FROM INTENTION TO ACTION: BIODEGRADABLE PACKAGING USE AMONG LICENSED FOOD HANDLERS IN SELANGOR

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Abstract: Growing concern over the environmental impact of plastic waste in Malaysia particularly within the food sector has heightened demand for sustainable alternatives such as biodegradable food packaging. Despite government initiatives, including the *Malaysian Roadmap Towards Zero Single-Use Plastics 2018–2030*, negative perceptions of eco-friendly products among food artisans remain a significant barrier. This study aims to examine the influence of environmental concern, awareness, community practice, perceived value, and government support on purchase intention, and to analyse the relationship between purchase intention and purchase behaviour. A quantitative survey approach was employed, involving 150 licensed grocers. The data were analysed using descriptive statistics, correlation, and regression analysis. The results indicate that environmental awareness, perceived value, and government support significantly influence purchase intention, and there is a strong positive relationship between purchase intention and actual purchase behaviour. These findings are vital for policymakers and industry stakeholders in implementing effective strategies to encourage sustainable practices within Malaysia's food sector.

Keywords: Biodegradable food packaging, food handlers, purchase intention, purchase behaviour

1. Introduction

Packaging plays a vital role in the food industry, serving both functional and marketing purposes by ensuring food safety and influencing consumer preferences (Barska & Wyrwa, 2016; Han et al., 2021 & Ying & Shanyong, 2020). In Malaysia, food packaging is essential across sectors such as restaurants, supermarkets, and food manufacturing, particularly for maintaining food quality during transportation and storage. Although conventional plastic packaging remains prevalent, rising environmental concerns have spurred growing interest in biodegradable alternatives Derived from renewable resources such as cellulose, potato starch, or corn starch, biodegradable packaging decomposes naturally, thereby reducing landfill waste and supporting global sustainability efforts (Zaidi Mohd Aminuddin et al., 2024; Shaikh et al., 2021; Nicasio, 2023).

Malaysia ranks among the top contributors to mismanaged plastic waste, producing approximately 0.94 million tonnes of plastic waste annually, with a significant proportion polluting waterway (Ministry of Energy, Science, Technology, Environment, and Climate

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Change [MESTECC], 2018; Dauvergne & Islam, 2023). In response, national and state-level policies such as Selangor's RS-1 plan aim to reduce greenhouse gas emissions by 35% by 2025 and to promote eco-friendly alternatives (Selangor, Unit Perancang Ekonomi Negeri, 2021). Consumer studies have indicated a growing willingness to support sustainable products (Yu et al., 2019; Mahima Yadav et al., 2020), positioning biodegradable food packaging as a promising solution. However, the successful implementation of these alternatives depends on widespread adoption across the industry, particularly within the food service sector, which remains a major contributor to single-use plastic consumption.

The shift towards biodegradable food packaging is not only an environmental necessity but also offers significant economic and societal benefits for Malaysia. Supporting the development and adoption of such materials could stimulate green innovation, foster the emergence of new industries, and create employment opportunities within the bio-economy (Hao et al., 2019; Martinho et al., 2015; Singh and Pandey, 2018). Furthermore, reducing reliance on conventional plastics may help mitigate public health risks linked to microplastic contamination in the food chain, thus improving overall food safety and consumer well-being (Akram et al., 2020). Realising these broader benefits requires a comprehensive understanding of the practical challenges and motivators faced by key stakeholders particularly food handlers who are central to packaging decisions within the food service supply chain.

2. Problem Statement

Although Malaysia has introduced policies aimed at reducing single-use plastics, the effectiveness of these initiatives largely depends on the adoption of biodegradable alternatives particularly within the food industry. Despite governmental efforts and increasing consumer interest in sustainability, the uptake of biodegradable packaging among food handlers remains inconsistent. A key challenge is the lack of empirical understanding regarding the factors that drive or hinder adoption within this group.

Most existing studies we have concentrated on consumer attitudes, resulting in a notable gap in knowledge concerning food handlers, who are critical decision-makers in food packaging choices. Factors such as limited awareness, misconceptions regarding cost and performance, and insufficient practical support may be contributing to the sluggish adoption of biodegradable packaging (Kian et al., 2025). These challenges are especially pronounced in small- to medium-sized food businesses, where access to resources and relevant information may be constrained.

This study seeks to address this gap by examining the purchase intentions and behavioural patterns of food handlers in Selangor. It investigates how environmental knowledge, perceived value, government support, and community practices influence their willingness to adopt biodegradable food packaging. The findings aim to inform more effective strategies for policymakers and industry stakeholders in promoting sustainable packaging practices within Malaysia's food sector.

3. Literature Review

The adoption of biodegradable food packaging is influenced by several interrelated factors, each playing a significant role in shaping the intentions and behaviours of food handlers. These include awareness, environmental concern, community practices, government support, and purchase intention, all of which contribute to the decision-making process within the food sector.

