

Influence of Green Knowledge and Green Attitude on Purchase Decisions of BPA-Free Labeled Baby Plastic Products Mediated by Green Trust: A Sustainable Approach

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Abstract: With a focus on the roles of green knowledge, green attitude, and green trust—the latter of which acts as a mediating element within the context of sustainable marketing—this study investigates the factors affecting decisions to buy BPA-free baby plastic products. Despite being necessary for modern living, plastic presents serious health and environmental hazards, especially because of dangerous compounds like bisphenol A (BPA). 185 women in the Jabodetabek region who bought BPA-free baby plastic products participated in the study's survey. A Likert scale and Structural Equation Modelling-Partial Least Square (SEM-PLS) were employed to examine the data. The findings indicate that while green knowledge does not directly affect purchase decisions, green attitude and green trust do have an advantageous and significant impact. Furthermore, the association between green knowledge and purchasing decisions is totally mediated by green trust, while the relationship between green attitude and purchasing decisions is somewhat mediated by green trust. These findings highlight the need of building customer trust through educational programs that highlight the advantages and characteristics of eco-friendly products, offering insightful information for long-term marketing plans.

Keyword: Sustainable Marketing, BPA-Free, Green Purchasing Decisions, Green Knowledge, Green Mindset, & Green Trust.

INTRODUCTION

Plastic is employed in the automotive, electronics, and food packaging industries and is a necessary component of modern life. Only 9% of the 8.3 billion metric tons contain of plastic has been manufactured since the middle of the 20th century has been recycled; the majority either ends up in landfills or pollutes the environment. Global plastic manufacturing exceeded 400 million metric tons by 2022 period, a reflection of growing demand and waste issues (Statista, 2024). Investments in Indonesia's plastics sector increased from 4,442 billion Rupiah in 2020 to 7,803 billion Rupiah in 2021 (BPS, 2022), causing illnesses and endocrine abnormalities because of chemicals like Bisphenol A (BPA) (Zhang et al., 2021). Often present in food packaging, BPA can contaminate food during sterilization and cause diseases like cancer, diabetes, and hypertension (Aulia & Mita, 2023). Baby bottles are among the most common causes of BPA exposure, which are frequently exposed to hot water. Addressing these health effects is consistent with Sustainable Development Goal 3, which emphasizes ecofriendly solutions and less plastic use. In response to consumer demand, companies such as Pigeon and Philips Avent have adopted BPA-free labels, demonstrating the growing popularity of BPA-free infant products in Indonesia (Gusnawati et al., 2023). Despite this, consumers are not well-informed on the risks posed by BPA. According to a 2023 Sigma Research survey, while buying infant bottles, only 46.8% of customers took BPA-free labelling into account; instead, they prioritized nipple design or size. Eco-friendly purchases are influenced by elements such as green attitude and green expertise. According to research, customers who are concerned about sustainability and safety place a higher value on green attitudes than green knowledge when making decisions (Apriana et al., 2023). Green trust is essential for confirming the veracity of BPA-free promises. High trust encourages the purchasing of ecofriendly items by reinforcing the influence of green knowledge and attitude (Nadiya & Ishak, 2022). In order to increase customer adoption of sustainable products, this study highlights the necessity of trust-building techniques and education. The intricacy of elements including timing, study environment, and analysis techniques is highlighted by variations in results. This study's title is "The Influence of Green Knowledge and Green Attitude on the Purchase Decision of BPA-Free Baby Plastic Products Mediated by Green Trust: A Sustainable Approach.

METHOD

Design of Research

To run the study and address the research questions, the research design serves as a framework. This work investigates the causal connections between events and their consequences independent (free) and dependent (bound) variables using a causal research method. Sugiyono (2019). Respondents who have toddlers and have bought BPA-free plastic products are given questionnaires as part of a survey approach used to obtain quantitative data. This causal analysis aims to supply with a complete comprehending the connections that exist between the factors that are being investigated.

Variables

Independent Variables: Green Knowledge (X1) is the understanding of eco-friendly methods and products, including sustainable products, environmental issues, and how consumer behavior affects the ecosystem (Wang et al., 2019).

Consumer confidence in green claims made by businesses or products is known as "green trust" (X2). It expresses the conviction that these goods or businesses actually live up to their ethical and environmental claims. The desire to acquire eco-friendly products is significantly affected by green trust. (Li and others, 2021).

The process by which customers choose, purchase, utilize, and assess goods or services to satisfy their requirements or Purchase decisions are designated as the dependent variable (Y).

