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Understanding Consumer Behavior for Sustainability: Factors Driving the Switching Intention to Eco-Friendly Detergents

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Abstract: This paper investigates green marketing factors that influence Indonesian consumers' switching intentions toward eco-friendly detergents and contributes to the broader discourse on sustainable consumption within the framework of the Sustainable Development Goals (SDGs), particularly SDG 12 on responsible consumption and production. Although previous studies have explored general green product adoption, limited research has examined the integrated role of green marketing stimuli together with psychological determinants in explaining the shift from conventional to environmentally friendly detergents. This gap highlights the need for a comprehensive model that captures both marketing-driven and belief-driven mechanisms of sustainable consumer behavior. The research gap of this study lies in its incorporation of multiple green marketing dimensions, including eco-labelling, green packaging, pricing, and green product knowledge, combined with environmental concern and two mediating variables, namely consumer belief and attitude toward eco-friendly detergents. This integrated framework allows for an examination of how cognitive and affective processes interact to shape consumers' switching intentions toward green detergents. By linking green marketing strategies with consumer psychological responses, the study offers insights into how sustainable product preferences can be strengthened through targeted marketing interventions. A quantitative survey approach was employed, involving 439 respondents from diverse regions across the Indonesian archipelago. The wide geographical distribution of participants enhances the representativeness of the data and provides a broader view of Indonesian consumers' sustainability-oriented behavior. Structural analysis was conducted to test the relationships among green marketing variables, mediating constructs, and switching intention. The findings demonstrate that eco-labelling, green packaging, green product knowledge, pricing perceptions, and environmental concerns significantly influence consumer beliefs related to environmental responsibility. These strengthened environmental beliefs subsequently shape positive attitudes toward eco-friendly detergents. In turn, attitude is found to play a crucial role in increasing consumers' intention to switch to green detergents. The results emphasize that beliefs and attitudes function as important psychological pathways through which green marketing strategies exert their influence.This study offers several theoretical and practical implications. Theoretically, it provides a more holistic model that integrates green marketing variables and psychological mediators, offering a stronger explanation for sustainable product switching. Practically, the findings underline the importance for companies to design credible eco-labels, improve environmentally responsible packaging, communicate product benefits clearly, and consider pricing strategies that align with consumer expectations. Encouraging stronger environmental concerns also appears to reinforce the belief–attitude–intention chain that motivates more sustainable household consumption. These contributions support the advancement of sustainable development efforts in Indonesia by strengthening consumer engagement with environmentally friendly products.

Keywords: Eco-friendly detergents, eco-labeling, green behavior, green package, switching Intention

Introduction

Water pollution is a significant concern due to the environmental impact of detergent waste. The chemical composition of detergent waste, which includes substances like phosphates, diethanolamine, alkylbenzene sulfonates, and alkylphenoxides, can severely degrade water quality and harm aquatic life. These chemicals are difficult for microorganisms to break down naturally (Saraswati, 2022). In Indonesia, household wastewater disposal practices are alarming: over 57% of households discharge wastewater from activities like bathing, washing, and cooking directly into drains or rivers. Furthermore, nearly 19% dispose of waste into soil pits, while about 10% use septic tanks. Only a small fraction, approximately 1.28%, utilize proper wastewater treatment facilities or sewerage systems (Annur, 2021).

The situation poses serious threats to both the environment and human well-being. Detergent waste contamination in the air also leads to significant environmental and health issues. The decomposition of bacteria in the air can be hindered by detergent waste, which can kill these microorganisms. If decomposing microorganisms die, pollutants in the air cannot be naturally mitigated, resulting in the contamination of air biota. Consequently, this can lead to the poisoning and extinction of various biota (Aviaska, 2022).

Detergents generally consist of a blend of chemicals formulated to clean various types of dirt from fabrics, carpets, and other household items (Cleanipedia, 2023). Beyond their cleaning capabilities, detergents also exhibit antibacterial properties that can eliminate germs and bacteria, thereby helping to prolong the lifespan of the materials being washed. The primary components of detergents include surfactants, builders, fillers, and additives. Surfactants play a crucial role in facilitating the removal of dirt from materials; however, they can cause skin irritation, reduce skin's natural moisture, and potentially disrupt the body's hormonal system. In aquatic environments, surfactants contribute to a decrease in oxygen levels, posing a significant threat to aquatic life (Rahmawaty, 2019). Given the benefits and drawbacks of using conventional detergents, it is essential for consumers to choose environmentally friendly detergent products.

In Indonesia, several eco-friendly detergent brands are available to consumers, yet there is no clear evidence of a widespread lifestyle shift towards adopting environmentally friendly detergents over conventional ones, which have detrimental environmental impacts. Green detergents are specifically formulated to mitigate negative environmental effects. Typically, these detergents utilize natural ingredients such as enzymes, plant extracts, and biodegradable materials, making them safer and more environmentally friendly compared to their conventional counterparts. Among the eco-friendly detergent brands from the FMCG industry that are marketed in Indonesian supermarkets are Gentle Gen by Mayora Group, Greenwash by Halal Network International, Amway's Liquid Concentrated Laundry Detergent, and Sosoft by Wingscare.

Previous research has extensively examined various determinants influencing consumer behavior toward environmentally friendly products. Environmental concern has been identified as a significant driver that fosters willingness to adopt green consumption habits (Moslehpour et al., 2023; Ghorbani, 2023). The informational role of eco-labeling has been demonstrated to enhance consumer awareness and positively affect attitudes toward sustainable products (Fang et al., 2023; Kilbourne & Pickett, 2008). Similarly, green product knowledge is crucial in shaping consumers' attitudes and intentions, serving as a foundation for informed decision-making and promoting sustainable brand preferences (Huang et al., 2014; Ghorbani, 2023). Pricing strategies play a particularly critical role in emerging markets like Indonesia, where consumers exhibit high price sensitivity; pricing influences both purchase intention and loyalty toward green products (Shabbir et al., 2020; Kholod et al., 2023; Liu et al., 2021). Additionally, green packaging contributes to consumers' environmental beliefs and attitudes by emphasizing sustainability throughout the product lifecycle (Zhang & Zhao, 2012; Mahmoud et al., 2022). Collectively, these studies highlight the complex, interrelated factors that affect consumers' transition toward eco-friendly products and underscore the importance of integrated marketing strategies that address beliefs, attitudes, and price sensitivity.

Considering the pressing issue of environmental degradation caused by detergent waste and the need to shift consumer habits from conventional to eco-friendly detergents, this study seeks to investigate the factors that influence consumer behavior in adopting environmentally friendly detergents. By identifying the factors that can alter consumer purchasing habits, green detergent companies can develop targeted strategies to enhance their market presence and ultimately drive sales. On a broader level, this research aims to contribute to a more sustainable future by providing insights into how to encourage consumers to make environmentally conscious choices.

