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MORALITY BEFORE KNOWLEDGE

Factors influencing customer purchase behavior through purchase intention on green cosmetic products

Nency Marbun[1], Filda Rahmiati[1*], R. Stevanus Bayu Mangkurat[2], Yunita Ismail[1]
[1] *President University, Cikarang, Bekasi, West Java 17530, Indonesia;*
[2] *Coordinating Ministry for Maritime Affairs and Investment, Jl. M.H. Thamrin No. 8, DKI Jakarta 10340, Indonesia; International Women University, Jl. Pasir Kaliki No. 179, Bandung, West Java 40173, Indonesia*.
*Correspondence: filda.rahmiati@president.ac.id

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ABSTRACT
Introduction: The cosmetic industry provides several plastic packaging problems for the environment. It has been shown that 120 billion units of packaging are produced annually by the global cosmetic industry. Campaigns for environmentally friendly cosmetic packaging products are growing. This study aims to determine the effect of plastic packaging on the environment. **Methods**: Research on environmentally friendly cosmetic products was conducted by distributing questionnaires through online platforms. The total questionnaire respondents were 215 Generation Z people, and the questionnaire was then analyzed with PLS-SEM. **Findings**: The results showed that personal norms have a significant effect both directly and mediated by green purchase intention on green purchase behavior. **Conclusion**: However, environmental concern does not have a significant effect, even though it has been mediated by green purchase intention on green purchase behavior in environmentally friendly cosmetic products in Indonesia. **Novelty/Originality of this article:** This study explores the factors influencing the purchasing behavior of eco-friendly cosmetic products among Indonesian Generation Z and reveals the critical role of personal norms in driving sustainable consumption. This study provides valuable insights for the cosmetic industry in developing effective marketing strategies for eco-friendly products.

KEYWORDS: green cosmetics; green purchase intention; green purchase behavior.

1. Introduction

It is hard to envision a world devoid of plastics and synthetic polymers today. These materials are deeply ingrained in our daily lives, becoming indispensable in numerous ways. Plastics epitomize globalization and late-stage capitalism, prioritizing profits while often neglecting environmental and human costs. They are omnipresent and used in everything from packaging to industrial applications. However, their environmental impact is profound. We are only beginning to grasp the severe consequences of our reliance on plastic (Stiftung, 2019).

Plastics present a serious global threat to ecosystems and human health. The volume of plastic waste, including tiny micro- and nano-plastics, is expected to double by 2030 (Silva et al., 2021). Adopting environmentally responsible practices, minimizing waste, and embracing recycling is crucial. Making eco-friendly choices is one of the most significant actions consumers can take (Ecofriend, 2023). Despite the rise in plastic use, our oceans

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are drowning in plastic waste. Rapid urbanization has outpaced the development of effective waste management systems (United Nations, 2023).

Over the past few decades, the accumulation of plastic waste has become more noticeable, highlighting its detrimental effects on the environment and public health. Plastic does not biodegrade; it photodegrades, breaking down into smaller particles over centuries (Okafor, 2022). Though plastics are vital for modern society, their waste production continues to escalate, worsening environmental conditions (OECD, 2022).

Plastic remains the dominant material for packaging across various industries, especially cosmetics. This sector significantly contributes to plastic pollution with both macro- and micro-plastics (Schwennicke, 2021). The cosmetics industry has seen substantial growth, notably in Indonesia, where it contributes significantly to the economy and exports despite pandemic challenges (Sinambela, 2022; Ministry of Industry, 2021). The sector's growth is driven by increasing consumer interest in personal care (Dinda et al., 2022).

Recently, there has been a shift towards natural ingredients in cosmetics, driven by consumer awareness of environmental and health issues (Lestari, 2020). Green cosmetics, which use renewable natural ingredients and avoid synthetic chemicals, have gained popularity. Companies respond to this trend by developing and marketing eco-friendly products that align with consumers' sustainability values (Amberg & Fogarassy, 2019).