Mediating variable is Green Attitude (Z): An optimistic attitude, a commitment to environmental preservation, and the utilization of sustainable products and services. It acts as a link that influences how independent and dependent variables are related to one another (Yoon, 2020; Yay, 2023).

Tools for Gathering Data

The study used Google Forms to administer online surveys and conducted in-person interviews with participants. While direct interviews offer more in-depth insights and a contextual understanding of respondents' experiences, online surveys give respondents the freedom and efficiency to voice their opinions. More in-depth and thoughtful responses are possible during interviews, which helps the researcher elucidate answers and go deeper into subjects (Moises & Torrentira, 2020).

The size of the sample

Hair et al. (2019) recommend a minimum number of samples of 100 participants. Conversely, another rule stipulates that The sample size should be five to ten times greater than the number of indicators being assessed. A minimum sample size of $\eta \ge 5 \times 36$, or 180 samples, is required for this investigation, which uses 36 indicators. In order to account for unusable data and guarantee adherence to estimation guidelines, which suggest a range of 100–200 respondents, the researcher decided to gather more than 180 samples (Hair et al., 2019).

The questionnaire used a Likert scale with five response levels: Strongly Disagree (STS) = 1 Disagree (TS) = 2 Neutral (N) = 3 Agree (S) = 4 Strongly Agree (SS) = 5 Each score represents an equal interval (Sugiyono, 2019).

Analysis of Data

With an emphasis on quantifiable facts and data, a quantitative approach was adopted. Features like gender, age, having toddlers, monthly income, and place of residence are all included in respondent profiles. The data collected through the questionnaire was analyzed to calculate frequencies and percentages. The investigation integrated the Structural Equation Modelling (SEM) method utilizing the Partial Least Square (PLS) approach. Due to its ability to handle complex models featuring multiple constructs and indicator variables, SEM-PLS was selected.

Table 1. Operational Variable					
Variable	Dimension	Indicator	Scale		
Purchase	Commitment to a product	1. Price			
Decision (Y)		2. Satisfaction			
	Habit of buying products	3. Tendency of usage			
		4. Resistance to new			
		Products	Ordinal		
	Recommending to Others	5. Service quality			
		6. Utility	_		
	Repurchase	7. Purchase frequency	-		
		8. long term loyalty	_		
Green Trust	Reliable	9. Environmental image			
(M)		10. Environmental claim			
	Dependable	11. Environmental function			
		12. Environmental Promise			
	Trustworthy	13. Superiority	Ordinal		
		14. Trusted product	Ofullia		
	Expectations	15. Expectation	_		
		16. Performance			
	Environmental Protection	17. Real commitment			
		18. Real action			
Green Knowledge	Product knowledge	19. Attributes			
(X1)		20. Benefit	Ordinal		
		21. Value	Ordinal		
	Purchase knowledge	22. Location			

Variable	Dimension	Indicator	Scale
		23. Timing	
		24. Information	
	Usage knowledge	25. Usage method	
		26. Usage education	
		27. Usage Benefit	
Green Attitude	Cognitive	28. Effort	
(X2)		29. Knowledge	
		30. Advantage	
	Affective	31. Satisfaction	
		32. Positive traits	Ordinal
		33. Enthusiasm	
	Conative	34. Participation	
		35. Support	
		36. Prevention	
	Source: Researcher	data processing 2024	

RESULTS AND DISCUSSION

This document outlines the characteristics displayed by the participants in the consumer surveys regarding infant plastic products labeled as BPA-Free in the Greater Jakarta region (Jabodetabek):

Table 2. Respondents Characteristic					
Respondent characteristic Frequency Perce					
Gender					
Women	185	100,0			
Men	0	0,0			
Age					
23 – 28 Years	48	25,9			
29 – 34 Years	81	43,8			
35 – 40 Years	46	24,9			
>41 Years	10	5,4			
Income					
3 – 5 Juta	30	16,3			
6 – 10 Juta	77	41,6			
11 – 15 Juta	38	20,5			
> 15 Juta	40	21,6			
Education Level					
Senior High School	31	16,7			
Diploma	26	14,1			
Bachelor degree	88	47,6			
Master	40	21,6			
Domicile					
DKI Jakarta	70	37,8			
Bogor	20	10,8			
Depok	26	14,1			
Tangerang	51	27,6			
Bekasi	18	9,7			

Source: Researcher data processing 2024

Measurement Model Test (Outer Model)

Convergent Validity

Reflective variables are assessed through the Convergent Validity test in PLS is looking at the loading factor, which proves the statistical relationship between item/component scores

and construct scores. Chin (Alfa et al., 2017) asserts that an indication is considered legitimate if its loading factor is more than 0.5.