Despite the high percentage of Indonesian households disposing of detergent waste into rivers 57.42% nationwide and 79.72% in Jakarta (Annur, 2021), there remains a notable gap between environmental awareness and actual consumer behavior, as the adoption of eco-friendly detergents is still relatively low. Although a survey by Bain & Company indicates that Indonesian consumers are willing to pay a premium of 15-20% for green products, the market for eco-friendly detergents remains limited (Alexander, 2023). This study aims to address practical and empirical gaps in understanding the factors that influence switching intentions toward eco-friendly detergents. Specifically, there is a lack of empirical studies in the Indonesian context that quantitatively examine how factors such as eco-labeling, green packaging, pricing, environmental concern and especially pricing, which is particularly relevant given Indonesian consumers' price sensitivity are scarce. While earlier research has primarily emphasized general environmental attitudes, this study advances the literature by explicitly incorporating Environmental Concern as an exogenous variable and price as a key factor influencing consumer behavior in this market. By employing a quantitative framework grounded in behavioral theory, this research aims to generate nuanced insights into consumer behavior and inform manufacturers and policymakers in developing more effective strategies to foster sustainable consumption patterns in Indonesia.

Literature Review

This study draws upon the theoretical logic of the Theory of Planned Behavior (TPB) to understand the factors influencing consumers' intention to switch to eco-friendly detergents. The TPB highlights the critical role of attitude in shaping behavioral intentions (Ajzen, 1991), which aligns with the focus of this research. Rather than employing the full TPB model, this study selectively incorporates its core principle, the role of attitudes in driving intention, while emphasizing additional factors that influence consumer attitudes and beliefs in the context of sustainable product choices. The model thus centers on three key variables: attitude toward green detergents, beliefs about green detergents, and switching intention toward green detergents.

Building on this framework, the study further investigates several external factors that are theorized to shape consumer attitudes and switching intentions. These include eco-labelling, green packaging, environmental concern, green product knowledge, and price perception. These variables were selected based on their relevance to green marketing strategies and the growing body of research on sustainable consumption. Previous studies on green products, including detergents, have frequently emphasized price as a dominant driver (Biswas & Roy, 2015; Srivastava & Gupta, 2023), particularly in emerging markets such as Indonesia, where consumers exhibit high price sensitivity (Mauliawan & Nurcaya, 2021; Hartono & Gatari, 2020). However, this study takes a broader perspective by exploring how these factors collectively shape attitudes and encourage behavioral change toward eco-friendly detergents. The following sections will review the relevant literature on each of these factors in greater detail.

Eco Labeling

Eco-labeling refers to a certification mark awarded to products or services that meet specific environmental criteria established by an independent third-party entity (Baron, 2011). While the presence of eco-labels or claims about environmental benefits from food ingredients does not significantly impact consumer purchasing decisions, trust in these labels emerges as a critical factor; consumers are more inclined to purchase eco-labeled food if they trust the label (Kwak et al., 2020). Extending this view, our research interprets the presence of eco-labels as a significant factor that conveys environmental value and plays a crucial role in encouraging consumers to purchase eco-friendly products. Eco-labels can enhance the market adoption of sustainable products (Riskos et al., 2021) by providing consumers with easily recognizable standards, facilitating product differentiation, and influencing consumer choices towards more sustainable options (Bullock & van der Ven, 2020). Moreover, eco-labeling serves as a pivotal marketing tool in promoting environmentally responsible consumer behavior, particularly among younger generations, by highlighting the ecological benefits associated with products (Song et al., 2020). Given its informational and symbolic value, eco-labeling is expected to influence consumers' beliefs toward the environment by signaling a product's environmental benefits.

Green Packaging

Green packaging, also known as "eco-friendly packaging," is defined as environmentally friendly packaging that is made entirely from natural plant materials, reusable, recyclable, biodegradable, and promotes sustainable development (Zhang and Zhao, 2012). Throughout its lifecycle, green packaging does not pose a risk to the environment or human and animal health (Herbes et al., 2020). Previous research has explored the impact of various green packaging aspects, including labels, characteristics, and size, on consumer choice and decision-making (Trivedi et al., 2018). Studies have also examined product selection in the context of recycling initiatives (George et al., 2023) and found that

consumers engaged in sustainable behaviors tend to better understand the benefits of eco-friendly packaging (Mahmoud et al., 2022). Green packaging serves not only as a functional and aesthetic feature but also as an environmental cue that can shape consumers' beliefs toward the environment. These beliefs contribute to more favorable attitudes toward green detergents.

Green Product Knowledge

Developing green product knowledge is a critical component for companies pursuing sustainability, as it helps shape positive consumer perceptions and behaviors. Prior research indicates that green product knowledge enhances green purchase intention by influencing attitudes toward green brands (Huang et al., 2014). Organizations with sustainability-driven goals emphasize the importance of acquiring, disseminating, and applying environmental knowledge as a means to encourage sustainable consumption and foster innovation (Ghorbani, 2023). Moreover, a combination of environmental concern, knowledge of eco-friendly products, and green innovation has been shown to be positively associated with consumers' intention to purchase green products (Moslehpour et al., 2023). By enhancing consumers' understanding of eco-friendly products, green product knowledge helps strengthen beliefs toward the environment. These strengthened beliefs are expected to foster more positive attitudes toward green detergents.

Pricing

Pricing strategies play a crucial role in shaping consumer decisions regarding eco-friendly products, as they reflect not only product value but also perceived affordability. While some consumers are willing to pay a premium for eco-friendly products (Shabbir et al., 2020), this willingness is highly context dependent. Liu et al. (2021) found that as sustainability concerns increase, manufacturers often adjust wholesale and retail prices upward, which can enhance consumer loyalty among environmentally conscious segments. However, if the market for green products expands without a corresponding rise in consumer awareness and value perception, price increases may negatively impact both product quality and environmental outcomes (Liu et al., 2021).

In the context of detergents, Kholod et al. (2023) demonstrate that price remains a significant determinant of consumer preferences, higher prices reduce the likelihood of product selection. This inverse relationship highlights price sensitivity, which is particularly pronounced in emerging markets such as Indonesia, where consumers tend to be highly price-conscious (Srivastava & Gupta, 2023; Biswas & Roy, 2015). Given this sensitivity, it is essential to consider price as a key variable in the conceptual model of this study, as it is likely to influence consumers' beliefs toward the environment, which in turn shape their attitudes toward green detergents. Understanding the role of price will provide more comprehensive insights into how sustainable consumption behaviors can be encouraged in markets with strong price constraints.

