are critical to encouraging green consumer behavior and supporting a circular economy.

RESEARCH METHODOLOGY

Objectives of the study:

1. To study the awareness and perception towards Single-Use plastic.
2. To identify various factors that affect the adoption of Single-Use plastic.

Research Design:

The study employed exploratory research to investigate the research questions and provide insights into existing information.

Sample Size:

We aimed to collect 200 responses, equally split between 100 males and 100 females. To account for non-responses and data quality issues, we collected 230 responses. After validation and

cleaning, the final sample size was 207, including 100 males and 107 females. Convenience sampling, which is a non-probability sampling method, was used to collect the data.

Data collection tools

This being an exploratory study, a well-structured questionnaire was used as the primary data collection tool. The questionnaire had a mix of multiple-choice, dichotomous questions (Yes/No), and five-point Likert scale statements. The Likert scale ranged from "Strongly Agree," "Agree," "Neither Agree nor Disagree," and "Strongly Disagree." Each response option was assigned corresponding numerical values of 5,4,3,2,1 respectively.

Tools of data analysis:

Some of the analytical tools employed to interpret the collected data included the Chi-square test of independence, independent samples t-test, and Levene's test. To perform the analysis, the following hypotheses were formulated:

- **Null Hypothesis (H_0):** There is no significant difference in the responses of male and female respondents.
- **Alternative Hypothesis (H_1):** There is a significant difference in the responses of male and female respondents.

The statistical package used for the analysis is SPSS.

DATA ANALYSIS & RESULTS

The demographic analysis shows that 48.3% of respondents are male and 51.7% are female (Table 1, Figure 1). Most participants (87.0%) are aged 18–24, followed by 9.2% in the 25–31 group, 2.4% in the 32–38 group, and 1.4% in the 39–45 group (Figure 2). Regarding education, 40.6% are undergraduates, 30.4% are postgraduates, and 29.0% are graduates, with nearly 60% holding at least a graduate degree (Figure 3).

Table 1: Demographic profile of respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	100	48.3	48.3	48.3
	Female	107	51.7	51.7	100.0
	Total	207	100.0	100.0	
Age					

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	180	87.0	87.0	87.0
	25-31	19	9.2	9.2	96.1
	32-38	5	2.4	2.4	98.6
	39-45	3	1.4	1.4	100.0
	Total	207	100.0	100.0	
Qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	graduate	84	40.6	40.6	40.6
	graduate	60	29.0	29.0	69.6
	Postgraduate	63	30.4	30.4	100.0
	Total	207	100.0	100.0	

In order to analyse the awareness of respondents towards Single-Use Plastic, respondents were evaluated through questions related to their general awareness, sources of information, means of Single-Use Plastic, and the kind of material associated with Single-Use Plastic. The data are shown in Table 2.

Table 2

		Are you aware of eco-friendly packaging (EFP)?				Total
		No	Yes			
Demographic Profile a). Gender	Male	7	93			100
	Female	9	98			107
Total		16	191			207
Pearson Chi-Square= .144, p value=.704, df=1						
	What are the sources of information about Single-Use packaging (EFP)?					Total
	Social media	Television	Family	Companies	Others	

				or friends				
Demographic Profile a). Gender	Male	53	10	24	9	4	100	
	Female	85	8	11	3	0	107	
Total		138	18		35	12	4	207
Pearson Chi-Square=19.256, p value=<.001, df=4								
		What, according to you, is Single-Use packaging (EFP)?						Total
		Reusable packaging	Compostable packaging		Minimal packaging	Sustainab le packaging	Other	
Demographic Profile a). Gender	Male	33	32	9	23	3	100	
	Female	49	15	10	32	1	107	
Total		82	47		19	55	4	207
Pearson Chi-Square=11.573, p value= .021, df=4								
		What kind of material do you associate with Single-Use packaging (EFP)?						Total
		Recycled paper or cardboard	Biodegr adable plastics	Glass	Metal	Others		
Demographic Profile a). Gender	Male	54		11	1	2	100	
	Female	75		6	1	0	107	
Total		129		57	17	2	2	207
Pearson Chi-Square= 7.521, p value= .111, df=4								

The analysis indicated a significant difference between males and females in terms of awareness of Single-Use Plastic (EFP), which is high across genders, with 93% of males and 91.6% of females reporting awareness. Overall, 92.3% are aware. A Chi-Square test ($\chi^2 = 0.144$, $p = 0.704$) shows no

significant association between gender and awareness, indicating a consistently high awareness level with minimal gender difference. EFP information sources differ between genders, especially females (79.4% vs. 53% of males). Males use a wider range of sources. **A Chi-Square test ($\chi^2 = 19.256$, $p < 0.001$) confirms a significant gender difference in information sources.**

The data show gender-based differences in perceptions of Single-Use Plastic (EFP). Males mostly associated EFP with being reusable (33%) or compostable (32%), while females favored reusable (45.8%) and sustainable (29.9%) options. A Chi-Square test ($\chi^2 = 11.573$, $p = 0.021$) indicates a statistically significant—but moderate—association between gender and EFP perception. Both males (54%) and females (75%) most commonly associate Single-Use packaging (EFP) with recycled paper or cardboard, followed by biodegradable plastics. Few link EFP to glass, metal, or other materials.