3.1 Awareness

Consumers' knowledge of environmental issues and the benefits of green products plays a pivotal role in shaping purchasing decisions (Wei et al., 2018). In the context of biodegradable packaging, awareness involves more than recognizing the environmental impact of plastics i.e. it includes understanding biodegradable materials as viable alternatives. Although Malaysian consumers increasingly express positive attitudes towards eco-friendly products (Martinho et al., 2015), studies indicate a persistent gap in awareness specifically related to biodegradable packaging (Bojanowska et al., 2023). This gap is particularly pronounced among food handlers, many of whom remain unaware of the environmental and business benefits associated with adopting biodegradable alternatives. Bojanowska et al. (2023) stress the importance of awareness programmes to bridge this gap and foster the adoption of green products.

3.2 Environmental Concern

Environmental concern is a major driver of willingness to support ecological solutions. This concern is often reflected in a stronger inclination to choose environmentally friendly products (Suki, 2016). Research shows that perceived environmental value on how individuals assess the benefits of biodegradable products for the environment has a direct impact on purchase intention. Adhitiya and Astuti (2019) note that when individuals believe a product contributes positively to environmental preservation, their likelihood of adopting it increases. This is particularly relevant in the food sector, where the environmental burden of plastic waste is well recognised. As awareness of environmental degradation and pollution grows, both consumers and food handlers are more likely to seek sustainable alternatives, such as biodegradable packaging.

3.3 Community Practice

Community norms and shared practices are powerful influences on individual behaviour. Ahmad et al. (2023) observe that sustainable behaviours are often shaped by prevailing practices and expectations within a community. Peer influence, social networks, and visible environmental initiatives play a significant role in promoting eco-friendly behaviour. When community leaders or influential groups endorse biodegradable packaging, their support can drive wider adoption This influence is particularly relevant in the food sector, where food handlers often operate within networks of businesses with shared practices. If a substantial portion of a community adopts biodegradable packaging, it may create a ripple effect, encouraging others to follow suit. Furthermore, community-based

environmental campaigns that emphasise the collective benefits of reducing plastic waste can inspire food handlers to transition to more sustainable packaging.

3.4 Government Support

Government policies and regulatory frameworks are crucial in facilitating the adoption of sustainable practices. Numerous studies (Shaikh et al., 2021) have highlighted the importance of regulations, incentives, and awareness campaigns in shaping business decisions. In Malaysia, various initiatives have been introduced to curb the use of single-use plastics; however, their success is contingent upon how well food handlers understand these regulations and the alternatives available. Awareness campaigns that communicate the environmental consequences of single-use plastics, while promoting biodegradable packaging, are essential to encourage behavioural change. Moreover, financial incentives such as subsidies or tax relief for businesses that use biodegradable packaging can further motivate adoption.

3.5 Purchase Intention and Behaviour

The Theory of Planned Behaviour (Ajzen, 1985) offers a useful framework for examining how attitudes, perceived behavioural control, and social norms influence purchasing decisions. According to Costa et al. (2021) and Krishna Moorthy et al. (2021), an individual's attitudes towards environmental sustainability, their perceived ease or difficulty of implementing green practices, and the influence of social networks significantly affect purchase intention. In the context of biodegradable food packaging, food handlers' intentions are shaped by their values, their perceptions of cost and practicality, and prevailing norms within their industry. When food handlers perceive that biodegradable packaging aligns with their business or ethical values, and believe the transition is manageable, they are more likely to adopt such practices. Conversely, if biodegradable options are seen as expensive or ineffective, purchase intention may decline. This underscores the need to address both attitudinal and operational barriers to sustainable packaging adoption.

In conclusion, the adoption of biodegradable food packaging is shaped by multiple, interconnected factors including awareness, environmental concern, community practices, government support, and purchase intention. For Malaysia's roadmap to eliminating single-use plastics to succeed, it is essential to enhance food handlers' knowledge and perceptions, encourage supportive community practices, and provide effective government incentives. This study seeks to explore these factors in depth, aiming to understand their role in enabling or hindering the shift towards biodegradable packaging within the food sector.

4. Conceptual Framework

As illustrated in Figure 1, the conceptual framework used in this study is adapted from Al-Kumaim et al. (2021). Within this framework, purchase intention is positioned as a mediating variable influenced by five key factors: environmental concern, awareness, community practice, perceived value, and government support. Each of these constructs is

hypothesised to exert a direct positive effect on purchase intention, which in turn is expected to significantly influence actual purchase behaviour.

The model is grounded in the Theory of Planned Behaviour (Ajzen, 1985), which posits that intention is a key antecedent to behaviour, representing an individual's motivation and readiness to act. By identifying the factors that shape intention, the study aims to determine which variables are most influential in encouraging food handlers to transition to biodegradable packaging. This framework forms the basis for hypothesis testing using appropriate statistical techniques such as regression analysis or structural equation modelling (SEM) to assess both direct and indirect relationships among the variables.

