The Effect of Sustainable Packaging Practices on Youthful Bangladeshi Consumers' Preferences and Purchasing Behaviour: Application on Food and Beverage Market

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Abstract: *Sustainable practices, such as sustainable packaging, have risen in importance for consumers and businesses as global environmental concerns grow. This research investigates the impact of sustainable packaging practices on the preferences and purchasing behaviour of youthful Bangladeshi consumers in the food and beverage market, illuminating a crucial aspect of sustainable consumption in a developing country. The primary methodology used in this study is a cross-sectional causal quantitative approach. The study authors employed a self-selection sampling strategy to obtain the 384 samples. This study identified the most influential factors on youthful consumers' preferences and purchasing behaviour in the food and beverage market, including price, environmental impact, and packaging convenience. The findings of this study indicate that a significant proportion, namely over one-third, of young consumers possess an absolute inclination to purchase products in the food and beverage market if they are packed in an environmentally sustainable manner. Businesses and policymakers in developing nations must collaborate to promote sustainable practices that meet consumer demands and align with global sustainability goals.*

Keywords: *Sustainable packaging, purchasing behaviour, sustainability, food and beverage market, environmental impact.*

Introduction

Packaging is essential for all food and non-food products because it safeguards the consumer. Packaging functions as a means of communication and drawing the attention of a company's final consumer. Packaging that is considered environmentally friendly encompasses many terms such as "eco-green packaging," "eco-friendly packaging," "sustainable packaging," or "recyclable packaging." These terms refer to packing equipment designed to meet the ecological requirements of the environment. It is common knowledge that a package's entire life cycle causes a variety of environmental impacts. Consequently, package design should consider not only cost, food shelf life, and safety, as well as user-friendliness, but also environmental sustainability. Life Cycle Assessment is one of these approaches and is a valid tool for this goal. Environmental evaluation methodologies must be developed to tackle this later problem better. Indeed, it has been extensively

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used in the food packaging industry to identify ecological hotspots and improvement opportunities for more environmentally responsible products. The Triple Bottom Line method can be used to evaluate sustainability, which takes into account economic, social, and environmental aspects in equal measure (Eilert, 2005). The importance of proper packing must be balanced in all of these three areas. Economical - it can lessen the direct and indirect costs of operation through a change in the material, optimal handling of goods, swift transportation, and efficient warehousing. Optimal handling of goods: this refers to moving items from one location to another without damaging them. Social - it can reduce and recover food waste by enforcing product protection and ensuring worker safety via ergonomically superior designs. Environmental - it is possible to lower the carbon footprint generated by ensuring that the packaging materials and designs utilized over the lifetime of a commodity are used to their full potential (Jain & Hudnurkar, 2022).

Consumer acceptance is crucial for sustainable packaging, as the packaging's environmental benefits are contingent on consumers selecting more sustainably packaged products. In other words, a lack of consumer adoption would diminish their actual environmental contributions if consumers do not favour sustainably packaged products. This implies that sustainable packaging design must consider both the functional aspects of sustainable design (enhancing the environmental impact of packaging) and the signals such packaging designs send to consumers, intentionally or not (Steenis, 2019).

One of the most significant drawbacks of packaging is that it is typically thrown away immediately after the product has been used, which unavoidably adds to our impact on the environment. Because the average European citizen generates around 160 kg of garbage from their packaging every year (statistics for 27 countries in 2011 sourced from Eurostat, as cited in Magnier & Schoormans, 2015) the issue of packaging waste is an essential one when examining the ecological inefficiencies of our society. It was predicted that by 2020, humans would produce 2.24 billion tonnes of solid garbage, or 0.79 kilograms of waste per person daily. The United Nations predicts that by 2050, annual garbage creation will have increased by 73% from 2020, reaching 3.88 billion tonnes (World Bank, 2022). On an annual basis, the average European individual produces approximately 180 kilograms of packing waste. According to projections, the European Union (EU) is anticipated to experience a notable rise of 19% in packaging trash by 2030. Moreover, the specific category of plastic packaging waste is expected to witness an even more substantial growth of 46% (European Commission, 2022).

Due to its extensive global presence and wide range of products, the food and beverage industry needs help implementing sustainable packaging methods. The market for sustainable packaging solutions is experiencing tremendous growth due to escalating environmental concerns and heightened consumer awareness. Packaging is a crucial component in the food and beverage industry, exerting a significant influence over the whole lifespan of a product. Ensuring sustainable packaging is of utmost importance for brands, producers, and consumers to meet the current demands of the sector. In the food and beverage industry, sustainable packaging is now a necessity, regardless of whether its significance is already glaringly evident. Due to government restrictions, consumer preferences, and evolving market standards, enterprises often need to adopt sustainable packaging strategies to mitigate their environmental impact. Effective July 1, 2022, India

has banned the production, import, storage, distribution, sale, and use of single-use plastic items categorized as having a high likelihood of becoming trash and low usefulness. Therefore, due to environmental concerns and regulations, it is necessary to use ecologically friendly packaging choices. However, it is fortunate for company owners because these solutions have the potential to save them money in the long run if implemented successfully.

Indeed, packaging pollution is a pressing environmental concern, and the food and beverage industry contributes significantly to this problem. The processing of raw food materials, the packaging of food products, and the distribution of food products are all included in the scope of the food and beverage sector. This industry is responsible for processing all goods made for people to eat, except medications (James & Kurian, 2021). Petrochemical plastics have found the most utilization in the food packaging industries because they are inexpensive, have tensile solid qualities, and constitute an efficient barrier against oxygen, carbon dioxide, and water vapour. Petrochemical plastics can effectively block oxygen, carbon dioxide, and water vapour (Ncube, Ude, Ogunmuyiwa, Zulkifli, & Beas, 2020). Petrochemical plastics derived from hydrocarbon-based feedstocks have been found to exert substantial adverse impacts on the natural environment. Adopting sustainable packaging within the food and beverage industry for environmental conservation is imperative.

