





# “Perceived health risk, online retail ethics, and consumer behavior within online shopping during the COVID-19 pandemic”

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# PERCEIVED HEALTH RISK, ONLINE RETAIL ETHICS, AND CONSUMER BEHAVIOR WITHIN ONLINE SHOPPING DURING THE COVID-19 PANDEMIC

## Abstract

The risk of virus contracting during the COVID-19 pandemic has changed consumer preference for online shopping to meet their daily needs than shopping in brick-and-mortar stores. Online shopping presents a different environment, atmosphere, and experience. The possibility of ethical violations is higher during online than face-to-face transactions. Therefore, this study was conducted to investigate the influence of perceived health risk and customer perception of online retail ethics on consumer online shopping behavior during the COVID-19 pandemic, involving seven variables, namely perceived health risk, security, privacy, non-deception, reliability fulfillment, service recovery, and online shopping behavior. The data were collected through an online survey by employing the purposive sampling technique to a consumer who has shopped online during the COVID-19 pandemic in Indonesia. 315 valid responses were obtained and analyzed through quantitative method using SEM-Amos. The results showed that perceived health risk and four variables of online retail ethics including security, privacy, reliability fulfillment, and service recovery affected online shopping behavior. Meanwhile, non-deception was found to have an insignificant effect. The coefficient value proved perceived health risk to be more dominant in influencing online shopping behavior than the variables of online retail ethics. Thus, consumers pay more concern for their health during online shopping. However, positive consumer perceptions of the behavior of online retail websites in providing services also can encourage consumers to shop online during this pandemic.

**Keywords** health, security, privacy, non-deception, fulfillment, service recovery, Indonesia

**JEL Classification** M31, L81

## INTRODUCTION

The COVID-19 pandemic has affected the economy, regional and global policies, and social behavior of people. The increasing spread of the virus to different parts of the world starting from December 2019 has led to its labeling as a pandemic by the World Health Organization (WHO) on March 11, 2020, and the call for countries to take urgent and aggressive actions in response. Therefore, quarantine, as well as social and economic isolation, was implemented in several countries, regions, and different economic sectors to curb its further spread (Diele-Viegas & Pereira, 2020)

The Indonesian National Committee for Handling COVID-19 and Economic Recovery reported that the number of COVID-19 cases in Indonesia increased every month from March to December 2020, as observed in 1,528 confirmed cases, 81 recovered, and 136 death recorded in March, and increment to 743,198 confirmed cases, 611,097 recovered, and 22,138 deaths in December. The Indonesian govern-

ment therefore limited activities in the country to curb the spread of the virus through the “Large-Scale Social Restriction Policy” implemented in several regions starting from March 2020. This policy hampered human interaction and movement and disrupted economic activity. This further affected people’s physical activities and daily behavior in the form of a shift from offline to online practices such as working, studying, and worshipping from home. This shows health and safety are the main concerns of the people in recent times.

The consumption pattern of people also changed due to the need to follow the governmental advice to stay at home and minimize physical contact to maintain personal and family health and cut the chain of the spread of the virus during the pandemic. This is observed from their shift from the conventional shopping method, which involves directly visiting shops, to the search for information and purchases of products and services online through electronic devices connected to the Internet. Following the data reported by Exabytes, a hosting service provider company in Indonesia through a written statement by Tirto.id, the number of e-commerce subscribers has increased by 38.3 % during the COVID-19 pandemic from January to July 2020. The report on “Big Data Overview of the Impact of COVID-19 2020” compiled by the Indonesian Central Bureau of Statistics (BPS) showed that online sales jumped sharply compared to sales in early 2020 as indicated by the 320% increment in March 2020 followed by a sharper increase to 480% in April 2020. Payment System Policy Department of Bank Indonesia (BI) also stated that e-commerce transactions increased by 26 % with the daily transactions increased to IDR 4.8 million during this pandemic. The most purchased items were recorded to be food and beverage products, clothing products, sports equipment, medical devices, communication equipment, cosmetics, household supplies, and educational equipment.

People consider shopping online as a safer alternative to prevent the virus during this period of a pandemic than at a physical store. Meanwhile, online shopping presents a different environment, atmosphere, and experiences when compared to offline shopping, even for identical products (Lu et al., 2013). There is a possibility of experiencing more ethical violations during online than offline transactions (Citera et al., 2005) and several online retail practices have been discovered to be violating consumer rights. This presents the biggest challenge for consumers considering transactions using online platforms, especially during the COVID-19 pandemic. Therefore, this study was conducted to investigate the effect of perceived health risk and customer perception of online retail ethics on consumer online shopping behavior during the COVID-19 pandemic.

