# Environmental Awareness as a Moderator of the Relationship between Green Packaging and Purchase Decision: An Empirical Investigation of Aqua Products inthe Indonesian Market

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**Abstract.** ***Purpose*** *– This study aims to examine the effect of green packagingon purchase decision, with environmental awareness as a moderating variable, in the context of Aqua bottled water products in Indonesia.* ***Design/methodology/approach*** *– The research model was tested using partial least squares structural equation modeling (PLS-SEM) with a sample of 200 Aqua consumers in Indonesia. The data were collected through an online survey and analyzed using WarpPLS software version 7.0.* ***Findings*** *– The results show that green packaging has a significant positive effect on purchase decision (β=0.533; P<0.001), and environmentalawareness also significantly influences purchase decision (β=0.333;P<0.001). Furthermore, environmental awareness positively moderates the effect of green packaging on purchase decision (β=0.160; P=0.010).* ***Research limitations*** *– The study focused on asingle brand in one product category in Indonesia, which may limit the generalizability of the findings. Future research can replicate thestudy in different contexts and explore other potential moderators.* ***Practical implications*** *– The findings suggest that green packaging is a strategic tool to attract environmentally conscious consumers. Companies should invest in sustainable packaging and communicate its benefits, especially to consumers with high environmental awareness.* ***Originality/value*** *– This study is the first to investigate the moderating role of environmental awarenesson the effect of green packaging on purchase decision for Aqua products in Indonesia. It contributes to the green marketing literature and offers insights for sustainability practices.*

**Keywords :** *Green packaging, Environmental awareness, Purchase decision, Bottled water, Indonesia*

## I. INTRODUCTION

Environmental problems such as pollution and global warming caused by unsustainable consumption patterns have become an increasingly urgent global issue to address. One of the crucial environmental problems in Indonesia is the accumulation of packaging waste, especially plastic. According to data from the Ministry of Environment and Forestry, the total national waste generation reaches 68.5 million tons, and 14% of it is plastic waste (KLHK, 2022). Awareness of using environmentally friendly products among Indonesians is still relatively low compared to developed countries, although it has begun to increase in recent years (Jambeck et al., 2015; Saraswaty, 2018).

Packaging is one aspect of a product that has the potential to cause environmental problems. Therefore, companies are increasingly required to reduce the impact of their product packaging and switch to using environmentally friendly packaging (green packaging). Green packaging is packaging whose materials and processes are designed to reduce environmental impact, for example, by using recycled materials, reducing the amount of packaging, reusable packaging, and so on (Singh & Pandey, 2018; Zhang & Zhao, 2012).

One of the companies in Indonesia that has taken the initiative to use green packaging for its products is Aqua. Aqua is a brand of bottled mineral water (AMDK) that dominates the Indonesian market. In 2018, Aqua launched a plastic bottle made from 100% recycled materials or rPET (recycled polyethylene terephthalate) to reduce plastic waste and support the circular economy (Kompas.com, 2018). Aqua claims that the packaging can reduce plastic bottle waste by up to 70% by 2025 (Aqua, 2022).

Several previous studies have proven that green packaging has a positive and significant effect on consumer purchase decisions. For example, research by Mahmoud et al. (2022) and Singh & Pandey (2018) revealed that consumers are willing to pay more for products with environmentally friendly packaging because they

are considered to offer added value. Mardiyah et al. (2022) also found that Rinso's green packaging is more of a consideration for villagers in Sidoarjo in deciding to buy compared to its environmentally friendly products. However, Mahmoud et al. (2022) and Ansu-Mensah (2021) also underline that consumer environmental awareness does not necessarily translate into the actual adoption or purchase of green products. In other words, even though consumers are aware of the importance of protecting the environment, they do not necessarily immediately decide to buy environmentally friendly products. This indicates the possibility of a moderating factor in the relationship.

Based on the research gap above, this study aims to examine the effect of green packaging on consumer purchase decisions for Aqua products in Indonesia, with environmental awareness as a moderating variable. The research was conducted on Aqua products because it is a pioneer of AMDK that uses packaging made from recycled materials in Indonesia. The novelty of this research lies in the use of the environmental awareness variable as a moderator in the context of Aqua products in Indonesia, which has never been studied so far. The results of this study are expected to provide insights and recommendations for marketers and policymakers in encouraging the consumption of environmentally friendly products in Indonesia.

***Literature review***

Previous studies have shown a positive relationship between green packaging and consumer purchase decisions (Prakash & Pathak, 2017; Orzan et al., 2018; Mardiyah et al., 2022). Green packaging is considered an important attribute that can attract environmentally conscious consumers. This influence can be explained by the theory of planned behavior (TPB) (Ajzen, 1991).

