

Assessing Community Readiness for a Plastic-Free Market in Malaysia: Evidence from Pasar Awam Taman Universiti, Skudai, Johor

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ABSTRACT

The intensifying urgency to address plastic pollution has increased the global interest in sustainable market practices. However, evidence on the consumer's readiness for plastic-free transition in the Malaysian public market remains limited. This study explores community readiness for a plastic-free market at Pasar Awam Taman Universiti, Skudai, Johor. Using a cross-sectional survey of 200 consumers, it examines awareness, behaviour, and policy support related to the campaign. Results show that public awareness of plastic pollution is high (78 per cent) and knowledge of environmental impacts scored strongly (mean 4.63 ± 0.58). However, consistent behavioural adoption remains moderate (mean 4.03 ± 0.71), often limited by convenience and routine shopping habits. Most respondents expressed moral support for the campaign and preferred facilitative strategies such as continuous local engagement rather than stricter enforcement. Factor analysis revealed three dimensions of readiness: behavioural convenience, moral and policy support, and social-emotional norms, explaining 64.8 per cent of the total variance. The findings indicate that the community is aware and supportive but still adjusting to sustainable habits. Practical improvements should focus on visible reminders and accessible alternatives to make environmentally responsible behaviour more convenient. Overall, the study highlights the importance of linking awareness, behaviour, and policy in shaping Malaysia's transition toward plastic-free community markets.

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1. Introduction

Plastic pollution is one of the most pressing environmental challenges of the twenty first century, driven largely by the

widespread use of single use plastics that persist in ecosystems and disrupt ecological and human health systems (Abdul Rahman, 2022; Chen et al., 2021). In Malaysia, high plastic consumption and relatively low recycling rates have intensified this problem, particularly within food distribution and retail systems.

In response, the Malaysian government introduced the Roadmap Towards Zero Single Use Plastics 2018–2030, which outlines phased strategies to reduce plastic dependency through regulation, public education, and the promotion of sustainable alternatives. While behavioural shifts have been observed in formal retail sectors, plastic consumption remains pervasive in traditional market settings (Chen et al., 2021).

Public markets (*pasar awam*) play a central socio-economic role by providing affordable access to fresh produce while sustaining small scale livelihoods (Zakariya et al., 2016). However, their reliance on lightweight and waterproof plastic packaging, especially for wet and fresh goods, makes them significant contributors to daily plastic waste (Asmuni et al., 2015; Zen et al., 2013). Unlike corporate retail chains, public markets operate within informal governance structures shaped by vendor practices, consumer habits, and municipal oversight, making behavioural regulation more complex.

Although public awareness of plastic pollution in Malaysia is now relatively high, behavioural change remains inconsistent. Consumers generally recognise the environmental and health risks associated with plastic waste, yet daily practices continue to be shaped by convenience, hygiene concerns, and habitual routines (Chun T'ing et al., 2020; Chin et al., 2023). This persistent gap between awareness and action indicates that information-based interventions alone are insufficient to generate sustained behavioural change in market environments.

Behavioural frameworks provide useful insight into this gap. The Knowledge Attitude Practice model suggests that environmental knowledge shapes attitudes and behaviour, while the Theory of Planned Behaviour highlights the roles of social norms and perceived behavioural control in determining whether pro environmental intentions translate into action (Ajzen, 1991; Kollmuss & Agyeman, 2002). In public markets, this implies that even environmentally motivated consumers may continue using plastic when alternatives are inconvenient or socially unsupported.

Local governance is therefore critical in mediating this transition. In Malaysia, municipal councils oversee public markets and are responsible for sanitation, waste management, and vendor regulation, positioning them as key intermediaries between national environmental policy and community practice (du Plessis, 2015; Budhiarta et al., 2012). Yet empirical research focusing on behavioural dynamics within Malaysian public markets remains limited, as most studies concentrate on urban consumers, educational institutions, or formal retail environments (Chin et al., 2023; Zen et al., 2013).

This study addresses this gap by examining community readiness for a plastic free market at Pasar Awam Taman Universiti, Skudai, Johor, under the governance of Majlis Bandaraya Iskandar Puteri. Specifically, it assesses three dimensions: awareness of plastic reduction initiatives, behavioural practices related to single use plastic consumption, and perceived policy support. By situating consumer behaviour within its institutional context, the study provides empirical evidence to inform the design of plastic reduction initiatives in Malaysian public markets.

2. Literature Review

2.1 Awareness, Behaviour and Plastic Reduction

Plastic reduction is commonly examined through behavioural frameworks that link environmental awareness to everyday practice. The Knowledge–Attitude–Practice (KAP) model suggests that environmental knowledge shapes attitudes, which subsequently influence behaviour (Bamberg & Möser, 2007; Kollmuss & Agyeman, 2002). However, empirical evidence consistently demonstrates that knowledge alone does not ensure behavioural change, particularly when habitual routines and convenience dominate daily decision-making (Klößner, 2013).