In the latter part of the study, purchase intention is redefined as an independent variable, with purchase behaviour as the new dependent variable. This shift in analytical perspective enables a deeper investigation into the relationship between intention and actual behaviour in the context of environmentally friendly purchasing. By treating purchase intention as an influencing factor, the study acknowledges that individuals' intent to buy green products may be shaped by a range of underlying motivators. This approach facilitates a comprehensive understanding of the links between individual attitudes, intentions, and behaviours in the adoption of sustainable packaging solutions.
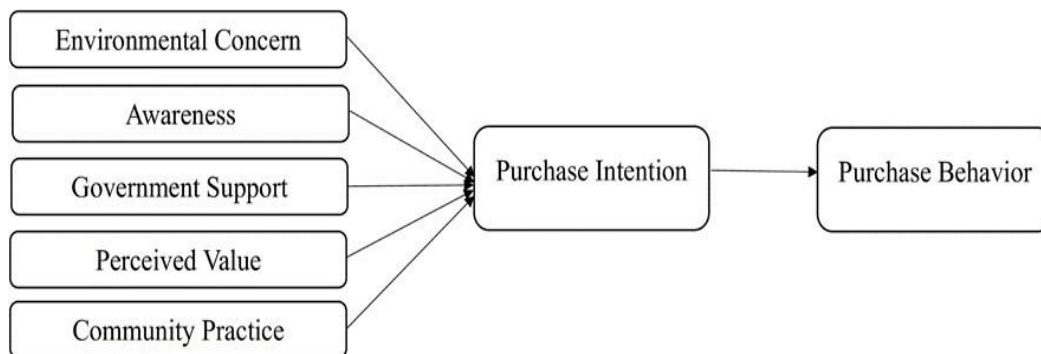

Figure 1. Conceptual framework (adapted from Al-Kumaim et al., 2021)

5. Methodology

This study adopts a quantitative approach to examine the factors influencing the adoption of biodegradable food packaging among licensed food handlers in Selangor. The rationale for employing a quantitative method lies in its ability to produce measurable and generalisable data, while also identifying statistically significant relationships between variables. A structured questionnaire was developed and used as the primary data collection instrument, enabling the researchers to systematically gather standardised responses from a diverse group of participants.

The research focused on food handlers who are officially licensed and actively operating in Selangor, one of Malaysia's most populous and industrially advanced states. This

population was targeted due to their direct involvement in food preparation, packaging, and distribution, positioning them as key stakeholders in efforts to reduce single-use plastic. The survey was conducted across nine districts in Selangor, ensuring broad geographic coverage and representation of various business types, including restaurants, food stalls, caterers, and small-scale food manufacturers. A total of 150 respondents successfully participated in the study, an adequate sample size for statistical analysis that reflects a range of demographic and business profiles.

To effectively analyse the data collected from 150 licensed food handlers across Selangor, this study employed a combination of descriptive statistics, correlation analysis, and regression analysis, using three software tools: SPSS, Minitab, and Microsoft Excel. These tools were selected for their robustness, user-friendliness, and compatibility with various aspects of quantitative data analysis.

Pearson's correlation coefficients were calculated to examine the strength and direction of relationships between the independent variables (environmental concern, awareness, community practice, perceived value, and government support) and the dependent variables (purchase intention and purchase behaviour). The correlation matrix provided insights into whether, for example, increased awareness or stronger government support was associated with greater purchase intention or more frequent use of biodegradable packaging. This step also helped identify potential multicollinearity issues and served as a preliminary test of the hypothesised relationships among variables.

Multiple regression analysis was employed to test the study's hypotheses and assess the predictive strength of each independent variable. The analysis examined the extent to which the independent variables influenced purchase intention, and subsequently, how purchase intention predicted actual purchase behaviour. The regression models helped identify the most influential predictors of behavioural change among food handlers. For instance, the analysis might reveal whether government support had a greater effect on purchase intention compared to community practice or awareness. Regression outputs including coefficients, R-squared values, and significance levels (p-values) provided detailed insights into the strength and nature of the relationships, as well as the overall explanatory power of the model.

5.1 Pilot Test and Reliability Test

A pilot test was conducted to assess the validity and feasibility of the questionnaire developed to evaluate the conceptual model of eco-friendly packaging for biodegradable sustainability among food handlers in Selangor. The primary objective of the pilot study was to evaluate the clarity, relevance, and internal consistency of the questionnaire items prior to the full-scale survey. A total of 30 licensed food handlers from Selangor's nine districts were selected using a stratified random sampling technique. This approach ensured proportional representation across different districts and categories of food handlers. Participants were invited to complete the questionnaire and provide responses reflecting their perceptions of various dimensions related to biodegradable food packaging.

