

Received : February, 15, 2023
Accepted : February, 17, 2023
Published : April, 14, 2023

**Conference on Management, Business,
Innovation, Education and Social Science**
<https://journal.uib.ac.id/index.php/combines>

A Study on Consumer Preference towards the Improvements in Online Shopping Overpackaging

Corrinne Mei Jyin Lee¹, Chee Cheng Chong²

Email of author correspondence : corrinne@utar.edu.my

¹Faculty of Accountancy and Management, Universiti Tunku Abdul Rahman, Bandar Sungai Long, Malaysia

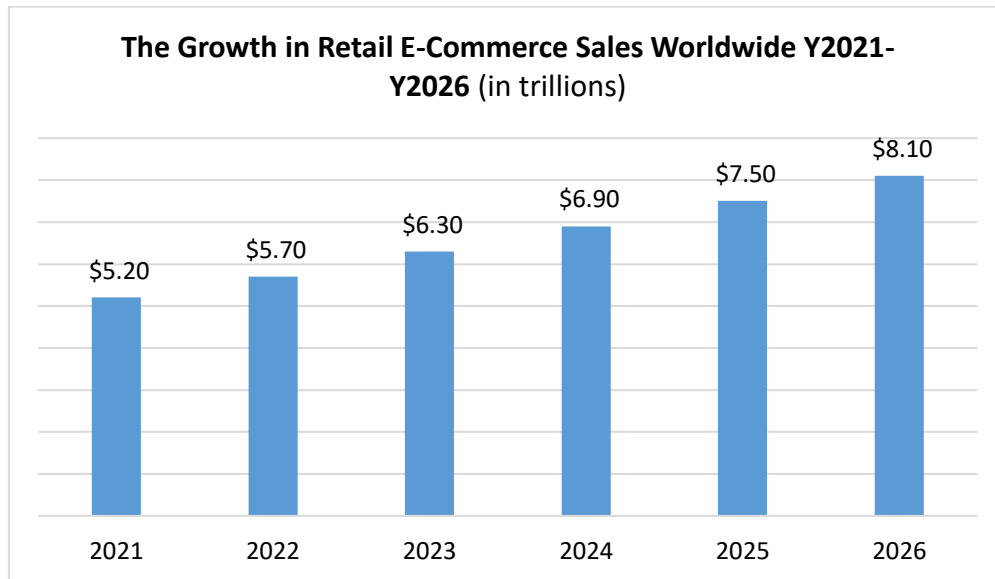
Abstract

Online shopping and delivery services are becoming increasingly popular. The purchase experience of consumers, as well as business processes, have been significantly changed by this phenomenon. Yet, overpackaging issues have caused a major environmental concern when consumers dispose of the packaging after unboxing parcels. A survey of 200 respondents aged above 18 with experience in online shopping was conducted. The study model was developed based on the value co-creation (VCC) theory to investigate consumer preferences towards improvements in online shopping overpackaging. The findings show that implementing packaging material (PM), and environmental concern (EC) have a beneficial impact on consumer preferences. Based on the findings, this paper recommends that online merchants need to be concerned about the packaging material, in view that consumers show their environmental concern to protect the environment. In addition, the government can provide a better recycling system for consumers in relation to the disposal of packaging.

Keywords: Value co-creation, Environmental Concern, Sustainability

Introduction

The number of people who perform online shopping has increased exponentially in recent years. Forbes business magazine predicts that global e-commerce sales will reach \$6.3 trillion in 2023, rising from \$5.2 trillion in 2021, and it is expected to climb to \$8.1 trillion by 2026 (Baluch, 2023).



Source: Baluch (2023)

Figure 1. E-Commerce Sales Trend from Y2021 to Y2026 (in trillions)

The recent pandemic has also contributed to this phenomenon. As consumers are not allowed to go out during lockdowns, they have turned to online channels to perform their shopping activities. This has brought about huge profits among online merchants. For instance, Lazada Malaysia has experienced an 80% growth in sales compared to before the pandemic (Nathan, 2021). Online shopping has enabled consumers to be able to purchase their desired products anytime and anywhere (Xie et al., 2021). It is also forecasted that by 2026, 24% of retail purchases will be performed online.

Even though online shopping has experienced significant growth, it has also posed challenges to sustainable development and environmental protection (Lu et al, 2020). There is a concern about waste and pollution due to overpackaging. In the context of online shopping, overpackaging is defined as using excessive amounts of materials, high weights, big volumes, unnecessary adornments, and incurring additional to extra-high costs for packaging.