Environmental Concern

Environmental Concern refers to the perception and response of producers to environmental issues, particularly in the context of climate change and natural resource availability (Borlu & Glenna, 2021). Environmental Concerns, on the other hand, pertain to individuals' apprehensions about the environment, including perspectives on the Earth's capacity, natural balance, and the impact of human intervention on the environment (Shabbir et al., 2020). When consumers exhibit significant environmental concerns, they are more likely to endeavor to mitigate environmental impacts by purchasing and recommending organic products (Cachero-Martínez, 2020), which in turn positively influences Consumer Belief Towards the Environment (Shabbir et al., 2020). Environmental concern reflects consumers' awareness and personal relevance of environmental issues, which directly shapes their beliefs toward the environment.

Consumer Belief towards The Environment

Consumer Belief Towards the Environment (CBTE) refers to consumers' beliefs about the importance of environmental protection and how these beliefs influence their behavior towards eco-friendly products (Shabbir et al., 2020). These beliefs encompass a range of actions, including the use of biodegradable soaps or detergents, avoidance of aerosol products, scrutiny of labels to ensure environmental safety, purchase of products made from or packaged in recycled materials, and support for environmentally responsible companies (Shabbir et al., 2020). Within the framework of the Theory of Planned Behavior (TPB), environmental beliefs play a crucial role in shaping individuals' attitudes towards desired behaviors, which subsequently influence their green purchase intentions (Widayat et al., 2021).

Attitude towards Green Detergent

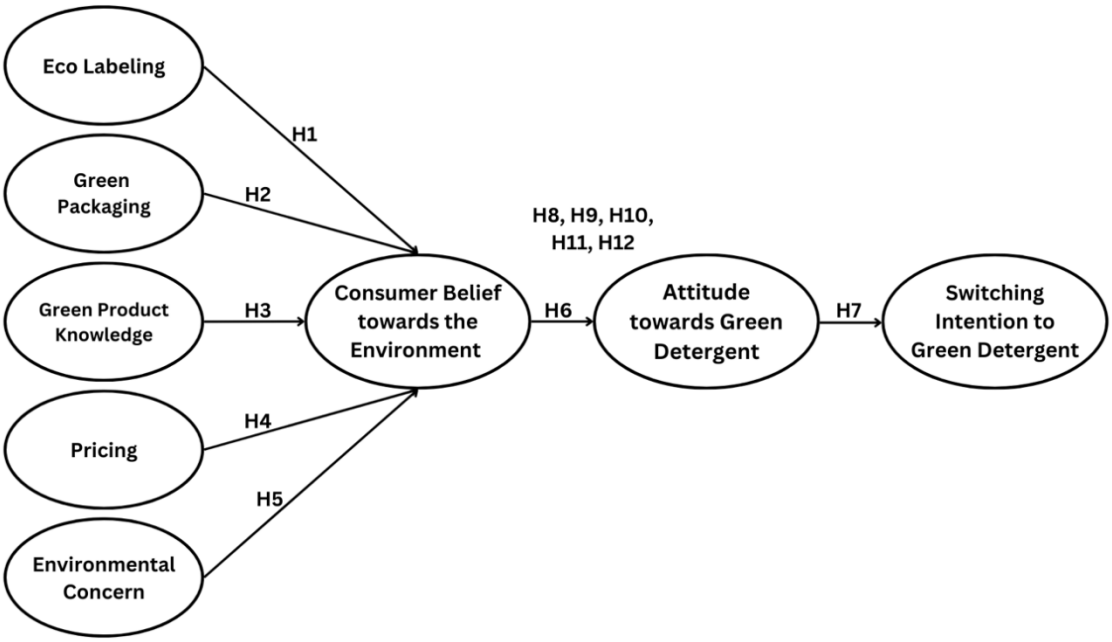
Attitude towards Green Detergent reflects consumer preferences and behaviors influenced by environmental

awareness, transparency of ingredients, and packaging preferences (Kholod et al., 2023). Kholod et al. (2023) found that consumers who have a positive disposition toward eco-friendly products are more inclined to choose detergents that visibly offer environmental advantages and contribute to reducing ecological harm. This tendency is further reinforced by information highlighting the adverse effects of non-eco-friendly detergents, such as the presence of toxic substances and the use of non-biodegradable plastic packaging. Research by Gading et al. (2024) reveals that Attitude exerts a positive and significant influence on the intention to switch to green products. While customer characteristics do not affect the desire to switch, both attitude and switching costs play a crucial role in influencing the behavior of transitioning to sustainable products, as exemplified by everyday products (Karman & Lipowski, 2024).

Switching Intention to Green Detergent

Switching Intention to Green Detergent refers to consumers' intention to transition from conventional detergents to more environmentally friendly alternatives. The factors influencing this intention can be elucidated through the Theory of Planned Behavior (TPB) framework, which comprises attitudes, subjective norms, and perceived behavioral control. A study examining Greek consumers' intention to purchase green detergents found that perceived behavioral control had a more pronounced effect on intention, followed by subjective norms, whereas the impact of attitudes was relatively weak (Delistavrou & Tilikidou, 2022). Although Delistavrou and Tilikidou (2022) base their research on the Theory of Planned Behavior (TPB), this study selectively adopts only one of its core constructs, attitude. Perceived Behavioral Control and Subjective Norms are not included in the present conceptual model. The emphasis is placed on attitude, which, consistent with TPB, is hypothesized to influence behavioral intention. Notably, the intention to make green purchases was stronger among consumers who exhibited higher levels of skepticism. The inclusion of switching intention in this model provides additional insight by addressing consumers' willingness to transition from conventional detergents to eco-friendly alternatives, to change their lifestyle choices, an aspect that has received limited attention in previous studies on green consumer behavior in Indonesia. Figure 1 illustrates the proposed research model, developed based on Shabbir et al. (2020) and relevant literature.

Figure 1: Research Model



Source: Developed based on the literature review.

Hypothesis

Previous studies have shown that marketing variables influence consumer beliefs about environmental problem-solving (Shabbir et al., 2020), which subsequently shape consumer attitudes (Riskos et al., 2021; Sumathy & Vimala, 2020). Furthermore, both attitude and perceived behavioral control have been found to positively impact green purchase intention (Delistavrou & Tilikidou, 2022; Kamalanon et al., 2022), as well as the intention to switch from

non-green to green products (Hidayat et al., 2021; Gading et al., 2022).

