



Descriptive study of tumbler user behavior to support green market development

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ABSTRACT

The environmental impact of plastic waste is extremely significant. Because plastic can take centuries to break down, it poses serious risks to wildlife, harms marine habitats, and can negatively affect human health. Growing global concern about this issue has encouraged people to switch to more ecofriendly products, while also creating opportunities for businesses to adapt their strategies to be more sustainable. This study employs a descriptive approach to examine the behavior of individuals using tumblers as eco-friendly products especially Gen Z, utilizing cross-tabulation techniques with SPSS software. The objective is to analyze the relationship between respondent profiles and their eco-friendly product usage. Data and descriptions regarding tumbler users in Medan City provide valuable insights for companies in the green entrepreneurship sector. The findings indicate that potential green consumers are predominantly female, aged 17-20, and currently students. Their primary motivation for choosing stainless steel tumblers is economic and practical considerations, followed by environmental awareness. These results offer a reference for green companies in the design and development of eco-friendly products and green marketing in particular.

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1. INTRODUCTION

Plastic waste has become a serious problem that is of great concern because its impact can threaten environmental sustainability. The ability of plastic materials to take hundreds of years to decompose poses a threat to wildlife, damages marine ecosystems, and endangers human health (González et al., 2024). Indonesia is the second-largest contributor of plastic waste in the world after China, producing 3.2 million tons of unmanaged plastic waste annually, including 1.29 million tons that enter the ocean (IETC, 2025). Based on the 2023 Census of the Indonesian River Affairs Research Agency (BRUIN), thousands of pieces of plastic waste were found, dominated by packaging from food products, wrappers, household appliances, personal care products, and smoking equipment. This emphasizes a new paradigm for waste management that is more economically valuable, redesigned manufacturer packaging, law enforcement, and the shared responsibility of the government, companies, and the community (Riski, 2024). The Green Action Fund from Consumers International is one of the programs that supports organizations in carrying out educational and advocacy activities regarding sustainable consumption and poverty alleviation. This program encourages innovative campaigns that bridge consumer awareness and action

through collaboration among communities, businesses, and governments to support the achievement of the Sustainable Development Goals (SDGs) (Consumer International, 2025).

This global phenomenon demonstrates increasing public awareness of choosing environmentally friendly products and also presents an opportunity for businesses to adapt their strategies. Consequently, sustainable business models are being developed and implemented, embracing responsible production that focuses not only on profit but also on community and environmental concerns. One product that reflects the green consumption trend is the widespread use of tumblers. One industry that has significantly contributed to the growth of plastic production is the food and beverage industry, primarily operating in restaurants and street vendors (Stepien et al., 2021). Based on data from 6WRResearch (2025) related to the Indonesian Beverage Equipment Market, it is estimated that this market will continue to grow at varying rates from 2025 to 2029. This is due to increasing consumer demand for stylish, durable, and environmentally friendly beverage products. A market report based on data from 6WRResearch (2025) shows that the trend of using sustainable materials such as glass, stainless steel, and ceramics is increasing in line with growing environmental awareness. Innovations in temperature-regulating bottles and ergonomic glasses are also contributing to increased customer interest. Based on data from 6Wresearch there is a comparison of the growth of the drinking equipment market in Indonesia with five major Asian economies in 2027. Indonesia has the highest growth rate of 10.51% and is categorized in the exponential phase, which indicates rapidly increasing demand.

The increase in production growth was driven by rising public demand for drinking utensils. This development was also supported by increased public income and lifestyle changes, particularly with the growing number of F&B businesses such as cafes and hotels that also sell drinking utensils (Rahmawati, 2024). Within this demand, Generation Z is considered the most promising segment because they have a high level of concern for environmental issues and are willing to pay more for sustainable products. Global Survey on Gen Z and Millennials, Indonesia shows that Gen Z has a very high level of concern for environmental issues, feeling worried or anxious about environmental conditions triggered by direct experiences related to extreme weather such as floods and landslides experienced by most respondents (Deloitte, 2025) ;(Zarawaki, 2024). Gen Z's habits and preferences have a major contribution in promoting sustainable development, both at the individual level and in influencing the direction of the economy and the future development of businesses and companies. Understanding Gen Z's perspective on sustainability is important because they were not only raised in the digital age but also have a broader understanding of sustainability issues that are the focus of global attention (TÓTH et al., 2024).

