

Development Strategy for Eco-Friendly Protective Mobile Phone Cases Through Mapping Attributes of Green Purchase Intention

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Abstract. *The rising consumption of plastic poses a significant global challenge. This research aims to develop strategies for bamboo-based Protective Mobile Phone Cases (PMPCs) as an eco-friendly alternative to reduce plastic waste. However, market interest in these products is currently low. This study uses Partial Least Square Structure Equation Model (PLS-SEM) and House of Quality (HoQ) methods to overcome these problems. Part of the population becomes respondents in this study, there are 313 students at Sebelas Maret University who have purchased or used environmentally friendly products were determined through purposive sampling. Data were collected using the questionnaire and interview methods for the measurement period January 2023-October 2024. The novelty of this research is combination of 9 variable, namely green perceived quality, green perceived value, perceived behavioral control, environmental knowledge, environmental concern, green trust, positive attitude, subjective norm, and green purchase intention. Through the analysis of PLS-SEM, four hypotheses were accepted, along with eleven customer attributes that are relevant to green purchase intention. These attributes informed a strategy for developing eco-friendly PMPCs at Devan Bamboo using the HoQ method. This study proposed two design for bamboo-based PMPCs.*

Keywords: *protective mobile phone cases; green purchase intention; partial least square-structural equation model (PLS-SEM); house of quality (HoQ); sustainable product development.*

I. INTRODUCTION

Environmental issues constitute a global challenge of escalating urgency, particularly in light of the increasing consumption of plastic (Lim et al., 2021). Plastic, recognized as a significant pollutant, is extensively utilized on a daily basis and has been demonstrated to harm ecosystems and living organisms (Li et al., 2023; Nielsen et al., 2020). According to The Indonesia Olefin, Aromatic & Plastic Industry Association (INAPLAS), the per capita plastic consumption in Indonesia in 2019 reached 23 kilograms per person annually, prompting concerns regarding the environmental repercussions of plastic waste.

In response to this issue, eco-friendly alternatives are being developed, including green products that are attracting more global attention.

On the other hand, based on data from the Central Statistics Agency (BPS) in 2020, the penetration of smartphone usage in Indonesia increased rapidly, with 62.84% of the population owning a smartphone in 2020. This surge has driven demand for protective accessories such as Protective Mobile Phone Cases (PMPCs), which are used to protect devices as well as serve as lifestyle elements (Khairiah et al., 2019). The global PMPCs market is projected to be worth over \$23 billion by 2023, with an annual growth rate of 4.19% until 2032. However, most of the PMPCs currently in circulation are made from polymer materials that are difficult to decompose, resulting in microplastic waste that is harmful to the environment (Allen et al., 2017; Li et al., 2023).

One innovative alternative is bamboo-based PMPCs, a natural material that excels in tensile strength more than 200 Mpa and sustainability (Manik et al., 2023; Monteiro et al., 2017). Bamboo grows much faster than other wood plants, making it a highly potential resource for environmentally friendly product materials (Dewi

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et al., 2023; Hartanti, 2010). Unfortunately, bamboo-based PMPC products are still rarely found in the market, especially in eCommerce in Indonesia. Local producers like UMKM Devan Bamboo face the challenge of low market interest in these products.

The low interest in eco-friendly PMPCs reflects the general trend in the green product market (Rex & Baumann, 2007), where consumer environmental awareness is not always followed by the intention to purchase (Young et al., 2010). Green purchase intention is influenced by various factors that must be understood to optimize the market. To meet these objectives, PLS-SEM and HoQ are used to develop strategy for eco-friendly PMPCs. This research will produce a design product suggestions to improving green purchase intention.

II. RESEARCH METHOD

This study identifies customer attributes relevant to green purchase intention using PLS-SEM, which will inform product development strategies for bamboo-based PMPCs through the House of Quality framework. The following is the framework in this study which is shown in Figure 1.

Customer attributes are based on the Theory of Planned Behavior (TPB) (Ajzen, 1991),

comprising nine variables and 27 indicators, there are nine hypotheses formulated. Based on this, the theoretical conceptual model SEM is shown in Figure 2 and Table 1 shows the indicators of each variable.