In recent years, environmental issues such as pollution, the depletion of resources, and the destruction of habitat have come to the forefront more frequently. Consequently, sustainable packaging practices have gained increased attention due to the compelling need to address these issues and meet consumer demand for environmentally friendly products. Around 28 years ago, Bangladesh passed the Environment Protection Act of 1995, which was later revised in 2002 to prohibit the production of polyethene and its subsequent distribution (The Bangladesh Environment Conservation Act, 1995). However, this law has yet to be implemented in this developing nation. The economic impact resulting from environmental deterioration in Bangladesh amounts to around $6.5 billion annually, equivalent to 3.4 percent of the country's yearly GDP (World Bank, 2022). Consequently, if individuals in this country know the need to safeguard the environment, it will be elementary. Environmental damage caused by people is one of the most critical problems we face now and will continue to face for many years. Sustainable packaging is important because it lowers the damage that the whole life cycle of the product does to the earth. It helps the provider and the customer be better at the environment (Lee & Xu, 2005).

The growth of the world's population and shifting consumption patterns are the primary factors driving the rapid increase in the demand for food and beverages worldwide. Because of this growing demand, there is a need for more packaging, which raises concerns about the environmental sustainability of the situation. In Bangladesh, a rapidly developing nation with a young population, the food and beverage industry is experiencing significant growth. The demographic of youthful buyers are more likely to act actively toward becoming more environmentally responsible. Young consumers are more acknowledged as a formidable presence in the global marketplace (OECD, 2010). The UK's young generation is deeply committed to sustainability, with 82% concerned about the state of the earth. They are willing to take action, with 72% reporting that they have al-

ready changed their behaviour to decrease their environmental impact (Shaw, 2023). This phenomenon is especially noticeable in developing nations such as Bangladesh, where youthful demographics are actively involved in social media and exposed to worldwide environmental issues. This influence is apparent in the fast-moving food and beverage industry, where the actions of young consumers are seen to have an effect.

The primary focus of this investigation will be on determining how implementing environmentally friendly packaging standards will influence the purchase patterns of younger people in the food and beverage markets of Bangladesh. Sustainable packaging practices still need to be widely used in Bangladesh's food and beverage industry, even though people are becoming more aware of them. Because of this knowledge gap, studies on the elements that impact the views and choices of young customers on sustainable packaging are urgently needed. This study represents the first investigation conducted in Bangladesh, focusing on this particular matter. Not only is it essential for the food and beverage industry to have a comprehension of how sustainable packaging practices interact with this specific age group, but it is also significant for policymakers and environmentalists who want to engage and activate young consumers in sustainability efforts to have an understanding of how these practices work.

The packaging practices observed in the food and beverage business frequently exhibit excessive tendencies that result in avoidable detrimental impacts on the environment. The use of disposable plastic daily, in the form of bottles, containers, and wrappers, has demonstrated significant inefficiency. With the ongoing increase in the world population, there is a corresponding increase in the need for food and beverages. This places a substantial burden on natural resources and the environment. For this reason, the food and beverage industry faces an increasing obligation to adopt environmentally responsible practices. Despite their importance in daily life, the industry's current practices offer significant environmental and social challenges. It considerably impacts greenhouse gas emissions, water consumption, deforestation, and plastic trash generation. These concerns need a move towards long-term environmental health and social well-being strategies. Hence, the food and beverage sector's current strain demands a fundamental change in how we approach sustainable practices throughout the food and beverage industry, encompassing everything from agricultural production to packaging and waste management, which must increasingly adopt sustainable processes. Existing literature emphasizes the harmful environmental impact of traditional packaging and the growing customer demand for sustainable alternatives (Xu & Ward, 2023). Several studies have also examined the factors influencing consumer preferences for sustainable packaging, highlighting the beneficial relationship between environmental concern and willingness to pay a premium for eco-friendly alternatives (Chi, 2022; Fischbach, Sparks, Hudson, Lio, & Englebretson, 2022). Furthermore, some research indicates that younger generations have better levels of environmental consciousness and are more likely to emphasize sustainability in their purchase decisions (Nichols & Holt, 2023; Lisboa, Vitorino, & Antunes, 2022). Despite these findings, we still need an in-depth understanding of the precise elements impacting young consumers' purchase decisions for sustainable packaging in Bangladesh's food and beverage sector. While studies have been undertaken in developed countries and on various product categories, there needs to be more research that

explicitly examines the Bangladeshi setting and focuses on the food and beverage sector.

This study will provide significant insights into young Bangladeshi customers' specific demands and preferences in terms of sustainable packaging in the food and beverage industry. This knowledge can support targeted marketing tactics, product development activities, and legislative interventions to encourage sustainable consumption and reduce the environmental effects of Bangladesh's food and beverage industry.

Literature Review

Theoretical Background

Gupta (2021) studied the factors influencing Indian consumers' purchase intentions towards green-packaged products; this study confirms a positive relationship between environmental concern and preference for eco-friendly packaging. The findings of this study show that individuals with higher levels of environmental consciousness exhibit a greater willingness to support products with sustainable packaging options. Shimul and Cheah (2023) looked into the correlation between consumers' level of environmental knowledge and responsibility and their pro-environmental views. The authors of this study demonstrate a positive correlation between consumers' environmental knowledge and responsibility and their pro-environmental attitudes. These attitudes, in turn, influence consumers' intentions to purchase environmentally friendly products. Furthermore, the association between attitudes and purchasing choices is influenced by environmental awareness and responsibility. The purpose of this study was to investigate the effect that environmentally friendly packaging has on the reactions of consumers. Data was collected from a sample of 160 participants residing in Australia. Among the respondents, 44% of the population possessed a university degree. De Canio (2023) analyzed the impact of customer familiarity on the relationship between health and environmental concerns and purchase intentions for environmentally friendly packaging. Here the authors found that the association between consumer concerns about health and the environment and their intentions to make purchases is contingent upon the degree of familiarity consumers possess regarding these particular products. Statistics showed consumers' preference for purchasing sustainably packed and bulk products due to health concerns is more significant among very familiar consumers. Still, the consideration of environmental impact is more prevalent among slightly aware consumers. This research aims to show how to capitalize on consumers' growing concern for the environment and their well-being to increase demand for environmentally friendly goods at a premium price point. A total of 278 data points were collected from respondents in Italy. Among the participants who possessed a considerable level of education, it was observed that 67% had successfully obtained a university degree, while 32% had completed their studies at the high school level. The results of these two studies provide valuable insights into consumer behaviour regarding eco-friendly products and packaging. These research efforts contribute to our comprehension of consumers' changing attitudes and preferences in the context of sustainability. Moreover, the exhaustiveness and diversity of the data and methodologies em-

ployed in these studies highlight their importance in confronting consumer behaviour's complex and multifaceted nature in the context of eco-friendliness.