The tumbler industry currently offers a wide selection of products with attractive designs that can influence consumer preferences in product selection. Growth in demand has driven innovation in the production process, with the application of modern features such as double locking mechanisms, secure sealing technology, and the use of high-quality materials becoming important factors that can increase the appeal of food and beverage storage products, especially tumblers (Rahmawati, 2024). Previous studies have attempted to address environmental issues in general, but research on tumbler usage behavior specifically remains limited, particularly in the context of implementing green marketing models. Based on the results of research by Indana et al. (2020), it was found that most people, especially students, have a high awareness of the negative impact of plastic waste and already bring tumblers to campus, but the habit of buying drinks in plastic packaging continues. This shows that awareness and intentions to reduce waste are not yet fully reflected in behavior, so follow-up is needed to encourage more consistent behavioral change. Research conducted by Wulandari dan Suhud (2025) states that tumblers are no longer just drinking containers, but have become a sustainable lifestyle for Generation Z. The intention to buy and use tumblers contributes to reducing plastic waste and supporting Sustainable Development Goal (SDG) 12 through long-term changes in consumption behavior and strengthening the identity of the younger generation as agents of change. Ramizares et al. (2024) emphasize in their research that both brand equity and the halo effect have a significant influence on the decision to purchase water bottles. Attitudes and perceived behavioral control are important factors in shaping consumer purchase intentions and behavior.

Mady et al. (2024) found eco-innovation is positively motivated by regulatory pressure and eco-friendly product demand; the direct link between environmental pressures (regulatory pressure, eco-friendly product demand) and sustainable competitiveness advantages are not statistically significant; and eco-innovation acts as a mediator in the relationship between these environmental pressures and sustainable competitive advantage. Based on previous research, there is a gap that requires further investigation into the dynamics of consumer behavior as a reference in the development of green marketing models. This study aims to further examine tumbler usage preferences, particularly among Gen Z. A comprehensive understanding of tumbler usage, such as usage habits, types of tumblers chosen, and main reasons for usage, is sought. A descriptive approach is used to describe Gen Z behavior. The findings are expected to provide practical contributions that can serve as strategic references in the development of green marketing models, especially for companies that focus on tumbler products.

2. RESEARCH METHOD

A research method is defined as a scientific approach designed to obtain data that serve as a reference (Sugiyono, 2019). This study employs a quantitative approach, with the primary objective being descriptive research. Descriptive research seeks to characterize a phenomenon as it occurs, rather than to identify or explain its causes (Zulganef, 2018). As noted by Sugiyono (2019), descriptive research also aims to present the state or value of one or more independent variables. In this study, no manipulation or intervention is applied to the data, and the research is conducted on an individual basis. Furthermore, the research utilizes a cross-sectional design, indicating that data collection occurs at a single point in time without subsequent follow-up (Zulganef, 2018). The process for obtaining accurate results in this descriptive analysis involves several stages, as outlined in the following flowchart:

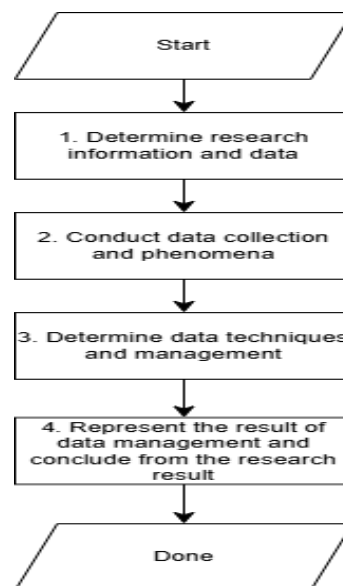


Figure 1. Descriptive analysis research flow chart
Source: Processed by researcher