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## 1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Pandemic is not a new phenomenon in modern society, the spread of the virus has been reported to be largely triggered by population density (Kang et al., 2020; Rocklöv & Sjödin, 2020), high levels of human mobility, mass socialization, socio-cultural events, and tourism (Praharaj & Vaidya, 2020; Ito et al., 2020; McCloskey et al., 2020). Similar to previous pandemics, COVID-19 has also caused significant changes at all levels of society, affecting thoughts and lifestyles of individuals in urban and rural communities, regions, and countries (Li et al., 2020; Baker et al., 2020; Guerrieri

et al. 2020; Di Gennaro et al., 2020; Atkeson, 2020; Eichenbaum et al., 2020; Farboodi et al., 2020; Gormsen & Koijen, 2020). The COVID-19 pandemic changed consumer shopping behavior, and the existence of consumer concerns about the risk of being infected with the virus when shopping by visiting malls and stores encourages consumers to stay at home, reducing physical interactions between humans by adopting e-commerce as a safer alternative than shopping at brick-and-mortar stores.

Many studies investigate consumer shopping behavior related to the COVID-19 pandemic. Baker et al. (2020) examined household spending during the COVID-19 outbreak in the United States. It was found that decreased human movement has re-

sulted in decreased spending across all categories. The fewer people move, the less they spend on restaurants or making purchases at brick-and-mortar stores. Gao et al. (2020) confirmed that the pandemic increases consumer behavior in purchasing food online. Butu et al. (2020) also observed the same trend for fresh vegetable products. The consumers were discovered to prefer buying fresh vegetables online with the products delivered directly by the producers and this has led to the intention to adopt a purchasing system from the short food supply chain (SFSCs) after the COVID-19 pandemic. Otherwise, Salem and Md Nor (2020) focused on consumers shifting behavior from shopping at physical stores to e-commerce in Saudi Arabia during this COVID-19 pandemic. It was confirmed that risk-taking propensity has a significant effect, whereas the perceived health risk was not to have a significant effect on consumers' intention to adopt e-commerce. Practically, some people still visit malls or stores to shop without caring about contracting COVID-19.

Perceived risk is defined as the potential loss and uncertainty in achieving the expected result (Forsythe & Shi, 2003; Featherman & Pavlou, 2003; Kim et al., 2008). Meanwhile, Hassan et al. (2006), Glover and Benbasat (2010), Zheng et al. (2012) defined the risk in online shopping as the expectation of a loss or negative consequences from the use of online shopping. Huang et al. (2004), and Mandrik and Bao (2005) stated that it is a subjective assessment of the possibility of loss or injury as well as unfavorable perceptions of oneself and others in the context of online shopping.

Perceived risk theory has been implemented since the 1960s to explain consumer behavior and the risk contexts are different depending on the challenges experienced in each era. San Martín and Camarero (2009), Tsai and Yeh (2010), Almousa (2011), Moshrefjavadi et al. (2012), and Masoud (2013) determined some risks considered to have a significant influence on consumer behavior in online purchases, such as financial, product, convenience, health, quality, time, delivery, after-sale, performance, psychological, social, and privacy risks. Zhang et al. (2012) also highlighted five out of these risks including those associated with health, quality, time, delivery, and after-sale to be the most dominant.

In the current pandemic situation, contracting the virus is a big threat to societies. This study, however, focused on health as a variable for perceived health risk. Perceived health risk is often referred to as perceived likelihood and vulnerability to becoming sick or a person's vulnerability to contracting a disease and its severity (Brewer et al., 2004; Brewer & Fazekas, 2007). The higher a person perception of the vulnerability and severity of a disease, the higher the probability for a person behavior to mitigate the risk of contractions (Chapman & Skinner, 2008). Meanwhile, Salem and Md Nor (2020) stated that the perceived health risk as a person perception of the potential health hazards is likely to be experienced while shopping physically at malls and stores during the pandemic. Referring to Salem and Md Nor (2020), in this study perceived health risk was defined as the danger of contracting the virus when visiting malls and shops during this pandemic.

Cone Health (2020) proposed several ways to prevent the spread of the virus such as maintaining social distancing, washing hands, avoiding touching the face, nose, eyes, or mouth, and staying at home. In the context of decision-making, people naturally consider options with lower risks. Social distancing and staying at home have been discovered to be an action that deliberately reduces close physical contact with people in crowded places such as malls and shops to prevent the potential transmission of the virus to families and communities during this pandemic. Therefore, the use of e-commerce is considered to have a lower risk when compared to other shopping methods during this period.