The Theory of Planned Behaviour (TPB) further explains this gap by highlighting the roles of perceived social norms and behavioural control in shaping pro-environmental actions (Ajzen, 1991). In the context of plastic consumption, individuals may express strong environmental concern yet continue using plastic bags when alternatives are perceived as inconvenient or socially unsupported. Malaysian studies confirm this “intention–action gap”, showing that while awareness of plastic pollution is high, sustained behavioural adoption remains inconsistent (Chun T'ing et al., 2020; Chin et al., 2023). These theoretical insights suggest that effective plastic reduction strategies must address not only awareness but also the structural and social conditions that enable or constrain sustainable behaviour.

2.2 Plastic Reduction in Malaysia and the Public Market Context

Malaysia has introduced multiple initiatives to curb single use plastic, including the Roadmap Towards Zero Single Use Plastics 2018–2030. While such policies have improved public awareness and reduced plastic usage in formal retail environments, their effectiveness remains uneven across socio economic contexts (Chen et al., 2021). Although Malaysians widely recognise the environmental and health risks associated with plastic waste (Abdul Rahman, 2022; Chin et al., 2023), behavioural compliance continues to be shaped by convenience, price sensitivity, and access to alternatives, particularly among lower income groups.

Public markets (*pasar awam*) occupy a distinctive position within Malaysia's plastic waste landscape. As major nodes of food distribution, they generate substantial volumes of single use plastic due to the dominance of plastic packaging for wet and fresh produce (Zakariya et al., 2016; Zen et al., 2013). Unlike corporate retail chains, public markets operate under informal vendor consumer interactions and local authority governance, making behavioural regulation more complex. Studies indicate that plastic bags remain deeply embedded in market culture, driven by hygiene concerns, transaction efficiency, and vendor routines (Asmuni et al., 2015). At the same time, their dense social networks and repeated interactions create opportunities for behaviour change when sustainable practices are socially visible and institutionally supported (Chun T'ing et al., 2020).

2.3 Public Markets as Behavioural Hotspots

Local governments play a pivotal role in translating national environmental policies into community practice. In Malaysia, municipal councils oversee public markets and are responsible for

sanitation, waste management, and vendor regulation (Budhiarta et al., 2012). Effective plastic reduction therefore depends not only on consumer attitudes but also on how municipal authorities facilitate behavioural change through infrastructure provision, communication, and enforcement. Environmental governance research emphasises that decentralised institutions are most effective when regulatory authority is combined with community participation and social legitimacy (du Plessis, 2015).

Despite growing attention to plastic waste reduction in Malaysia, empirical studies focusing on traditional public markets remain limited. Most existing research concentrates on urban consumers, educational institutions, or formal retail environments, leaving informal market settings underexplored (Chin et al., 2023; Zen et al., 2013). Moreover, few studies integrate behavioural theory with municipal governance in examining plastic free readiness. This study addresses these gaps by analysing awareness, behavioural practice, and policy support within a public market context governed by Majlis Bandaraya Iskandar Puteri, offering an institutionally grounded understanding of community readiness for plastic reduction.

3. Summary of Methodology

The study employed a quantitative cross-sectional survey design to assess consumer awareness, behavioural practices and policy support related to the implementation of a plastic-free public market. The design was appropriate for capturing existing attitudes and behaviours within a specific time frame and for evaluating community readiness within a defined market context.

3.1 Study Design and Setting

This study adopted a quantitative cross sectional survey design to assess consumer awareness, behavioural practices, and policy

support related to the implementation of a plastic free public market. This design was appropriate for capturing prevailing attitudes and behaviours within a defined time frame and for evaluating community readiness within the study context.

The study was conducted at Pasar Awam Taman Universiti, Skudai, Johor, a suburban public market under the jurisdiction of Majlis Bandaraya Iskandar Puteri. The site was selected due to its high transaction volume and strong community embeddedness, making it suitable for examining public responsiveness to environmental initiatives implemented by local authorities.

3.2 Instrument and Data Collection

The questionnaire items were developed based on established environmental behaviour frameworks, particularly the Knowledge–Attitude–Practice (KAP) model and the Theory of Planned Behaviour (TPB). Data were collected using a structured self-administered questionnaire developed based on national policy objectives, relevant literature, and the study’s conceptual framework. The questionnaire comprised six sections, as summarised in Table 1, and was designed to capture socio-demographic characteristics, plastic usage patterns, environmental awareness, behavioural readiness, and community driven policy suggestions.

The survey was administered on site over a two-week period with official permission from Majlis Bandaraya Iskandar Puteri. Respondents were briefed on the study objectives and provided informed consent prior to participation. Completion time averaged 10 to 15 minutes.