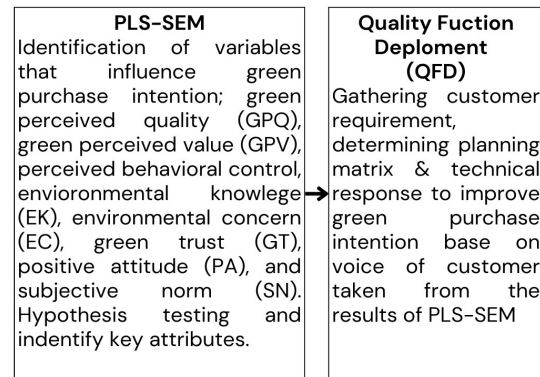


Figure 1. Research Procedure

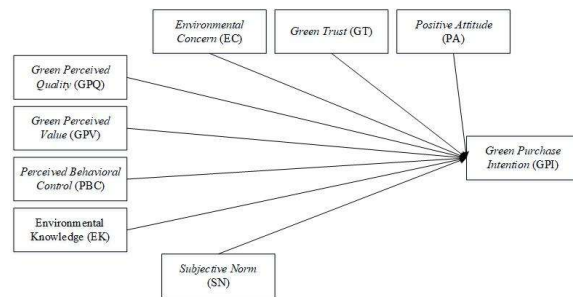


Figure 2. SEM Model

Table 1. Indicators Measurement

Contract	Indicators		References
Green Perceived Quality	GPQ1	Quality is the best benchmark	Chen & Chang, 2013
	GPQ2	Product quality is reliable	
	GPQ3	The product is durable	
Green Perceived Value	GPV1	Price that is being offered	Woo & Kim, 2019; Chen & Chang, 2012
	GPV2	Product functions provide very good value	
	GPV3	Product performance meets expectations.	
Perceived Behavioral Control	PBC1	Decision-making is controlled	Siaputra & Isaac, 2020
	PBC2	Consumers have financial resources	
	PBC3	Consumers have sufficient time	
Environmental Knowledge	EK1	Awareness promotes environmental attention	Hariyanto & Alamsyah, 2019; Putri et al., 2021
	EK2	Knowledge of eco-friendly materials is vital	
	EK3	Plastic is a major cause of environmental pollution	
Environmental Concern	EC1	Willingness to aid environmental preservation exists	Maichum et al., 2017
	EC2	Awareness of inconsistent environmental conditions	
	EC3	Concern is shown by buying eco-friendly products	

Construct	Indicators		References
Green Trust	GT1	Claims about eco-friendly products are made	Ahmad & Zhang, 2020
	GT2	Commitment to product integrity is present	
	GT3	Eco-friendly products meet expectations	
Positive Attitude	PA1	Awareness of eco-friendly vs. conventional consumption exists	Pandey & Yadav, 2023
	PA2	Eco-friendly products are beneficial	
	PA3	Choosing eco-friendly products is wise	
Subjective Norm	SN1	Family influences decisions	Sukma et al., 2023; Zubaidi, 2020
	SN2	Friends influences decisions	
	SN3	Social interactions are influential	
Green Purchase Intention	GPI1	Purchase this product because of its environmental concern	Chen & Chang, 2012
	GPI2	Purchase this product in the future because of its environmental performance	
	GPI3	Purchase this product because it is environmental friendly	

Literature Review And Hypothesis Development

Green Perceived Quality

Green perceived quality is consumers evaluation of the superiority of a product or service based on environmental aspects (Chen & Chang, 2013). Green perceived quality is used to evaluate consumer perceptions of environmentally friendly products. Alah Wasayah (2021) involving 306 energy-saving consumers in Punjab, Pakistan, indicates that green perceived quality significantly impacts green purchase intention. Chi et al. (2009) found that green perceived quality boosts green purchase intention.