Environmental awareness has also been proven to positively influence green product purchase behavior (Sharaf & Isa, 2017; Kumar et al., 2017; Arli et al., 2021). Consumers with high environmental awareness tend to consider the impact of their consumption and choose sustainable products. This influence can be understood through the value-belief-norm (VBN) theory (Stern, 2000).

However, the relationship between environmental awareness and the adoption of green productsis not always linear. Awareness alone does not necessarily translate directly into purchase decisions (Mahmoud et al., 2022; Ansu-Mensah, 2021). Previous research indicates that environmental awareness can moderate the relationship between green packaging and purchase decisions (Trivedi et al., 2018; Liobikienė et al., 2016; Anser et al., 2022). The elaboration likelihood model (ELM) can explain this moderating effect (Petty & Cacioppo, 1986).

Based on this literature review, this study proposes three hypotheses: H1: Green packaging has a positive and significant effect on purchase decision.
H2: Environmental awareness has a positive and significant effect on purchase decision.
H3: Environmental awareness positively moderates the effect of green packaging on purchase decision.

## II. METHODOLOGY

This research utilized a quantitative explanatory approach to investigate the causal link between eco-friendly packaging and purchasing decisions, with environmental consciousness serving as a moderating factor (Cooper & Schindler, 2014). The target population consisted of Aqua customers in Indonesia, and purposive sampling was employed to select the sample based on the following criteria:

(1) minimum age of 17 years, (2) purchased Aqua products within the last month, and (3) currently residing in Indonesia (Sekaran & Bougie, 2016).

The sample size was calculated using the rule of thumb for PLS-SEM analysis, which necessitates a minimum of ten times the highest number of paths pointing to any latent variable (Hair et al., 2017). With 3 variables and a maximum of 2 paths, the minimum sample size was determined to be 30. Nevertheless, to account for potential outliers or incomplete responses, the sample size was increased to 200 participants.

Data collection was carried out via an online survey using Google Forms, which was distributed through social media platforms and messaging applications from January to February 2024. The survey questionnaire utilized a 5-point Likert scale and included screening questions, respondent demographics, main questions (eco-friendly packaging, purchase decision, environmental awareness), and a closing section.

Data analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the WarpPLS v.7 software, which is appropriate for predictive and exploratory studies involving non-normal data and limited sample sizes (Hair et al., 2019). The analysis encompassed the evaluation of the measurement model (validity and reliability tests) and the

structural model (hypothesis testing and moderating effect).

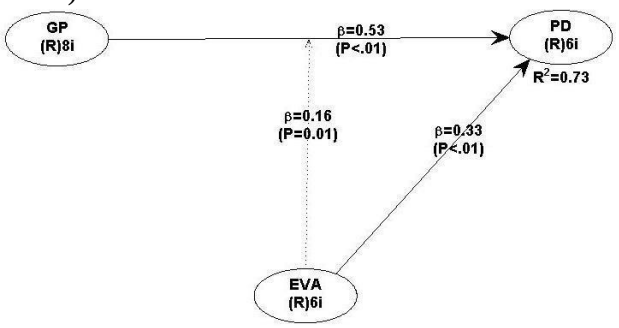


**Figure 1. WarpPLS Output**

## III. RESULTS

The subsequent sections present the outcomes of the measurement model assessment (convergent validity, reliability, and discriminant validity) and structural model evaluation (R-squared, Q-squared, and hypothesis testing).

***Validity and Reliability***

Convergent validity was evaluated by assessing the outer loadings and average variance extracted (AVE) for each latent variable. Table 1 displays the outer loadings for all indicators and the AVE values for each construct. All outer loadings surpass the suggested threshold of 0.708 (Hair et al., 2019), indicating satisfactory indicator reliability. Furthermore, the AVE values for all latent variables surpass the minimum criterion of 0.50 (Hair et al., 2019), confirming adequate convergent validity. These findings imply that the indicators of each construct are highly correlated and that the latent variables explain more than half of the variance in their indicators.

The reliability of the measurement model was evaluated using two internal consistency measures: composite reliability and Cronbach's alpha. Table 2 presents the composite reliability and Cronbach's alpha coefficients for each latent variable. All composite reliability values exceed the recommended level of 0.70 (Hair et al., 2019), indicating good internal consistency. Likewise, the Cronbach's alpha coefficients for all latent variables surpass the widely accepted cutoff point of 0.70 (Nunnally, 1978), providing additional evidence of the measures' reliability. These results demonstrate that the indicators of each construct are highly interrelated and that the measurement model is reliable.