Table 1 Questionnaire structure, content domains, and measurement objectives for assessing plastic bag use and support for plastic-free market initiatives

Section	Content	Purpose
A. Respondent Background	Gender, age, ethnicity, religion, marital status, education level, occupation, and household income.	To describe the socio-demographic profile of respondents and assess whether personal characteristics influence environmental awareness and behaviour.
B. Use of Single-Use Plastic Bags	Frequency of market visits, number of plastic bags used per visit, reuse practices, and methods of carrying purchased goods.	To evaluate patterns of plastic bag, use and identify behavioural habits among consumers.
C. Awareness of Plastic Free Campaigns and Reusable Bags	Knowledge of existing plastic-free campaigns, use of reusable bags, and reasons for non-adoption.	To assess consumers' level of awareness and understanding of government and local initiatives.
D. Understanding of Plastic Bag Impacts	Statements related to the environmental effects of plastic bags using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).	To measure cognitive awareness and perceived environmental consequences of plastic usage.
E. Behaviour and Support for Plastic Free Campaigns	Attitudinal and behavioural items measuring readiness, willingness, and support for policy enforcement.	To determine overall acceptance of plastic-free initiatives and the potential for behavioural change.
F. Suggestions for Policy and Campaign Improvement	Open and closed-ended questions on recommendations for strengthening implementation strategies.	To capture community input for enhancing the effectiveness of the plastic-free market campaign.

3.3 Study Population and Sampling

The study population comprised adult consumers aged 18 years and above visiting the market during the data collection period. Vendors and administrative staff were excluded to maintain focus on consumer behaviour. A total of 200 respondents participated voluntarily. Participants were recruited using convenience sampling across different market sections during peak hours to ensure diverse shopper representation. Although non-probabilistic, this approach was appropriate for examining behavioural patterns within a defined community setting. Convenience sampling was used due to the natural market setting, but it may introduce sampling bias and limit the generalisability of the findings. Data were collected during peak market hours, which may overrepresent frequent market visitors. Therefore, the results reflect behavioural patterns within this community rather than all Malaysian public markets.

3.4 Data Analysis

Data were analysed using IBM SPSS Statistics (Version 27). Descriptive statistics summarised demographic characteristics and key variables related to awareness, behaviour, and policy support. Internal consistency of multi-item scales was assessed using Cronbach's alpha. Inferential analysis employed chi square tests to examine associations between selected socio demographic factors and key outcome variables, with statistical significance set at $p < 0.05$. Principal Component Analysis and exploratory factor analysis were applied to identify latent dimensions underlying behavioural readiness and campaign support

3.5 Ethical Considerations

Ethical standards were upheld throughout the study. Participation was voluntary, anonymity was assured, and respondents were

informed of their right to withdraw at any time. Institutional approval and site permission were obtained from Majlis Bandaraya Iskandar Puteri prior to data collection.

4. Results and Discussion

4.1 Demographic Profile of Respondents

The demographic characteristics of the 200 respondents are summarised in Table 2. The sample was gender-balanced, with females slightly outnumbering males (52% vs 48%). Most respondents were between 19 and 49 years old (58.0%), reflecting the working-age population that constitutes the core group of routine market users. Malays formed the majority ethnic group (71.5%), consistent with the demographic profile of Johor, while the religious composition was predominantly Muslim (74.5%).

Educational attainment was moderate to high, with over 48% of respondents holding post-secondary qualifications, reflecting the market's proximity to Universiti Teknologi Malaysia and surrounding residential areas. Occupational backgrounds were diverse, indicating that plastic-free initiatives must be adaptable across different working routines and consumption patterns. Notably, two-thirds of respondents belonged to the B40 income group, which has important implications for policy design: while environmental awareness may be present, consistent behavioural adoption is likely to remain sensitive to cost, convenience, and accessibility of alternatives, particularly among lower-income households (Wahab et al., 2021).

The demographic profile suggests that Pasar Awam Taman Universiti serves a socially diverse yet economically moderate community, providing a relevant setting for examining behavioural readiness toward plastic-free market initiatives.

Table 2 Demographic characteristics of respondents ($n = 200$)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	104	52.0
	Male	96	48.0
Age Group	≤ 18 years	6	3.0
	19 – 29 years	53	26.5
	30 – 49 years	63	31.5
	50 – 59 years	42	21.0
	≥ 60 years	36	18.0
Ethnicity	Malay	143	71.5
	Chinese	20	10.0
	Indian	31	15.5
	Others	6	3.0
Religion	Islam	149	74.5
	Hindu	30	15.0
	Buddhist	16	8.0
	Christian	5	2.5
Marital Status	Married	139	69.5
	Single	61	30.5

Variable	Category	Frequency (n)	Percentage (%)
Education Level	Lower Secondary (PMR)	26	13.0
	Upper Secondary (SPM)	72	36.0
	Pre-University / Diploma	39	19.5
	Bachelor's Degree	43	21.5
	Master's Degree	15	7.5
	Doctoral Degree	5	2.5
Occupation	Self-employed / Trader	56	28.0
	Government Sector	43	21.5
	Private Sector	37	18.5
	Student	18	9.0
	Unemployed / Retired	46	23.0
Household Income	< RM 4,850	135	67.5
	RM 4,850 – RM 10,970	49	24.5
	≥ RM 10,970	12	6.0
	Not stated	4	2.0

4.2 Use of Single-Use Plastic Bags

The patterns of plastic bag usage among consumers at Pasar Awam Taman Universiti are summarised in Table 3. Most respondents visited the market at least once a week, indicating that plastic bag consumption in this setting is frequent and embedded in routine household purchasing behaviour. A substantial proportion of respondents reported using multiple plastic bags per visit, particularly when purchasing wet and fresh produce, reflecting a functional reliance on plastic for food handling and separation.