However, the rapid growth of the cosmetics industry presents environmental challenges, particularly with plastic packaging. Plastic, the primary material for cosmetic packaging, takes millennia to degrade (Nguyen, 2022). Nearly half of cosmetic packaging is plastic, with the global industry producing 120 billion unrecyclable packaging units annually (Erdmane, 2019). In Indonesia, plastic makes up a significant portion of cosmetic packaging, contributing heavily to the nation's plastic waste (Anna, 2018).

Given the increasing plastic waste, reducing plastic use, especially single-use plastics, is essential (Waste4Change, 2021). As interest in personal care rises, so does plastic usage (Riyanti & Suwartono, 2018). Beautifying oneself should not come at the expense of the environment (Nariswari, 2021). Many cosmetic brands launch eco-friendly initiatives, promote sustainable beauty, and encourage recycling (Thegoodtrade, 2016). Examples include brands like By Lizzie Parra, Somethinc, and The Body Shop, which are implementing green initiatives to reduce plastic waste (Nariswari, 2021).

Despite these efforts, consumer awareness about eco-friendly cosmetics remains low in Indonesia, impacting the adoption of green products (Indriani et al., 2019). Strong personal norms can influence eco-friendly purchasing behaviors, but these norms alone are not enough to drive green purchase intentions (Prakash & Pathak, 2017; Pratiwi, 2020). Environmental concerns are significant predictors of green purchasing behavior (Leonidou & Skarmeas, 2017; Schmuck et al., 2018). Educating consumers about the long-term benefits of green products is crucial (Genoveva, 2020).

This research aims to explore the impact of environmental concerns and personal norms on green purchasing behavior for cosmetics in Indonesia. By understanding these factors, we can better promote eco-friendly practices and reduce the environmental footprint of the cosmetics industry.

2. Methods

The research design method that will be applied in this study is a quantitative method, which will be conducted by running an online questionnaire to determine the impact of environmental concerns and personal norms on green purchase intention and green purchase behavior towards green cosmetics in Indonesia. To examine objective theories, quantitative research focuses on investigating the connections between variables. The quantitative methods are intended to address logical questions that are formed by the variables of the research. The basic goal is to reach conclusions and projections that can be applied to different persons, events, and locations (Taherdoost, 2022). PLS-SEM is a

predictive causal technique for statistical model estimation that highlights prediction and includes a structure meant to provide causal explanations (Hair et al., 2017). PLS-SEM is an excellent option for research with small sample sizes, provided the research still complies with the requirements of the minimal sample size (Hair et al., 2014).

In this research, there are two types of collected data. First, data sources are divided into two (primary data and secondary data). Primary data on this research is obtained from online questionnaires via Google Forms to Generation Z through various media platforms. This research uses books, journal articles, and online research for secondary data. Also, this research will assess the inquiries by utilizing measurements-based questions with a Likert scale of 1—5 for strongly disagree until strongly agree.

3. Results and Discussion

The participants in this study were 215 Generation Z members who knew about eco-friendly cosmetics. In fact, the respondents have also purchased environmentally friendly cosmetics in Indonesia. The participants consisted of men and women with various conditions. The Likert scale in the questionnaire was used to distribute 21 question items for the research that assessed the respondents' possible answers.

The result of analyzing the Likert scale is about microclimate. The microclimate is one of the main requirements of urban communities to create thermal outdoor comfort. Open green spaces (RTHs) are an opportunity to create a pleasant microclimate in the community. The microclimate varies from region to region. It depends on the surface of the water pipe, the type of wood, the water level of the running surface, and the construction surface around the open green. According to Obi (2014), plants are essential to the city's microclimate strategy.

3.1 Data analysis

Two methods, namely outer loading and average variance extracted (AVE), were needed to assess the convergent validity. The outer loading of a construct should be 0.708 or higher, according to Hair et al. (2019). When a construct's outer loadings are high, it suggests that the connected indicators have many features that the construct can capture. See the Figure 1 below.