H1: variabel green perceived quality has a positive significant to green purchase intention

Green Perceived Value

According to Patterson and Spreng in Chen & Chang (2012), green perceived value is the overall assessment made by consumers of the value and benefits offered based on green needs. Rizwan et al. (2014), green perceived value has a significant positive to green purchase intention eco-friendly product. The rise in green perceived value increasing the intention to buy eco-friendly products, playing a major role in influencing purchasing decisions (Chen & Chang, 2012).

H2: green perceived value has a positive significant to variabel green purchase intention

Perceived Behavioral Control

Perceived behavioral control (PBC) refers to an individual's perception of their ability to take

action (Karatu & Mat, 2015). Research shows that a higher level of perceived behavioral control can increase the intention to purchase eco-friendly products (Zhuang et al., 2021). Karatu & Mat (2015) found a significant relationship between perceived behavioral control and the intention to purchase environmentally friendly products in Nigeria.

H3: perceived behavioral control has a positive significant to green purchase intention

Environmental Knowledge

Environmental knowledge includes an understanding of the relationship between the environment and ecosystems, which encourages individual responsibility in preserving sustainability (Hariyanto & Alamsyah, 2019). The research shows that environmental knowledge has a positive significant to green purchase intention (Hariyanto & Alamsyah, 2019), meaning that the more knowledge someone has, the greater their support for green purchase intention. The research by Ginting & Ekawati (2016) also reported a positive impact of environmental knowledge on green purchase intentions.

H4: environmental knowledge has a positive significant to green purchase intention

Environmental Concern

Environmental concern is defined by Alibeli & Johnson (2009) as the extent to which people are aware of environmental issues and their willingness to solve environmental problems. Zhuang et al. (2021) dan Patak et al. (2021),

environmental concern has a positive and significant effect on the intention to purchase eco-friendly products. Although not the strongest factor, environmental concern still has a positive impact on the intention.

H5: environmental concern has a positive significant to green purchase intention

Green Trust

Chen & Chang (2013) defines green trust as the willingness to rely on an object based on its credibility, benevolence, and performance in a specific context. Green trust a crucial element in consumers' decisions when selecting brands (Cam, 2023). Ahmad & Zhang (2020) showed that green intention to repurchase is significantly influenced by green trust.

H6: green trust has a positive significant to green purchase intention

Positive Attitude

The theory of planned behavior by Ajzen (1991) highlights the importance of attitude in purchase intention, particularly concerning environmental awareness. Attitude serves as a key factor in consumers' evaluation of products (Pandey & Syam, 2023). Wei et al. (2021) found that a positive attitude toward sustainable consumption is associated with the intention to purchase energy-certified eco-friendly products. (Hong et al., 2023) demonstrated the significant influence of attitude on green purchase intention among WeChat users, while Zaremohzzabieh et al. (2021) also identified a positive effect of attitude on green purchase intention.

H7: positive attitude has a positive significant to green purchase intention

Subjective Norm

In decision-making, individuals are often influenced by those around them. Research shows that subjective norms can affect behavior due to social pressure from reference groups (Zhuang et al., 2021). Amalia & Darmawan (2023) found that support from family, friends, and idols significantly shapes the intention to purchase environmentally friendly products. Support from close social circles is an important factor in

encouraging sustainable behavior. In India, a positive relationship between subjective norms and the intention to buy eco-friendly products has been observed (Sreen et al., 2018).

H8: subjective norm has a positive significant to green purchase intention

Population and Research Sample

The study population includes Sebelas Maret University students who have previously owned or purchased eco-friendly products. An online survey was conducted via social media from October 24 to November 6, 2023, collecting 346 responses, of which 313 met the research criteria.

III. RESULT AND DISCUSSION

Partial Least Square – Structural Equation Model (PLS – SEM)

Outer Model Measurement

Convergent validity test in the second iteration has loading factor value $> 0,6$, and as shown in Table xxx, the AVE of the nine constructs are higher than 0.5. It indicates that the convergent validity of the measurement is acceptable or all indicators are valid (Ghozali, 2015). This discriminant validity test shows that cross-loading values of each construct is higher than the correlation value between constructs in a model. Therefore, the discriminant validity of the measurement is acceptable (Sarstedt et al., 2021). All variable has composite reliability value $> 0,7$ and Cronbach's Alpha values $> 0,7$, that all indicators are reliable (Sarstedt et al., 2021).