Dependency remains high, with over half of respondents using five or more plastic bags per visit. This pattern suggests that plastic use in public markets is driven not merely by preference but by operational norms associated with wet-market transactions. Concerns related to hygiene, contamination, and the need to separate different food categories continue to reinforce reliance on plastic packaging (Syed Ismail et al., 2021; Zainudin et al., 2021).

Although some degree of reuse behaviour was evident, consistent adoption remained limited. Nearly half of respondents reported reusing plastic bags only occasionally, indicating that reuse is largely

opportunistic rather than habitual. This reflects a persistent intention–action gap, where environmental awareness does not readily translate into stable behavioural change, particularly when convenience and cleanliness remain dominant considerations (Stephen, 2024).

Socio-economic constraints further shape these behavioural patterns. The predominance of lower-income households in the sample suggests that price sensitivity and access to low-cost alternatives are likely to influence the feasibility of reducing plastic reliance. Without economically viable substitutes or structural incentives, such as subsidised reusable bags or default alternative packaging, behavioural change is unlikely to scale effectively (Chin et al., 2023).

Plastic-bag dependency at Pasar Awam Taman Universiti appears to be influenced more by routine market practices and convenience than by lack of awareness. These findings indicate that plastic reduction in public markets requires system-level interventions, integrating vendor participation, infrastructure provision, and municipal facilitation, rather than relying solely on consumer-driven behaviour change (Chen et al., 2021).

Table 3 Frequency and patterns of plastic-bag use ($n = 200$)

Behavioural Indicator	Category	Frequency (n)	Percentage (%)
Frequency of market visits	Daily	18	9.0
	2–3 times a week	46	23.0
	Weekly	104	52.0
	Less than weekly	32	16.0
Plastic bags used per visit	1–2 bags	31	15.5
	3–4 bags	59	29.5
	5–6 bags	63	31.5
	≥ 7 bags	47	23.5
Reusing plastic bags	Always reuse	48	24.0
	Sometimes reuse	97	48.5
	Rarely reuse	36	18.0
	Never reuse	19	9.5

4.3 Knowledge and Awareness of Plastic-Free Campaigns

Public awareness of the plastic-free initiative at Pasar Awam Taman Universiti was generally high but unevenly translated into

behavioural practice (Table 4). Most respondents were aware of the national “No Plastic Bag” campaign (70.9%) and supported designating the market as plastic-free (78.6%). However, only 35.7% regularly brought their own reusable bags, indicating a substantial gap between cognitive awareness and routine behaviour.

Table 4 Knowledge and awareness of plastic-free campaigns among respondents

Item	Statement / Variable	Category	Frequency (n)	Percentage (%)
C01	Do you bring your own reusable bag when visiting the market?	Yes	71	35.7
		No	128	64.3
C02	Reasons for not using a reusable bag	Often forget to bring	98	49.2
		Too expensive	23	11.6
		Unsuitable size	14	7.0
		Unattractive design	3	1.5
C03	Awareness of "No Plastic Bag" campaign	Yes	141	70.9
		No	58	29.1
C04	Support for designating Pasar Awam Taman Universiti as a plastic-free market	Yes	154	78.6
		No	42	21.4

The barriers reported further clarify this discrepancy. Nearly half of respondents cited forgetting to bring reusable bags as the primary reason for non-use, while fewer attributed it to cost, unsuitable size, or design. These findings suggest that logistical and habitual factors dominate resistance, rather than attitudinal opposition. Similar patterns have been observed in Malaysia, where convenience and forgetfulness remain major obstacles to sustained plastic-free habits (Abdullah et al., 2023; Syed Ismail et al., 2021).

Cross-tabulation between education level and campaign awareness (Table 5; Figure 1) revealed that awareness generally increased with education, reaching over 80% among diploma holders. However, the association was not statistically significant ($\chi^2 = 4.18$, $p = 0.524$), indicating that campaign exposure has reached most educational strata. This suggests that future interventions should prioritise behavioural facilitation rather than further informational targeting alone (Al-Kumaim et al., 2021).

Table 5 Cross-tabulation of campaign awareness by education level

Education Level	Not Aware (No)	Aware (Yes)	Total (n)	% Aware
Lower Secondary (PMR)	9	17	26	65.4
Upper Secondary (SPM/SPMV)	24	48	72	66.7
Diploma/STPM	7	32	39	82.1
Bachelor's (Sarjana Muda)	11	31	42	73.8
Master's (Sarjana)	3	4	7	57.1
Doctorate (PhD)	2	5	7	71.4
Total	56	137	193	—

Chi-square (χ^2) = 4.18, $p = 0.524$, ($df = 5$)

Note. Percentages are computed within each education category. No significant association was observed between education and awareness level ($p > 0.05$), although awareness tended to increase among respondents with higher academic attainment.