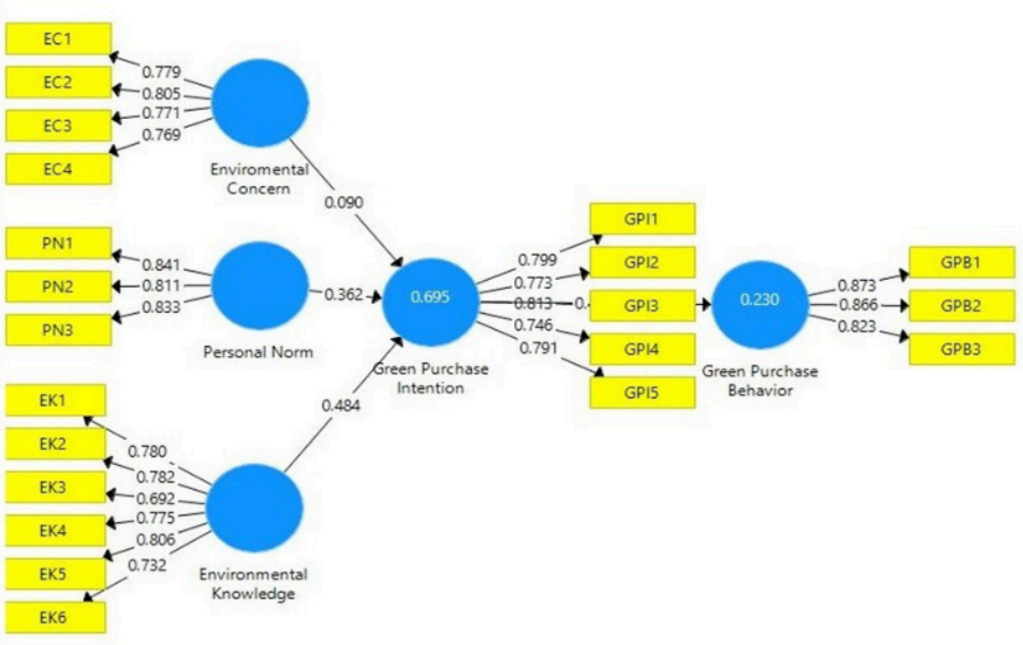

Fig. 1. Outer model result
(SmartPLS processed by researcher, 2023)

All indications are valid since all the outer loading indicator values are higher than 0.708. The AVE is the next stage in determining the convergent validity. The AVE must be more than 0.50, which means that every indicator is valid.

3.1.1 Convergent and discriminant validity

This section evaluates the outer model's discriminant validity using cross-loading, variance inflation factor (VIF), and the Fornell-Larcker criterion. Cross-loading necessitates that each indicator's loading on its variable exceeds its cross-loading on other variables (confirming the model's discriminant validity). The VIF, which should be below 5 to indicate the absence of collinearity, also confirms discriminant validity. The Fornell-Larcker Criterion, though sometimes inconsistent in revealing discriminant validity issues, is satisfied in this analysis. Additionally, the heterotrait-monotrait ratio of correlations (HTMT) indicates discriminant validity since all HTMT values are below 0.9. Therefore, the constructs in the model possess discriminant validity based on these evaluations.

3.1.2 Reliability

Firstly, Cronbach's alpha and Composite reliability can both be used to assess the internal consistency reliability. Cronbach's alpha has a minimum value of 0.7 and a maximum value of 0.8 or 0.9 (Purwanto & Sudargini, 2021). The composite reliability value, however, should be more than 0.70 (Sarstedt et al., 2021). The value of Cronbach's alpha and the composite reliability are all above 0.70, indicating that all the variables are reliable. After determining the validity and reliability of all the variables in this research, which demonstrated that all of the indicators matched all of the criteria for outer model measurement, it came to be able to go on to the inner model analysis. See Figure 2 below.