H1: Eco Labeling has a significant impact on Consumer Belief towards the Environment

H2: Green Packaging has a significant impact on Consumer Belief towards the Environment

H3: Green Product Knowledge has a significant impact on Consumer Belief towards the Environment

H4: Pricing has a significant impact on Consumer Belief towards the Environment

H5: Environmental Concern has a significant impact on Consumer Belief towards the Environment

H6: Consumer Belief towards the Environment has a significant impact on Attitude towards Green Detergent

H7: Attitude towards Green Detergent has a significant impact on Switching Intention to Green Detergent

H8: Consumer Belief towards the Environment and Attitude towards Green Detergent mediate the effect of Eco Labeling on Switching Intention

H9: Consumer Belief towards the Environment and Attitude towards Green Detergent mediate the effect of Green Packaging on Switching Intention

H10: Consumer Belief towards the Environment and Attitude towards Green Detergent mediate the effect of Green Product Knowledge on Switching Intention

H11: Consumer Belief towards the Environment and Attitude towards Green Detergent mediate the effect of Pricing on Switching Intention

H12: Consumer Belief towards the Environment and Attitude Towards Green Detergent Mediate the Effect of Environmental Concern on Switching Intention

Method

This study employed a survey method, conducted across most regions of the Republic of Indonesia, including the capital city Jakarta and its surrounding areas (Jabodetabek: Jakarta, Bogor, Depok, Tangerang, Bekasi), as well as the islands of Sumatra, Sulawesi, Kalimantan, Bali, Nusa Tenggara, Maluku, and Papua. This study employed a stratified purposive sampling technique, in which respondents were selected from major islands in Indonesia with large population sizes, such as Java, Sumatra, Kalimantan, Bali, Sulawesi, Nusa Tenggara and Papua, to ensure proportional geographic representation. The sample collection was based on the following criteria: individuals residing in Indonesia, males and females aged 17 to 65 years, those who are aware of and use detergents for washing clothes, and those who are aware of eco-friendly detergents. The survey was administered online using a questionnaire. The population for this study consisted of residents in Indonesia. The actual sample size used in this study was 439 respondents, which exceeds the minimum target sample size of 165–330 respondents as recommended by Hair et al. (2013) based on the number of indicators employed in the SEM-PLS model. Hair et al. (2013) provide guidance for determining the required sample size by using a rule of thumb that involves multiplying the number of indicators, 33 in this study, by a factor of 5 to 10. Based on this calculation, the minimum recommended sample size ranges from 165 to 330 respondents. Accordingly, the sample used in this study consisting of 439 respondents, exceeds the recommended minimum, ensuring adequate statistical power.

Switching Intention to Green Detergent serves as the endogenous variable. Eco Labeling, Green Packaging, Green Products knowledge, Pricing, and Environmental Concerns and Beliefs act as exogenous variables. Consumer Belief towards the Environment and Attitude towards Green Detergent function as mediating variables. The instrument for Eco Labeling consists of 5 items, Green Packaging & Branding (5 items), Pricing (4 items), and Consumer Belief towards the Environment (5 items), adapted from Shabbir et al. (2020). Green Products knowledge (4 items) adapted from Suki (2016) and Attitude towards Green Detergent (3 items) are adapted from Hazen et al. (2017), while Environmental Concerns (4 items) are adapted from Kilbourne & Pickett (2008). Switching Intention toward green detergents (3 items) is adapted from Hidayat et al. (2021). Each questionnaire item uses a Likert scale from one to six. Data analysis employs the Structural Equation Modeling-Partial Least Square (SEM-PLS) method. In the initial stage of the research, the author conducted a pre-test for validity and reliability, with results showing that all items are valid and have a Cronbach's alpha greater than 0.7.

To mitigate potential internal bias, several procedural and analytical steps were implemented in this study, the results

of which will be further detailed in the results section of this article. These steps are as follows. Stratified purposive sampling across major regions of Indonesia was applied to minimize selection bias and ensure proportional geographic representation. Clear screening criteria were used to include only respondents who were aware of and used environmentally friendly laundry detergents and detergents, thereby reducing response bias. The online questionnaire was administered anonymously to limit social desirability bias, and respondents were informed that there were no right or wrong answers. Measurement bias and common method bias were addressed by adapting all constructs from established and validated scales in previous studies and by conducting pre-testing, which confirmed acceptable reliability with Cronbach's alpha values exceeding 0.7. A six-point Likert scale without a neutral option was used to mitigate central tendency bias. During data analysis, SEM-PLS procedures were applied to assess reliability, convergent validity, and discriminant validity, while variance inflation factor (VIF) values were examined to detect potential multicollinearity between constructs. The detailed results of this assessment are presented and discussed in the relevant sections of this article.

Table 1: Respondent Profile

Respondent Profile	Number of Respondents	Percentage
Gender		
Female	381	86,8%
Male	58	13,2%
Age		
Late Adolescence (17-25)	92	20,96%
Early Adulthood (26-35)	184	41,91%
Late Adulthood (36-45)	149	33,94%
Early Seniors (46-55)	12	2,73%
Late Seniors (56-65)	2	0,46%
Residential Area		
Urban	172	39,2%
Rural	118	26,9%
Suburb	149	33,9%
Region		
Jabodetabek	102	23,23%
West Java	30	6,83%
Central Java	32	7,29%
East Java	26	5,92%
Sumatera	101	23,01%

Sulawesi	20	4,56%
Nusa Tenggara	39	8,88%
Kalimantan	39	8,88%
Denpasar	18	4,1%
Maluku & Papua	32	7,29%
Marital Status		
Not Married	129	29,38%
Married	144	32,8%
Married & Have Children	165	37,59%
Divorced	1	0,23%
Current/Last Education		
Associate's degree	108	24,6%
Bachelor's degree	197	44,87%
Master's degree	39	8,88%
Doctoral degree	21	4,78%
Senior High School	74	16,86%
Profession		
Housewife	239	54,44%
Employee	69	15,72%
Student	60	13,67%
Entrepreneur	32	7,29%
Teacher/Lecturer	36	8,2%
Other	3	0,68%
Types of Detergents Used		
Powder Detergent	209	47,6%
Liquid Detergent	210	47,8%
Capsule Detergent	20	4,6%

Information Sources that motivate to buy Detergent		
Family Members	131	29,84%
Lecturers/Teachers	11	2,51%
Friends	107	24,37%
Siblings	104	23,69%
Neighbors	82	18,68%
Advertising, Internet, & Packaging	4	0,91%
Number of detergent purchases in 1 month		
1-3 Packs	325	74%
4-6 Packs	100	22,8%
More than 7 Packs	14	3,2%
Money spent to buy detergent (IDR)		
< IDR 20.000	106	24,1%
IDR 20.000 – IDR 50.000	105	23.9%
IDR 50.000 – IDR 100.000	119	27,1%
> IDR 100.000	109	24,8%