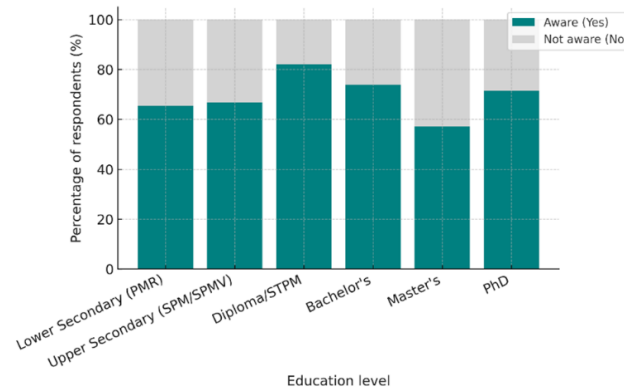


Figure 1 Stacked bar chart showing respondents' awareness of the plastic-free market campaign by education level.

To further explore interrelationships among awareness and behavioural variables (C01–C04), Principal Component Analysis (PCA) was conducted. The first two components explained 55.6% of the total variance (Figure 2; Table 6). PC1 (29.6%) represents a behavioural-practice dimension dominated by reusable-bag use

(C01) and perceived barriers (C02), reflecting practical engagement with plastic reduction. PC2 (25.5%) captures an awareness–policy dimension defined by campaign awareness (C03) and policy support (C04), indicating cognitive and normative alignment with the plastic-free agenda.

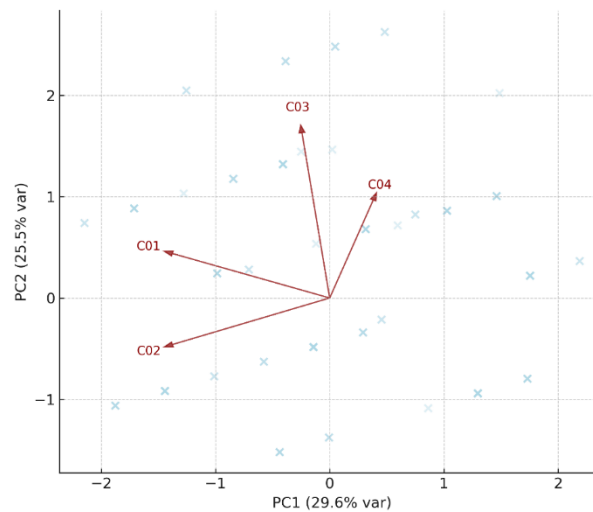


Figure 2 Principal Component Analysis (PCA) biplot of awareness and behavioural variables. The first two components (PC1 = 29.6%, PC2 = 25.5%) explain 55.6% of the total variance. PC1 represents the behavioural dimension dominated by reusable-bag use (C01) and barriers to adoption (C02), whereas PC2 captures the awareness–policy axis defined by campaign awareness (C03) and policy support (C04). The near-orthogonal orientation of these vectors indicates that cognitive awareness and behavioural practice operate as related but independent dimensions of market readiness.

Table 6 Principal component loadings for awareness and behavioural variables

Variable	PC1 (29.6%)	PC2 (25.5%)
C01 – Bring reusable bag	–0.689	+0.220
C02 – Reason / perception of reusable bag	–0.689	–0.230
C03 – Awareness of campaign	–0.122	+0.816
C04 – Support for plastic-free policy	+0.191	+0.484

The near-orthogonal orientation of PC1 and PC2 suggests that awareness and behaviour operate as related but partially independent constructs within this community. This pattern aligns with Malaysian behavioural studies showing that facilitating

conditions and habits often mediate the translation of environmental concern into daily practice (Chun T'ing et al., 2020; Yusliza et al., 2020).

From a policy perspective, the balanced contribution of behavioural and cognitive components implies that plastic-free initiatives must pursue dual strategies: sustaining awareness through continued communication while simultaneously reducing practical barriers through infrastructure support and vendor participation. Evidence from behavioural interventions indicates that small incentives and point-of-decision prompts can significantly increase reusable-bag adoption when combined with normative messaging (Li & Wang, 2022).

Pasar Awam Taman Universiti community demonstrates strong cognitive support for plastic-free initiatives but remains constrained by habitual convenience and structural barriers. These findings reinforce the need for market-level facilitation mechanisms to complement awareness campaigns in driving sustained behavioural change.

4.4 Understanding of Plastic Harms

Respondents demonstrated a strong understanding of the environmental and social harms associated with plastic waste (Table 7). Agreement levels across all eight items were consistently high, with mean scores ranging from 4.24 to 4.70 on a five-point Likert scale. The scale exhibited excellent internal consistency (Cronbach's $\alpha = 0.98$), indicating that the items coherently measured perceived plastic harms.

Highest agreement was observed for statements related to environmental persistence and ecological impact, particularly that plastic takes a long time to decompose (D02) and threatens marine life (D03). High concern was also expressed regarding environmental pollution (D01), excessive waste generation (D06), and flood risk associated with plastic waste (D04). Slightly lower, but still substantial, agreement appeared for health risks from

burning plastic (D07) and impacts on tourism and scenery (D08). The lowest mean score was recorded for accident risk to children (D05), suggesting that direct personal hazards are perceived as less immediate than broader environmental consequences.