Table 2. Convergent Validity Outer Model

Construct	Loading Factor	Construct	Loading Factor
GPQ1	0.643	GT1	0.863
GPQ2	0.738	GT2	0.832
GPQ3	0.858	GT3	0.810
GPV1	0.705	PA1	0.658
GPV3	0.798	PA2	0.769
PBC2	0.840	PA3	0.831
PBC3	0.857	SN1	0.787
EK1	0.647	SN2	0.764
EK2	0.864	SN3	0.789
EC1	0.711	GPI1	0.851
EC3	0.719	GPI2	0.795
		GPI3	0.850

Table 3. Cronbach's Alpha, Composite Reliability dan Average Variance Extracted (AVE)

	Cronbach's Alpha	Composite Reliability	AVE
EC	0.772	0.761	0.614
EK	0.700	0.733	0.583
GPQ	0.718	0.794	0.565
GPV	0.716	0.803	0.671
GPI	0.878	0.871	0.693
GT	0.883	0.874	0.697
PBC	0.799	0.869	0.769
PA	0.725	0.799	0.572
SN	0.779	0.823	0.609

Inner model Measurement

The R-square indicates that exogenous variables contribute 44.7% to green purchase intention, with a moderate effect as the adjusted R-square value is 0.432 or 43%, which is less than 67%. The Q value for GPI is 0.292, indicating that the model has good predictive power and accuracy. The model fit test shows an SRMR of 0.08, which is < 0.10 , concluding that this research model fits the data well (Handojo & Santoso, 2022).

Hypothesis Testing

The purpose of this study was to examine the relationships between the exogenous and endogenous variables. Hypothesis testing uses t-statistic and p-value. If a p-value < 0.05 (alpha 5%) and t-statistics $> t$ -table (1.96), it can be concluded that the result is significant or the hypothesis is accepted. Table 4 shows the results of hypothesis testing.

Table 4. Hypothesis Test

	Original Sample	T Statistics	P Values	Result
GPQ - GPI	0.139	2.148	0.032	Accepted
GPV - GPI	0.062	1.206	0.228	Rejected
PBC - GPI	0.195	3.175	0.002	Accepted
EK - GPI	0.014	0.305	0.760	Rejected
EC - GPI	-0.092	1.741	0.082	Rejected
GT - GPI	0.170	2.496	0.013	Accepted
PA - GPI	0.289	5.682	0.000	Accepted
SN - GPI	0.125	1.951	0.052	Rejected

The findings of this research reveal that green perceived quality, perceived behavioral

control, green trust, and positive attitude has positive significant to green purchase intention. While there are insignificant correlations between green perceived value to green purchase intention (H2), environmental knowledge to green purchase intention (H4), environmental concern to green purchase intention (H5), and subjective norm to green purchase intention (H8).

House of Quality

House of Quality (HoQ) is the initial stage in the application of QFD method. The quality house matrix tries to translate directly the consumer's assessment of the technical preconditions of a product. The customer needs will be translated into technical response (How's) based on the interview with owner of UMKM Devan Bamboo. The matrix is present in table xxx. After getting the technical response, it will elaborate into action plan. The action plan is present to the table xxxx.

Customer requirements in this study refer to the relevant customer attributes influencing green purchase intention, specifically identifying 11 customer attributes that exhibit a loading factor value > 0.6 , as determined by the accepted hypotheses.

1. Planning matrix (matrix what)

Planning matrix shows a priority sequence of eleven attributes that must be improved as shown in Table 5.

Table 5. Planning Matrix

Kode	Loading Factors	Rank
GPQ1	0.643	11
GPQ2	0.738	9
GPQ3	0.858	4
GT1	0.862	3
GT2	0.832	5
GT3	0.810	7
PA1	0.658	10
PA2	0.769	8
PA3	0.831	6
PBC2	0.875	2
PBC3	0.879	1

2. Relationship Between Matrix What dan Matrix How (Relationship Matrix)

The relationship between customer requirements and technical responses will result in a sequence of priority technical responses. This

relationship can be seen in Figure 3. Meanwhile, the calculations are shown in Table 6.