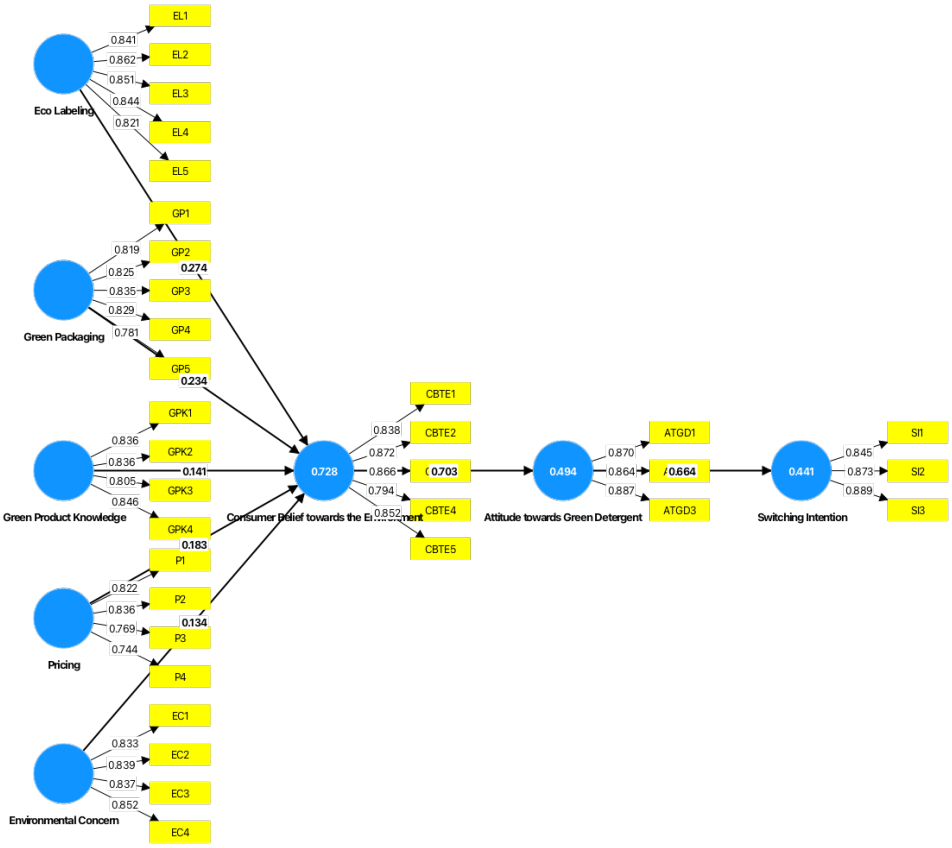
Source: Primary data processed by the authors.

The respondent profile (Table 1) involves 439 respondents, with a predominant female representation (86.8%) and a smaller proportion of males (13.2%), aligning with the observation that more women are engaged with eco-friendly products. In terms of age, most respondents belong to the early adulthood category of 26-35 years (41.91%) and late adulthood of 36-45 years (33.94%). Geographically, they are primarily located in urban areas (39.2%) and suburban areas (33.9%), with the largest concentrations in the Jabodetabek region (23.23%) and Sumatra (23.01%). The educational background of the respondents is predominantly characterized by bachelor's degree holders (44.87%) and diploma holders (24.6%). Professionally, more than half of the respondents are homemakers (54.44%), followed by employees (15.72%) and students (13.67%).

In terms of detergent usage, the distribution is nearly balanced between users of powdered detergent (47.6%) and liquid detergent (47.8%), with a smaller proportion utilizing detergent capsules (4.6%). Most respondents (74%) purchase between one and three detergent packages per month, with the largest expenditure bracket falling between IDR 50,000 and IDR 100,000 (27.1%). The primary sources of information influencing detergent purchases are family members (29.84%), friends (24.37%), and siblings (23.69%).

Result

Figure 2: Structural Model



Source: Data processed by the authors.

Table 2: Outer Loading, AVE, Discriminant Validity

Variable	Indicator	*Outer Loading*	AVE	Cronbach's Alpha	Composite reliability	VIF
Eco Labeling	EL1	0.841	0.713	0.899	0,899	2,307
	EL2	0.862				2,513
	EL3	0.851				2,375
	EL4	0.844				2,152
	EL5	0.821				2,631
Green Packaging	GP1	0.819	0.669			2,190
	GP2	0.825				2,046

Variable	Indicator	*Outer Loading*	AVE	Cronbach's Alpha	Composite reliability	VIF
	GP3	0.835		0.877	0,886	2,096
	GP4	0.829				2,190
	GP5	0.781				2,052
Green Product Knowledge	GPK1	0.836	0.690	0.851	0,853	2,055
	GPK2	0.836				2,019
	GPK3	0.805				1,639
	GPK4	0.846				2,217
Pricing	P1	0.822	0.630	0.806	0,819	1,835
	P2	0.836				1,947
	P3	0.769				1,845
	P4	0.744				1,723
Environmental Concern	EC1	0.833	0.706	0.862	0,867	1,829
	EC2	0.839				2,058
	EC3	0.837				2,163
	EC4	0.852				2,232
Consumer Belief towards the Environment	CBTE1	0.838	0.714	0.900	0,900	2,176
	CBTE2	0.872				2,781
	CBTE3	0.866				2,778
	CBTE4	0.794				1,872
	CBTE5	0.852				2,486
Attitude towards Green Detergent	ATGD1	0.870	0.764	0.845	0,849	2,071
	ATGD2	0.864				1,940
	ATGD3	0.887				2,094
Switching Intention to Green Detergent	SI1	0.845	0.756			1,901
	SI2	0.873				1,922

Variable	Indicator	*Outer Loading*	AVE	Cronbach's Alpha	Composite reliability	VIF
	SI3	0.889		0.839	0,845	2,155

Source: Primary data processed by the authors.

The outer loading values for each indicator, which exceed the threshold of 0.70 (Table 2), demonstrate that all indicators are valid (Hair et al., 2014). The cross-loadings reveal that each indicator exhibits a higher loading on its respective variable compared to its cross-loading values, indicating that the indicators used in this study effectively capture the intended variables. Furthermore, the average variance extracted (AVE) values for each variable exceed 0.50, suggesting that the model possesses adequate convergent validity (Hair et al., 2014). The multicollinearity test indicates that all VIF values range between 1.639 and 2.781, which are below the recommended threshold (< 3.3 or < 5). This result confirms that multicollinearity is not a concern in the model, and the estimated SEM-PLS relationships are free from multicollinearity bias. Additionally, Table 2 shows that the constructs are reliable, as both the composite reliability and Cronbach's alpha values surpass the threshold of 0.70 (Hair et al., 2014). Table 3 presents the discriminant validity assessment using the Heterotrait-Monotrait Ratio (HTMT) values. All HTMT values in the table are below the threshold of 0.90, indicating that discriminant validity has been established among the constructs.

The R-Square values for the variables reveal that Consumer Belief towards the Environment exhibits the highest value of 0.728, followed by Attitude towards Green Detergent with an R^2 of 0.494, and Switching Intention with an R^2 of 0.441. This finding indicates that the research model possesses substantial predictive power, especially in explaining consumer beliefs towards the environment, where it accounts for 72.8% of the variance ($R^2 = 0.728$).