Feber, Granskog, Lingqvist, and Nordigården (2020) explored the factors influencing U.S. consumers' prioritization of sustainable packaging. The authors of this investigation have identified that the predominant factor influencing the low prioritization of sustainable packaging among US consumers is their environmental apprehensions. The comparatively low importance consumers in the United States attach to ecological considerations is not an isolated phenomenon; we observe sentiments similar to those in China, France, and the United Kingdom. Environmental concerns are given a far higher priority in the United States than Japan, where they are substantially less weighted. On the other hand, they rank slightly higher in Germany and Italy and a lot higher in Brazil, India, and Indonesia. This result is consistent with the increased focus on environmental concerns recently. It demonstrates a growing awareness among American consumers of environmental issues and may promote eco-friendly choices. This finding suggests that concern for the environment is expanding beyond national borders. This shift has far-reaching consequences for multinational corporations, underscoring the urgency with which they must integrate sustainable packaging practices to keep pace with consumers' ever-changing demands. This research adds to the growing body of evidence pointing to the complex link between environmental responsibility and consumer actions.

Hypothesis Development

Sustainable Packaging and Willingness to Pay

Mahmoud, Tsetse, Tulasi, and Muddey (2022) investigated how consumers' knowledge of the environment, willingness to pay, and choice of green packaging affected their buying decisions. Their research showed that green packaging did not significantly affect people's decisions about what to buy in Ghana. This study discovered a direct correlation between individuals' environmental consciousness and their inclination to spend money on products, positively influencing their purchasing choices. A cross-sectional survey was used to get information from 218 people in Ghana for this study, and purposive sampling was used to choose people to participate in the study. Mardiyah, Anggraeni, and Muzdalifah (2022) investigated how consumers decide what to buy based on green goods and eco-friendly packaging. The researchers found that green packaging significantly affected people's buying decisions, but the green product itself didn't have a statistically significant effect. This study utilized a quantitative research design with a descriptive methodology. A purposive sampling technique was employed to determine a sample size of 98 participants. These different results show that more research needs to be done in certain areas, especially in the food and beverage industry. Based on the previous study, we came up with the following hypothesis:

H1. There is a relation between the influential level of sustainable packaging and the willingness to pay for products in the food and beverage sector.

Age and Concern about Environmental Issues

Jain and Hudnurkar (2022) observed the behaviours and perceptions of consumers in the FMCG sector concerning sustainable packaging. There was no significant correlation between consumer purchasing behaviour and age or education, as their study revealed. This study aims to examine consumers' perceptions and behaviours concerning environmentally friendly and sustainable packaging. This study employed a qualitative methodology and involved conducting interviews with ten individuals residing in the metropolitan area of India. In their study, Rokka and Uusitalo (2008) examined the impact of various factors on consumer product preferences concerning environmental packaging. The authors assert that their findings align with previous research, which has indicated that factors such as age, education, and environmental or ethical attitudes exhibit relatively weak associations. This study examined consumer environmental decision-making by assessing the relative significance of green packaging with other pertinent product qualities. This survey was done in Finland and involved a sample of 330 respondents. This discrepancy in findings could be attributable to several factors, including geographical variation, cultural and social differences, and differences in research methodology. These disparate findings imply that the relationship between age and environmental concern may be more intricate than previously thought. Several circumstances, including geographical and cultural differences, could cause this complication, as well as differences in methodology and differences. Therefore, the following hypothesis states that:

H2. There is a relationship between age and concern about environmental issues.

Monthly Expenditure and Level of Priority to Sustainable Packaging

Sharma and Babel (2002) investigated the link between people's knowledge of eco-friendly packing and income levels. They discovered a noteworthy association between the level of awareness regarding environmentally friendly packaging and the income levels of individuals. This study obtained data from a sample of respondents chosen at random from the city of Mumbai in India. Respondents' perspectives from various age groups, genders, income levels, and education levels were analyzed. The study conducted by Du, Cao, and Huang (2024) investigated the correlation between pro-environmental behaviour, income satisfaction, and income class and discovered that the correlation between income class and pro-environme-ntal behaviour becomes more pronounced when individuals are content with their financial status. This study employed a hierarchical regression model to examine the correlation between income class, income satisfaction, and pro-environmental behaviour. The data utilized in this paper originates from the World Value Survey. Huhtala (2010) investigated the relationship between income and environmental behaviour in the context of recycling in Finland. Here the authors assert that one's income influences environmental behaviour. Higher-income households are more willing to pay for the more convenient incineration method. In contrast, lower-income households are less inclined to pay for recycling due to the higher opportunity cost of time. The research article uses contingent valuation surveys to determine the extent to which individuals are willing to pay for recycling and incineration as means of garbage

disposal. Although previous studies do not explicitly examine the correlation between monthly spending and preferences for sustainable packaging, they provide significant insights supporting our hypothesis. This study aims to fill in this need for more knowledge by examining the following hypothesis:

H3. There is a relationship between monthly expenditure and the level of the priority to sustainable packaging when making purchase decisions in food and beverage market.

Environmental Concern and Likelihood of Purchasing

Sanny, Chairuddin, and Ninal (2023) examined the relationship between environmental attitudes and green purchasing behaviour in Jakarta. Here the authors assert that having an environmental concern does indeed influence the probability of buying environmentally friendly things. The research methodology employed in this study is quantitative and associative to identify causal links between variables. The study utilized a purposive sample technique to select 228 respondents residing in Jakarta who had purchased green products. Nugraha and Soelasih (2023) investigated the elements influencing green buying behaviour related to eco-friendly shopping bags. Their research revealed a positive association between individuals' level of environmental concern and their propensity to engage in green shopping behavior, which refers to the likelihood of purchasing ecologically friendly products. The study employed purposive sampling to choose participants for data gathering. The study encompassed a total of 190 participants. Setiawan, Farhana, and Rahayu (2023) studied to assess the effect of environmental concern, health consciousness, and perceived behavior control on purchase intention. This study revealed that environmental concern does not favor purchase intention. Nevertheless, health consciousness has a beneficial impact on purchase intention. In addition, the study showed that Perceived Behavior Control had no discernible effect on Purchase Intention. The study employed the "Purposive Sampling" method to choose respondents who had made purchases of environmentally friendly cosmetic goods specifically. Questionnaires were issued to 200 respondents to obtain primary data. Food and beverages differ from other products, so examining how environmental concerns regarding sustainable packaging affect buying choices in this market is essential. Existing studies provide helpful information about the connection between caring about the environment and purchasing green products. Still, we must fully understand this connection regarding food and beverage packaging. Hence, this study aims to fill this gap by examining the subsequent hypothesis:

H4. There is a relationship between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging, in an endeavor to reduce their environmental impact.