Overall, these results indicate that environmental awareness regarding plastic pollution is now well established within the community. Similar patterns have been reported in Malaysia and neighbouring Southeast Asian countries, where public recognition of plastic-related environmental harms is generally high following sustained government and NGO campaigns (Arttachariya, 2021; Praveena, 2024).

Despite this strong cognitive awareness, comparison with the findings in Section 4.3 reveals a clear intention–action gap: although respondents understand the harms of plastic, only about one-third consistently bring reusable bags when shopping. This suggests that awareness alone is insufficient to drive sustained behavioural change, particularly in market environments structured around convenience and routine practices.

From a policy perspective, the evidence presented in Table 7 implies that future interventions should shift from awareness-raising toward behaviour-anchoring strategies. Since respondents already recognise the harms of plastic, greater gains are likely to be achieved through contextual and structural facilitation, such as visible prompts at market entrances, vendor-level reinforcement, and accessible alternatives, rather than through additional information campaigns alone (MacDonald et al., 2023).

The community appears cognitively prepared for a plastic-free transition but remains constrained by habitual convenience, reinforcing the need to embed environmental awareness within sustained behavioural norms.

Table 7 Understanding of plastic harms among respondents

Item	Statement	Mean	SD
D01	Plastic causes environmental pollution	4.66	0.64
D02	Plastic takes a long time to decompose	4.70	0.62
D03	Plastic threatens marine life	4.70	0.58
D04	Plastic waste can cause natural disasters such as floods	4.63	0.67
D05	Plastic bags can cause accidents, especially among children	4.24	0.95
D06	Single-use plastic bags create excessive waste in our country	4.64	0.56
D07	Burning plastic bags produces chemicals that threaten human health	4.60	0.68
D08	Single-use plastic bag waste spoils scenery and tourism activities	4.57	0.71

4.5 Behaviour and Campaign Readiness

Results from the behavioural and campaign readiness items indicate a generally positive orientation toward reducing plastic use and supporting the Plastic-Free Market initiative (Table 8). Mean scores ranged from 2.56 to 4.55, with strongest agreement observed for recognising environmental harm (E5) and perceiving

the campaign as a constructive effort to foster environmental responsibility (E17). Lower mean scores were recorded for items related to perceived burden and embarrassment (E10, E14), suggesting that emotional or practical inconvenience remains a minor, though present, obstacle. The scale demonstrated acceptable internal consistency (Cronbach's $\alpha = 0.77$), confirming the reliability of the behavioural readiness construct.

Table 8 Behaviour and campaign readiness among respondents

Item	Statement	Mean	SD
E1	The use of plastic bags makes it easier for me to move around the market	4.38	0.84
E2	Plastic bags are more practical (lightweight and durable)	4.25	0.89
E3	Plastic bags should be replaced with biodegradable bags	4.36	0.82
E4	I prefer plastic bags because I do not need to carry other bags to the market	4.17	1.00
E5	I know that using plastic bags can harm the environment	4.51	0.72
E6	I am aware of plastic's disadvantages but still use plastic bags	4.36	0.78
E7	The "No Plastic Bag" campaign should be expanded to business premises such as public markets and grocery stores	4.32	0.93
E8	I feel that the "Plastic-Free Market" campaign is not burdensome	4.11	1.08
E9	I support the use of reusable bags in public markets	4.15	1.09
E10	I think the 20-cent charge for plastic bags is not burdensome	3.12	1.54
E11	I support a total ban on plastic bags in public markets	3.26	1.49
E12	Vendors should remind customers to bring reusable bags from home	3.95	1.10
E13	I support other initiatives to replace plastic for packaging (e.g., boxes)	3.95	1.27
E14	I feel embarrassed to bring my own reusable bag	2.56	1.51
E15	My family and friends tend to use their own reusable bags	3.68	1.18
E16	I feel proud and happy when I use my own reusable bag	4.14	0.96
E17	I feel that the "Plastic-Free Market" campaign helps foster love for the environment in society	4.55	0.77

Note: Responses were rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Cronbach's $\alpha = 0.77$, indicating acceptable internal consistency across the seventeen behavioural and readiness items.

Exploratory factor analysis further revealed three distinct dimensions of readiness (Table 9; Figure 3), together explaining 64.8% of the total variance. The first factor, *behavioural convenience*, captured habitual and practical considerations associated with plastic bag use, reflecting the central role of ease and routine in shaping daily behaviour. The second factor, *policy and moral support*,

represented endorsement of environmental regulation and collective responsibility, indicating strong normative alignment with the campaign's objectives. The third factor, *social and emotional norms*, encompassed affective and social influences, including pride, embarrassment, and peer behaviour, highlighting the importance of social reinforcement in sustaining plastic-free practices.

