CONSUMERS' INTENTION OF USING AGROWASTE FOOD PACKAGING VIA EXTENDED THEORY OF PLANNED BEHAVIOR (TPB): A CONCEPTUAL PAPER

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Abstract. The increasing environmental concerns regarding plastic pollution have prompted the search for sustainable alternatives, such as biodegradable food packaging made from agricultural waste. However, understanding the factors that influence consumers' intentions to adopt such alternatives remains a critical challenge. Despite the potential environmental benefits of biodegradable packaging, consumer adoption rates remain low. This study aims to explore the psychological and social factors that influence Malaysian consumers' intentions to use biodegradable food packaging, specifically made from agricultural waste. This research adopts an extended version of the Theory of Planned Behavior (TPB) to examine the role of attitude, subjective norms, perceived behavioral control, and moral norms in shaping consumer intentions. Additionally, environmental responsibility is tested as a mediating variable. A quantitative approach is employed, with data collected through a survey targeting a representative sample of Malaysian consumers in Selangor. Structural equation modeling (SEM) is used to analyze the relationships between the TPB constructs and consumer intentions. The findings are expected to provide valuable insights into the key drivers and barriers affecting consumer behavior towards sustainable packaging. These insights will be useful for policymakers, environmental advocates, and marketers in designing effective campaigns to promote the adoption of biodegradable packaging and reduce plastic waste. By identifying the psychological factors that influence consumer behavior, this study aims to contribute to strategies that encourage sustainable consumption practices and support the transition towards environmentally friendly alternatives in the food packaging industry.
Keywords: *biodegradable, food packaging, agriculture waste, theory of planned behavior*

Introduction

The rapid development of Malaysia's food and beverage sector has led to an increased demand for cost-effective and efficient packaging solutions. However, this expansion has also resulted in significant environmental challenges, primarily due to the widespread use of non-biodegradable packaging materials such as plastic, Styrofoam, and aluminum. Malaysia has one of the highest per capita plastic consumption rates in ASEAN, and in 2020, the country used an estimated 148,000 tonnes of plastic food packaging, contributing heavily to plastic pollution and waste management issues. As plastic waste accumulates in landfills and oceans, it poses long-term environmental and health risks, including contamination of food chains and ecosystems. In response to these environmental challenges, there is a growing global interest in biodegradable alternatives, particularly those made from agricultural waste. Biodegradable food packaging, derived from renewable resources such as agricultural by-products, offers a more sustainable solution by decomposing naturally, reducing plastic waste, and

potentially alleviating environmental harm. However, despite the ecological advantages, the adoption of biodegradable food packaging in Malaysia remains limited. This is partly due to a lack of consumer awareness and concerns over the performance, cost, and convenience of these materials.

Research questions and objectives

The research will address the following research questions: (RQ1): What is the relationship between attitude and the consumers' intention to use biodegradable food packaging made from agriculture waste? (RQ2): What is the linkage between subjective norms and the consumers' intention to use biodegradable food packaging made from agriculture waste? (RQ3): Is there a strong association between perceived behavioral control and the consumers' intention to use biodegradable food packaging made from agriculture waste? (RQ4): Is there any correlation between moral norms and the consumers' intention to use biodegradable food packaging made from agriculture waste? (RQ5): To what extent does environmental responsibility mediate the relationship between attitude, subjective norms, perceived behavioral control as well as moral norms toward the consumers' intention to usebiodegradable food packaging made from agriculture waste? The research will address the following objectives: (RO1): To examine the impact of consumer attitude on the intention to adopt biodegradable food packaging made from agricultural waste; (RO2): To explore the influence of subjective norms on consumers' intention to use biodegradable food packaging made from agricultural waste; (RO3): To assess the role of perceived behavioural control in shaping consumers' intention to use biodegradable food packaging made from agricultural waste; (RO4): To investigate the effect of moral norms on consumers' intention to adopt biodegradable food packaging made from agricultural waste; (RO5): To analyse the mediating role of environmental responsibility in the relationships between attitude, subjective norms, perceived behavioural control, and moral norms on consumers' intention to use biodegradable food packaging made from agricultural waste.