Table 3: Discriminant validity (Heterotrait-monotrait ratio /HTMT)

	ATGD	CBTE	EL	EC	GP	GPK	P
ATGD							
CBTE	0,803						
EL	0,769	0,858					
EC	0,795	0,802	0,767				
GP	0,808	0,855	0,832	0,805			
GPK	0,820	0,839	0,817	0,822	0,856		
P	0,792	0,856	0,824	0,815	0,842	0,859	
SI	0,784	0,798	0,770	0,802	0,816	0,839	0,824

ATGD=Attitude towards Green Detergent

CBTE=Consumer Belief towards the Environment

EL=Eco Labeling

EC=Environmental Concern

GP=Green Packaging

GPK=Green Product Knowledge

P=Pricing

SI=Switching Intention

Source: Primary data processed by the authors.

The *f-squared* analysis offers useful insights into the relative importance of variables in the model. Attitude towards Green Detergent shows a strong influence on Switching Intention ($f^2 = 0.790$), indicating that attitude is a key predictor of consumers' readiness to adopt eco-friendly detergents. This finding reinforces the role of attitude as an essential mediator through which environmental beliefs are translated into actual behavioral intentions. In contrast, the *f-squared* values for Eco Labeling ($f^2 = 0.095$), Environmental Concern ($f^2 = 0.026$), Green Packaging ($f^2 = 0.062$), Green Product Knowledge ($f^2 = 0.024$), and Pricing ($f^2 = 0.044$) indicate small individual contributions to Consumer Belief towards the Environment. While their direct effects are modest, these variables provide important contextual and informational inputs that help shape consumers' pro-environmental beliefs, which subsequently influence attitudes and switching intentions. Overall, these results support the model's structure, where belief formation is a crucial starting point for fostering positive attitudes and encouraging sustainable consumption behavior.

The goodness of fit analysis shows that The Normed Fit Index (NFI) of the model is 0.834, which is below the recommended cutoff of 0.90 but may still be considered moderately acceptable depending on the model's complexity and research context (Hair et al., 2019). The estimated model has an SRMR value of 0.112, which slightly exceeds the threshold of 0.10 suggested by Hu and Bentler (1999), indicating a less optimal fit. This PLS-SEM model places more emphasis on evaluating the predictive validity and theoretical justification of the model than on strict adherence to the goodness-of-fit thresholds (Hair et al., 2019). Nevertheless, these values provide initial support for the adequacy of the model, although further refinement of the model may be needed to improve the overall fit.

Table 4: Direct Effect

Variable	***Original Sample (O)***	***Simple Mean (M)***	***Standard Deviation (STDEV)***	***T-Statistics***	***P-Values***
EL -> CBTE	0.274	0.274	0.047	5.784	0.000
GP -> CBTE	0.234	0.234	0.043	5.433	0.000
GPK -> CBTE	0.141	0.139	0.041	3.407	0.001
P -> CBTE	0.183	0.184	0.047	3.899	0.000
EC -> CBTE	0.134	0.133	0.038	3.508	0.000
CBTE -> ATGD	0.703	0.705	0.034	20.587	0.000
ATGD -> SI	0.664	0.664	0.044	15.025	0.000

EL= *Eco Labeling*; GP= *Green Packaging ; =Consumer Belief towards the Environment* ;

GPK =*Green Product Knowledge* ; ATGD = *Attitude towards Green Detergent* ; P=Pricing;

SI= *Switching Intention to green detergent*

Source: Primary data processed by the authors.

As shown in Table 4, the impact of Eco Labeling (EL) on Consumer Belief towards the Environment (CBTE) is found to be significantly positive, with a t-statistic of 5.784 and a p-value of 0.000. Similarly, Green Packaging (GP) exerts a significant influence on Consumer Belief towards the Environment (CBTE), as evidenced by a t-statistic of 5.433 and a p-value of 0.000. Additionally, Green Product Knowledge (GPK) is observed to have a significant effect on Consumer Belief towards the Environment (CBTE), with a t-statistic of 3.407 and a p-value of 0.001.

As indicated in Table 4, Pricing (P) is found to significantly influence Consumer Belief towards the Environment (CBTE), with a t-statistic of 3.899 and a p-value of 0.000. Similarly, Environmental Concern (EC) exerts a significant effect on Consumer Belief towards the Environment (CBTE), as evidenced by a t-statistic of 3.508 and a p-value of 0.000. Notably, the strongest influence is observed between Consumer Belief towards the Environment (CBTE) and Attitude towards Green Detergent (ATGD), with a t-statistic of 20.587 and a p-value of 0.000. Finally, Attitude towards Green Detergent (ATGD) is shown to have a significant impact on Switching Intention (SI), with a t-statistic of 15.025 and a p-value of 0.000.

Table 5: Indirect Effect

Variable	***Original Sample (O)***	***Simple Mean (M)***	***Standard Deviation (STDEV)***	***T-Statistics***	***P-Values***
P -> CBTE -> ATGD -> SI	0.085	0.087	0.022	3.813	0.000
GPK -> CBTE -> ATGD -> SI	0.066	0.066	0.022	2.962	0.003
EL -> CBTE -> ATGD -> SI	0.128	0.128	0.026	4.873	0.000
EC -> CBTE -> ATGD -> SI	0.062	0.062	0.018	3.492	0.001
GP -> CBTE -> ATGD -> SI	0.109	0.113	0.026	4.147	0.000

Source: Primary data processed by the authors.

The analysis of indirect effects in this study reveals several important findings in the context of switching intentions to green detergents (Table 5). Eco Labeling has the strongest indirect effect on Switching Intention, mediated by Consumer Belief towards the Environment and Attitude towards Green Detergent, with a t-statistic of 4.873 and a p-value of 0.000. This indicates that eco-labeling plays a crucial role in shaping consumer beliefs and attitudes towards eco-friendly detergent products.

Consumer Belief towards the Environment and Attitude towards Green Detergent also significantly mediate the effect of Green Packaging on Switching Intention, with a t-statistic of 4.147 and a p-value of 0.000. This indicates that eco-friendly packaging significantly contributes to influencing consumer decisions to switch to eco-friendly detergents by shaping positive environmental beliefs and attitudes.

Consumer Belief towards the Environment and Attitude towards Green Detergent also significantly mediate the effect of Pricing on Switching Intention, with a t-statistic of 3.813 and a p-value of 0.000. Meanwhile, the indirect effect of Green Product Knowledge on Switching Intention is significant, with a t-statistic of 2.962 and a p-value of 0.003. Environmental Concern exerts a significant indirect effect on Switching Intention, with a t-statistic of 3.492 and a p-value of 0.001. Although their indirect effects are smaller, these three variables still demonstrate significant indirect effects in shaping consumer intentions to switch to eco-friendly detergents through the mediation of environmental beliefs and attitudes.