Source: Output Smart PLS, 2024 Figure 2. Results of the Convergent Validity Evaluation Using the Loading Factor

Referring to the test finding result in Figure 2 above, there are still indicators with a loading factor < 0.5, namely indicators Z4, Z8, and Z10. As a result, the researcher eliminated these markers and ran another test, yielding the following findings:



Source: Output Smart PLS, 2024 Figure 1. Results of the Loading Factor-Based Second Convergent Validity Assessment

Referring to the test results presented in Figure 3 above, all indicators now exhibit outer loading values exceeding 0.5, confirming their validity. This conclusion is further supported

by the Construct Reliability and Validity test, as evidenced by the AVE values presented in Table 3.

Table 3. Construct reliability and validity			
Average Variance Extracted (AVE)			
Green Attitude 0,699			
Green Knowledge	0,657		
Green Trust	0,674		
Purchase Decision 0,605			
Source: Output Smart PLS, 2024			

Discriminant Validity

The Discriminant Validity test is assessed through examination the cross-loading values between the measurements and their respective constructs, as detailed below

Table 4. I				
	Green Green Croop Trust			
	Attitude	Knowledge	Green Trust	Decision
Green Attitude	0,836			
Green Knowledge	0,723	0,811		
Green Trust	0,730	0,732	0,821	
Purchase Decision	0,765	0,735	0,716	0,778
Source: Output Smart PLS, 2024				

The Fornell-Larcker test results in Table 4 imply the square root of the average variance extracted (\sqrt{AVE}) for each construct overcomes the correlation with other constructs in the model. The AVE values suggest the constructs in the model that was developed meet the criteria for discriminant validity.

Reliabilities Model Test a) Composite Reliability

Table 5. Composite reliability				
	Composite Reliability	Composite Reliability		
	rho_A	rho_C		
Green Attitude	0,947	0,954		
Green Knowledge	0,936	0,945		
Green Trust	0,920	0,935		
Purchase Decision	0,912	0,924		
Source: Output Smart PLS 2024				

Source: Output Smart PLS, 2024

The data presented in Table 5 indicates that the composite reliability values are > 0.7, affirming credibility of all constructs.

b) Cronbach's Alpha

Table 6. Cronbach's Alpha				
Cronbach's Alpha				
Green Attitude	0,946			
Green Knowledge	0,934			
Green Trust	0,918			
Purchase Decision 0,907				
Source: Output Smart PLS, 2024				

Table 6 shows that the Cronbach's alpha values are > 0.7, confirming validity of all constructs.

Structural Model Test (Inner Model)

Model Accuracy Test (Goodness of Fit Model Test) R-Square

Table 7. r-square value				
	R Square	R Square Adjusted		
Green Trust	0,718	0,715		
Purchase Decision	0,777			
Source: Output Smart PLS, 2024				

Table 7 reports R-square values of 0.718 and 0.781, suggesting that the independent variables provide substantial predictive relevance for the dependent variables, enhancing the model's robustness.

Goodness of Fit Model

The predictive relevance value is determined by applying the following formula to the R-square values of each endogenous variable in this study:

 $\begin{array}{l} Q^2 &= 1 - (1 - R1)(1 - R_p) \\ Q^2 &= 1 - (1 - 0.718)(1 - 0.781) \\ Q^2 &= 1 - (0.282)(0.283) \\ Q^2 &= 0.9202 \end{array}$

The calculation indicates a predictive relevance value of 0.9202, exceeding 0. This signifies that 92.02% of the Green Trust and purchase decision (dependent variables) are accounted for by the independent variables, making the model suitable with significant predictive value

Hypothesis Test

The hypothesis testing results for each path coefficient are provided as follows:

Table 8 Path Coefficients						
		Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Remarks
Green Attitude Green Trust	\rightarrow	0,422	0,131	3,229	0,001	Positive - Significant
Green Attitude Purchase Decision	\rightarrow	0,512	0,090	5,674	0,000	Positive - Significant
Green Knowledge Green Trust	\rightarrow	0,442	0,136	3,246	0,001	Positive - Significant
Green Knowledge Purchase Decision	\rightarrow	0,122	0,091	1,344	0,179	Not Significant
Green Trust Purchase Decision	\rightarrow	0,288	0,072	3,981	0,000	Positive - Significant
Mediation						
Green Attitude Green Trust Purchase Decision	\rightarrow \rightarrow	0,122	0,049	2,464	0,014	Parsifal Mediation
Green Knowledge Green Trust Purchase Decision	\rightarrow \rightarrow	0,128	0,052	2,440	0,015	Full Mediation