Overpacking is often associated with online shopping because the products are generally distributed off-site. When consumers shop online, the parcel will be shipped and delivered to the consumers. During shipping and delivery, some of the products might be damaged when consumers received them. Often when this happens, the online merchant will need to compensate the consumers for the loss, by providing a refund or exchange for another new product. Therefore, it brings about inconveniences and difficulties for these online merchants. Thus, parcels are packed in more than one packaging to prevent damage during delivery. This, in turn, creates the issue known as overpackaging. The overpackaging issue not only causes environmental harm but also unpleasant consumer experiences. Overpackaging also increases the weight of the parcel, and consumers often bear the additional cost of delivery. It is also difficult to unwrap the many layers of the parcel packaging. Due to these negative impacts of overpacking, research in this area is critical.

Improvements in online shopping overpackaging are needed. Both online merchants and consumers are responsible for this overpackaging issue. Consumers' preference against

overpackaging can influence online merchants' decisions to use better packaging solutions. If a large group of consumers express their disapproval of overpackaging, this will pressure online merchants to adopt more sustainable packaging practices. Since consumers are the primary target of online merchants, their opinions can carry significant weight. In addition, improvements in overpackaging could help to reduce environmental problems, such as waste and carbon emissions from the added delivery weight. Thus, to improve on the overpackaging issue, three factors of importance are studied in this research. They are packaging material (PM), new design of packaging (NDP) and the consumers' environmental concern (EC). Improvements in online shopping overpackaging will bring about a different experience for consumers, merchants and the environment. Using the underlining theory of value co-creation, this paper will examine the relationship between packaging material, new design packaging, consumer environmental concern and consumer preference towards improvements in online shopping overpackaging.

Literature Review

a. Value Co-Creation

With more consumers making their purchases through online shopping, it is imperative to investigate the issue of overpackaging related to online shopping. The value co-creation theory points to the active participation and collaborative approach of both the company and the customer in creating value (Prahalad & Ramaswamy, 2004). According to Vargo & Lusch (2008), value co-creation emphasises the importance of understanding and fulfilling customers' needs and preferences, and the process involves consumers in service development and delivery. Therefore, co-creation forms an integral part of the exchange process even in retail e-commerce. This is because it entails individualised interactions that are essential to both consumers and the company (Kruger et al., 2018).

Value co-creation is gaining significance in the current business environment as companies are using it to improve their performance and build strong relationships with their consumers (Saha et al., 2022). Recent studies show a plethora of reasons for companies and consumers to embrace value co-creation. These studies demonstrate that involving customers in the value-creation process leads to greater consumer preference, interactions, satisfaction, and the company's competitive advantage (Bonamigo and Frech, 2021). It is critical to understand the different consumer preferences to build an appropriate marketing strategy (Joshi et al., 2021). Understanding each of the consumers' needs can aid in the development of products and services that satisfy consumers. The gap between consumer preferences and the company's offering can be filled through a better understanding of the consumers' insights.

Among the factors that influence co-creation success are the expertise, aptitude and preference of co-creators, and also the company's commitment and technologies created to set up and efficiently administer a digital engagement platform (Frempong et al., 2020). In this research, the environmental concern is the consumers' aptitude, while packaging material and new design of packaging are the company's commitment towards improvements on online shopping overpackaging.

b. Packaging Material

The packaging material is all the materials that the online merchants used to protect the products from damage, and also to wrap the external packaging material on the products themselves (Yeo et al., 2020). The use of packaging material has caused a degree of carbon impact in online shopping. If better packaging materials are used by online merchants, distributors, and logistic providers, it will bring about less environmental harm after the consumers dispose of the packaging. Packaging materials can be developed from a range of different materials, like corn, rice and soy. These bio-based resources are more environmentally friendly than petroleum-based resources. This is because they are sustainable and recyclable, and less harmful to the environment (Herbes et al., 2018). Using better materials to produce the packaging can be a better choice for online merchants, and also the environment. According to Xie et al. (2021), the improvements in packaging material give consumers a better shopping experience. For instance, the overuse of adhesive tape, boxes, or other non-reusable materials made it difficult for consumers to unbox their parcels. Thus, this paper hypothesises that:

H1: Packaging Material has a relationship with Consumer Preference towards improvements in online shopping overpackaging.