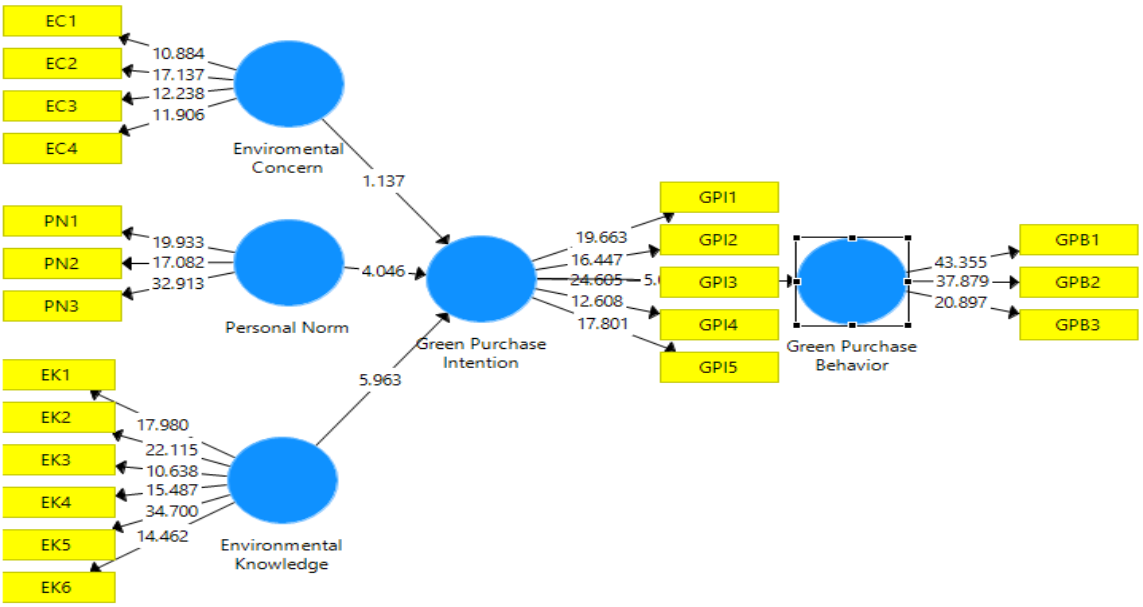

Fig. 2. Inner model measurement
(SmartPLS processed by researcher, 2023)

3.1.3 Path coefficient

The relationship between all of the model's variables is assessed using the path coefficient. While the p-value should be less than 0.05 (significant level = 5%), the level of significance should be taken into consideration in cases where the t-values are more

remarkable than 1.96 (significant level = 5%) (Hair et al., 2017). In this research, three variables have directly significant path coefficients, according to Table 1, while one variable has an insignificant path coefficient. First, environmental concern has no significant influence on green purchase intention, with a statistical value of 1.137, which means that people's concern for the environment does not affect their green purchase intention. Second, green purchase intention positively and significantly influences green purchase behavior with the t-statistic value of 5.091, which means that green purchase intention positively influences people's behavior towards green purchases. Third, personal norms have a positive and significant influence on green purchase intention, with a t statistic value of 4.046, which means that someone's ethical responsibility positively influences their green purchase intention.

Table 1. Path coefficient (indirect effects)

	Original sample	T statistics	P-values	Interpretation
Environmental concern -> green purchase intention -> green purchase behavior	0.043	1.136	0.257	Insignificant
Environmental knowledge -> green purchase intention -> green purchase behavior	0.232	3.496	0.001	Significant
Personal norm -> green purchase intention -> green purchase behavior	0.173	3.355	0.001	Significant

(SmartPLS, constructed by researcher, 2023)

This path coefficient test revealed that the variables of environmental concern have no direct or indirect significant influence on creating intention and purchasing behavior toward green cosmetics products. As we know, the T-value is less than 1.96, and the P-value is more significant than 0.05. The path coefficient between personal norm on green purchase intention as the mediating variable successfully led to green purchase behavior with a t-statistic value of 3.355 more than the t-value, which indicated that this construction is a positively significant influence.