Source: Output Smart PLS, 2024

The following results were obtained from the hypothesis testing: The analysis indicates that Green Attitude is of paramount importance, as it has a positive impact on both Green Trust

and Purchase Decision. Not only are individuals who possess a strong green attitude more likely to trust green products, but they are also more willing to make purchasing decisions based on these attitudes. Conversely, Green Knowledge exhibits a substantial positive influence on Green Trust, underscoring the fact that trust is cultivated through awareness and comprehension of green initiatives. Nevertheless, its direct impact on the Purchase Decision is negligible, indicating that knowledge alone is insufficient to influence consumer behavior in the absence of trust. Green Trust emerges as a critical factor, directly and positively influencing Purchase Decision. This underscores the importance of trust in bridging the gap between consumer attitudes, knowledge, and their purchasing behaviors. Green attitude indirectly influences purchase decisions through green trust. This indicates partial mediation, where trust enhances but does not entirely account for the relationship between attitude and purchasing behavior. The influence of green knowledge on purchase decisions occurs only through green trust. This highlights full mediation, emphasizing that trust is indispensable in converting knowledge into action.

CONCLUSION

The study, "Influence of Green Knowledge and Green Attitude on the Decision to Purchase of BPA-Free Labelled Baby Plastic Products Mediated by Green Trust," finds that Green Knowledge has an advantageous and substantial effect on green trust concerning BPAfree labelled baby plastic products. This indicates that a robust comprehension of eco-friendly features among consumers leads to heightened trust in these products. The green attitude has a beneficial and substantial effect on green trust. This suggests that individuals who hold a positive view of products that support sustainability and health are more inclined to have confidence in BPA-free products. The effect of Green Knowledge on the purchase decisions regarding BPA-free labelled baby plastic products is neither significant nor positive. This suggests that consumer awareness of BPA's harmful effects does not have a direct impact on their purchasing choices. The positive influence of a green attitude on the purchasing choices for BPA-free labelled baby plastic goods is significant and substantial. Everybody who inherit a greater understanding of environmental issues tend to prefer products that are void of BPA. The effect of Green Trust on purchase decisions for BPA-free labelled baby plastic products is both positive and significant. People who view BPA-free products as safe and environmentally friendly tend to be more inclined to buy them. The connection between Green Attitude and purchase decisions is partially mediated by Green Trust. An elevated level of confidence among customers enhances the impact of environmental concerns on the decision to purchase BPA-free products. The connection between Green Knowledge and Purchase Decisions is completely managed by Green Trust. The trust of consumers creates an interaction between understanding and the choice to buy BPA-free products.

Recommendations for Producers of BPA-Free Labeled Baby Products are Green Knowledge: The dominant statement identified is, "I understand the benefits gained from following the correct usage instructions." Producers should provide clear and precise usage instructions to ensure consumers derive the expected benefits. For instance, adding a barcode on packaging that links to a video tutorial on proper usage would be helpful, this is also in line with Widayati et al., (2024) Digital marketing produces an advantageous and important impact on purchase intention, which means that when digital marketing is done well, The willingness to buy among buyers also rises. Green Attitude: The dominant statement identified is, "I have the attitude of buying BPA-Free labeled baby plastic products because of their benefits." Producers should align their products with the BPA-free label by emphasizing benefits and prioritizing environmental care through initiatives like CSR activities, this is also in line with Hafiz & Permana (2021) A strong orientation towards pro-environmental conduct will affect a desire to purchase environmentally friendly products. Green Trust: The dominant statement identified is, "I trust that BPA-Free labeled baby plastic products meet the promised health

standards." Producers must ensure adherence to health standards, such as offering warranties for BPA-free products to address potential issues within a specific time period, this is also in line with (Lee, 2020) statement, which asserts that beliefs or expectations are formed based on credibility, virtue, and capability in pro-environmental performance. Suggestions for future researchers exploring similar topics and referencing this thesis, further review is recommended to address any inaccuracies in the statements. As the author, I acknowledge the limitations and constraints encountered while completing this research.

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