Therefore, efforts to increase the adoption of eco-friendly detergents should focus on strengthening consumer beliefs about environmental issues and forming positive attitudes towards green products, which in turn will facilitate consumers' transition to choosing environmentally friendly detergent options.

Table 6: PLS Predict

	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
ATGD1	0,387	0,982	0,693	0,980	0,682
ATGD2	0,409	0,936	0,682	0,939	0,687
ATGD3	0,482	0,910	0,684	0,885	0,657
CBTE1	0,568	0,979	0,761	0,922	0,703
CBTE2	0,522	0,957	0,681	0,957	0,693
CBTE3	0,508	0,955	0,712	0,952	0,712
CBTE4	0,469	0,911	0,699	0,918	0,705
CBTE5	0,490	0,933	0,689	0,929	0,692
SI1	0,290	1,026	0,744	1,081	0,804
SI2	0,383	1,034	0,768	0,907	0,654
SI3	0,365	0,998	0,704	0,903	0,640

Source: Primary data processed by the authors.

The PLS Predict results, as shown in Table 6, suggest that the model holds modest predictive relevance in explaining switching intention to eco-friendly detergents. All Q^2 Predict values exceed zero, indicating that the model provides added value over a naive benchmark. Additionally, 3 out of 11 indicators exhibit lower RMSE, and 5 out of 11 indicators show lower MAE compared to the linear model. While the overall predictive accuracy remains limited, these findings demonstrate that the model captures some predictive patterns and provides a useful foundation for further model refinement and future research.

Discussion

The descriptive analysis provides useful insights into consumer perceptions of key factors influencing the adoption of eco-friendly detergents in Indonesia. Among these, Pricing stands out as particularly relevant. Although eco-friendly products are perceived as more expensive, there is noticeable reluctance to pay higher prices (M = 3.86). This underscores the importance of price sensitivity in the Indonesian market, where consumers are generally highly price-conscious (Kholod et al., 2023). The inclusion of Pricing in this model therefore represents a relevant and timely addition, as price considerations are often underrepresented in previous studies of green product adoption, particularly in emerging markets.

Other variables also reveal encouraging, though nuanced, patterns. Eco Labeling is perceived as moderately informative (M = 4.25), suggesting that labels provide some useful environmental information, although there is still room to improve clarity and consumer understanding. Green Packaging is viewed positively (M = 4.47), indicating a favorable consumer response to environmentally friendly packaging, though not overwhelmingly strong. Green Product Knowledge shows relatively high awareness (M = 4.54), suggesting that consumers have a good, though not universal, understanding of the ecological benefits of green detergents.

The results indicate that Environmental Concern is exceptionally high, particularly concerning the environmental impact of chemicals (M = 4.75). Respondents also express strong support for products with refillable packaging (M = 4.64), reflecting their conviction about the benefits of eco-friendly products for environmental sustainability. The Attitude towards Green Detergent is highly positive (M = 4.70), consistent with their strong intention to switch to using these products (Switching Intention) (M = 4.70). The results reveal that respondents perceive eco-labels as

informative (M = 4.25), suggesting that identifying eco-friendly products is not a significant barrier. However, pricing remains a concern, as such products are generally viewed as more expensive, and there is a moderate reluctance to pay higher prices (M = 3.86). Despite this price sensitivity, respondents demonstrate a strong intention to switch to eco-friendly detergents (M = 4.70), indicating a high level of behavioral commitment toward more sustainable consumption.

The significant impact between Eco Labeling and Consumer Belief towards the Environment (Hypothesis 1 supported) strengthens and aligns with previous research conducted by Shabbir et al. (2020), where the use of eco-labeling on products has been proven to positively shape and influence consumer beliefs about environmental issues. Eco Labeling makes consumers believe in the product (Kwak et al., 2020), as it appears to have clear standards as an environmentally friendly product (Bullock & van der Ven, 2020). For young consumers, the presence of eco-labeling can identify which products/brands are environmentally friendly, making products easily recognizable and providing information about the brand's environmental responsibility (Song et al., 2020).

The finding that Green Packaging significantly influences Consumer Belief towards the Environment has been empirically validated in this study (Hypothesis 2 supported). This result provides robust empirical evidence and aligns with previous research by Shabbir et al. (2020), suggesting that the more effectively green packaging is implemented for a product, the more positive consumer beliefs become regarding environmental aspects. Consumers are persuaded that not only is the detergent itself environmentally friendly, but also that the packaging, as an integral component of the product, is composed of natural materials and is recyclable (Zhang & Zhao, 2012; George et al., 2023), posing no risk to humans, the environment, or animals (Herbes et al., 2020), and consumers are convinced of its benefits (Mahmoud et al., 2022).

The results of hypothesis testing 3 regarding the impact of Green Product Knowledge on Consumer Belief towards the Environment have been accepted and are positively significant, demonstrating that consumer knowledge about eco-friendly products plays a significant role in shaping their beliefs about environmental issues, consistent with the findings of Shabbir et al. (2020). Consumers' understanding that Eco-Friendly Detergents will help reduce water pollution problems, decrease the use of harmful chemicals that threaten aquatic life, reduce water needed for rinsing, and minimize negative impacts on ecosystems (Hazen et al., 2017), strengthens their belief in the environmental benefits of these products.

The results of hypothesis testing 4 (H4) in this study empirically validate a significant relationship between Pricing (price setting) and Consumer Belief towards the Environment. The finding that Pricing influences Consumer Belief towards the Environment (Hypothesis 4 supported) highlights the critical role that pricing strategies for eco-friendly products play in shaping and influencing consumer beliefs about environmental issues. This outcome is consistent with previous research (Shabbir et al., 2020).

The testing of hypotheses 1-4 demonstrates that companies' green marketing efforts, encompassing products, packaging, pricing, and eco-labeling, effectively promote consumer beliefs that green consumption contributes to environmental conservation. Additionally, green marketing initiatives are supported by consumers, as Environmental Concern is shown to impact Consumer Belief towards the Environment, indicating that consumers' level of environmental concern plays a significant role in forming and reinforcing their environmental beliefs. Research by Laksmidewi and Gunawan (2023) found that fear appeal influences pro-environmental behavior. In addition, Laksmidewi and Gunawan (2022) showed that negative message framing in environmental conservation campaigns also significantly affects such behavior. In marketing eco-friendly detergent products, fear appeal combined with negative framing can be used to raise environmental concern by highlighting the harmful effects of chemical detergents, such as water pollution and damage to aquatic life. This emotional trigger can encourage consumers to switch to safer, environmentally friendly alternatives.