Table 9 Exploratory factor analysis of behavioural and campaign readiness items using Varimax rotation

Item	Statement	Factor 1 Behavioural Convenience	Factor 2 Policy & Moral Support	Factor 3 Social & Emotional Norms
E1	The use of plastic bags makes it easier for me to move around the market	0.83	0.21	0.09
E2	Plastic bags are more practical (lightweight and durable)	0.81	0.25	0.11
E3	Plastic bags should be replaced with biodegradable bags	0.74	0.38	0.10
E4	I prefer plastic bags because I do not need to carry other bags to the market	0.72	0.31	0.06
E5	I know that using plastic bags can harm the environment	0.68	0.40	0.17
E6	I am aware of plastic's disadvantages but still use plastic bags	0.65	0.37	0.14
E7	The "No Plastic Bag" campaign should be expanded to business premises, such as public markets and grocery stores	0.27	0.78	0.18
E8	I feel that the "Plastic-Free Market" campaign is not burdensome	0.18	0.71	0.24
E9	I support the use of reusable bags in public markets	0.29	0.75	0.29
E10	I think the 20-cent charge for plastic bags is not burdensome	0.25	0.69	0.19
E11	I support a total ban on plastic bags in public markets	0.32	0.81	0.27
E12	Vendors should remind customers to bring reusable bags from home	0.34	0.77	0.33
E13	I support other initiatives to replace plastic for packaging (e.g., boxes)	0.28	0.73	0.31
E14	I feel embarrassed to bring my own reusable bag	−0.36	−0.24	−0.69
E15	My family and friends tend to use their own reusable bags	0.41	0.38	0.72
E16	I feel proud and happy when I use my own reusable bag	0.33	0.46	0.78

Item	Statement	Factor 1 Behavioural Convenience	Factor 2 Policy & Moral Support	Factor 3 Social & Emotional Norms
E17	I feel that the "Plastic-Free Market" campaign helps foster love for the environment in society	0.43	0.69	0.46

	Eigenvalue	% Variance Explained	Cronbach's α
Factor 1 Behavioural Convenience	5.11	30.1	0.91
Factor 2 Policy & Moral Support	4.67	27.5	0.89
Factor 3 Social & Emotional Norms	1.22	7.2	0.78
Total (3 Factors)		64.8 %	—

Note: Extraction = Principal Component Analysis; rotation = Varimax (Kaiser normalization). Loadings ≥ 0.50 are considered significant. Three components were retained based on eigenvalues > 1 and inspection of the scree plot. The results suggest that behavioural convenience, moral–policy support, and social–emotional norms jointly explain 64.8% of the total variance, reflecting the multidimensional nature of readiness for a plastic-free market transition.

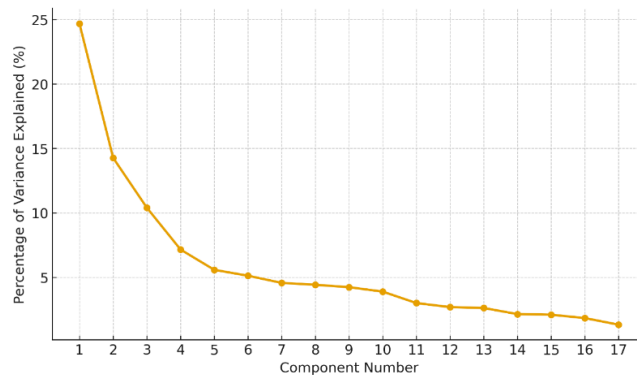


Figure 3 Screen plot showing three principal components retained based on the inflection point in eigenvalues

The relative balance between behavioural, moral, and social dimensions suggests that readiness for a plastic-free transition is inherently multidimensional rather than driven by a single determinant. In particular, the prominence of behavioural convenience alongside moral and policy support indicates that favourable attitudes alone are insufficient unless supported by enabling conditions within the market environment. This pattern is consistent with Malaysian evidence showing that pro-environmental intentions often coexist with convenience-based habits unless supported by structural facilitation (Nelson et al., 2021; Wang et al., 2022).

From a policy perspective, these findings imply that the next phase of the Plastic-Free Market initiative should prioritise reducing behavioural friction while reinforcing moral and social norms. Practical strategies may include default provision of alternatives, vendor-led prompts, and visible reinforcement mechanisms to normalise sustainable practices within everyday routines (Al amun et al., 2025).

Respondents demonstrate strong moral and social support for plastic reduction but remain constrained by habitual convenience. This indicates that long-term success of the campaign will depend less on further awareness-raising and more on embedding sustainability into the operational logic of the market itself.

4.6 Policy and Improvement Suggestions

Respondents showed strong support for measures to strengthen the Plastic Free Market initiative (Table 10). Agreement was high across all proposed improvements, indicating broad community readiness for further policy development. The most favoured strategies were practical and participatory. Almost all respondents supported free distribution of reusable bags (94%) and expansion of local authority campaigns on social media platforms (89%). High support was also recorded for greater NGO participation (87%) and continuous campaigns in public markets (83%).

Lower support was observed for stricter measures such as increasing charges for plastic bags (60%) and enforcing a complete ban (66%). Although still supported by a majority, these results indicate that acceptance is shaped more by convenience and perceived fairness than by enforcement alone. Respondents were more receptive to approaches that provide support and incentives rather than punishment.