This study uses secondary and primary data sources. Secondary data is data collected independently and directly by the researcher (Suliyanto, 2018); (Schindler, 2019). In this study, we used primary data from the distribution of questionnaires using Google Forms. Data collection aims to obtain the information researchers need to achieve their research objectives. Data collection methods are techniques used to collect data (Kurniawan and Puspitaningtyas, 2016). Meanwhile, secondary data was obtained indirectly by the researcher from the research subjects (Suliyanto, 2018). This data has been collected and presented by related parties for commercial purposes.

In this descriptive analysis study, the population and sample used were determined. According to (Sugiyono, 2019), a population is a generalized area with characteristics and qualities consisting of objects and subjects that have been studied and determined by the researcher to draw conclusions. In this study, the population is the Medan City community who use tumberl as a green and environmentally friendly product, so the exact number is unknown. Meanwhile, the sample is a part or subset of the population consisting of selected population members (Zulganef, 2018). All samples come from the population, but not every member of the population is included in the sample. Because of time and budget limits, this study used a representative sample. A non-probability purposive sampling method was chosen. Rochaety et al. (2019) state that sample selection is based on specific considerations that match the research goals and problems. The sample in this study was people in Medan City who use tumblers as eco-friendly products. The sample size was set by multiplying the number of items by ten, following Hair et al. (2021), so the minimum expected sample size was 230 respondents.

Data was collected by distributing questionnaires and analyzed using statistical methods. According to Sugiyono (2017) data analysis is done after gathering all responses. In quantitative research, this involves using statistics. This study used a descriptive approach to observe how the sample used tumblers, applying cross-tabulation with SPSS software. Data analysis techniques using cross-tabulation arranged based on rows and columns (Rangkuti, 1997); (Smith and Albaum, 2005). This helped combine each respondent's profile. The results provide information and an overview of tumbler users in Medan City, which can be used by companies in the green entrepreneurship industry for product developing.

3. RESULTS AND DISCUSSIONS

The researchers presented key findings on respondent profiles to support green market growth. Tumblers emerged as a widely adopted eco-friendly product. This study identifies potential consumer profiles based on perceptions from a representative sample of 265 respondents in Medan City, providing valuable insights for related industries.

Respondent Profile Background

The questionnaire was distributed through social media platforms including Instagram, Twitter, and WhatsApp. The following section describes the characteristics of potential green consumers relevant to the green entrepreneurship industry.

- a. Characteristics of Potential Green Consumers by Gender, the following is a breakdown of potential green consumers by gender, as shown in the following data:

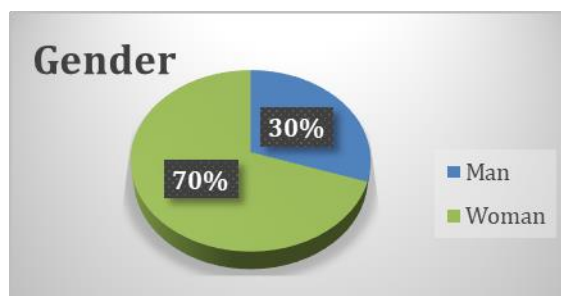


Figure 2. The percentage of gender
Source: Processed by researcher

Figure 2 shows that the data processing results indicate that respondents are predominantly female (70%) and male (30%). These results indicate that women are potential consumers for eco-friendly products. This also aligns with research conducted by Mintel Market Intelligence, which shows that men are significantly less conscientious than their female counterparts when it comes to maintaining environmentally friendly habits. Therefore, this data is crucial for the green entrepreneurship industry to further create and develop eco-friendly products.