H5. There is a relationship between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging.

Upon conducting a comprehensive analysis of various research studies, our objective is to investigate the potential correlation between the factors (such as pricing, environmental concern) and the consumer behaviour of purchasing items with sustainable packaging within the food and beverage market, specifically among the youth population in Bangladesh. In examining the reception of sustainable packaging items in the food and beverage market, we will also endeavour to assess consumer willingness to purchase such products.

Conceptual Framework

This figure shows the ideas that help us to understand how people in the food and beverage industry behave regarding sustainable packing.

Figure 1
Conceptual Framework
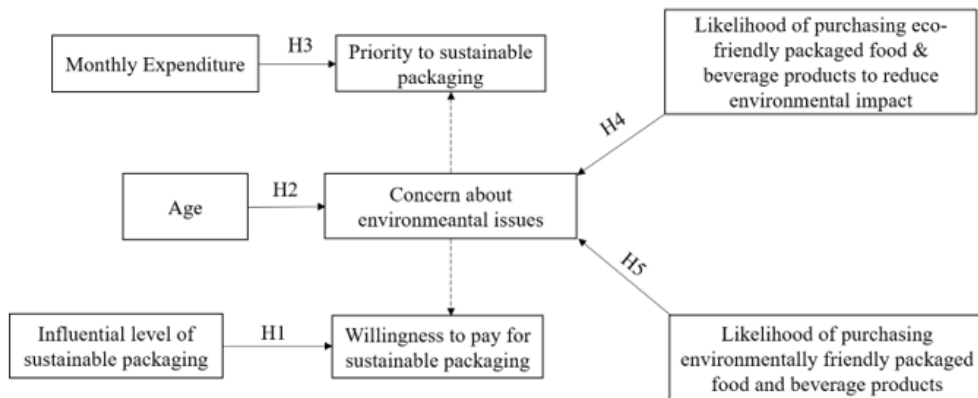
It is based on four main factors: the influential level of sustainable packaging (based on how environmentally friendly and recyclable it is), environmental concerns, monthly spending, and the likelihood of buying sustainable packaging. The theory suggests that both the influential level of sustainable packaging and environmental concern directly and positively affect the willingness to pay more for sustainable packaging. It also shows that Monthly Expenditure might moderate the relationship between Environmental Concerns. This means that people with more money might be more likely to choose environmentally friendly packaging, even if it costs more. From previous studies, we have learned that concern about environmental issues is related to the priority for sustainable packaging and willingness to pay more for it.

Research Methodology

Sampling and the Justification for Selection

This investigation primarily makes use of a cross-sectional causal quantitative methodology. The cross-sectional causal quantitative design is an appropriate and effective method for studying the immediate effects of sustainable packaging on the behavior of young consumers in Bangladesh. This design is particularly relevant for this study due to its unique setting and limited resources. It allows for accurate and valid conclusions about cause and effect while also considering the variety and involvement of the group being studied. This study used a self-selection sampling technique to gather data from individuals residing in Bangladesh's urban and rural regions. Including self-selection in the study allowed for a wide range of participants and focused interaction, and recognizing its non-probability nature enhances the technique. This strategy was chosen because it could reach a broad and geographically scattered population within a restricted timeline and budget. Furthermore, self-selection guaranteed that participants were engaged in the research topic, which may have improved data quality and engagement. A Google Form was used to collect the responses from the participants. Participants were individually sent with the link to the Google Form, which was also disseminated. Participating was entirely voluntary, and participants received no compensation; this was done to reduce the likelihood of opportunistic answers. This strategy attempted to reduce opportunistic answers while gaining insights from genuine consumer opinions. The majority of the sample is comprised of individuals with ages ranging from 18 to 35 years old because this is the age range that is considered to be "youth" in Bangladesh (Ministry of Youth and Sports, 2017). There are currently 40 million young people in Bangladesh, aged 18 to 29 (Rahman, 2022). That means that this amount may grow even larger if the age limit were extended to 35.

Sampling Design and Rationale for Selection

A sample size of 384 was chosen, following the recommended guidelines for populations exceeding 100,000 (Taherdoost, 2016). We recognize that a sample size 384 would not comprehensively represent the intricacies of Bangladesh's extensive and heterogeneous population, which today exceeds 170 million (Bangladesh Population (2024) - Worldometer). To address this constraint, we employed a stratified sample method, deliberately selecting an equal number (48) of participants from each of the total eight administrative divisions. This approach places a high importance on regional representation, guaranteeing that the study incorporates voices and opinions from total eight regions of the country. This strategy prioritizes regional participation, ensuring that the study includes perspectives and ideas from all eight areas of the country. While our method does not precisely correlate with the population size of each division, it guarantees a minimum level of inclusivity and variety. This allows us to incorporate a broader range of experiences and opinions relevant to our study objectives. We prioritized achieving a substantial degree of regional inclusivity. While the population size of each division is not directly linked,

this approach ensures that our study encompasses viewpoints and opinions from various regions, containing a more comprehensive array of experiences and perspectives pertinent to our research goals on the impacts of sustainable packaging practices on young consumers in Bangladesh. A significant section of this research study's participants comprises persons currently engaged in their academic pursuits as students. The selection was made to guarantee that the research objectives were met and appropriately reflected the population likely to provide valuable insights on preferences and behaviors regarding sustainable packaging.

Questionnaire Design, Data Analysis and Processing

The procedure of gathering data entailed the distribution of a structured survey questionnaire consisting of 24 questions. Several items for the questionnaire were derived from prior research that investigated the preferences and behaviors of consumers regarding sustainable packaging (Orzan, Cruceru, Bălăceanu, & Chivu, 2018; Steenis, 2019; Williams, Flannery, & Patel, 2023). The research primarily employed Likert scales and multiple-choice questions, facilitating data analysis and ensuring consistency. University students participated in a pilot study (n=10) to evaluate the items' clarity, comprehension, and dependability. Minor adjustments were implemented in response to the pilot test feedback to enhance the questions' phrasing and the available response options. The data collected from these surveys was analyzed using the statistical software SPSS. Descriptive statistics, including frequency distributions and percentages, were used to characterize the sample. Correlation analysis was conducted to examine the relationships between variables. Specifically, we employed Pearson's correlation coefficient and Chi-square test. Additionally, the analysis considered the following aspects: significance testing, assumptions and limitations.