c. Environmental Concern

Environmental concern is the extent to which people are willing to solve the environmental problem that affects the earth (Li et al., 2019). Environmental concern is considered an important factor consumer that will affect consumer preference towards improvements in online shopping overpackaging. The environmental concern is a combination that includes perceptual, behavioural and cognitive components. It determines the level of consumers' environmental worries by assessing their worry or interest in overpackaging, and how well they comprehend the environmental consequences of their activities (Freire et al., 2021). Consumers who prioritise the protection of the environment are likely to change their buying behaviour and become more ecologically conscious (Batool et al., 2016). Consumers' attitude towards environmental protection and personal responsibility can influence their preference for new packaging of online shopping products. Improvements in overpackaging can reduce the environmental problem and change consumers' preferences. Thus, this paper hypothesises that:

H2: Environmental Concern has a relationship with Consumer Preference towards improvements in online shopping overpackaging.

d. New Design of Packaging

Better development of packaging design will enable the packaging to be easier for consumers to remove or provide more environmentally friendly packaging (Xie et al., 2021). For instance, previously the packaging will have a few layers to ensure the products would not get damaged. However, when the new design of the packaging is used, it will be easier to secure the products during the delivery process. Additionally, unboxing the parcels will be easier for consumers. The study by Georgakoudis et al. (2018) suggests that many online merchants develop new and innovative packaging for their products in response to changing consumer preferences. This indicates that online merchants are attempting to remodel or completely restructure their packaging in order to gain a competitive advantage, while also improving their

environmental performance. New design of packaging can reduce waste, improve space efficiency of the packaging, make it easier for consumers to recycle and reduce overall weight. Given the ability of consumers to discern between the new design of packaging, it is possible that consumer preference will occur, depending on whether the new design of packaging aligns with their values and preferences (Steenis et al., 2018). Thus, this paper hypothesises that:

H3: New Design of Packaging has a relationship with Consumer Preference towards improvements in online shopping overpackaging.

Figure 2 presents the research framework of this paper.

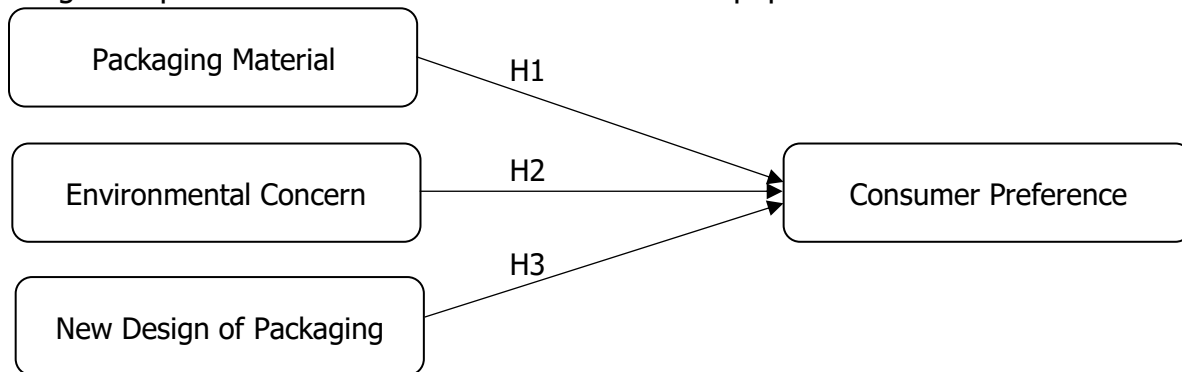


Figure 2. Research framework

Research Methods

To examine the hypotheses of this research, primary data were collected from 200 respondents aged above 18. A screening question was used to ensure that the respondents had experience with online shopping. Prior to collecting the data from these 200 respondents, a pilot test was first performed with 30 participants to ensure the language clarity of the self-administered questionnaire.

The questionnaire consists of 26 questions and was divided into two sections. The first section enquires about the demographic information of the respondents. It consists of 13 questions, including questions on gender, age group, occupation, monthly household and personal income, race, and geographic areas. The second section consists of another 13 questions which measure the dependent variable and the three independent variables. The 5-point Likert scale was used in this section, with 1 as strongly disagree and 5 as strongly agree. The measurements for Consumer Preference, Packaging Material and New Design of Packaging were adapted from Xie et al. (2021), and the measurement for Environmental Concern was adapted from Chuah et al. (2020).