Literature review

Agriculture Waste (AgW)

Agriculture Waste (AgW): Agricultural waste refers to the byproducts and residues generated throughout farming activities, including crop production, livestock rearing, and food processing. It encompasses a wide range of materials such as leftover crops, fruit and vegetable byproducts, livestock waste, and food processing residues (Raut et al., 2023). These wastes, which vary in composition and characteristics depending on the source, are often discarded as they are perceived to have little economic value due to their low nutritional content (Adejumo and Adebiyi, 2021). Common disposal methods, such as landfilling and open-air burning, exacerbate environmental issues, contributing to pollution, greenhouse gas emissions, and soil degradation (Karić et al., 2022). If not properly managed, agricultural waste can have detrimental effects on environmental sustainability, including contamination of water sources, air pollution, and increased greenhouse gas emissions, which account for about 21% of global emissions (Karić et al., 2022).

In Malaysia, agriculture plays a significant role in the economy, contributing approximately 6-9% of the GDP, with the agro-food sector generating a substantial

portion of this value. However, the rapid expansion of the agricultural industry has resulted in an increase in agricultural waste generation. Studies show that Malaysia faces a growing challenge in managing agricultural waste, with notable contributors such as palm oil and rice production. For example, Malaysia's palm oil industry alone generates around 75.61 million tonnes of waste annually, and coconut waste contributes 80,000 tonnes per year (Rosli and Jumali, 2022). This growing waste volume, coupled with inadequate disposal practices, further exacerbates environmental concerns. Globally, the agricultural sector generates over 1 billion tonnes of waste annually, with organic waste accounting for around 80% of this total (Vyas et al., 2022). In Malaysia, agricultural waste such as rice husks and coconut fibers present a significant opportunity for innovation, particularly in creating sustainable solutions like biodegradable packaging, which could help mitigate the environmental impacts of waste disposal while contributing to the circular economy.

Agriculture waste as a source of biodegradable food packaging

Malaysia, rich in agricultural resources, generates substantial amounts of agricultural waste, particularly from the palm oil and food industries. Improper management of this waste can lead to environmental challenges like pollution and resource depletion (Hassan et al., 2020). However, recent research has highlighted the significant potential of repurposing agricultural byproducts, such as fruit and vegetable waste, into sustainable and environmentally-friendly solutions (Cioffi et al., 2023). Agricultural waste, especially from horticultural crops, contains valuable bioactive compounds, including vitamins, minerals, fibers, and antioxidants, which can be extracted for use in food, pharmaceutical, cosmetic, and textile industries (Zhang et al., 2023). This repurposing not only reduces waste but also minimizes environmental impact and creates new revenue streams for the industry. In addition to these bioactive applications, Malaysia is exploring agricultural waste as a source of biodegradable food packaging, offering a promising alternative to plastic pollution. Materials like rice husks, palm oil fronds, and sugarcane bagasse can be processed into biopolymers for use in sustainable packaging solutions (Sha'ari et al., 2023; Hassan et al., 2020). Biodegradable plastics, derived from renewable biomass, are gaining traction in the food sector for products like food trays and cutlery, contributing to the reduction of plastic waste and supporting circular economy practices (Shaikh et al., 2021). With the growing demand for eco-friendly alternatives, Malaysia is positioning itself at the forefront of sustainable innovation by transforming agricultural waste into valuable products and packaging solutions.