Timeline

The period beginning on June 1, 2023 and ending on September 15, 2023 was allotted for the completion of the research project, which included data collecting, statistical analysis, and the preparation of a report. An intended timeline was developed to facilitate the practical completion of each project step.

Ethical Considerations

Throughout the study, we emphasized the importance of preserving an unwavering attitude toward ethical standards to protect the rights and well-being of the involved individuals. The commitment in question encompassed essential principles such as informed consent, anonymity, privacy, data security, honesty, transparency, benevolence, and adherence to research approval procedures. The ethical considerations were rigorously adhered to throughout the research, which improved the reliability of the findings and guaranteed the safety of all parties involved.

Results

The following table details the demographics of our survey participants, giving necessary background for interpreting the data that follows.

Table 1
Participants' Demographic Characteristics

Socio-demographic Attribute	Frequency n = 384	Percentage
Age		
18-23	208	54.20%
24-29	121	31.50%
30-35	55	14.30%
Gender		
Male	235	61.20%
Female	148	38.50%
Prefer not to say	1	0.30%
Division		
Barishal	48	12.50%
Chittagong	48	12.50%
Dhaka	48	12.50%
Khulna	48	12.50%
Mymensingh	48	12.50%
Rajshahi	48	12.50%
Rangpur	48	12.50%
Sylhet	48	12.50%
Location		
Urban	257	66.90%
Rural	127	33.10%
Educational Qualification		
Continuing HSC	12	3.10%
Completed HSC	35	9.10%
Continuing Bachelor	192	50.00%
Completed Bachelor	59	15.40%
Continuing Masterís	25	6.50%
Completed Masterís	61	15.90%
Profession		
Student	266	79.30%
Government job holder	31	8.10%
Private sector job holder	45	11.70%
Business	42	10.90%
Monthly Expenditure		
1000-10000	186	48.40%
11000-20000	107	27.90%
21000-30000	47	12.20%
31000-40000	28	7.30%
41000-50000	16	4.20%

Table 1 shows the 18- to 23-year-old age cohort dominates the participant population, comprising 54.2% of the total sample. Young adults constitute a sizable proportion of the study's demographic, highlighting the significance of incorporating their perspectives and behaviours into data analysis. The gender distribution of participants is an additional demographic feature of note. A substantial majority of the sample, more than three-fifths (61.2%), is male, indicating a gender imbalance. This gender disparity should be taken into account when interpreting the research results, as it may have an impact on the findings. The geographic diversity of the sample is also an essential factor. The data collection procedure encompassed all divisions of Bangladesh, ensuring a propor-

tional representation of respondents from each division. This methodology improves the generalizability and applicability of the study's findings to a broader national context. In addition, more than two-thirds of the participants (66.9%) reside in urban areas, reflecting the urban-rural divide in the study sample. This urban predominance underscores the need to consider potential urban-rural differences in attitudes and behaviours related to the topic of the study. Nearly four-fifths (79.3%) of the complete sample is comprised of students, as revealed by the occupational distribution of the respondents. This statistic indicates that most research sample contains individuals actively engaging in educational pursuits. This demographic characteristic is relevant when analyzing the influence of education on perceptions and behaviours related to the focus of the study.

Regarding educational status, half (50%) of respondents are pursuing a bachelor's degree. This insight provides context for the educational backgrounds of the participants, which can be crucial when investigating the correlation between educational attainment and their attitudes and preferences. The study concludes that approximately 48.4% of respondents have monthly expenditures between one thousand and ten thousand Bangladeshi taka, the highest proportion. This information provides a comprehension of the economic circumstances of the participants, which can be helpful when evaluating their capacity and willingness to engage with eco-friendly products or sustainable practices.

The survey questions used in our research are presented below, followed by the percentages of replies we obtained from participants.

Table 2 displays the respondents' preference for sustainably packaged food and beverage products. First, it is encouraging to note that 84.1% of respondents are familiar with sustainable packaging. This level of awareness suggests that sustainable packaging is a well-known and pertinent topic among the participants in this study. In addition, a substantial proportion of respondents, namely 73.7%, sought sustainable packaging products at some point. It demonstrates significant consumer interest and engagement in selecting products consistent with their environmental values. The fact that 49.5% of respondents consider compostable packaging an eco-friendly option highlights the significance of eco-friendly packaging materials. It indicates that consumers are discerning regarding various forms of sustainable packaging. About 39.3% of respondents indicate that sustainable packaging practices moderately influence purchasing decisions. This finding suggests that, despite their importance, sustainability considerations may not be the sole determinant of consumer choices; other factors may also affect their decisions. Significantly, most (73.4%) respondents contemplate product packaging when purchasing in the food and beverage market. It indicates that packaging holds considerable sway in consumer choices in this market. Before making a purchase, 40.4% of food and beverage market respondents actively seek information about a product's packaging. This proactive behaviour demonstrates the importance of transparent, informative packaging in influencing consumer decisions. According to the data, 44.9% of individuals base their purchasing decisions on the price of products with sustainable packaging. This suggests that, despite the importance of sustainability, price remains the determining factor in consumer decisions. More than three-fifths (61.7%) of consumers in the food and beverage market have transferred brands due to eco-friendly packaging. It highlights how sustain-

able packaging could impact brand loyalty and consumer retention. Notably, 23.7% of respondents are willing to incur additional effort or inconvenience to purchase products with sustainable packaging. This indicates a segment of committed consumers who place a premium on eco-friendly options.