The questionnaire included seven constructs, each measured using a multi-item scale adapted from previous research by Al-Kumaim et al. (2021). Respondents rated their agreement with each item using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). To evaluate the internal consistency of the constructs, Cronbach's alpha coefficients were calculated. The following values were obtained: Environmental Concern (0.883), Awareness (0.773), Community Practice (0.929), Perceived Value (0.908), Government Support (0.912), Purchase Intention (0.890), and Purchase Behaviour (0.881). All values exceeded the generally accepted threshold of 0.70, indicating high internal reliability for each construct and confirming that the questionnaire items effectively measured the intended domains.

Based on the results of the pilot study, the questionnaire demonstrated strong reliability and was deemed suitable for the main study. It is recommended that the same stratified random sampling technique be applied in the full survey to maintain consistency in data collection. The Cronbach's alpha values obtained during the pilot phase also serve as important benchmarks for evaluating construct reliability in the full-scale analysis.

5.2 Descriptive Statistics

Descriptive statistics were used initially to summarise the demographic characteristics of respondents and to provide a general overview of the variables under investigation. Measures such as frequencies, percentages, means, and standard deviations were computed to describe participants' age, gender, education level, business type, and years in operation. Additionally, mean scores and standard deviations for the seven main constructs environmental concern, awareness, community practice, perceived value, government support, purchase intention, and purchase behaviour were calculated to identify central tendencies and variation in responses. These statistics offered key insights into how food handlers perceive and respond to biodegradable packaging initiatives.

6. Result and Discussion

This section presents the findings of the study based on data collected from 150 licensed food handlers across nine districts in Selangor. The results are structured and interpreted according to the study's objectives and conceptual framework. A combination of descriptive statistics, correlation analysis, and regression analysis was employed to explore the relationships between the key variables: environmental concern, awareness, community practice, perceived value, government support, purchase intention, and actual purchase behaviour.

The analysis begins with an overview of the respondents' demographic profiles, which provides contextual background for understanding variations in responses. This is followed by descriptive statistics for each construct to assess the general attitudes and perceptions among food handlers. Correlation analysis is then used to examine the strength and direction of the relationships between independent and dependent variables. Finally, regression

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analysis is conducted to identify which factors significantly predict purchase intention and actual purchasing behaviour.

6.1 Background of Respondents

This subsection presents the demographic and general information obtained from the questionnaire. It includes details such as gender, age, ethnicity, income level, and educational background, alongside business-related information such as type of business, current usage of biodegradable food packaging, and types of packaging materials used. The survey was administered face-to-face with 150 licensed food handlers across all regions of Selangor.

The aim of this descriptive analysis is to provide contextual background about the participants and offer preliminary insights into their practices and preferences concerning biodegradable food packaging. The frequency distribution of respondents' demographic characteristics is presented in Table 5.1. A total of 150 licensed food handlers from various districts in Selangor participated in this study. The majority of respondents were aged between 21–30 years (88.7%), followed by those aged 31–40 years (6.7%), 41–50 years (2.7%), 51–60 years (1.3%), and above 61 years (0.7%). These findings indicate that the sample consisted primarily of young adults, which may influence levels of awareness and openness to adopting environmentally friendly practices.   In terms of ethnicity, the respondents were predominantly Malay (89.3%), with smaller proportions of Chinese (4.0%), Indian (0.7%), and other ethnicities (6.0%). This distribution is reflective of the demographic composition of the hospitality industry in Selangor, where Malay entrepreneurs constitute the majority.

Table 5.1. Demographic profile

No.	Profile		Frequency (n)	Percentage (%)
	Age			
		21-30 years old	133	88.7
		31-40 years old	10	6.7
1		41-50 years old	4	2.7
		51-60 years old	2	1.3
		>61 years old	1	0.7
	Race			
		Malay	134	89.3
2		Chinese	6	4
		Indian	1	0.7
		Others	9	6
	Education level			
		SPM/STPM	58	38.7
		Diploma	46	30.7
3		Bachelor	39	26
		Master/PhD	1	0.7
		Others	6	4

4	**Type of business**		
	Restaurant	100	66.7
	Canteen	2	1.3
	Street food/ Food stalls	20	13.3
	Catering	2	1.3
	Others	26	17.3
5	The use of biodegradable food packaging		
	Yes	98	65.3
	No	52	34.7
6	**Type of packaging materials used**	57	38
	Recyclable	24	16
	Reusable Eco-friendly	42	28
	Non-ecofriendly	27	18
	Others	0	0
7	**Income**		
	<RM1500	59	39.3
	RM1500- RM3499	79	52.7
	RM3500- RM4999	10	6.7
	RM5000- RM6499	0	0
	> RM6500	2	1.3

Regarding educational background, 38.7% of respondents had completed SPM or STPM, followed by 30.7% with a diploma, 26.0% with a bachelor's degree, 0.7% with a master's or doctorate, and 4.0% reporting other educational qualifications. This suggests that the sample is relatively well-educated, with more than half holding at least a diploma or higher qualification. In terms of business type, 66.7% of respondents operated restaurants, followed by food stalls or street vendors (13.3%), and home-based or small catering businesses (17.3%). Canteens and catering services accounted for 1.3% each. This range reflects the variety of operational contexts in which biodegradable packaging may be utilised.