Online shopping has a different environment, atmosphere, and experiences compared to offline shopping (Lu et al., 2013). Consumers in brick-and-mortar stores touch and feel the product to be bought first-hand while online shopping requires interacting in a virtual space consisting of a technical interface instead of the normal employees in a physical space. This means online buyers cannot inspect physically their potential purchases. The assessment and evaluation of the product attributes are limited to the information presented by the seller on the website. Therefore, consumers are faced with uncertainty and worry mainly associated with the ethics of online retail outlets in fulfilling their services.

Citera et al. (2005) showed higher possibility of ethical violations during online than face-to-face transactions. Several unethical practices by online retailers have been discovered, such as false testimonials, persuasive but deceptive advertisements, images or photos not in accordance with the original product, lack of information disclosure or product information on the website, mismatches of goods sent with consumer expectations, delivery of damaged goods because of wrong packaging, fraudulent acts where sellers do not send products paid for by consumers, credit card crimes, and rampant spamming actions to send online catalogs via buyer email, which is considered intrusive to the privacy.

Roman (2007) focused on the ethics of online retailing, and described customer perception regarding online retail ethics (CPEOR) as “a consumer perceptions about the integrity and responsibility of the company (behind the website) in its attempt to deal with consumers in a secure, confidential, fair and honest manner that ultimately protects consumers’ interests” (p. 134). Cheng et al. (2014) also studied the consumer perceived ethics from transaction process perspective, and defined electronic transaction ethics (eTransEthics) as “positive consumer perceptions about the behavior of an e-commerce company that handles consumers in a confidential, fair, honest, and sincere manner during the transaction process” (p. 3). Agag et al. (2016) focused on buyer perception of seller ethics (BPSE), and defined consumer perception in relation to the ethical behavior of online transactions as “positive consumer perceptions about the behavior of e-retailers that handle consumers in a confidential, fair, honest, and sincere manner that ultimately protects consumers’ interests” (p. 11).

Several studies have measured the perception of consumers on the ethics of online retail. According to Bush et al. (2000), those are including security of transactions, fraud, hacking, privacy, and honesty or truthfulness. Moreover, Stead and Gilbert (2001) showed three main points defining ethics in e-commerce to be privacy, security, and conflicts of interest, while Roman (2007) also indicated four measurement dimensions including security, privacy, non-deception, and functionality/reliability. Furthermore, Cheng et al. (2014) used four valid measurement scales including sales behavior, priva-

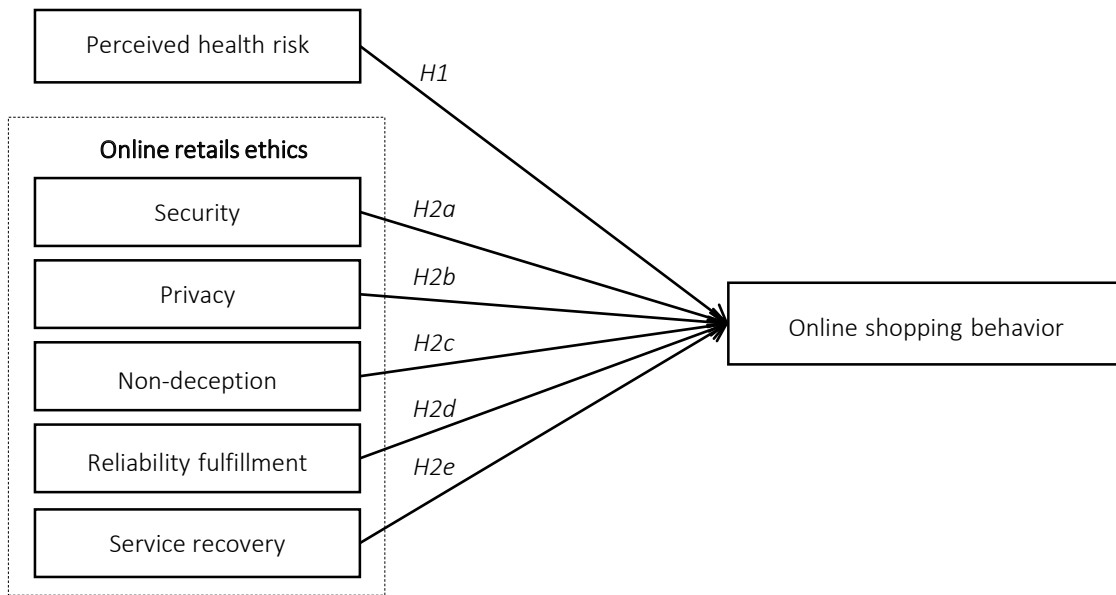
cy, security, and fulfillment to assess the perceived ethics in electronic transactions. Agag (2019) also identified several ethical problems in the context of B2B e-commerce, and these were used to form the seven dimensions including privacy, security, non-deception, reliability, service recovery, shared value, and communication in the BPSE model.