Upon the completion of data collection, the data were screened for missing input, cleaned and coded before transferring to the analysis software. The SPSS (Statistical Package for the Social Sciences) software programme was used to analyse the quantitative data. The data were analysed for its reliability by assessing the Cronbach's Alpha score. Descriptive analysis was used in this research to analyse the demographic information. The inferential analysis was used via multiple linear regression to evaluate the relationship between the variables, and how the dependent variable (consumer preference) changes as the proposed independent variables (packaging material, environmental concern, and new design of packaging) of the research

change. To determine whether hypotheses are accepted or rejected, the beta and p-values were evaluated. If the p-value is less than 0.05, the hypothesis would be accepted and if greater, it would be rejected.

Results and Discussion

Table 1. Respondents Demographic

Demographic	Category	Frequency	Percentage (%)
Gender	Female	97	48.5
	Male	103	51.5
Age Group	18 – 25 years old	89	44.5
	26 – 35 years old	43	21.5
	36 – 45 years old	37	18.5
	Above 45 years old	31	15.5
Occupation	Student	80	40.0
	Employed	74	37.0
	Self-employed	36	18.0
	Unable to Work	2	1.0
	Others	5	4.0
Monthly Household Income	Less than RM1,999	34	17.0
	RM2,000 – RM3,999	44	22.0
	RM4,000 – RM5,999	47	23.5
	RM6,000 – RM7,999	18	9.0
	RM8,000 and above	57	28.5
Geographic Area	Rural	89	44.5
	Urban	111	55.5
Highest Education Level	High School Graduate	33	16.5
	Diploma	42	21.0
	Bachelor’s Degree	113	56.5
	Postgraduate Degree	9	4.5
	Others	3	1.5
How often do you purchase through online shopping?	Never	0	0
	1 to 5 times per month	162	80.0
	6 to 10 times per month	26	13.0
	More than 10 times per month	12	6.0
How much do you spend on online shopping per month?	Below RM100	41	20.5
	RM100 – RM199	50	25.0
	RM200 – RM299	43	21.5
	RM300 – RM399	29	14.5
	RM400 – RM499	4	2.0
	RM500 – RM599	17	8.5
	RM600 – RM699	5	2.5
	RM700 – RM799	0	0
	RM800 – RM899	1	0.5
	RM900 – RM999	1	0.5
RM1,000 and above	9	4.5	

Table 1 shows the respondents' demographic information. The table includes the demographic category with the frequency and percentage.

Table 2. Mean Score and Reliability

Variables	Mean Score	Reliability
Consumer Preference	4.14	0.69
Packaging Material	4.39	0.62
Environmental Concern	4.14	0.79
New Design of Packaging	4.24	0.87

Table 2 shows the mean score and reliability score of the studied variables. The mean score for Consumer Preference is 4.14. While the mean score for Packaging Material is 4.39, Environmental Concern is 4.14, and New Design of Packaging is 4.24. The Consumer Preference's reliability score is 0.69, Packaging Material reliability score is 0.62, Environmental Concern is 0.79 and New Design of Packaging has a reliability score of 0.87. Thus, the variables Cronbach Alpha scores dictate reliability.

Table 3. Pearson Correlation Coefficient Analysis

	Consumer Preference	Packaging Material	Environmental Concern
Consumer Preference			
Packaging Material	0.552**		
Environmental Concern	0.329**	0.369**	
New Design of Packaging	0.349**	0.511**	0.419**

**Correlation is significant at the (0.01) level (2-tailed)

Table 3 shows the Pearson correlation coefficient analysis for all variables. Pearson Correlation Coefficient analysis is used to measure the relationship between variables. It shows that the Packaging Material has a value 0.552, Environmental Concern with a value of 0.329, and New Design of Packaging with a value of 0.349. All the variables have a moderate correlation strength with Consumer Preference. The results from the Correlation Coefficient analysis among the independent variables also show that multicollinearity is not a concern in this research.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.569 ^a	0.324	0.314	0.52063

a: Independent Variables (Packaging Material, Environment Concern, New Design of Packaging)

b: Dependent Variable (Consumer Preference)

Table 4 shows the model summary of independent variables and dependent variable. The R square is a statistical technique that quantifies the proportion of variation explained the variables (Fernando, 2021). The R square is 0.324. Additionally, the Adjusted R Square is 0.314, and the Standard Error of the Estimate is 0.521. The Adjusted R-Square indicates that 31.4% of the changes in Consumer Preference can be explained by Packaging Material, Environment Concern and New Design of Packaging.