Women think differently from men due to biological, neurological, and behavioral variations between the male and female brains. These differences impact their spending habits, as women have the power to control their own spending (Jesus et al., 2021).

In this section, it is explained the results of research and at the same time is given the comprehensive discussion. Results can be presented in figures, graphs, tables and others that make the reader understand easily (Grieshaber, 2020). The discussion can be made in several sub-chapters.

- b. Characteristics of Potential Green Consumers by Age, the following is the percentage of potential green consumers by age group, as shown in the following data:

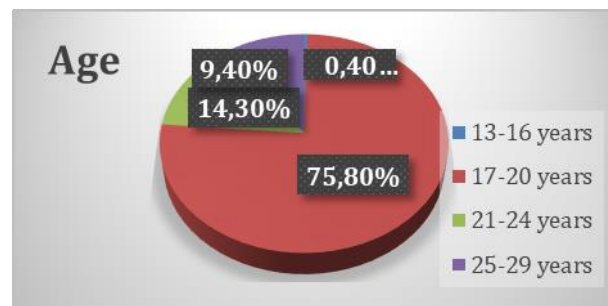


Figure 3. The percentage of age
Source: Processed by researcher

Figure 3 shows that Generation Z, aged 13-29, is divided into four groups, with the 17-20 age group the most likely to use eco-friendly products, at 75.8%. The tumbler was the target of this study. This aligns with the fact that this age group is a productive group currently studying (in school). This is followed by the 21-24 age group, at 14.3%. Next, the productive group, fresh graduates or entry-level workers, aged 25-29, accounted for 9.4%. Finally, there was one respondent aged 13-16. From these results, it can be concluded that potential green consumers who productively use eco-friendly products are in the 17-20 age group.

This aligns with the respondent's educational background, where those aged 17-20 have a high school diploma or equivalent. Therefore, this data can serve as a reference for companies or MSMEs creating and developing eco-friendly products appropriate for this age group. Examples of products that can be created and developed besides tumblers include tote bags, innovative packaging, reusable food containers, and others.

- c. Characteristics of Potential Green Consumers Based on Education, the following data shows the percentage of potential green consumers based on their highest level of education, as shown in the following data:

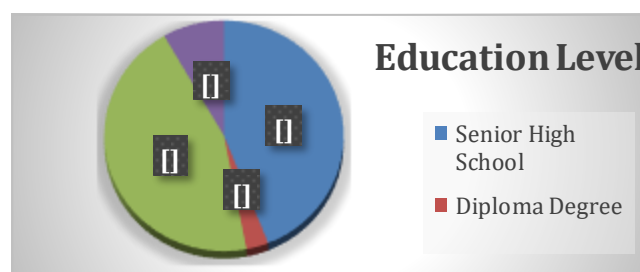


Figure 4. The percentage of education level
Source: Processed by researcher

In line with the results of the respondent characteristics data by age, the most dominant level of education was senior high school graduates, at 43.8%. Next came bachelor's degree graduates, at 44.5%. Respondents with master's/doctoral degrees accounted for 8.3%. Finally, 3%

of respondents had diploma degrees. According to the results of the respondent characteristics by age group, those aged 17-20 years old have a senior high school education level.

This data aligns with the government's efforts to address the global environmental crisis, as several schools in Indonesia are currently implementing the eco-school concept. According to data from the Ministry of Environment and Forestry (KLHK), by 2024, more than 20,000 schools in Indonesia will have earned the Adiwiyata (Green Ecosystem) designation. Campaigns such as "bring your own water bottle" are concrete steps taken by schools and universities.