Table 2
The Attitudes of Consumers toward Sustainable Packaging Practices

Questions	Measurement	Percentage
Are you familiar with the concept of sustainable packaging?	Yes	84.10%
	No	15.90%
Have you ever searched out products with environmentally friendly packaging?	Yes	73.70%
	No	26.30%
Which of the following methods of environmentally friendly packaging do you think is the most effective?	Recyclable packaging	16.40%
	Biodegradable packaging	24.00%
	Compostable packaging	49.50%
	Minimal packaging	10.20%
How influential are sustainable packaging practices in food and beverage sector in your purchase decisions?	Extremely important	29.70%
	Moderately important	39.30%
	Slightly important	20.60%
	Not important at all	10.40%
Do you think about how a product is packaged in food and beverage sector before buying it?	Yes	73.40%
	No	26.60%
Do you actively seek information on a product's packaging before purchasing it in the food and beverage market?	Yes	40.40%
	No	59.60%
How do you decide whether or not to purchase a product with sustainable packaging in the food and beverage market?	Price of the product	44.90%
	Brand reputation	8.30%
	Product quality	7.60%
	Environmental impact of packaging	23.10%
	Convenience of packaging	16.20%
Have you ever switched brands in food and beverage market because of their environmentally friendly packaging?	Yes	61.70%
	No	38.30%
Are you willing to go out of your way to purchase products in food and beverage market with sustainable packaging, even if they are difficult to find or require extra effort?	Yes, always	23.70%
	Sometimes	68.00%
	No, never	8.30%
Are you willing to pay more for food and beverage products with environmentally friendly packaging?	Yes	53.60%
	No	46.40%
Do you believe that the use of sustainable packaging in food and beverage market can aid in the reduction of environmental pollution?	Yes	97.40%
	No	2.60%
Do you believe that environmentally friendly packaging in food and beverage market should be a top priority for businesses?	Yes	97.90%
	No	2.10%

Moreover, most respondents (53.6%) are willing to pay a premium for environmentally friendly packaged food and beverages. This propensity to invest in sustainability indicates an opening for premium sustainable products in the market. The overwhelming majority of respondents believe sustainable packaging has a positive environmental

impact, with 97.4% expressing confidence in its ability to reduce environmental contamination. Moreover, an even higher percentage, 97.9%, believes that businesses in the food and beverage market should make environmentally responsible packaging a top priority. These sentiments reflect the sector's robust demand for corporate sustainability initiatives.

Table 3
Consumer Environmental Concerns Regarding Sustainable Packaging in the Food and Beverage Market

Likert scale	How concerned are you about environmental issues?	How important is sustainable packaging to you when making purchase decisions in food and beverage market?	How likely are you to buy a food or beverage product if it is wrapped in environmentally friendly packaging?	How likely are you to buy a food or beverage product if it is wrapped in environmentally friendly packaging?
Strongly Unimportant/ Impossibility/Unconcerned	4.4	6.0	4.9	3.4
Unimportant/Impossibility/ Unconcerned	.8	1.8	1.0	1.0
Slightly Unimportant/ Impossibility/Unconcerned	1.0	3.1	2.1	0.8
Newtral	0.5	2.9	2.3	0.8
Somewhat important/ Possibility/ concerned	3.9	5.2	7.0	3.4
Moderately Important/ Possibility/ concerned	5.2	6.5	4.2	6.5
Important/ Possibility/ Concerned	10.2	12.2	11.5	7.8
Very Important/ Possibility/ Concerned	16.4	19.0	16.1	19.5
Extremely Important/ Possibility/ Concerned	16.9	18.2	17.4	17.4
Absolutely Important/ Possibility/ Concerned	40.6	25.0	33.3	39.3

Our preliminary pilot survey used a 5-point Likert scale to assess respondents' perspectives and opinions. Nevertheless, feedback indicated that participants felt restricted in articulating their perspectives within this narrow scope. We implemented a 10-point Likert scale for the primary survey to capture the complete range of customer preferences. An enlarged scale allowed participants to express their feelings in more detail, resulting in more comprehensive and insightful data. This data was subsequently analyzed to examine the intricate connection between sustainable packaging and purchasing behavior in Bangladesh. The questions are shown in the following table, followed by the answers from those who took the survey.

Table 3 presents the Likert scale questions that were administered in our survey, together with the corresponding responses provided by the participants. The poll results suggest that a notable percentage of the participants, precisely 40.6%, demonstrate absolute concern over environmental matters. This finding emphasizes the significance of

environmental awareness among respondents, indicating that a significant proportion of those surveyed are profoundly invested in ecological issues. A significant proportion-one-fourth (25%) of consumers place absolute importance on the imperative nature of sustainable packaging when making purchasing choices within the food and beverage market. One-third (33.3) of participants could purchase a food or beverage product provided it was encased in environmentally sustainable packaging. A total of 39.3% of the participants possessed the absolute importance of making purchases in the food and beverage industry, explicitly opting for products that are packaged in an environmentally sustainable manner to mitigate their ecological footprint. According to the survey's findings, a sizeable percentage of the general population believes that consumers may directly contribute to protecting the environment by purchasing products that come in environmentally friendly packaging.

To investigate the potential correlation between the influential level of sustainable packaging on purchase decisions and willingness to pay in the food and beverage sector, we conducted a statistical analysis using the Chi-square test of independence in Table 4. Our study's null hypothesis (H°) proposes no visible association between the level of influence of sustainable packaging on purchase decisions and willingness to pay in this sector. On the other hand, the alternative hypothesis (H1) indicates a link between the influential level of sustainable packaging and the willingness to pay for products in the food and beverage sector.

Table 4
Chi-square test of independence

	Value	Asymptotic/Approximate Significance (2-sided)
Pearson Chi-Square	78.556a	0.000
Likelihood Ratio	89.365	0.000
Linear-by-Linear Association	72.244	0.000
Phi	0.452	0.000
Cramer's V	0.452	0.000

When the significance value obtained from a chi-square test of independence is less than the 0.05 significance level (which corresponds to the 95% confidence level), it provides evidence to reject the null hypothesis. As a result, we reject the null hypothesis and accept the alternative hypothesis in this case. As a result, we may conclude that there is a link between the level of importance of sustainable packaging on purchase decisions and willingness to pay in the food and beverage sector. Based on the calculated Phi and Cramer's V value of 0.458, which exceeds the 0.25 threshold, it is concluded that there is a strong relationship between the importance of sustainable packaging in purchase decisions and willingness to pay in the food and beverage sector.

A cross-tabulation analysis was performed in this study to investigate the relationship between different age groups and degrees of environmental concern, which were measured using a 10-point Likert scale. The goal was to identify any noticeable patterns or differences in environmental awareness among various age groups. Table 5 below provides a detailed analysis of the relationship between age groups and Likert scale replies. It offers insights into the different age cohorts' diverse viewpoints on environmental issues.