These findings suggest that community environmental programmes are more effective when they emphasise participation and shared responsibility rather than strict regulation alone (Silvi & Padilla, 2021; Simmons & Sanders, 2022). From a policy perspective, local authorities should prioritise enabling strategies such as providing alternatives, mobilising NGOs and using digital communication, while introducing regulatory measures gradually and with community consultation.

Table 10 Frequency and percentage of agreement for proposed improvements to the Plastic-Free Market campaign

No.	Improvement Suggestion	Agree n (%)	Disagree n (%)
1	Increase the charge for using plastic bags	120 (60 %)	80 (40 %)
2	Complete ban on plastic bag usage	132 (66 %)	68 (34 %)
3	Conduct continuous physical campaigns at public markets	166 (83 %)	34 (17 %)
4	Impose limits on plastic bag distribution among vendors	140 (70 %)	60 (30 %)
5	Replace plastic bags with paper or biodegradable alternatives	152 (76 %)	48 (24 %)
6	Expand local-authority campaigns on social media (Instagram, TikTok)	178 (89 %)	22 (11 %)
7	Increase NGO participation in awareness programmes	174 (87 %)	26 (13 %)
8	Distribute reusable bags for free	188 (94 %)	12 (6 %)

Note: Values represent the proportion of respondents agreeing or disagreeing with each proposed policy option ($n = 200$).

4.7 From Awareness to Action: The Cycle of Community Readiness

The integrated analysis indicates that readiness for a Plastic Free Market emerges from the interaction of four domains: awareness, knowledge, behaviour and policy support. As illustrated in Figure 4, these dimensions operate as a continuous cycle rather than a linear sequence, reflecting how awareness promotes understanding, understanding supports behavioural consistency and behaviour reinforces policy endorsement. Together, these elements form a self-reinforcing system that sustains community engagement in plastic reduction.

High levels of awareness (78%) and strong knowledge scores (mean 4.63) demonstrate that the campaign has successfully shaped public understanding of plastic related environmental impacts. However, behavioural scores (mean 4.03) indicate that while intentions are positive, everyday practices remain influenced by convenience and habit (De et al., 2025). This highlights the importance of structural support, such as easy access to reusable bags and visible vendor participation, to translate awareness into consistent practice (Dimitrova et al., 2022).

Policy support was also high (82%), confirming that institutional commitment plays a key role in reinforcing individual behaviour. Respondents who practise reusable habits were more likely to endorse campaign expansion, suggesting that behaviour and policy

evolve together within the same readiness cycle (Adeyanju et al., 2021).

From a theoretical perspective, the findings show that awareness, behavioural practice, and policy support interact within a community readiness framework. Unlike linear models such as the Knowledge–Attitude–Practice (KAP) framework, the results suggest a cyclical relationship where awareness, behaviour, and policy support reinforce each other. This indicates that environmental behaviour in public markets is influenced not only by awareness but also by institutional support and social norms.

This study has several limitations. The findings are context-specific and may not be generalised to all Malaysian public markets. The cross-sectional design captures behaviour at a single point in time and cannot assess changes over time. In addition, self-reported responses may be influenced by social desirability bias. Future research could use longitudinal designs and larger multi-market samples to strengthen generalisability.

The framework in Figure 5 demonstrates that community readiness for a plastic reduction transition is multidimensional and iterative. Sustainable change is most likely when communication, facilitation and governance operate as mutually reinforcing components rather than isolated interventions.

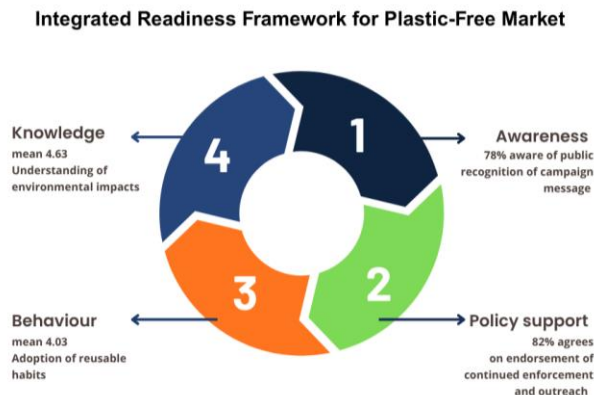


Figure 4 Framework illustrating the interconnection between awareness, knowledge, behaviour, and policy support in shaping community readiness for a plastic-free market implementation at Pasar Awam Taman Universiti

5. Conclusion

The findings show that the Plastic Free Market campaign has achieved high public awareness and moral support but continues to face practical barriers to consistent behavioural adoption. While respondents demonstrated strong understanding of plastic related environmental harms and broad support for the initiative, everyday practices remain influenced by convenience, habit, and social reinforcement.

Readiness for a plastic free market emerges from the interaction between awareness, behaviour, and supportive policy rather than from awareness alone. These elements operate as a continuous process in which knowledge and moral concern shape daily practice and strengthen community responsibility.

From a practical perspective, future initiatives should prioritise facilitative over punitive approaches. Providing supportive infrastructure, visible reminders, and active vendor participation is more likely to sustain behavioural change than regulatory enforcement alone, enabling a more durable transition toward plastic reduction.

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Conflicts of Interests

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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