Biodegradable food packaging from agricultural waste provides an effective way to manage and repurpose agricultural waste, which is often seen as a nuisance and a burden on the environment. By converting this waste into valuable packaging materials, the circular economy model is reinforced, where resources are recycled and reused, reducing the overall environmental impact. The use of biodegradable packaging can help reduce the reliance on fossil-fuel-based plastics, which are non-renewable and contribute to greenhouse gas emissions. Lastly, the adoption of biodegradable food packaging can have positive implications for the mango industry in Malaysia, where traditional bagging materials, such as newspaper, have proven to be ineffective in withstanding harsh weather conditions and protecting the fruit from pests and damage. The development of a circular economy, where waste is reused and recycled, is a promising approach to address the agricultural waste problem in Malaysia. However,

the efficiency of these efforts is still being evaluated, and increased cooperation from all community levels is necessary to establish a zero-food waste culture in Malaysia. The government's initiatives to enhance food waste management are limited due to budget constraints and a lack of public awareness on the importance of food waste segregation and composting (Hashim et al., 2021). To overcome these challenges, researchers are exploring sustainable approaches, such as using food waste as a substrate for valuable bioproduct production. By harnessing the potential of agricultural waste, Malaysia can address environmental concerns and create new economic opportunities in sustainable waste management.

Relationship between attitude and intention to use biodegradable food packaging made from agriculture waste

Existing research indicates that consumers' attitudes and intentions regarding the use of agricultural waste products are closely interlinked. Studies have found that an individual's perceptions and evaluations of a particular behavior such as their attitude, play a significant role in shaping their intention to engage in that behavior (Cammarelle et al., 2021). For instance, a positive attitude toward electricity-saving has been shown to have a strong positive correlation with the intention to save electricity. Other than that, Cammarelle et al. (2021) also agreed that attitude is one of the factors that encourage people's intention to reduce food waste from their households. At the same time, Azam et al. (2022) reveal that attitudes significantly influenced consumer behavior in encouraging people to purchase agriculture products through e-commerce. Furthermore, Ayob et al. (2017) observed that consumers' attitudes toward food waste, including the belief that wasting food is a waste of money, are related to their actual food waste behavior. However, a study conducted by McCarthy and Liu (2017) found that there are inconsistencies between attitudes and real-world behaviors. The consumers are inclined to face various behavioral constraints when they need to overcome food waste problems as the study claimed that vegan or vegetarian consumers tend to waste more edible foods. Besides that, the consumers are also unaware about the environmental burden generated from food waste.

Nevertheless, the existing literature suggests that promoting positive attitudes toward the use of agricultural waste products is a crucial step in fostering consumers' intention to adopt such practices (Bhatti et al., 2019). Bhatti et al. (2019) revealed that attitude played a significant role in triggering the intention to reduce food waste among young consumers. Based on the above, we offer the following hypothesis: (H1): There is a positive relationship between consumer attitude and their intention to use biodegradable food packaging made from agricultural waste.

Relationship between attitude and intention to use biodegradable food packaging made from agriculture waste

The connection between consumers' perceived social pressure or refers to subjective norms and their intention to use biodegradable agricultural waste products is intricate and multifaceted. Subjective norms, which reflect the social expectations individuals perceive regarding a particular behavior, have been identified as a pivotal factor in shaping consumers' intentions and behaviors within the context of environmentally sustainable consumption. For example, subjective norms have surged people to develop behavioral intentions to adopt a zero-waste lifestyle (ZWL). According to Sajid et al.

(2024), Zero-Waste Lifestyle (ZWL) refers to the reasonable actions in reducing waste generation and mitigating environmental impacts due to human activities. As a result, the study indicates that subjective norms are crucial to encourage people to adopt Zero-Waste Lifestyle.