- d. Characteristics of Potential Green Consumers by Occupation, the following data present the percentage distribution of potential green consumers according to their highest level of education:

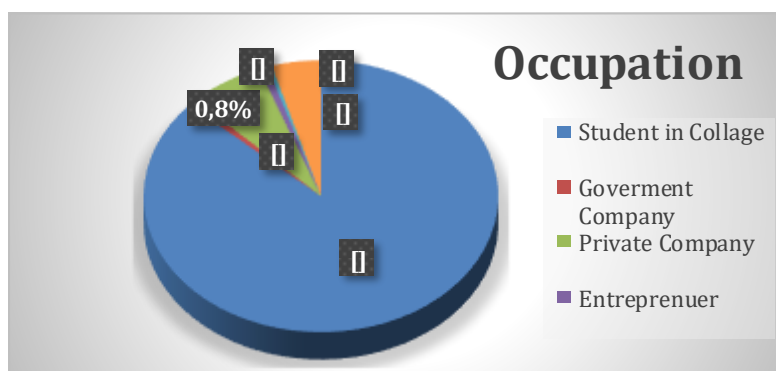


Figure 5. The Percentage of occupation
 Source: Processed by researcher

Figure 5 shows that 86.8% of respondents were college students, followed by 6.8% private employees, 4.5% with other unspecified occupations, 0.8% each from government companies and entrepreneurs, and 0.4% as a farmer or fisherman.

Crosstabulation Result

Crosstabulation analysis using SPSS software produced several combinations of respondent profile characteristics and product purchasing behavior. The initial analysis examined three variables: occupation, frequency of eco-friendly tumbler use, and reasons for product use. Due to limitations in the number of variables that could be analyzed simultaneously, two separate combinations were tested. The primary objective was to assess consumer behavior toward eco-friendly products, specifically tumblers, by analyzing frequency and reasons for use in relation to occupation.

Tabel 1. Crosstabulation result of occupation, frequencies of use and reason of use

Occupation * Frequencies of Use * Reason of Use Crosstabulation							
Reason of Use		Frequencies of Use				Total	
		Less than 2 times a week	2-3 a week	4-5 a week	Every day		
Follow the Trend	Occupation	Student in Collage	Count	2	0	1	3
			% within occupation	66,7%	0,0%	33,3%	100,0%
		Private Company	Count	0	2	0	2
		% within occupation	0,0%	100,0%	0,0%	100,0%	
		Farmer/ Fishmer	Count	1	0	0	1
		% within occupation	100,0%	0,0%	0,0%	100,0%	

Occupation * Frequencies of Use * Reason of Use Crosstabulation									
Reason of Use			Frequencies of Use				Total		
			Less than 2 times a week	2-3 a week	4-5 a week	Every day			
Environmental Awareness	Total	Count	3		2	1	6		
		% within Occupation	50,0%		33,3%	16,7%	100,0 %		
	Occupatio n	Student in Collage	Count	7	8	7	58	80	
		% within Occupation	8,8%	10,0%	8,8%	72,5%	100,0 %		
		PNS	Count	0	0	0	1	1	
			% within Occupation	0,0%	0,0%	0,0%	100,0 %	100,0 %	
		Private Company	Count	0	0	0	3	3	
			% within Occupation	0,0%	0,0%	0,0%	100,0 %	100,0 %	
		Others	Count	0	0	1	4	5	
			% within Occupation	0,0%	0,0%	20,0%	80,0%	100,0 %	
	Total	Count	7	8	8	66	89		
		% within Occupation	7,9%	9,0%	9,0%	74,2%	100,0 %		
Healthy Lifestyle	Occupatio n	Student in Collage	Count	6	1	11	27	45	
		% within Occupation	13,3%	2,2%	24,4%	60,0%	100,0 %		
		Private Company	Count	0	0	3	0	3	
			% within Occupation	0,0%	0,0%	100,0 %	0,0%	100,0 %	
		Others	Count	0	0	0	5	5	
			% within Occupation	0,0%	0,0%	0,0%	100,0 %	100,0 %	
	Total	Count	6	1	14	32	53		
		% within Occupation	11,3%	1,9%	26,4%	60,4%	100,0 %		
	Social Movement (zero waste)	Occupatio n	Student in Collage	Count		1	2	3	
			% within Occupation			33,3%	66,7%	100,0 %	
			PNS	Count			0	1	1
				% within Occupation			0,0%	100,0 %	100,0 %
		Private Company	Count			0	3	3	
			% within Occupation			0,0%	100,0 %	100,0 %	
		Others	Count			0	1	1	
			% within Occupation			0,0%	100,0 %	100,0 %	
Total		Count			1	7	8		
		% within Occupation			12,5%	87,5%	100,0 %		
Practical and Economical		Occupatio n	Student in Collage	Count	6	9	17	60	92
			% within Occupation	6,5%	9,8%	18,5%	65,2%	100,0 %	