Table 5
Cross - Tabulation of Age and Environmental Concern

Age group	Strongly Unconcerned	Unconcerned	Slightly Unconcerned	Newtral	Somewhat concerned	Moderately Concerned	Concerned	Very Concerned	Extremely concerned	Absolutely Concerned
18-23	14	3	3	1	10	13	26	30	27	81
24-29	3	0	0	0	3	4	9	24	26	52
30-35	0	0	1	1	2	3	4	9	12	23
Total	17	3	4	2	15	20	39	63	65	156

The data presented demonstrates a significant trend in environmental concern among respondents aged 18-23, highlighting a greater level of concern than other age groups. Although the sample sizes differ among various categories, this discovery provides valuable insights into the increased environmental awareness among younger consumers in Bangladesh. This emphasizes the potential for changing attitudes towards environmental issues within this cohort.

A Pearson analysis was conducted to see whether there is a relationship between age and the level of concern over environmental issues in Table 6. Both age and level of concern about environmental issues were measured as continuous variables, which satisfied the criteria for conducting a Pearson correlation study. Outliers were identified in the level of concern about environmental issues variable and replaced with the median value to mitigate their potential impact on the correlation analysis. The median was chosen due to its robustness against outliers and ability to depict the center tendency of the data accurately. Upon eliminating outliers, our dataset exhibited a normal distribution. Here, our H° (Null Hypothesis) = There is no relationship between age and concern about environmental issues in Table 6. H1 (Alternative Hypothesis) = There is a relationship between age and concern about environmental issues. Using the SPSS program, the following results were obtained:

Table 6
Correlation Between Age and Environmental Concern Level

Variables		Age	How concerned are you about environmental issues?
Age	Pearson Correlation	1	.105*
	Sig. (2-tailed)		0.039
	N	384	384
How concerned are you about environmental issues?	Pearson Correlation	.105*	1
	Sig. (2-tailed)	0.039	
	N	384	384

Pearson correlation value is statistically significant, as Sig. (2-tailed) = 0. 039 value is less than 0.05, so the Pearson correlation coefficient is statistically significant at the 95% confidence level. Therefore, the null hypothesis is rejected in favour of the alternative hypothesis. Hence, a very weak correlation exists between the age of the participants and their level of care regarding environmental matters.

Pearson analysis was performed on the data presented in Table 7 to determine whether or not there is a correlation between the monthly expenditure and the level of priority that respondents place on environmentally friendly packaging when it comes to making purchasing decisions in the food and beverage market. Both monthly expenditure and priority level for sustainable packaging were measured on the continuous variable, agreeing with the requirements of the Pearson correlation analysis. Outliers were detected in both

variables and were substituted with the median to minimize their potential influence on the correlation study. The median was selected because it is resistant to outliers and effectively represents the central tendency of the data. After removing outliers, our data was normal. Here our H° (Null Hypothesis) = There is no relationship between monthly expenditure and the level of the priority to sustainable packaging when making purchase decisions in food and beverage market. H1 (Alternative Hypothesis) = There is a relationship between monthly expenditure and the level of the priority to sustainable packaging when making purchase decisions in food and beverage market.

Table 7
Relationship Between Monthly Expenditure and Priority for Environmentally Friendly Packaging

Variables		How important is sustainable packaging to you when making purchase decisions in food and beverage market?	What is your monthly expenditure?
How important is sustainable packaging to you when making purchase decisions in food and beverage market?	Pearson Correlation	1	0.074
	Sig. (2-tailed)		0.15
	N	384	384
What is your monthly expenditure?	Pearson Correlation	0.074	1
	Sig. (2-tailed)	0.15	
	N	384	384

If the significance level associated with a Pearson correlation coefficient is 0.074 and a significance threshold of 0.05 (corresponding to a 95% confidence level), then the correlation is deemed not statistically significant. It suggests that we do not have sufficient evidence to support the alternative hypothesis. Therefore, we are forced to agree with the null hypothesis. That being said, consumers' importance on environmentally friendly packaging when making purchases in the food and beverage market appears to stay the same with their monthly expenditure.

Table 8
Correlation between Environmen

Variables		How concerned are you about environmental issues?	In an effort to reduce your impact on the environment, how likely are you to buy products in food and beverage market that come in environmentally friendly packaging?
How concerned are you about environmental issues?	Pearson Correlation	1	.879**
	Sig. (2-tailed)		0
	N	384	384
In an effort to reduce your impact on the environment, how likely are you to buy products in food and beverage market that come in environmentally friendly packaging?	Pearson Correlation	.879**	1
	Sig. (2-tailed)	0	
	N	384	384

The Pearson analysis was performed on the data shown in Table 8 to determine if there is a correlation between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging, to reduce their impact on the environment. Both variables were measured as continuous variables, meeting the requirements for conducting Pearson correlation research. Any outliers detected in both variables were substituted with the median value to address the potential influence of outliers on the correlation analysis. After removing outliers, our dataset displayed a normal distribution. Here our

(Null Hypothesis) = There is no relationship between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging, in an endeavor to reduce their environmental impact. H1 (Alternative Hypothesis) = There is a relationship between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging, in an endeavor to reduce their environmental impact.

The Pearson correlation coefficient demonstrates statistical significance, as indicated by a two-tailed significance value (Sig.) of 0.000, below the conventional threshold of 0.05. Therefore, the Pearson correlation coefficient is deemed statistically significant at a 95% confidence level. Consequently, the null hypothesis is refuted in support of the alternative hypothesis. The Pearson correlation coefficient is calculated to be 0.879. There is a very strong correlation between individuals' level of environmental concern and their propensity to purchase food and beverage products packaged in environmentally friendly materials, intending to minimize their environmental footprint.

The data presented in Table 9 were subjected to a Pearson analysis to see if there is a connection between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in ecologically friendly packaging. Both variables were measured as continuous variables to fulfill the criteria for performing Pearson correlation research. To address the potential impact of outliers on the correlation analysis, we replaced the median value for any outliers found in both variables. Our dataset showed a normal distribution after outliers were removed. Here our H° (Null Hypothesis) = There is no relationship between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging. H1 (Alternative Hypothesis) = There is a relationship between respondents' level of environmental concern and their likelihood of purchasing products in the food and beverage market that are wrapped in environmentally friendly packaging.