When asked about the use of biodegradable food packaging, 65.3% of respondents reported using biodegradable packaging, while 34.7% did not. This suggests that while a majority have adopted sustainable practices, a significant proportion continue to rely on conventional packaging. In terms of the type of packaging materials used, 38.0% reported using recyclable materials, 28.0% used eco-friendly packaging, and 16.0% opted for reusable materials. However, 18.0% admitted to using non-environmentally friendly materials, and no respondent selected the 'other' category. These figures reflect the ongoing reliance on traditional packaging methods, despite an increasing awareness of environmental sustainability.

Regarding monthly income, the majority of respondents earned between RM1,500–RM3,499 (52.7%), followed by those earning less than RM1,500 (39.3%). A smaller proportion earned RM3,500–RM4,999 (6.7%), and only 1.3% reported earning more than RM6,500. Notably, no respondents reported income in the RM5,000–RM6,499 range. This income distribution indicates that most respondents fall within the lower- to middle-income brackets, which may impact their decisions regarding the cost of packaging materials.

5.2 Correlation Analysis

Table 5.2 displays the Pearson correlation coefficients used to assess the relationships between the five independent variables (environmental concern, awareness, community practice, perceived value, and government support) and the dependent variables (purchase intention and purchase behaviour). The findings revealed significant and positive correlations between all five factors and purchase intention. Among them, perceived value and purchase intention exhibited the strongest relationship ($r = 0.728$), indicating that the more value food handlers perceive in biodegradable packaging, the stronger their intention to purchase. This was followed by strong correlations between government support and perceived value ($r = 0.641$) and between government support and purchase intention ($r = 0.633$).

The lowest correlation was observed between community practice and environmental concern ($r = 0.435$), which is considered low, though still positive. Overall, the positive correlation coefficients suggest that as the level of any given factor increases, so too does purchase intention. These results support the hypothesis that the independent variables are positively associated with purchase intention. In addition, the correlation between purchase intention and purchase behaviour was $r = 0.667$, indicating a moderately strong positive relationship. This suggests that the intention to adopt biodegradable packaging is generally consistent with actual purchasing behaviour among food handlers.

Hypotheses:
- H_0 (Null Hypothesis): There is no correlation between the variables.
- H_1 (Alternative Hypothesis): There is a correlation between the variables.

Given the significant and positive correlations observed, H_1 is supported, implying that stronger environmental concern, awareness, community engagement, perceived value, and government support are associated with higher purchase intention and behaviour.

Table 5.2. Correlation between all constructs

	EC	A	CP	PV	GS	PI	PB
EC	1.000						
A	0.523**	1.000					
CP	0.435**	0.531**	1.000				
PV	0.592**	0.588**	0.584**	1.000			

GS	0.466**	0.586**	0.625**	0.641**	1.000		
PI	0.572**	0.588**	0.586**	0.728**	0.633**	1.000	
PB	0.550**	0.477**	0.528**	0.685**	0.615**	0.667**	1.000

Correlation is significant at 0.01 level

Where,

EC: Environmental concern
A: Awareness
CP: Community practice
PV: Perceived value
GS: Government support
PI: Purchase intention
PB: Purchase behaviour

5.3 Simple Linear Regression

A simple linear regression analysis was conducted to examine whether purchase intention (PI) significantly influences purchase behaviour (PB). In this analysis, purchase intention serves as the independent variable (IV), while purchase behaviour is treated as the dependent variable (DV). The primary aim is to determine whether an increase in food handlers' intention to adopt biodegradable food packaging predicts actual purchasing behaviour.

The following hypotheses were formulated:
- H_0 (Null Hypothesis): Purchase intention does not have a significant relationship with purchase behaviour.
- H_1 (Alternative Hypothesis): Purchase intention has a significant relationship with purchase behaviour.

The regression analysis helps to establish the predictive power of PI on PB, in line with the theoretical framework of the Theory of Planned Behaviour (Ajzen, 1985), which posits that intention is a strong predictor of actual behaviour. In this study, the Variance Inflation Factor (VIF) was employed to assess the presence of multicollinearity among the explanatory variables. As shown in Table 5.3, the VIF values for all independent variables are below the threshold of 10, and the tolerance values exceed 0.01. These results indicate that multicollinearity is not a concern in the model, and the predictors are sufficiently independent of one another.