Occupation * Frequencies of Use * Reason of Use Crosstabulation								
Reason of Use			Frequencies of Use				Total	
			Less than 2 times a week	2-3 a week	4-5 a week	Every day		
Others	Private Company	Occupation					%	
		Count	0	2	2	2	6	
		% within	0,0%	33,3%	33,3%	33,3%	100,0	
		Occupation					%	
		Entrepreneur	Count	1	0	0	1	2
		% within	50,0%	0,0%	0,0%	50,0%	100,0	
	Others	Occupation					%	
		Count	0	0	0	1	1	
		% within	0,0%	0,0%	0,0%	100,0	100,0	
		Occupation					%	
		Total	Count	7	11	19	64	101
		% within	6,9%	10,9%	18,8%	63,4%	100,0	
	Occupation	Student in Collage	Occupation					%
			Count	3	1	2	1	7
		% within	42,9%	14,3%	28,6%	14,3%	100,0	
		Pegawai Swasta	Occupation					%
			Count	0	0	0	1	1
		% within	0,0%	0,0%	0,0%	100,0	100,0	
Total	Count	3	1	2	2	8		
% within	37,5%	12,5%	25,0%	25,0%	100,0			
Total	Occupation	Student in Collage	Occupation				%	
			Count	24	19	38	149	230
	% withi	10,4%	8,3%	16,5%	64,8%	100,0		
	PNS	Occupation					%	
		Count	0	0	0	2	2	
	% within	0,0%	0,0%	0,0%	100,0	100,0		
	Private Company	Occupation					%	
		Count	0	2	7	9	18	
	% within	0,0%	11,1%	38,9%	50,0%	100,0		
	Entrepreneur	Occupation					%	
		Count	1	0	0	1	2	
	% within	50,0%	0,0%	0,0%	50,0%	100,0		
Farmer/ Fishmer	Occupation					%		
	Count	1	0	0	0	1		
% within	100,0%	0,0%	0,0%	0,0%	100,0			
Others	Occupation					%		
	Count	0	0	1	11	12		
% within	0,0%	0,0%	8,3%	91,7%	100,0			
Total	Count	26	21	46	172	265		
% within	9,8%	7,9%	17,4%	64,9%	100,0			
	Occupation					%		

Source: Processed by researcher

Data analysis revealed that 66.7% of respondents (2 individuals) cited tumbler use as following a trend, with the highest frequency of less than twice a week, mainly among students.

Additionally, 72.5% cited environmental concerns, most using tumblers daily (58 individuals). 60% cited a healthy lifestyle, with the highest frequency being daily (27 individuals). Similarly, 60% associated their use with supporting a social movement (zero waste), with daily use most common among private sector employees and students. 65.2% cited practicality and used tumblers daily (60 individuals). Finally, for other less-defined reasons, the most common frequency was less than twice a week, mainly among students. Next, we cross-referenced respondent characteristics, namely gender and age, with the type of material used in eco-friendly products, specifically tumblers. The resulting data is presented below.