Subjective norms show a positive factor that contributed to the consumers intention to purchase green electric vehicles (Dutta and Hwang, 2021). Similarly, in the case of purchasing green food, undoubtedly that subjective norm is one of the main motivators that encourage people to purchase and consume green foods. This is because individuals tend to be swayed by the perceived expectations and opinions of their families, colleagues, and other important social referents when making decisions about their consumption habits (Ham et al., 2015). Similarly, in the context of green product purchases, a study determined that environmental concerns had a significant effect on attitude, perceived behavioral control, and purchase intention, but not on subjective norms (Maichum et al., 2016). However, the same study also found that environmental knowledge had an indirect effect on purchase intention through attitude, subjective norm, and perceived behavioral control. These findings suggest that the relationship between subjective norms and the intention to use biodegradable agricultural waste products is complex and may be influenced by a variety of factors, including environmental knowledge, personal values, and social influences. To fully understand this relationship, this study suggests exploring the interplay between subjective norms and the consumers' intention to use biodegradable AgW products. (H2): There is a positive relationship between subjective norms and consumers' intention to use biodegradable food packaging made from agricultural waste.

Relationship between perceived behavioral control and intention to use biodegradable food packaging made from agriculture waste

Consumers' intention to utilize biodegradable agricultural waste products is crucial for promoting sustainable consumption practices. Perceived behavioral control, referring to the perceived ease or difficulty of performing a behavior, has been identified as a significant predictor of consumers' intention to use sustainable products (Pardana et al., 2019). Research suggests that individuals with greater perceived control over their behavior are more likely to actualize their intentions (Hagger, 2019). When consumers perceive they have more resources and opportunities to use biodegradable agricultural waste products, their perceived behavioral control is likely to increase. This perception of control can be influenced by factors such as the availability, accessibility, and perceived ease of using these products. Interestingly, the impact of subjective norms, representing perceived social pressure to perform a behavior, may not significantly affect the intention to use biodegradable agricultural waste products. For instance, Ruslim et al. (2022), claimed that subjective norms did not strongly influence the customers' intention to use green skincare products in Jakarta, Indonesia. It is also supported by Liu and Xu (2022) in their study that found that some scholars slightly argue about the ability of subjective norms in predicting a particular behavior intention. This implies that consumers' decisions may be more strongly influenced by their own perceptions of control and the benefits of using these products, rather than the opinions of others. To promote the use of biodegradable agricultural waste products, it is important for policymakers and businesses to focus on enhancing consumers' perceived behavioral control. This could involve making these products more readily available, providing clear information about their benefits, and addressing any perceived barriers

to their use By understanding the role of perceived behavioral control in shaping consumers' intention to use biodegradable agricultural waste products, this study offer the following hypothesis: (H3): There is a positive relationship between perceived behavioral control and consumers' intention to use biodegradable food packaging made from agricultural waste.

Relationship between moral norms and intention to use biodegradable food packaging made from agriculture waste

As environmental consciousness continues to grow, consumers increasingly seek sustainable alternatives to conventional products (Bhatti et al., 2019; Bortoleto et al., 2012). One such alternative is the use of biodegradable agricultural waste products, which offer the potential to mitigate the environmental impact of consumption. Many current research have explored various potential benefits from the agriculture waste. For instance, agricultural waste such as ghee residues as well as potato peels can be used as a main source of biodegradable polymer that is used to produce bioplastic (Zhang et al., 2023). The relationship between moral norms and consumers' intention to use these sustainable products has been a focus of recent researchStudies have found that moral and personal norms, along with environmental and ethical values, can exert a significant influence on consumers' green purchase behavior and intentions (Joshi and Rahman, 2015). A study found that moral norms have been successfully proved as predictors in consumers' purchase intention of energy-efficient appliances in which it significantly improved the traditional TPB theory. Moreover, moral norms have also been applied in the study of green electric products by Zhang et al. (2023) that indicates that it tends to increase customers' purchase intention. In the similar vein, Eksari and Md Zaini (2020) have introduced moral norms in their study on the intention to use eco-friendly reusable bags and they found there is a positive impact of moral norms towards the intention to use these bags.