3.1.4 Hypothesis testing (bootstrapping)

The bootstrapping resampling approach is used to test hypotheses, accepting a hypothesis if the t-statistic is greater than 1.96 and the p-value is less than 0.05. This method relies on empirical observations for measurement estimates and standard errors. The hypotheses tested are as follows.

H1: Green purchase intention has a positive and significant influence on green purchase behavior.
H2: Green purchase intention mediates the positive and significant influence of environmental concern on green purchase behavior.
H3: Green purchase intention mediates the positive and significant influence of personal norms on green purchase behavior.

The acceptance or rejection of each hypothesis is discussed below. The influence of environmental concern on green purchase intention shows a t-statistic of 1.137 and a p-value of 0.257, which do not meet the criteria for significance. Therefore, H1, which posits that green purchase intention positively and significantly influences green purchase behavior for green cosmetics in Indonesia, is accepted. However, H2, which suggests that environmental concern mediated by green purchase intention significantly influences green purchase behavior, is rejected due to a t-statistic of 1.136 and a p-value of 0.257. The PLS mediation analysis shows no significant mediation effect (Sarstedt et al., 2021).

Conversely, the influence of personal norms on green purchase behavior, mediated by green purchase intention, is significant, with a t-statistic of 3.355 and a p-value of 0.001.

Hence, H3 is accepted, indicating that personal norms, mediated by green purchase intention, positively and significantly impact green purchase behavior for green cosmetics in Indonesia. The PLS analysis confirms direct and indirect mediation effects (Sarstedt et al., 2021).

3.2 Discussion of findings

3.2.1 The significant influence of green purchase intention on green purchase behavior

Hypothesis 1 (H1) testing showed that green purchase intention (GPI) has a positive and significant influence on green purchase behavior (GPB) of green cosmetics among Generation Z in Indonesia. The statistical T-value of 5.091 is more significant than 1.96, and the p-value is 0.000, more diminutive than 0.05. As a result, hypothesis 1 (H1) is accepted. The value of the sample origin is 0.476, which shows that the direction of influence is positive.

In this research, green purchase intention positively influences the customer's purchase behavior of green products. This proves Pratiwi's (2020) research stating that green purchase intention significantly influences green purchase behavior. The same result also comes from Chaudhary (2018), which stated that green purchase behavior and intention are significantly positively correlated. Green cosmetics products are expected to increase Generation Z's green purchase intention in various ways to increase green consumer purchase behavior. Customers' behavior will be affected by their intention to purchase environmentally friendly products once they have decided to do so. Therefore, customers' decisions to buy environmentally friendly products will be influenced by their environmental concerns, and their behavior in choosing such products will also be impacted (Pratiwi, 2020).

3.2.2 The significant influence of green purchase intention mediates environmental concern and green purchase behavior

Hypothesis 5 (H2) testing showed that environmental concern (EC) does not significantly influence the GPB mediates GPI of green cosmetics in Indonesia according to the findings of evaluating hypothesis 5 (H2), with a T-value of 1.136, which is less than 1.96, and a p-value of 0.257 where greater than 0.05. As a result, hypothesis 5 (H2) is rejected.

This research contradicts the study by Sawitri & Rahanatha (2019), which stated that consumers are choosing green products from marketers as they become more concerned with the environment. These research findings also contradict the study from Alamin & Ratnasari (2019) that people who are more aware and concerned about the environment will significantly influence purchasing decisions. So, it is necessary to improve Generation Z's concern and environmental awareness so that they will intend to buy green products and change their behavior to green purchase behavior towards green cosmetics products in Indonesia.

3.2.3 The significant influence of green purchase intention mediates personal norm and green purchase behavior

The hypothesis (H3) showed that the personal norm on green purchase intention as the mediating variable has a positive and significant influence on green purchase behavior with a t-statistic value of 3.496 more than the t-value of 1.96, while p-values are 0.001 and it is lesser than the 0.05. As a result, the hypothesis (H3) is accepted. The value of the sample origin is 0.232, which shows that the direction of influence is positive.