Table 6. Matrix How (Technical Response Priority)

No	Technical Responses	Weight	Relative Weight	Rank
1	PMPC dimensions and mobile phone compatibility	12.43	6%	7
2	Accessibility of external components	12.43	6%	7
3	Bamboo thickness	20.15	9%	4
4	Build in quality	20.15	9%	4
5	Product strength	20.15	9%	4
6	Complexity of design drawings	7.88	4%	11
7	Production speed	7.91	4%	10
8	Material types	44.83	20%	1
a9	Quantity of material requirements	10.07	5%	9
10	Safety characteristics of materials	29.68	13%	3
11	Completeness of product information	34.57	16%	2
Total		220.26	100%	

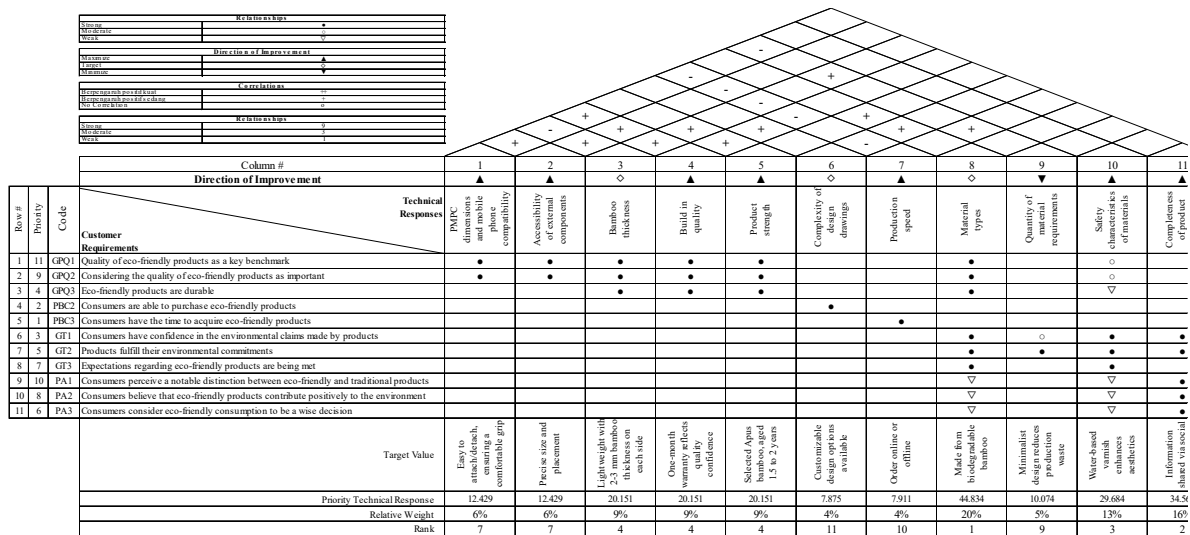


Figure 3. House of Quality

3. Relationship Between Matrix How (Correlation Matrix)

The relationship between technical responses is referred to as the correlation matrix and is shown in Figure 3. On top of the House of Quality, you will find a "roof" of a similar shape. This provides information about the relationship between technical responses, so that the possibility of technical responses in answering other priority customer requirements is known.