The literature suggests that while moral norms and perceived behavioral control may not directly impact consumers' intentions, other factors such as attitude, subjective norms, and environmental concern can play a significant role in shaping their decisions to use biodegradable agricultural waste products. However, according to Zaikauskaitė et al. (2023), they suggest that some pro-environmental behaviors may be more impacted by morality compared to other factors. Understanding the factors that drive consumers to adopt biodegradable agricultural waste products is crucial for promoting sustainable consumption. Hence, the study suggests to introduce moral norms as one of determinants that influence the consumers' intention to use biodegradable AgW products. (H4): There is a positive relationship between moral norms and consumers' intention to use biodegradable food packaging made from agricultural waste.

Environmental responsibility is a mediating variable between attitude, subjective norms, perceived behavior control and moral norms toward the consumers' intention to use biodegradable food packaging made from agriculture waste

Existing literature suggests that consumers are increasingly aware of the environmental impact of their consumption behaviors and are engaging in more eco-friendly practices (Dagher and Itani, 2014). Factors such as perceived seriousness of environmental issues, perceived environmental responsibility, perceived effectiveness of environmental behaviors, and concern for self-image in environmental protection

have been found to influence green purchasing behavior. Consumers who value environmental protection are more likely to purchase eco-friendly products, as they believe their actions can make a tangible difference (Chauhan and Bhagat, 2018). Environmental consciousness and awareness are key drivers of eco-friendly consumption. Consumers have shifted from passive eco-friendly activities, like recycling, to actively opposing the production of environmentally-harmful products and supporting businesses engaged in green strategies. This indicates that environmental responsibility is a critical factor in shaping consumers' intentions to use biodegradable agricultural waste products. It can be proven with the result of study that environmental responsibility has given a significant impact on the environment concerns and indirectly improved the consumers' consumption toward green products.

The Theory of Planned Behavior (TPB) provides a useful framework for understanding the drivers of consumers' eco-friendly intentions and behaviors. For example, TPB has been utilized in a study aimed to predict consumers' purchase intention toward green foods (Auza and Mouloudj, 2021). Moreover, applied TPB in their research regarding consumers' sustainable consumption. Based on this theory, attitudes, subjective norms, and perceived behavioral control all contribute to an individual's intention to perform a particular behavior. Moral norms, which reflect personal values and beliefs about the morality of a behavior, can also play a significant role in shaping eco-friendly intentions. This study proposes that environmental responsibility may mediate the relationship between these antecedents and consumers' intention to use biodegradable agricultural waste products. Consumers with positive attitudes, strong subjective norms, high perceived behavioral control, and strong moral norms towards the use of biodegradable products are more likely to feel a sense of environmental responsibility, which in turn enhances their intention to use such products. By understanding the mediating role of environmental responsibility, businesses and policymakers can develop more effective strategies to promote the adoption of eco-friendly agricultural waste products. This study further explores the complex interplay between these variables and investigates other potential factors that may influence consumers' intention to use biodegradable AgW products. (H5) Environmental responsibility mediates the relationship between consumer attitude, subjective norms, perceived behavioral control, and moral norms toward the intention to use biodegradable food packaging made from agricultural waste.

Research framework and hypothesis

The research framework can be shown in *Figure 1*. The hypothesis are include: (H1): There is a positive relationship between consumer attitude and their intention to use biodegradable food packaging made from agricultural waste; (H2): There is a positive relationship between subjective norms and consumers' intention to use biodegradable food packaging made from agricultural waste; (H3): There is a positive relationship between perceived behavioral control and consumers' intention to use biodegradable food packaging made from agricultural waste; (H4): There is a positive relationship between moral norms and consumers' intention to use biodegradable food packaging made from agricultural waste; (H5): Environmental responsibility mediates the relationship between consumer attitude, subjective norms, perceived behavioral control, and moral norms toward the intention to use biodegradable food packaging made from agricultural waste.