Based on Pratiwi (2020), the study also found that personal norms and behavior are related to purchasing green products. Prakash & Pathak (2017) also stated that solid personal norms could influence customers' purchasing habits and help to develop green

behavior. The result of this research findings is that personal norms have a significant influence on green purchase behavior and are mediated by green purchase intention, which means customers' norms are essential to developing their intention and behavior to purchase cosmetics products that are environmentally friendly while looking forward to the environment.

4. Conclusions

This research analyzes Generation Z's purchasing behavior towards green cosmetic products in Indonesia. It examines the impact of environmental concerns and personal norms, mediated by green purchase intention, on their green purchase behavior. Data was analyzed using PLS-SEM to measure both outer and inner model parameters. The findings indicate that environmental concern, whether directly or mediated by green purchase intention, does not significantly influence green purchase behavior for green cosmetic products in Indonesia. In contrast, personal norms positively and significantly influence green purchase behavior, both directly and when mediated by green purchase intention. In conclusion, for individuals to intend to buy green cosmetics, their personal norms must be high. More excellent knowledge about green cosmetics leads to more actual purchases, known as green purchase behavior. Future research should explore additional factors influencing green purchase intention and behavior, such as green pricing, green marketing, and attitudes. Further studies could also investigate other generations who have never purchased green cosmetics and focus on the Jabodetabek area.

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References

Alamin, R. F. & Ratnasari, I. (2019). The Effect Of Green Marketing Concept On Consumer Intention To Buy Savana Project Product. *Jambura Science of Management*, *1*(2), 54—64. https://doi.org/10.37479/jsm.v1i2.2499.

Amberg, N. & Fogarassy, C. (2019). Green consumer behavior in the cosmetics market. *Resources*, *8*(3), 137. https://doi.org/10.3390/resources8030137.

Anna, L. K. (2018). Kurangi Limbah Kemasan Kosmetik dengan Produk Isi Ulang. *Kompas.Com*. Retrieved from https://lifestyle.kompas.com/read/2018/01/18/170000820/kurangi-limbah-kemasan-kosmetik-dengan-produk-isi-ulang.

Chaudhary, R. (2018). Green buying behavior in India: an empirical analysis. *Journal of Global Responsibility*, *9*(2), 179—192. https://doi.org/10.1108/JGR-12-2017-0058.

Dinda, G., Tahar, S., Farady, R., & Angreani, N. (2022). Telaah Pesan Kampanye #Bijakkelolasampah pada Instagram @Waste4Change Mengenai Program Send Your Waste yang Berdampak Terhadap Sikap Followers Mengelola Sampah Skincare. *JCommsci: Journal Of Media and Communication Science*, *5*(2), 80—97. https://jcomm.unram.ac.id/index.php/jcomm/article/view/172.

Ecofriend. (2023). Greener Products, Better World. *Ice-Cube Gift & Premium Sdn. Bhd*. Retrived from http://ecofriend.com.my/why-eco-friendly-products.

Erdmane, A. (2019). Sustainability How the Beauty Industry is Feeding Plastic to You and the Planet. *Commercialwaste.Trade*. Retrieved from https://commercialwaste.trade/how-the-beauty-industry-is-feeding-plastic-to-you-and-the-planet/.

Genoveva, G. (2020). Factors Affecting Consumers' Green Purchase Behavior (An Empirical Study of Indonesia Pay Plastic Policy). *International Journal of Business, Economics, and Law*, *10*, 31—36. https://ijbel.com/wp-content/uploads/2016/09/K10_201.pdf.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review*, *26*(2), 106—121. https://doi.org/10.1108/EBR-10-2013-0128.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM). *European Business Review*, *26*(2), 106—121. https://doi.org/10.1108/EBR-10-2013-0128.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling*. Sage.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2—24. https://doi.org/10.1108/EBR-11-2018-0203.