4. Action of Plan

The action plan matrix in table xxx provides information about the required resources, results and impact of the proposed action plan. There are ten action plans developed:

a. Material types

Bamboo, as a biodegradable material, is superior to wood because it is easy to cultivate and flexible (Arsad, 2015). The use of bamboo reflects innovation, sustainability, and cultural value, making it more appealing than recycled plastic (Gumulya et al., 2019). Bamboo also supports the local economy, with 54% of respondents selling it as poles, 59% for building

materials, 45% for crafts, and 72% as fences. (Rahmawati et al., 2019).

b. Safety characteristics of materials

The color and shape of PMPCs attract consumers, but material safety is also important. Avoid coatings and varnishes that contain many chemicals; use water-based mixtures. Choose eco-friendly varnishes that are free of heavy metals, especially lead, and have low levels of Volatile Organic Compound (VOC). (0–50 grams per liter) (Deni & Daniel, 2014). The design of PMPCs should represent the natural color of bamboo and reduce the use of harmful chemicals.

c. Build in quality

Build in quality is important in the development of eco-friendly PMPCs to prevent defects. A one-month warranty becomes a strategy to ensure quality, assuring consumers that the product fulfills high standards and increasing trust in the company. This guarantee makes consumers more at ease when choosing a product (Makkulawu, 2023).

d. Product strength

The strength of the product is very important for durability and quality of protection. Bamboo materials, such as Jawa bamboo (*Gigantochloa atter*), Apus bamboo (*Gigantochloa apus*), and Ori bamboo (*Bambusa arundinace*), have become alternative materials. 1.5 to 2-year-old Apus bamboo was chosen due to its optimal tensile strength of 228 Mpa, in accordance with the preferences of Devan Bamboo craftsmen (Manik et al., 2023). At this age, bamboo fibers are sufficiently mature and meet the required flexibility.

e. Bamboo thickness

The thickness of bamboo must consider comfort and aesthetics. PMPCs come in various masses, and weight preferences vary among consumers. Lighter products are more comfortable to use (Paputungan et al., 2021). To achieve lightweight yet protective PMPCs, the thickness of the bamboo is set between 2–3 mm on each side. Increasing the thickness will add weight to the PMPCs.

f. PMPC dimensions and mobile phone compatibility

The dimensional compatibility of PMPCs with mobile phones is important for compatibility and functionality. Consumers want PMPCs that are easy to install and remove without damaging the phone, while also providing quick access and security. Comfort is also important, considering that users often hold their phones for extended periods. Therefore, dimensional compatibility is necessary to balance protection and comfort (Muhammad et al., 2019). Dimension information was obtained by the craftsman from the internet.

g. Accessibility of external components

The ease of access to external components such as volume, input/output, power buttons, and cameras must consider the precise positioning of holes. Determining the appropriate position and thickness of the bamboo is important for user comfort and efficiency, allowing access without removing the PMPCs and enhancing the user experience.

h. Quantity of material requirements

The main goal is to create a minimalist design that meets material needs and reduces production waste. This design focuses on PMPCs that fit the size of mobile phones, appearing simple yet attractive, and enhancing productivity through efficient use of raw materials (Ma'ruf et al., 2022).

i. Production speed

The speed of production is influenced by various factors, including the level of difficulty. At Devan Bamboo, the production of bamboo PMPCs uses conventional methods, which take longer. The company implements a make-to-order system with a production time of about three working days, adjusting the timeline to meet consumer needs. Customers can order offline or online.

j. Complexity of design drawings

After understanding consumer needs, PMPC bamboo products can be ordered with custom engravings according to personal preferences. The difficulty level of the engraving affects the price and production speed.

Implementation of target values according to technical responses to obtain the product design

shown in Figures 5 and 6. Visualising product concepts.



Figure 4. Original Design Devan Bamboo



Figure 5. Project Design 1



Figure 6. Project Design 2

There are differences in the PMPC design of the three designs, especially in the position of the foam and the shape of the rear edge. The original design of Devan Bamboo foam does not surround the interior, whereas the first and second design do. The edges of the original and first designs are right-angled, while the second design is curved. The materials used remain bamboo and foam, with a water-based varnish finish.

IV. CONCLUSION

This research has identified the attributes of PMPC customers, emphasizing the importance of

green product quality. Consumers prioritize durability, budget, and trust in green claims, convinced that these products contribute to environmental protection and represent a smart choice. The research developed a product development strategy for bamboo PMPCs centered on quality, durability, and reliability. The product will offer a warranty to enhance trust and feature a minimalist design, biodegradable materials, and easy access to mobile phone components. Customizable designs tailored to consumer preferences are also a key focus. This study produced two design concepts: the first incorporates foam on the inside with right angles, while the second features curved edges, both constructed from the same material.