Consumer belief about environmental issues serves as a crucial foundation for shaping attitudes toward sustainable products. The results of hypothesis testing 6 (H6) validate that Consumer Belief towards the Environment significantly influences Attitude towards Green Detergent. Consumer beliefs about environmental issues are found to play a pivotal role in shaping their attitudes towards eco-friendly products, aligning with the research by Sumathy & Vimala (2020). The results of hypothesis testing 7 (H7) demonstrate that a positive attitude towards Green Detergent significantly influences Switching Intention to Green Detergent. Consumers who hold a positive attitude towards eco-friendly detergents are more likely to be interested in switching to these products, aligning with the findings of Gading et al. (2024) and Sudhadevi (2021). Consumers' attitudes towards selecting eco-friendly products are shaped by their personal beliefs about environmental responsibility and their readiness to purchase green products. Individuals with strong personal norms and positive environmental attitudes exhibit a higher propensity to switch to green products,

reflecting a strong interplay between beliefs, attitudes, and purchasing decisions.

The support for Hypothesis 8 indicates that Attitude towards Green Detergent acts as a key mediator in strengthening the impact of Eco Labeling on Switching Intention, consistent with the findings of Fang et al. (2023). This result shows that a positive consumer attitude towards eco-friendly detergents plays a crucial role in promoting the transition to green products. Furthermore, the testing of Hypotheses 9 (H9) and 10 (H10) reveals that Consumer Belief towards the Environment and Attitude towards Green Detergent serve as dual mediators in the relationship between Green Packaging and Green Product Knowledge and Switching Intention. Eco-friendly packaging and green product knowledge have a stronger impact on consumers' switching intentions when a positive attitude towards eco-friendly detergents is formed, as confirmed in studies by Gading et al. (2024) and Fang et al. (2023). However, it is important to acknowledge that this study did not include direct paths from the exogenous variables (Eco Labeling, Green Packaging, Pricing, Green Product Knowledge, and Environmental Concern) to Switching Intention in the tested model. As a result, it was not possible to determine whether the observed mediation effects represent partial or full mediation. This limitation should be considered when interpreting the findings and suggests an avenue for future research. Future studies could explore alternative model structures that incorporate both direct and indirect paths to more fully understand the nature of these mediation relationships.

Understanding the psychological mechanisms that drive consumer behavior is essential in promoting sustainable consumption. The findings related to Hypotheses 11 (H11) and 12 (H12) provide deeper insight into this process, showing that Consumer Belief about the Environment and Attitude toward Green Detergents play a mediating role in the relationship between Pricing and both Environmental Concern and Switching Intention. These results suggest that while pricing is an important consideration, its influence on switching intention should be interpreted with caution, as the study did not examine a direct path from pricing to behavioral intention. Instead, the findings highlight the critical role of consumer beliefs and attitudes (variables included in the tested model) in shaping environmentally responsible choices. This underscores the importance of integrated strategies that emphasize persuasive communication and the cultivation of positive attitudes toward eco-friendly products. In line with Lin et al. (2021) and Moshood et al. (2023), the current study supports the view that pro-environmental attitudes and beliefs serve as key mediators in encouraging the transition to green products. These findings point to the theoretical relevance of focusing on psychological factors, while acknowledging that the influence of pricing may require further investigation in future research.

Conclusion

This study provides empirical insights into factors associated with consumers' intentions to switch to eco-friendly detergents. While eco-labeling, green product knowledge, pricing, environmental concern, and packaging were not directly tested as predictors of switching intention in the model, the results indicate their potential indirect influence through consumer beliefs toward the environment and attitudes toward green detergents. Attitude toward green detergents showed a notable mediating role, suggesting its importance in shaping behavioral intention. These findings point to the relevance of marketing approaches that support the development of positive environmental beliefs and attitudes to encourage more sustainable consumption behaviors. This perspective may be particularly useful in price-sensitive contexts such as Indonesia, highlighting areas for further research and practical application.

This study employed procedural and analytical measures to mitigate internal bias and ensure robust conclusions. Selection and response bias were minimized through stratified purposive sampling, clear screening criteria, and anonymous data collection. Measurement and common method bias were addressed by using validated scales and conducting pre-tests to confirm reliability. SEM-PLS analysis further ensured the robustness of the findings through assessments of reliability, validity, and multicollinearity. This approach strengthened confidence in the observed relationships between green marketing factors, consumer beliefs, attitudes, and switching intentions. Consequently, the conclusions provide reliable empirical support for sustainability-oriented marketing strategies.

This study has several limitations that should be acknowledged. First, while the conceptual model builds upon key constructs such as Consumer Belief towards the Environment, Attitude towards Green Detergent, and Switching Intention, it does not incorporate all components of the Theory of Planned Behavior (TPB), specifically Subjective Norm and Perceived Behavioral Control, which may also play important roles in shaping green consumption behavior. Second, the tested model did not include direct paths from the exogenous variables (Eco Labeling, Green Packaging, Pricing, Green Product Knowledge, and Environmental Concern) to Switching Intention. Consequently, the study is unable to assess whether the observed mediation effects represent partial or full mediation. Future research should consider testing alternative model structures that include direct paths to gain a more comprehensive understanding of these relationships. Third, the sampling strategy employed stratified purposive sampling with online data collection, which enabled broad geographic coverage across major Indonesian islands but may limit generalizability due to

potential sampling biases. In particular, the sample was not fully representative across all demographic segments, which may influence the extent to which the findings can be generalized to the wider population. Finally, although the model fit indices indicate an acceptable level of fit, the SRMR value (0.112) suggests room for improvement. Future studies could refine the model and incorporate additional variables to enhance both theoretical robustness and explanatory power.

Given the study's limitations, future research should consider including additional TPB constructs like subjective norm and perceived behavioral control to better understand switching intentions toward green detergents. Testing models with direct effects from exogenous variables to switching intention would clarify mediation roles. Further studies should also use more representative samples and explore consumer responses to emerging eco-friendly detergent alternatives, potentially enhancing generalizability and practical relevance.

Despite these limitations, the study underscores the importance of visible eco-labels, informative packaging, and accessible product knowledge as essential foundations for raising consumer awareness. While pricing alone may not directly predict switching behavior, maintaining competitive pricing remains important to support adoption when combined with effective communication and positive consumer attitudes toward eco-friendly products.

To foster sustainable consumption, collaboration among businesses, government agencies, educational institutions, and civil society is crucial. Such partnerships can enhance environmental literacy, bolster CSR-driven initiatives, and increase the availability of eco-friendly products through integrated communication channels like social media and educational programs.

Future research is encouraged to delve deeper into the psychological factors that drive sustainable product choices, including emotional appeals, message framing, and self-benefit messaging. Additionally, there is potential to explore traditional, natural alternatives such as lerak (Sapindus rarak) in Indonesia, which, despite its environmental advantages, remains underutilized. Examining consumer acceptance, innovation, and effective marketing strategies for such biodegradable, locally sourced detergents could reveal valuable pathways to promote greener alternatives.

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