Indriani, I. A. D., Rahayu, M., & Hadiwidjojo, D. (2019). The Influence of Environmental Knowledge on Green Purchase Intention the Role of Attitude as Mediating Variable. *International Journal of Multicultural and Multireligious Understanding*, *6*(2), 627. https://doi.org/10.18415/ijmmu.v6i2.706.

Leonidou, C. N. & Skarmeas, D. (2017). Gray Shades of Green: Causes and Consequences of Green Skepticism. *Journal of Business Ethics*, *144*(2), 401—415. https://doi.org/10.1007/s10551-015-2829-4.

Lestari, D. D. (2020). Green Cosmetic Purchase Intention: Impact of Green Brand Positioning, Attitude, and Knowledge. *Selekta Manajemen: Jurnal Mahasiswa Bisnis & Manajemen*, 16. https://journal.uii.ac.id/selma/article/view/24054.

Ministry of Industry. (2021). Tingkatkan daya saing IKM kosmetik, kemenperin gencarkan restrukturisasi mesin dan peralatan. *Kemenperin.Go.Id*. Retrieved from https://kemenperin.go.id/artikel/22550/Tingkatkan-Daya-Saing-IKM-Kosmetik,-Kemenperin-Gencarkan-Restrukturisasi-Mesin-dan-Peralatan.

Nariswari, S. L. (2021). Peduli Bumi, 5 Brand Kosmetik Ini Menerima Sampah Sisa Produknya. *Kompas.Com*. Retrieved from

https://lifestyle.kompas.com/read/2021/04/22/134027920/peduli-bumi-5-brand-kosmetik-ini-menerima-sampah-sisa-produknya.

Nguyen, V. (2022). The Effect of Sustainable Cosmetic Packaging on the Environment. *Theseus*, *November*, 55. Retrieved from https://www.theseus.fi/handle/10024/788947.

Obi, N. I. (2014). The influence of vegetation on microclimate in hot humid tropical environmenta case of Enugu Urban. *International Journal of Energy and Environmental Research*, *2*(2), 28—38. https://eajournals.org/ijeer/vol-2issue4december-2014/influence-vegetation-microclimate-hot-humid-tropical-environment-case-enugu-urban/.

OECD. (2022). Global Plastics Outlook. In *OECDiLibrary*. OECD. https://doi.org/10.1787/de747aef-en

Okafor, J. (2022). Environmental Impact of Cosmetics & Beauty Products. *Trvst.World*. Retrieved from https://www.trvst.world/sustainable-living/environmental-impact-of-cosmetics/.

Prakash, G. & Pathak, P. (2017). Intention to Buy Eco-Friendly Packaged Products Among Young Consumers of India: A Study on Developing Nation. *Journal of Cleaner Production*, *141*, 385—393. https://doi.org/10.1016/j.jclepro.2016.09.116.

Pratiwi, D. D. (2020). Factors Affecting Green Purchase Behavior of Cosmetic Products Among Millennial Consumers in Indonesia. *Relevance: Journal of Management and Business*, *3*(2), 126—135. https://doi.org/10.22515/relevance.v3i2.2946.

Purwanto, A. & Sudargini, Y. (2021). Partial Least Squares Structural Squation Modeling (PLS-SEM) Analysis for Social and Management Research : A Literature Review. *Journal of Industrial Engineering & Management Research*, *2*(4). https://doi.org/https://doi.org/10.7777/jiemar.v2i4.168.

Riyanti, B. P. D. & Suwartono, C. (2018). Psychometric Evaluation of Newly Developed Self-Assessment of Entrepreneurial Competencies. *International Journal of Applied Business & International Management*, *3*(1). https://doi.org/10.32535/ijabim.v3i1.73.

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market Research* (pp. 1—47). Springer International Publishing. https://doi.org/10.1007/978-3-319-05542-8_15-2.