REFERENCES

- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211. <https://doi.org/10.4135/9781446249215.n22>
- Alibeli, M. A., & Johnson, C. (2009). Environmental Concern: A Cross National Analysis. *Journal of International and Cross-Cultural Studies*, 3(1), 1–10.
- Allen, A. S., Seymour, A. C., & Rittschof, D. (2017). Chemoreception drives plastic consumption in a hard coral. *Marine Pollution Bulletin*, 124(1), 198–205. <https://doi.org/10.1016/j.marpolbul.2017.07.030>
- Cam, L. N. T. (2023). A Rising Trend In Eco-Friendly Products: A Health-Conscious Approach To Green Buying. *Heliyon*, 9(9). <https://doi.org/10.1016/j.heliyon.2023.e19845>
- Chen, & Chang, C. H. (2012). Enhance Green Purchase Intentions: The Roles of Green Perceived Value, Green Perceived Risk, and Green Trust. *Management Decision*, 50(3), 502–520. <https://doi.org/10.1108/00251741211216250>
- Chen, & Chang, C. H. (2013). Towards green trust: The influences of green perceived quality, green perceived risk, and green satisfaction. *Management Decision*, 51(1), 63–82. <https://doi.org/10.1108/00251741311291319>
- Chi, H. K., Ren Yeh, H., & Ting Yang, Y. (2009). The Impact of Brand Awareness on Consumer Purchase Intention: The Mediating Effect of Perceived Quality and Brand Loyalty. *The Journal of International Management Studies*, 4(1), 135–144. https://s3.amazonaws.com/academia.edu.document_s/34707438/17_Ya_Ting_Yang.pdf?response-