**Table 1. Validity and Reliability**

Table 1. Validity and Reliability

| Latent Variable | Outer loading | AVE | Composite Reliability Coeff. | Cronbach's Alpha Coeff. |
|---|---|---|---|---|
| Green Packaging (GP) | | 0.736 | 0.957 | 0.948 |
| GP.1 | 0.786 | | | |
| GP.2 | 0.806 | | | |
| GP.3 | 0.833 | | | |
| GP.4 | 0.873 | | | |
| GP.5 | 0.914 | | | |
| GP.6 | 0.810 | | | |
| GP.7 | 0.903 | | | |
| GP.8 | 0.881 | | | |
| Environmental Awareness (EVA) | | 0.684 | 0.928 | 0.905 |
| EVA.1 | 0.770 | | | |
| EVA.2 | 0.876 | | | |
| EVA.3 | 0.906 | | | |
| EVA.4 | 0.889 | | | |
| EVA.5 | 0.771 | | | |
| EVA.6 | 0.790 | | | |
| Puchase Decision (PD) | | 0.773 | 0.953 | 0.941 |
| PD.1 | 0.820 | | | |
| PD.2 | 0.915 | | | |
| PD.3 | 0.905 | | | |
| PD.4 | 0.928 | | | |
| PD.5 | 0.898 | | | |
| PD.6 | 0.802 | | | |

***R-squared and Q-squared***

The purchase decision (PD) variable has an R-squared value of 0.726, indicating that 72.6% of the variance in PD can be explained by its predictors, namely green packaging, environmental awareness, and moderation. This value is considered substantial. Similarly, the Q-squared value of 0.727 (>0) suggests that the model has predictive relevance.

**Table 2. R-squared and Q-squared Values**

Table 2. R-squared and Q-squared Values

| Latent Variable | R-Squared | Q-Squared |
|---|---|---|
| PD (Purchase Decision) | 0.726 | 0.727 |

***Hypothesis Testing Results***

Table 6. Hypothesis Testing Results

| Hypothesis | Path Coeff. | P-Value | Decision |
|---|---|---|---|
| H1: GP → PD | 0.533 | <0.001 | Supported |
| H2: EVA → PD | 0.533 | <0.001 | Supported |
| H3: GP*EVA → PD | 0.160 | 0.010 | Supported |

## IV. DISCUSSION

The results support H1, confirming that green packaging has a significant positive effect on purchase decision (β=0.533, p<0.001). This aligns with previous studies (Prakash & Pathak, 2017; Orzan et al., 2018; Mardiyah et al., 2022) and highlights the importance of green packaging as a strategic tool to attract environmentally conscious consumers. Companies should invest in sustainable packaging solutions to improve their brand image and tap into the growing green market.

H2 is also supported, with environmental awareness having a significant positive effect on purchase decision (β=0.333, p<0.001). This finding is consistent with prior research (Choshaly, 2017; Sharaf & Isa, 2017; Kumar et al., 2017) and

underscores the need for companies to educate consumers about the environmental benefits of their products through various communication channels. However,environmental awareness alone may not translate into purchase behavior, as other factors like price and quality also influence decisions.

The results support H3, indicating that environmental awareness positively moderates the effect of green packaging on purchase decision (β=0.160, p=0.010). This can be explained by the elaboration likelihood model (Petty & Cacioppo, 1986), where highly environmentally aware consumers are more motivated to scrutinize and be persuaded by green packaging. Companies should focus marketing efforts on this segment and emphasize the environmental benefits of their packaging. However, they should be cautious not to overstate claims or engage in greenwashing. Market segmentation based on environmental consciousness is needed to tailor packaging and communication strategies effectively.

## V. CONCLUSION

This study demonstrates the positive effect of green packaging and environmental awareness on purchase decision for Aqua products in Indonesia. The findings indicate that green packaging significantly predicts purchase decision, and environmental awareness enhances this effect. The research contributes to the literature on green consumer behavior and provides insights for companies promoting sustainable packaging and consumption.

However, the study has limitations. It focuses on a single product category and brand in one country, limiting generalizability. The cross-sectional design precludes causal inferences. The study does not consider other potential moderators or mediators influencing the relationships. Future research should address these limitations by replicating the study in different contexts, using longitudinal or experimental designs, and exploring additional factors.

Despite limitations, the study offers recommendations for companies and policymakers. Companies should invest in sustainable packaging and communicate environmental benefits to consumers, especially those with high environmental awareness. Policymakers can support green packaging adoption through regulations, incentives, and public awareness campaigns. Collaboration between companies and policymakers can promote sustainable consumption and contribute to a circular economy.

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