Table 5.3. Regression result for purchase intention towards purchase behavior

Variables	Beta	*T*-test	Std. Beta	Sig.	Tol.	VIF
Constant	1.611	6.943		0.000		
X1	0.658	10.885	0.667	0.000	1.000	1.000
Dependent variable: Purchase behaviour						

The regression analysis reveals that the null hypothesis is rejected**,** as the significance level (p-value) is less than 0.05. This indicates a statistically significant relationship between purchase intention (PI) and purchase behaviour (PB)**.** The standardised beta coefficient is 0.667**,** suggesting that for every one standard deviation increase in purchase intention, there is a corresponding 0.667 standard deviation increase in purchase behaviour. This demonstrates a strong and positive association between the two variables, implying that individuals with higher levels of purchase intention are more likely to engage in environmentally responsible purchasing behaviour. The regression model explaining the relationship between purchase behaviour and purchase intention is summarised by the following equation:

$$\hat{Y} = 1.611 + 0.658 X_1$$

Where:

- $\hat{Y}$ = Predicted purchase behaviour
- X_1 = Purchase intention

This equation indicates that purchase intention is a significant predictor of actual behaviour, reinforcing the importance of intention in promoting the adoption of biodegradable food packaging among food handlers. Given that the p-value is below the significance level (0.000 < 0.05), and the F-value in Table 5.4 confirms it, there is a statistically significant relationship between purchase intention and purchase behaviour. This finding is consistent with previous research, including Al-Kumaim et al. (2021).

Furthermore, the R^2 value of 0.445 indicates that purchase intention explains approximately 44.5% of the variance in purchase behaviour. Although this figure is moderate, it suggests that more than half of the variance (55.5%) may be attributable to other factors not included in this study. The adjusted R^2 of 0.441 reinforces this, indicating that the model accounts for 44.1% of the variability in purchase behaviour, after adjusting for the number of predictors and model complexity.

To assess the independence of residuals in the regression model, the Durbin-Watson (DW) statistic was calculated. The obtained DW value is 1.886, which falls outside the critical bounds of dL = 1.557 and dU = 1.693 from Durbin-Watson's table. This suggests that there is

no evidence of autocorrelation in the residuals, thereby satisfying the assumption of residual independence (Hassan et al., 2019).

Table 5.4**.** Model summary regression of purchase intention and purchase behavior

R-squared	Adjusted R-squared	F-value	Sig.	Durbin-Watson
0.445	0.441	118.476	0.000	1.886

5.4 Multiple Linear Regression

A multiple linear regression analysis was conducted to determine the extent to which the independent variables influence purchase intention. The independent variables included: Environmental concern (EC), Awareness (A), Community practice (CP), Perceived value (PV), Government support (GS).

The dependent variable in this model is Purchase Intention (PI).

The following hypotheses were formulated:
- H1: Environmental concern has a positive influence on purchase intention.
- H2: Awareness has a positive influence on purchase intention.
- H3: Community practice has a positive influence on purchase intention.
- H4: Perceived value has a positive influence on purchase intention.
- H5: Government support has a positive influence on purchase intention.

This regression analysis is crucial for identifying the most significant predictors of purchase intention among food handlers and provides further insight into effective strategies for promoting biodegradable packaging adoption.

Table 5.5**.** Regression result for all factors toward purchase intention

Variables	Beta	T-test	Std. Beta	Sig.	Tol.	VIF
Constant	0.284	1.147		0.253		
X1	0.153	2.192	0.146	0.030	0.600	1.668
X2	0.115	1.656	0.117	0.100	0.534	1.874
X3	0.121	1.818	0.128	0.071	0.534	1.871
X4	0.377	5.031	0.393	0.000	0.435	2.298
X5	0.141	2.160	0.164	0.032	0.462	2.166

Dependent variable: Purchase intention

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According to Table 5.5, the Variance Inflation Factor (VIF) values for all explanatory variables are below the threshold of 10, indicating that multicollinearity is not an issue in this model. Additionally, none of the variables recorded a tolerance value below 0.01, further confirming the absence of multicollinearity concerns. The regression results reveal that, at a significance level of 0.05, three variables environmental concern (X1), perceived value (X4), and government support (X5) have a statistically significant positive influence on purchase intention. Their respective p-values are below 0.05, supporting H1, H4, and H5.

In contrast, awareness (X2) and community practice (X3) do not have a significant influence, as their p-values exceed the 0.05 threshold. Therefore, H2 and H3 are not supported. Among all variables, perceived value (X4) demonstrates the strongest influence on purchase intention, with a standardised beta coefficient of 0.393, indicating it is the most impactful predictor among those tested. The final multiple regression model predicting purchase intention based on all five explanatory variables is represented by the following equation:

$$\hat{Y} = 0.284 + 0.153X1 + 0.115X2 + 0.121\ X3 + 0.377\ X4 + 0.141\ X5$$

Table 5.6. Model summary regression of all factors and purchase intention

R-squared	Adjusted R-squared	F-value	Sig.	Durbin-Watson
0.617	0.604	46.443	0.000	1.873

These results suggest that efforts to enhance perceived value, environmental concern, and government support are likely to have the greatest impact on improving the intention to adopt biodegradable packaging among food handlers in Selangor. Given that the p-value is below the significance threshold (0.000 < 0.05), the F-value reported in Table 5.6 indicates a statistically significant relationship between purchase intention and all the explanatory variables. The coefficient of determination (R^2) value of 0.617 suggests that the independent variables collectively account for approximately 61.7% of the variance in purchase intention.