- content-disposition=inline%3B
filename%3D17_Ya_Ting_Yang.pdf&X-Amz-
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Credential=AKIAIWOWYYGZ2Y53UL3A%2F2019080
1%2Fus-east-1%2Fs3%2Faws4_re
- Dewi, N. M. E. N., Pranajaya, I. K., Rahayu, N. N. S., & Mahadipta, N. G. D. (2023). Kajian Pemanfaatan Bambu Sebagai Material Berbasis Kearifan Lokal Dalam Perancangan Interior. *SENADA*, 6, 148–155.
- Ginting, R. K., & Ekawati, N. W. (2016). Pengaruh Pengetahuan Lingkungan Terhadap Niat Membeli Produk Hijau Pada Merek "Attack" dengan Kepedulian Lingkungan Sebagai Variabel Mediasi. *E-Jurnal Manajemen Unud*, 5(4), 2223–2249.
- Hariyanto, O. I. B., & Alamsyah, D. P. (2019). The Relationship Of Environmental Knowledge And Green Purchase Intention. 5, 142–144. <https://doi.org/10.35940/ijeat.E1020.0585C19>
- Hartanti, G. (2010). Keberadaan Material Bambu sebagai Substitusi Material Kayu pada Penerapan Desain Interior dan Arsitektur. *Humaniora*, 1(1), 11. <https://doi.org/10.21512/humaniora.v1i1.2143>
- Hong, Y., Hu, J., Chen, M., & Tang, S. (2023). Motives And Antecedents Affecting Green Purchase Intention: Implications For Green Economic Recovery. *Economic Analysis and Policy*, 77, 523–538.
- Karatu, V. M. H., & Mat, N. K. N. (2015). The Mediating Effects of Green Trust and Perceived Behavioral Control on the Direct Determinants of Intention to Purchase Green Products in Nigeria The Mediating Effects of Green Trust and Perceived Behavioral Control on the Direct Determinants of Intenti. *Mediterranean Journal of Social Sciences*, 6(4), 256–265. <https://doi.org/10.5901/mjss.2015.v6n4p256>
- Khairiah, H., Armayani, H. A., Lubis, M. F., Ridwan, M., & Siregar, A. I. V. (2019). Analysis Revenues of Casing Cover Business Inslipper Material in Medan Analisis Pendapatan Usaha Case Dengan Bahan. 2(2), 73–78. <http://jurnal.umsu.ac.id/index.php/JASc/article/view/3210/2897>
- Li, Q., Yuan, M., Chen, Y., Jin, X., Shangguan, J., Cui, J., Chang, S., Guo, M., & Wang, Y. (2023). The neglected potential source of microplastics from daily necessities: A study on protective mobile phone cases. *Journal of Hazardous Materials*, 441(August 2022), 129911. <https://doi.org/10.1016/j.jhazmat.2022.129911>
- Manik, P., Firdhaus, A., Tuswan, T., Kiryanto, K., & Ichsan, B. M. (2023). Analysis Of The Tensile And Bending Strengths Of The Joints Of "Gigantochloa Apus" Bamboo Composite Laminated Boards With Epoxy Resin Matrix. *Journal of the Mechanical Behavior of Materials*, 32(1). <https://doi.org/10.1515/jmbm-2022-0276>
- Monteiro, S. N., Margem, F. M., Braga, F. de O., Luz, F. S. da, & Simonassi, N. T. (2017). Weibull Analysis of the Tensile Strength Dependence with Fiber Diameter of Giant Bamboo. *Journal of Materials Research and Technology*, 6(4), 317–322. <https://doi.org/10.1016/j.jmrt.2017.07.001>
- Nielsen, T. D., Hasselbalch, J., Holmberg, K., & Strippel, J. (2020). Politics and the plastic crisis: A review throughout the plastic life cycle. *Wiley Interdisciplinary Reviews: Energy and Environment*, 9(1), 1–18. <https://doi.org/10.1002/wene.360>
- Pandey, M., & Syam, P. (2023). Understanding the role of individual concerns , attitude , and perceived value in green apparel purchase intention; the mediating effect of consumer involvement and moderating role of generation Z & Y. *Cleaner and Responsible Consumption*, 9(April). <https://doi.org/10.1016/j.clrc.2023.100120>
- Patak, M., Branska, L., & Pecinova, Z. (2021). Consumer Intention to Purchase Green Consumer Chemicals. *Sustainability (Switzerland)*, 13(14). <https://doi.org/10.3390/su13147992>
- Rex, E., & Baumann, H. (2007). Beyond ecolabels: what green marketing can learn from conventional marketing. *Journal of Cleaner Production*, 15(6), 567–576. <https://doi.org/10.1016/j.jclepro.2006.05.013>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial Least Squares Structural Equation Modeling Chapter . In *Handbook of Market Research (Issue July)*. Springer Nature Switzerland. <https://doi.org/10.1007/978-3-319-05542-8>
- Wei, J., Zhao, X., & Yang, X. (2021). Measuring Purchase Intention Towards Green Power Certificate In A Developing Nation: Applying And Extending The Theory Of Planned Behavior. *Resources, Conservation & Recycling*, 168. <https://doi.org/10.1016/j.resconrec.2020.105363>
- Young, W., Hwang, K., McDonald, S., & Oates, C. J. (2010). Sustainable Consumption: Green Consumer Behaviour When Purchasing Products. *Sustainable Development*, 18(1), 20–31. <https://doi.org/10.1002/sd.394>
- Zaremohzzabieh, Z., Ismail, N., Ahrari, S., & Abu, A. (2021). The Effects Of Consumer Attitude On Green Purchase Intention: A Meta-Analytic Path Analysis. *Journal of Business Research*, 132, 732–743. <https://doi.org/10.1016/j.jbusres.2020.10.053>
- Zhuang, W., Luo, X., & Riaz, M. U. (2021). On the Factors Influencing Green Purchase Intention: A Meta-Analysis Approach. *Frontiers in Psychology*,

12(April), 1-15.
<https://doi.org/10.3389/fpsyg.2021.644020>

BSN (Badan Standarisasi Nasional). (2009). SNI 2725.3.2009. Ikan Asap - Bagian 3: Penanganan dan Pengolahan. Jakarta.