Table 5: Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	p
1 (Independent Variables)	0.904	0.344		2.630	0.009

Packaging Material	0.561	0.082	0.478	6.856	0.000
Environmental Concern	0.136	0.068	0.132	2.003	0.047
New Design of Packaging	0.047	0.068	0.049	0.691	0.490

a: Dependent variable: Consumer Preference

Based on Table 5, multiple linear regression model formed an equation below:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p$$

Where,

Y= Consumer Preference

X₁= Packaging Material

X₂=Environmental Concern

X₃= New Design of Packaging

b₀= the intercept

b=estimated regression coefficient

Therefore,

$$\text{Consumer Preference} = 0.904 + 0.561(\text{Packaging Material}) + 0.136(\text{Environmental Concern}) + 0.047(\text{New Design of Packaging})$$

Table 5 shows the Regression Analysis for the three independent variables, that is Packaging Material, Environmental Concern, and New Design of Packaging. It shows that two variables have a p-value of less than 0.05, and they are Packaging Material (b=0.561, p<0.001) and Environmental Concern (b=0.136, p=0.047). This indicates that the two variables have a positive and significant relationship with Consumer Preferences. Therefore, H1 and H2 are supported. However, New Design of Packaging does not have a significant relationship with Consumer Preference since the p-value of 0.490 was more than 0.05. Thus, H3 (b=0.047, p>0.490) is not supported.

The current study provides insight into the relationship between Packaging Material, Environmental Concern, New Design of Packaging and Consumer Preferences. Packaging Material has a positive and significant relationship with Consumer Preference.

This finding supports the view of Xie et al. (2021), who also reported a positive and significant relationship between Packaging Material and Consumer Preference. This paper emphasises that the improvements in packaging material will have an impact on consumer preference. This indicates that consumers are typically satisfied with the improvements. Non-recyclable packaging materials that harm the environment should be replaced with recyclable alternatives to promote sustainability. Thus, Packaging Material should be given more attention to appeal to consumers.

Meanwhile, Environmental Concern is found to have a positive and significant relationship with Consumer Preference. This study confirms the finding of Batool et al. (2016), who found that Environmental Concern and Consumer Preference for improvements in online shopping overpackaging have a positive and significant relationship. This suggests that consumers are willing to change their purchase behaviour to eco-friendly or less harmful options due to their environmental protection and personal responsibility. The protectionist feelings towards the natural environment will naturally change consumers buying behaviour as

they become more environmentally concerned. Additionally, online shopping can also provide recommendations to consumers for environmentally friendly packaging or services, to raise the environmental concern of consumers. Thus, protectionist feelings towards the environment will affect consumer preference towards improvements in overpackaging. Nonetheless, the New Design of Packaging shows a negative and non-significant relationship with Consumer Preference.

This research contributes to the literature by examining the issue of online shopping relating to consumer preference. The theory of value co-creation was used to investigate the issue. It analyses consumer preferences for overpackaging in online shopping from the perspectives of consumers and online merchants. The research also provides new insights into the improvements of online shopping overpackaging and determines more suitable options for consumers. It highlights the critical role of merchants in utilising better packaging materials. The implementation of this framework enriches relevant research, especially on online shopping and it could also be extended to other fields such as logistics.

As for the practical implications, this research offers merchants advice on how to develop a consumer-friendly solution. It also includes tactics and techniques to encourage consumers to behave in an environmentally friendly manner. Besides, the government can increase consumers' environmental concerns by providing a proper recycling system for consumers to recycle or reuse the packaging after they unbox their parcels. Recognising the recyclability of packaging and the effect of overpackaging on public health and the environment might help consumers become more environmentally concerned.

On the other hand, this research had several limitations. We highlight two specific limitations here. Firstly, the research focused only on online merchants and consumers and did not take the government's perspective into account. Since the government has a strong executive ability to handle the issue of overpackaging, future studies can include this perspective in the research. Secondly, technological advancements in overpacking improvements were also not studied in this research. As technology is rapidly evolving, future studies can also explore the latest packaging technologies.