Table 9
Relationship Between Environmental Awareness and Choice of Sustainable Packaging in Food and Beverage Purchasing

Variables		How concerned are you about environmental issues?	How likely are you to buy a food or beverage product if it is wrapped in environmentally friendly packaging?
How concerned are you about environmental issues?	Pearson Correlation	1	.717**
	Sig. (2-tailed)		0
	N	384	384
How likely are you to buy a food or beverage product if it is wrapped in environmentally friendly packaging?	Pearson Correlation	.717**	1
	Sig. (2-tailed)	0	
	N	384	384

The Pearson correlation coefficient shows robust statistical significance, with a two-tailed significance value (Sig.) of 0.000, well below the standard threshold of 0.05. This establishes the statistical significance of the Pearson correlation coefficient at a 95% confidence level. Consequently, we reject the null hypothesis in favour of the alternative hypothesis. The calculated Pearson correlation coefficient is 0.717. This suggests a strong

correlation between individuals' levels of environmental concern and their inclination to buy food and beverage products packaged in environmentally friendly materials.

Discussion

This study examines the potential relationship between the factors (pricing, environmental concern) and consumer behaviour regarding purchasing products with sustainable packaging in the food and beverage market, focusing primarily on the youth demographic in Bangladesh. According to the findings of this survey, more than two-fifths of young people in Bangladesh base their decision regarding whether or not to buy a product with sustainable packaging in the food and beverage sector on the product's price. Regarding the fast-moving consumer goods market, research conducted by Feber et al. (2020) discovered that pricing continues to be the most important consideration for consumers in the United States when selecting sustainable products. As a similar finding, Kapse et al. (2023) discovered that more than two-thirds of the people who participated in a study in India considered the greater cost of organic packaging a significant disadvantage of sustainable products. Similarly, Orzan et al. (2018) discovered that organic packaging is more expensive, which is a big downside for sustainable products, according to nearly 60% of Romanian consumers. Although it is a fact that the initial costs of sustainable packaging materials and practices can sometimes be higher in comparison to those of non-sustainable alternatives, it is essential to keep in mind the bigger picture and the benefits that will accrue with time. The higher costs are a problem initially, but the long-term benefits for the economy and the environment are more significant than these worries. Getting around price concerns through subsidies, tax breaks for companies that use eco-friendly materials, or public awareness efforts can help more people adopt. Policymakers can also encourage eco-friendly packaging by requiring a minimum amount of recycled material or extending producer responsibility schemes. Targeted interventions that take into account both consumer preferences and cost concerns can encourage sustainable packaging practices, lessen the effects of climate change like the $570 million annual loss that is expected for Bangladesh (Kazi et al., 2022), and make things better for consumers, businesses, and the environment.

This study demonstrates a strong correlation between the level of environmental awareness among Bangladeshi youth and the likelihood of purchasing food and beverage products packaged in environmentally friendly materials. An Indian also came to the same conclusions. It demonstrates that an individual's concern for the environment and their intention to make a future purchase are positively and significantly associated with one another (James & Kurian, 2021). The findings imply that the association between environmental consciousness and consumer decisions on sustainable packaging may extend beyond a particular geographical area, indicating broader relevance.

This study demonstrated a very weak correlation between age and concern for environmental issues. Individuals who prioritize environmental conservation are more likely to indicate a preference for purchasing eco-friendly plastic products, as opposed to other forms of plastic products (Chi, 2022). However, a study conducted in Romania revealed

that there is no correlation between age and the factors that influence a consumer's decision to buy products that come in organic packaging. The observed disparities in research outcomes between studies may be attributed to various reasons, including changes in sample sizes, methodological approaches, cultural or regional distinctions, or the specific research inquiries under investigation.

Practical Implications

This research investigates the attitudes and behaviours of young consumers in Bangladesh's food and beverage industry regarding sustainable packaging. Environmental considerations motivate consumers to purchase, but the price is a substantial deterrent. To tackle this issue, policymakers and businesses may join forces to develop comprehensive approaches encompassing targeted awareness campaigns, policy mandates requiring minimal recycled content, and financial incentives such as tax breaks and subsidies. Age indifference should be maintained when contemplating sustainability for all demographic groups. By surmounting the obstacle of cost and cultivating cooperation, interested parties can enable consumers to take action regarding their ecological apprehension, thereby contributing to developing a sustainable packaging sector in Bangladesh and other countries. This would result in a mutually beneficial outcome for consumers, businesses, and the environment.

Limitation and Implication

Even though this research has yielded valuable insights, it is necessary to recognize and resolve several inherent limitations. The investigation was conducted using a quantitative methodology. Our results might have been more accurate and in-depth if we had used a mixed-methods strategy, allowing us to take advantage of the subjective details available. Secondly, the absence of external funding restricted the scope of this investigation. As a result, we needed more sample size and geographic coverage. Our outreach was primarily directed toward current students, a predominantly unemployed demographic.

Consequently, the study relied solely on the monthly expenditures reported by the respondents. A more comprehensive examination that considered the respondents' incomes could have yielded a more nuanced portrayal of the situation. In addition, it took a lot of work to achieve a balance between urban and rural participation. If we had obtained a more equitable data distribution from these regions, additional insights may have been uncovered. Besides, it's possible that some survey questions were worded so that it was difficult for respondents to understand them, which could open the door to introducing bias into the results. Conducting in-person interviews offline improved the clarity and comprehension of survey questions. Lastly, this research investigates a relatively new area, making locating a large corpus of prior literature challenging. Within the context of this emerging discipline, there is potential for it to use a broader range of preexisting scholarly investigations, bolstering its general comprehensiveness and comprehension. This revised version of our work maintains a thorough recognition of its inherent limits

and emphasizes enhanced business and refining of the material. As a result, it facilitates a more coherent and informative discussion on the topic at hand.

Conclusion

This study offers a holistic look at the food and beverage market in a developing nation from the perspective of young Bangladeshi consumers, shedding light on the effect of sustainable packaging practices on their tastes and buying habits. The findings of this study provide valuable insights for both industry practitioners and policy officials. The study results provide a glimpse into the changing attitudes and behaviours of consumers in Bangladesh's food and beverage market, driven by an increasing awareness of environmental and ethical issues. A more ecologically responsible and socially conscious future is possible in the context of a developing nation, and this study serves as a call to action for businesses and policymakers to collaborate in promoting sustainable packaging practices.

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