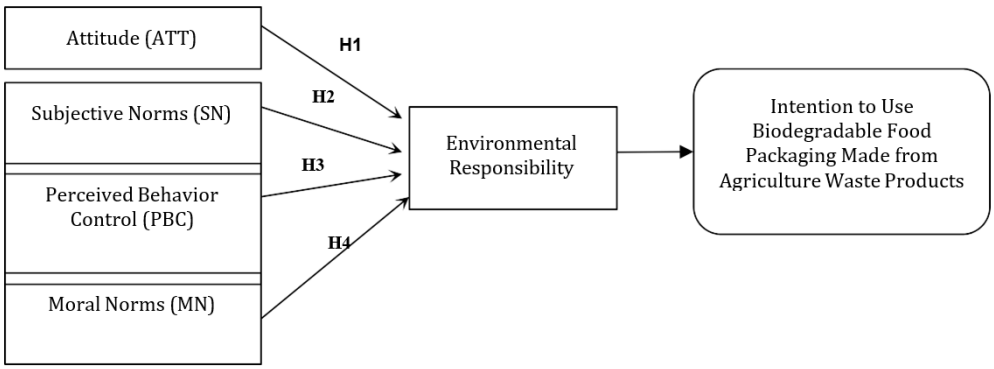

Figure 1. *Research framework.*

Materials and Methods

Research design

This study aims to assess Malaysian consumers' intention to use biodegradable food packaging made from agricultural waste, using a descriptive and correlational research design with a quantitative approach. A cross-sectional study is deemed most appropriate for this purpose, as it allows for efficient data collection from a large sample and the use of statistical analysis to identify relationships between variables. Quantitative research is particularly suited to this study due to its objectivity, generalizability, and effectiveness in handling large data sets (Xiong, 2023). By collecting numerical data through self-administered questionnaires, this method ensures reliable insights into consumer attitudes and intentions. The use of surveys, as noted, is effective for gathering information on perceptions and behaviors. Additionally, the study will be conducted in a natural setting with minimal researcher interference, ensuring that the findings accurately reflect the attitudes of the target population. The results from this approach will provide valuable, generalizable insights into Malaysian consumers' willingness to adopt biodegradable packaging, contributing to sustainable consumption practices.

Population and sample

This study focuses on assessing Malaysian consumers' intention to use biodegradable food packaging made from agricultural waste, with a target population of adult Malaysians aged 18 and above who have used such packaging. The sample will be drawn from urban areas in Selangor, particularly Petaling and Klang districts, due to their high population density and socio-economic relevance. These districts are suitable for studying consumer behavior in an urban context, as urban areas in Malaysia are characterized by higher education levels, economic activity, and infrastructure (Mahmoud et al., 2022; Abdullah, 2012). The study will use a convenience sampling method, which is efficient and cost-effective, especially when a comprehensive sampling frame is unavailable (Golzar et al., 2022; Naseri and Rahmiati, 2022). A minimum sample size of 138 respondents, as determined by G-Power software, will be used to ensure statistically significant results. Data will be collected via self-administered questionnaires, with measures in place to ensure data validity by filtering

invalid responses. This research aims to provide valuable insights into the factors influencing consumers' adoption of sustainable packaging in Malaysia.

Instrument

The research will utilize a questionnaire developed in English and translated into Malay to ensure accessibility for Malaysian respondents. The questionnaire will be distributed randomly via Google Forms and shared through social media platforms such as WhatsApp, Facebook, Telegram, and email. Using multiple languages to localize surveys, enhancing respondent experience and reducing dropout rates. The questionnaire will consist of three sections: Section A will collect demographic information, Section B will assess consumers' attitudes, subjective norms, perceived behavioral control, moral norms, and environmental responsibility toward biodegradable food packaging, and Section C will measure consumers' intention to use such products. Each variable in Sections B and C will be evaluated using a five-point Likert scale, which is effective for general population studies (Weijters et al., 2010).