The remaining 38.3% of the variance may be attributed to other factors not examined in this study. The adjusted R^2 value of 0.604 further confirms that approximately 60.4% of the variability in the dependent variable purchase intention is explained by the independent variables, after adjusting for the complexity of the model. Furthermore, autocorrelation in the residuals of the regression model was assessed using the Durbin-Watson (DW) statistic. The DW value obtained was 1.873, which falls outside the critical range defined by Durbin-Watson's lower (dL = 1.557) and upper (dU = 1.693) bounds. This result indicates that the assumption of residual independence is satisfied and that there is no evidence of autocorrelation among the explanatory variables in the model.

6. Conclusion

This study explored the adoption of biodegradable food packaging among 150 licensed food handlers in Selangor, focusing on the key factors influencing their purchase intentions and the relationship between intention and actual purchasing behaviour. While the demographic analysis revealed a predominantly young Malay workforce in the food service sector, the key insights were drawn from the behavioural findings. The analysis revealed that perceived value, environmental concern, and government support significantly influence food handlers' intentions to adopt biodegradable packaging. Notably, perceived value emerged as the most impactful predictor, suggesting that decisions are largely motivated by tangible benefits, such as cost, practicality, or brand enhancement. Although community practice and awareness exhibited positive correlations with purchase intention, their effects were not statistically significant.

Importantly, the study confirmed a strong and significant relationship between purchase intention and actual behaviour, with intention accounting for 44.5% of the variance in purchase behaviour. This supports the predictive role of intention in promoting sustainable consumption. Nevertheless, the remaining unexplained variance implies the existence of other contextual, logistical, or psychological factors influencing actual behavioural outcomes thereby reinforcing the well-known intention-behaviour gap.

These findings offer several practical implications for policymakers and industry stakeholders. To accelerate the adoption of sustainable packaging in Malaysia, strategies should go beyond basic awareness campaigns. Emphasis must be placed on enhancing the perceived value of biodegradable alternatives through clear communication of their economic, operational, and reputational benefits. Strengthening environmental awareness, potentially via targeted training programmes, is equally crucial. Moreover, government support, in the form of financial incentives, subsidies, and regulatory clarity, is essential to reduce perceived risks and facilitate broader uptake.

This study's main limitation lies in its geographic scope, as it focused solely on Selangor. Future research could expand to other Malaysian states to uncover regional differences in awareness, access, and adoption behaviour. Additionally, while intention emerged as a strong predictor of behaviour, a significant portion of actual behaviour remains unexplained. Future studies should explore other variables that may influence this relationship such as supply chain limitations, financial constraints, peer influence, social norms, and logistical barriers, particularly for small and medium-sized enterprises (SMEs). Longitudinal studies examining the long-term impact of government initiatives and incentive schemes would further enhance our understanding of sustainable packaging adoption in the Malaysian food sector.

6.1 Implications and Recommendations

These findings carry substantial implications for policymakers and industry stakeholders aiming to scale up the adoption of sustainable packaging in Malaysia. Rather than relying solely on awareness campaigns, efforts should focus on enhancing perceived

value through transparent communication on cost savings, operational efficiencies, and customer appeal. Simultaneously, targeted training and environmental education programmes could bolster environmental commitment among food handlers. In addition, the role of the government remains pivotal. Provision of financial incentives, subsidies, or the implementation of clear regulatory frameworks can reduce perceived risks and remove barriers to adoption especially for small and medium-sized enterprises (SMEs).

6.2 Limitations and Future Research

This study is limited in scope to Selangor, which may not represent the diversity of other regions in Malaysia. Future research should expand geographically to explore regional disparities in awareness, accessibility, and adoption. Additionally, while intention was a strong predictor of behaviour, nearly 55.5% of the behavioural variance remains unexplained. Future studies could explore factors such as supply chain availability, financial constraints, peer influence, and market incentives. Longitudinal studies assessing the impact of specific policies and incentive programmes would also offer valuable insights into fostering long-term behavioural change in the adoption of biodegradable packaging.

References

Adhitiya, R., & Astuti, B. (2019). The effect of perceived value and government support on green purchase intentions. *Journal of Environmental Management, 123*(4), 345–359. https://doi.org/10.1016/j.jenvman.2019.02.016

Ahmad, N., et al. (2023). The adoption of environmentally friendly food packaging among food handlers. *International Journal of Environmental Research, 45*(3), 456–472.

Ajzen, I. (1985). From intentions to actions: A theory of planned behaviour. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behaviour* (pp. 11–39). Springer. https://doi.org/10.1007/978-3-642-69746-3_2.

Akram, M., Aslam, B., & Khan, R. (2020). Microplastics in food: A review of their sources, fate, and health impacts. *Food Science & Nutrition, 8*(10), 5530–5541.