Conclusions

In conclusion, packaging material and environmental concern were observed to have a significant relationship with consumer preference. However, new design of packaging does not have a significant relationship with consumer preferences. Therefore, online merchants should use recyclable packaging material, as consumers will change their purchase behaviour towards something more eco-friendly due to their environmental protection and personal responsibility. Moreover, the government can provide a better recycling system for the proper disposal of packaging. This research contributes to the body of knowledge and provides practical implications by delivering new insights on the issue of overpackaging in online shopping, and also by connecting the notion of consumer preferences to the concept of value co-creation.

References

Baluch, A. (2023, March 10). *38 e-commerce statistics of 2023*. Retrieved from Forbes: <https://www.forbes.com/advisor/business/ecommerce-statistics/#:~:text=Mobile>

- Batool, I., & Saeed, M. S. (2016). Analysis of Factors Influencing Green Consumption Behavior, A Comparison of Pakistani and Canadian Consumers. *Journal of Culture, Society and Development*, 23, 27-35.
- Bonamigo, A., & Frech, C. G. (2021). Industry 4.0 in services: Challenges and opportunities for value co-creation. *Journal of Services Marketing*, 35(4), 412-427.
- Chuah, S. H. W., El-Manstrly, D., Tseng, M. L., & Ramayah, T. (2020). Sustaining customer engagement behavior through corporate social responsibility: The roles of environmental concern and green trust. *Journal of Cleaner Production*, 262, 121348.
- Fernando, J. (2021, September 12). *R-Squared Definition*. Retrieved from Investopedia; Dotdash Meredith. <https://www.investopedia.com/terms/r/r-squared.asp>
- Freire, O., Quevedo-Silva, F., Frederico, E., Vils, L., & Junior, S. S. B. (2021). Effective scale for consumers' environmental concerns: A competing scales study between NEP and ECCB. *Journal of Cleaner Production*, 304, 126801.
- Frempong, J., Chai, J., Ampaw, E. M., Amofah, D. O., & Ansong, K. W. (2020). The relationship among customer operant resources, online value co-creation and electronic-word-of-mouth in solid waste management marketing. *Journal of Cleaner Production*, 248, 119228.
- Georgakoudis, E. D., Tipi, N. S., & Bamford, C. G. (2018). Packaging redesign—benefits for the environment and the community. *International Journal of Sustainable Engineering*, 11(5), 307-320.
- Herbes, C., Beuthner, C., & Ramme, I. (2018). Consumer attitudes towards biobased packaging—A cross-cultural comparative study. *Journal of Cleaner Production*, 194, 203-218.
- Joshi, Y., Uniyal, D. P., & Sangroya, D. (2021). Investigating consumers' green purchase intention: Examining the role of economic value, emotional value and perceived marketplace influence. *Journal of Cleaner Production*, 328, 129638.
- Kruger, C., Caiado, R. G. G., França, S. L. B., & Quelhas, O. L. G. (2018). A holistic model integrating value co-creation methodologies towards the sustainable development. *Journal of Cleaner Production*, 191, 400-416.
- Li, G., Li, W., Jin, Z., & Wang, Z. (2019). Influence of environmental concern and knowledge on households' willingness to purchase energy-efficient appliances: A case study in Shanxi, China. *Sustainability*, 11(4), 1073.
- Lu, S., Yang, L., Liu, W., & Jia, L. (2020). User preference for electronic commerce overpackaging solutions: Implications for cleaner production. *Journal of Cleaner Production*, 258, 120936.
- Nathan, L. (2021, January 1). *The boom of e-commerce in Covid-19 era*. Retrieved from The Malaysian Reserve: <https://themalaysianreserve.com/2021/01/01/the-boom-of-e-commerce-in-covid-19-era/>
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5-14.
- Saha, V., Goyal, P., & Jebarajakirthy, C. (2022). Value co-creation: A review of literature and future research agenda. *Journal of Business and Industrial Marketing*, 37(3), 612–628.

- Steenis, N. D., van der Lans, I. A., van Herpen, E., & van Trijp, H. C. (2018). Effects of sustainable design strategies on consumer preferences for redesigned packaging. *Journal of Cleaner Production*, 205, 854-865
- Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1-10.
- Xie, G., Huang, L., Apostolidis, C., Huang, Z., Cai, W., & Li, G. (2021). Assessing Consumer Preference for Overpackaging Solutions in E-Commerce. *International Journal of Environmental Research and Public Health*, 18(15), 7951.
- Yeo, S. F., Tan, C. L., Lim, K. B., & Khoo, Y. H. (2020). Product packaging: Impact on customers' purchase intention. *International Journal of Business and Society*, 21(2), 857-864.