Tabel 2. Crosstabulation result of gender, age, and the type of material

Gender * Age * Type of Material Crosstabulation								
Type of Material				Age				Total
				13-16 Years	17-20 Years	21-24 Years	25-29 Years	
Stainless Steel	Gender	Man	Count	27	5	8	40	
			% within Gender	67,5%	12,5%	20,0%	100,0%	
	Woman	Count	71	13	10	94		
		% within Gender	75,5%	13,8%	10,6%	100,0%		
Total		Count	98	18	18	134		
		% within Gender	73,1%	13,4%	13,4%	100,0%		
Bioplastic	Gender	Man	Count	14	10	3	27	
			% within Gender	51,9%	37,0%	11,1%	100,0%	
	Woman	Count	59	5	3	67		
		% within Gender	88,1%	7,5%	4,5%	100,0%		
Total		Count	73	15	6	94		
		% within Gender	77,7%	16,0%	6,4%	100,0%		
Glass	Gender	Man	Count	0	4	2	7	
			% within Gender	0,0%	57,1%	28,6%	14,3%	100,0%
	Woman	Count	1	14	2	0	17	
		% within Gender	5,9%	82,4%	11,8%	0,0%	100,0%	
Total		Count	1	18	4	1	24	
		% within Gender	4,2%	75,0%	16,7%	4,2%	100,0%	
Aluminium	Gender	Man	Count	4			4	
			% within Gender	100,0			100,0%	
	Woman	Count	7			7		
		% within Gender	100,0			100,0%		
Total		Count	11			11		
		% within Gender	100,0			100,0%		
Bamboo	Gender	Man	Count	1	1		2	
			% within Gender	50,0%	50,0%		100,0%	
	Total	Count	1	1		2		
		% within Gender	50,0%	50,0%		100,0%		
Total	Gender	Man	Count	0	50	18	12	80
			% within Gender	0,0%	62,5%	22,5%	15,0%	100,0%
	Woman	Count	1	151	20	13	185	
		% within Gender	0,5%	81,6%	10,8%	7,0%	100,0%	
Total		Count	1	201	38	25	265	
		% within Gender	0,4%	75,8%	14,3%	9,4%	100,0%	

Source: Processed by researcher

Based on the data analysis, 75.5% (98) of women aged 17-20 preferred eco-friendly products, specifically stainless-steel tumblers. Furthermore, 88.1% (59) of women aged 17-20 chose products made from bioplastics. Glass products remained the dominant choice, with 82.4% (14) of women aged 17-20 opting for them. Aluminum was also favored by 7 women aged 17-20. However, tumbler products made from bamboo are in demand by 2 male respondents aged 17-20 years and 21-24 years, respectively.

4. CONCLUSION

The respondent profile consists primarily of women aged 17 to 20. Most are Senior High School graduates or equivalent and are currently students. The majority select eco-friendly tumblers for practical reasons and cost savings, with environmental concern as a secondary motivation. Additional factors include support for social movements such as zero waste, other unspecified reasons, and adherence to current trends. These findings provide valuable insights for organizations and companies aiming to understand consumer behavior and inform green marketing strategies. Since consumers prioritize functional value and cost efficiency, marketing efforts should emphasize product quality, ease of use, and long-term savings. Environmental considerations also influence purchasing decisions. Therefore, companies must highlight tumbler material, environmental impact, and sustainability to reinforce their eco-friendly image. The zero-waste movement is characterized by collective values and community participation. This suggests green marketing should incorporate community engagement, social campaigns, and behavior-change initiatives. Addressing these factors supports the development of a comprehensive green marketing strategy that integrates functional, ecological, social, and emotional dimensions to promote sustainable, eco-friendly tumblers.

Respondents demonstrated a preference for eco-friendly stainless-steel products. This indicates a focus on durability, food safety, and long-term value. Green marketing should emphasize material quality, durability, and the use of recyclable materials. Cross-tabulation results offer detailed insights into the relationship between respondent backgrounds and eco-friendly product usage. These insights are discussed in the results and discussion chapter. These data can inform new product development and targeted marketing strategies.

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