The Chi-Square test ($\chi^2 = 7.521$, $p = 0.111$) shows no significant association between gender and material choice. Both males (57%) and females (46%) most commonly associate Single-Use packaging with **food**. Males link it more to electronics (17%), while females associate it more with fashion (20%) and cosmetics (17%). Overall, food leads, followed by fashion, electronics, cosmetics, and others, with females showing stronger ties to fashion and cosmetics.

Table: 3

		According to you, which category of products uses eco-friendly packaging?					Total
		Food	Cosmetics	Fashion	Electronics and gadgets	Others	
Demographic Profile a). Gender	Male	57	12	11	17	3	100
	Female	46	17	20	14	10	107
Total		103	29	31	31	13	207
Pearson Chi-Square=8.482, p value=.075, df=4							

Growing concern about Single-Use packaging. Both males (64%) and females (90%) primarily associate Single-Use packaging with reducing waste and pollution. Overall, 74.6% prioritize environmental concerns, while fewer link EFP to aesthetics (12.6%), cost reduction (7.2%), or profit increase (5.8%), highlighting a clear emphasis on sustainability over economic factors.

Table 4

		Why are you concerned about Single-Use packaging (SUP)?				Total
		Reduce waste and pollution	Make packaging more attractive	Reduce overall product cost.	Increase profit of companies.	
Demographic Profile a). Gender	Male	64	14	11	11	100
	Female	90	12	4	1	107
Total		154	26	15	12	207
Pearson Chi-Square= 15.925, p value= .001, df=3						

The decision to switch brands has been influenced by the lack of Single-Use packaging (E. The data show that 63% of males and 62% of females have switched brands due to the lack of Single-Use packaging. Overall, 60.4% of respondents have done so, underscoring the strong influence of sustainability on brand loyalty.

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sigificance
						Two-Sided p
E3	Equal variances assumed	1.488	.224	2.299	205	.023
E7	Equal variances assumed	.166	.684	2.073	205	.039
E8	Equal variances assumed	.377	.540	2.649	205	.009
E14	Equal variances assumed	.651	.421	2.002	205	.047

Out of 17 statements, the 4 statements E3, E7, E8, and E14 show a significant difference in the mean score value, with males agreeing with E3, E7, E8, and E14. To find out if these 4 statements show a significant difference, an independent t-test was conducted, and likewise, Levene's test of equality of variance was observed. These statements showed significant 2-tailed significances of **.023, .039, .009, and .047**; as shown in the table, these values confirm that, gender-wise, male and female classes do differ in their responses.

FINDINGS

Awareness of Single-Use packaging (EFP) is high among both genders: 93% of males and 91.6% of females, showing overall awareness of 92.3%. No significant gender difference was found ($\chi^2 = 0.144$, $p = 0.704$). Social media is the primary information source for both, especially females (79.4% vs. 53%). Males cited more varied sources like family, TV, and companies. A significant gender difference was observed. Perceptions of EFP differ: males associate it with reusability (33%) and composability (32%), while females favor reusability (45.8%) and sustainability (29.9%). This difference was significant. Both genders mostly associate EFP with recycled paper/cardboard (54% males, 75% females).

Biodegradable plastics followed. No significant gender difference was found. Food is the top category linked to EFP (57% males, 46% females), followed by fashion (more among females), electronics, and cosmetics. No significant gender difference ($\chi^2 = 8.482$, $df = 4$, $p = 0.075$). Environmental impact is the key concern (64% males, 90% females), with less emphasis on aesthetics, cost, and profit. A significant gender difference was found ($\chi^2 = 15.925$, $df = 3$, $p = 0.001$). Out of 17 attitude statements, four (E3, E7, E8, E14) showed significant gender-based differences ($p < .05$), with males agreeing more. Levene's test confirmed equal variances. About 60.4% of respondents have switched brands due to lack of EFP, with similar rates among males (63%) and females (62%). No significant gender difference. The main challenge in buying EFP is "All of these" (36% males, 34.6% females), followed by availability, awareness, and cost. No significant gender difference ($\chi^2 = 1.887$, $df = 3$, $p = 0.596$). Motivators to buy EFP include awareness (32.8%), availability, policy, price, and market effects. No significant gender difference ($\chi^2 = 4.385$, $df = 4$, $p = 0.356$).

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