Validity and reliability of instrument and pilot test

Validity is essential in research to ensure the accuracy of measurements. This study will focus on two types of validity: face validity, which ensures the instrument appears to measure what it is intended to measure (Anderson, 2010), and content validity, which assesses how well the instrument captures the full scope of the construct being measured (FitzPatrick, 2019). To ensure validity, the questionnaire will be reviewed by a panel from the Research Ethics Committee (REC) at Universiti Teknologi MARA (UiTM), following ethical standards for research involving human participants. After receiving approval from the REC, a pilot study will be conducted to test the questionnaire's clarity, relevance, and language. A sample size of 20-30 respondents will be used for the pilot study, as recommended for survey research (Yahaya, 2024; Joshi and Rahman, 2015), with the questionnaires distributed via social media platforms.

Plan for data collection & analysis

The data collection method for this study will be a survey research approach, chosen for its efficiency in gathering data from large samples. Online surveys using Google Forms will be employed to collect responses from Malaysian consumers on their intention to use biodegradable food packaging made from agriculture waste. Google Forms is selected due to its user-friendly interface, versatility in question formats, and seamless integration with Google Sheets, which simplifies data storage and analysis (Mondal et al., 2018; Mansor, 2012). To enhance response rates, an informative digital brochure with a QR code linking to the survey will be distributed through social media platforms (email, Facebook, WhatsApp, Instagram, Telegram) and physically in Petaling and Klang districts. For data analysis, responses will be coded and analyzed using SPSS (version 29). Reliability and validity will be assessed using Cronbach's alpha for internal consistency, and the Kaiser-Meyer-Olkin (KMO) test will ensure sampling adequacy. Normality of data distribution will be checked using graphical methods and the Kolmogorov-Smirnov test. Descriptive statistics (mean, standard deviation) and multiple regression analysis will be used to analyze the data, with multiple regression helping to identify the strength of relationships between dependent

and independent variables, and to determine which predictors most influence consumers' intention (Petchko, 2018).

Managerial Contribution

This study significantly advances the understanding of consumer behavior regarding the adoption of environmentally sustainable products, specifically biodegradable food packaging made from agricultural waste. By extending the Theory of Planned Behavior (TPB), it not only examines traditional factors such as attitude, subjective norms, and perceived behavioral control but also explores additional external variables, offering a more comprehensive model for predicting consumer behavior in the sustainability context. The findings provide valuable insights for businesses and marketers, helping them understand the key motivators and barriers influencing consumer purchasing decisions. This knowledge enables the design of more effective marketing campaigns, focusing on psychological drivers like perceived benefits, environmental awareness, and social influence. The study also holds practical implications for policymakers and the agricultural sector. The results can inform government strategies aimed at promoting sustainable packaging solutions, such as subsidies or educational campaigns, while also guiding regulations on waste management and sustainability. By highlighting the potential for agricultural waste to be repurposed into packaging materials, the study supports sustainable agriculture and offers new economic opportunities for farmers. Additionally, the research contributes to environmental advocacy by raising awareness about the environmental impact of plastic packaging and promoting the benefits of biodegradable alternatives. It has global relevance, extending the TPB framework to consumer adoption of sustainable practices and can be applied to other regions facing similar environmental challenges. Finally, the study fills a gap in existing research by focusing on biodegradable packaging derived from agricultural waste, offering critical insights into this emerging sector.

Conclusion

This study is crucial in addressing the growing environmental concerns related to plastic waste and the need for sustainable alternatives, particularly in the food packaging industry. As consumers become increasingly aware of the environmental impact of conventional packaging, understanding their intention to adopt biodegradable alternatives made from agricultural waste is essential for promoting widespread acceptance and use of such eco-friendly options. By extending the Theory of Planned Behavior (TPB), this research provides valuable insights into the psychological and social factors that influence consumer behavior, offering a deeper understanding of the drivers behind sustainable consumption choices. Ultimately, this study contributes to the development of effective strategies for encouraging the transition to more sustainable packaging solutions, supporting both environmental sustainability and the shift toward a circular economy.

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Conflict of interest

The authors confirm that there is no conflict of interest involved with any parties in this research study.

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