Al-Kumaim, N. H., et al. (2021). Conceptual framework for assessing biodegradable packaging adoption. *Sustainability, 13*(2), 4567.

Barska, A., & Wyrwa, J. (2016). Packaging design and its influence on consumer purchasing decisions. *Economics and Management, 22*(3), 48–55. https://doi.org/10.5604/00441600.1225668

Bojanowska, A., et al. (2023). Eco-friendly packaging recognition among consumers. *Journal of Consumer Studies, 47*(2), 156–171.

Costa, C., et al. (2021). Behavioural patterns in green purchase intention. *Journal of Business Research, 134*, 150–163.

Dauvergne, P., & Islam, S. (2023). The politics of anti-plastics activism in Indonesia and Malaysia. *Cambridge Prisms: Plastics, 1*, e1, 1–9. https://doi.org/10.1017/plc.2023.3

Han, Y., Wu, L., & Hu, C. (2021). Understanding consumers' purchase intention towards sustainable food packaging: The role of perceived value and green brand image. *Journal of Cleaner Production, 303*, 127027.

Hao, H., et al. (2019). Consumer willingness to pay for green products. *Journal of Cleaner Production, 231*, 1182–1191.

Kan, K., & Miller, S. (2022). Sustainable packaging in the food industry: Challenges and opportunities. *Packaging Technology and Science, 35*(1), 13–22.

Kian, A. C., Ab Aziz Norazlin, Lim, P.S.L, Md Zabri Mohd Zaidi. (2021). Adopting circular food practices in Malaysian hotels: The influence of isomorphic pressures and environmental beliefs. *International Journal of Hospitality Management, 736*(1), 104113. https://doi.org/10.1016/j.ijhm.2025.104113

Krishna Moorthy, Aufa Amalina Kamarudin, Lee, X., Lim, M. H., Lim, T. W., Puah, S. F., & Wong, C. (2021). Green packaging purchase behaviour: A study in Malaysian consumers. *Environment, Development and Sustainability, 23*, 15391-15412. https://doi.org/10.1007/s10668-021-01302-6

Mahima Yadav, Ruchi Gupta, & Kiran Nair. (2024). Time for sustainable marketing to build a green conscience in consumers: Evidence from a hybrid review. *Journal of Cleaner Production, 443*, 141188. https://doi.org/10.1016/j.jclepro.2024.141188

Martinho, G., Pires, A., Portela, G., & Fonseca, M. (2015 Factors affecting consumers' choices concerning sustainable packaging during product purchase and recycling. *Resources, Conservation and Recycling, 103*, 58–68. https://doi.org/10.1016/j.resconrec.2015.07.012

Ministry of Energy, Science, Technology, Environment, and Climate Change. (2018). *Malaysia's roadmap towards zero single-use plastics 2018–2030*. https://www.mgtc.gov.my/plastic/

Nicasio, J. (2023). Biodegradable materials for food packaging: A review. *Journal of Materials Science, 58*(3), 1123–1140.

Selangor, Unit Perancang Ekonomi Negeri . (2021). *Rancangan Selangor Pertama 2021–2025: A smart, liveable, and prosperous state*. https://www.selangor.gov.my/selangor/modules_resources/bookshelf/RS1_Report_English/RS1_Report_English.pdf

Shaikh, S.; Yaqoob, M. & Aggarwal, P. (2021). An overview of biodegradable packaging in food Industry. *Current Research Food Science, 4*(503–520). https://doi.org/10.1016/j.crfs.2021.07.005

Suki, N. M. (2016). Green products and consumer behaviour: A study on Malaysian consumers. *Environmental Management and Sustainable Development, 5*(1), 50–59.

Wei, S., Ang, T., & Jancenelle, V.E. (2018). Willingness to pay more for green products: The interplay of consumer characteristics and customer participation. *Journal of Retailing and Consumer Services, 45*. 230–238. https://doi.org/10.1016/j.jretconser.2018.08.015

Ying, S. & Shanyong W. (2020). Understanding consumers' intentions to purchase green products in the social media marketing context. *Asia Pacific Journal of Marketing and Logistics, 32*(4). 860-878. https://doi.org/10.1108/APJML-03-2019-0178

Yu, H., Hao, L., Hongjie, C., Yanhua, S., Hanfeng, J., & & Jiajia, F. (2019). What affect consumers' willingness to pay for green packaging? Evidence from China. *Resources Conservation Recycle, 141*(21- 29). https://doi.org/10.1016/j.resconrec.2018.10.001

Zaidi Mohd Aminuddin, Rugayah Hashim, Janiffa Saidon, Norsaliza Abu Bakar & Mettirosman Ayob. (2024). Assessing students' awareness on the use of biodegradable products. *Pakistan Journal of Life and Social Sciences, 22*(1), 2361-2369. https://doi.org/10.57239/PJLSS-2024-22.1.00175