Sawitri, I. G. A. T. D. & Rahanatha, G. B. (2019). Pengaruh Green Marketing dan Brand Image Terhadap Loyalitas Pelanggan. *E-Jurnal Manajemen Universitas Udayana*, *8*(8), 5267. https://doi.org/10.24843/EJMUNUD.2019.v08.i08.p22.

Schmuck, D., Matthes, J., & Naderer, B. (2018). Misleading Consumers with Green Advertising? An Affect–Reason–Involvement Account of Greenwashing Effects in Environmental Advertising. *Journal of Advertising*, *47*(2), 127—145. https://doi.org/10.1080/00913367.2018.1452652.

Schwennicke, N. (2021). Gozero : A Marketplace for Local and Sustainable Cosmetics and Home Care. *Dipòsit Digital de La Universitat de Barcelona*, 56.

Silva, A. L. P., Prata, J. C., Walker, T. R., Duarte, A. C., Ouyang, W., Barcelò, D., & Rocha-Santos, T. (2021). Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations. *Chemical Engineering Journal*, *405*, 126683. https://doi.org/10.1016/j.cej.2020.126683.

Sinambela, N. M. (2022). Kemenperin: Industri Kosmetik Sumbang PDB 1,78 Persen di Kuartal II 2022. *Kumparan.Com*. Retrieved from https://kumparan.com/kumparanbisnis/kemenperin-industri-kosmetik-sumbang-pdb-1-78-persen-di-kuartal-ii-2022-1z7P6ATCTMI/full.

Stiftung, H. B. (2019). *Plastic Atlas 2019* (L. Fuhr (ed.); First Edit). Heinrich Böll Foundation.

Taherdoost, H. (2022). What are different research approaches? comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limit. *Journal of Management Science & Engineering Research*, *5*(1). https://doi.org/https://doi.org/10.30564/jmser.v.

Thegoodtrade. (2016). 5 Ways The Beauty Industry Is Becoming More Eco-Friendly. *Thegoodtrade*. Retrieved from https://www.thegoodtrade.com/features/5-ways-the-beauty-industry-is-becoming-more-eco-friendly/.

United Nations. (2023). Our Planet is Choking on Plastic. *Unep.Org*. Retrieved from https://www.unep.org/interactives/beat-plastic-pollution/.

Waste4Change. (2021). Solusi Sampah Kosmetik: Zero Waste dan Daur Ulang. *Waste4change.Com*. Retrieved from https://waste4change.com/blog/solusi-sampah-kosmetik-2/.

Biographies of Authors

Nency Marbun, students at President University, Cikarang, Bekasi, West Java 17530, Indonesia.

- Email: nency.marbun@student.president.ac.id
- ORCID: N/A
- Web of Science ResearcherID: N/A
- Scopus Author ID: N/A
- Homepage: N/A

Filda Rahmiati, lecturer at President University, Cikarang, Bekasi, West Java 17530, Indonesia.

- Email: filda.rahmiati@president.ac.id
- ORCID: N/A
- Web of Science ResearcherID: N/A
- Scopus Author ID: 57196190685
- Homepage: https://scholar.google.com/citations?user=kSqGokMAAAAJ&hl=en

R. Stevanus Bayu Mangkurat, Coordinating Ministry for Maritime Affairs and Investment, Jl. M.H. Thamrin No. 8, DKI Jakarta 10340, Indonesia; International Women University, Jl. Pasir Kaliki No. 179, Bandung, West Java 40173, Indonesia.

- Email: sbayumangkurat@iwu.ac.id
- ORCID: N/A
- Web of Science ResearcherID: N/A
- Scopus Author ID: N/A
- Homepage: N/A

Yunita Ismail, lecturer at President University, Cikarang, Bekasi, West Java 17530, Indonesia.

- Email: yunitaismail@president.ac.id
- ORCID: 0000-0002-3297-8850
- Web of Science ResearcherID: GPF-8013-2022
- Scopus Author ID: 57205019607
- Homepage: https://scholar.google.co.id/citations?user=dja2_WgAAAAJ&hl=en