These findings were used in this study to formulate the five dimensions to measure customer perception ethics of online retail, which consist of security, privacy, non-deception, fulfillment reliability, and service recovery.

1. *Security* is the consumer perception of online transaction security and the protection of consumer financial information from unauthorized access (Roman, 2007).
2. *Privacy* is the consumer perception of the protection of individual identification information on the internet (Bart et al., 2005).
3. *Non-deception* refers to the confidence of consumers that online retailers serve honestly and do not use fraudulent practices and negative persuasion for consumers to buy their offerings (Limbu et al., 2011).
4. *Reliability fulfillment* is the timeliness of online purchase delivery, accurate product representation on online retail websites, and technical functioning of the product as promised by online retail websites (Wolfenbarger & Gilly, 2003; Shergill & Chen, 2005).
5. *Service recovery* is the consumer perception of online retail companies’ fairness in recovery efforts regarding actions used as a response to their service failure (Grönroos, 1998).

The perspectives of parties involved in online trading regarding ethical behavior are very complex and those are important to consumer behavior. Meanwhile, this pandemic requires deliberate restraint of physical contact, and online shopping has been discovered by people to be a safer way to avoid the spread of the virus. This, therefore, means the need to protect transaction security, maintain the confidentiality of information, act fairly and honestly, and protect consumers in the form of on-





**Figure 1.** The model

line retailers’ ethical behavior affecting customer behavior in using the platform at this period.

It is proved that customer perception towards online retail ethics affects attitude to the website, trust in the website, customer satisfaction, customer loyalty, word-of-mouth, revisit intention, and repurchase intention (Román & Cuestas, 2008; Limbu et al., 2012; Agag & Elbeltagi, 2014; Elbeltagi & Agag, 2016; Jensen & Limbu, 2018; Agag, 2019). Meanwhile, there are few studies on customer perception of online retail ethics towards online shopping behavior especially in this pandemic era where health is the main factor considered by people.

Based on the literature review, the objective of the study is to investigate the effect of perceived health risk and customer perception of online retail ethics involving security, privacy, non-deception, reliability fulfillment, and service recovery on customer behavior during online shopping during the COVID-19 pandemic especially in the Indonesian context.

In line with the objective of this study, the following hypotheses are therefore proposed (Figure 1):

*H1: The higher perceived health risk of shopping in brick-and-mortar stores has a positive effect on consumer behavior in online shopping during the COVID-19 pandemic.*

*H2a: Consumer perception of security of online shopping has a positive effect on customer behavior in online shopping during the COVID-19 pandemic.*

*H2b: Consumer perception of privacy of online shopping has a positive effect on consumer behavior in online shopping during the COVID-19 pandemic.*

*H2c: Consumer perception of non-deception of online shopping has a positive effect on consumer behavior in online shopping during the COVID-19 pandemic.*

*H2d: Consumer perception of reliability fulfillment of online shopping has a positive effect on consumer behavior in online shopping during the COVID-19 pandemic.*

*H2e: Consumer perception of service recovery of online shopping has a positive effect on consumer behavior in online shopping during the COVID-19 pandemic.*

## 2. METHODOLOGY

This study used a questionnaire as the instrument to test the proposed hypotheses. It was developed by adapting the validated scales from the previous literature to the current context. The question-

naire consists of two main parts. The first one is designed to cover socio-demographic characteristics of the respondents such as gender, age, employment status, monthly expenditure, and intensity of online shopping during the pandemic. The second one focuses on the question items related to the construct proposed in the model and measured using a five-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5).

The question items were checked by 10 respondents after the questionnaire was compiled, and feedback was provided on the wordings of the sentences, which led to small changes. Preliminary pilot testing of the modified questionnaires was conducted among 50 respondents. The questionnaire was distributed randomly online using a purposive sampling technique, with the focus on respondents who have shopped online during the COVID-19 pandemic. It is important to ensure that the questionnaire items were valid and reliable.

The results of preliminary testing of the questionnaire were evaluated using confirmatory factor analysis (CFA) for the validity and determined

using Cronbach’s alpha for the reliability of the research instrument through SPSS. The validity was tested to ensure the question items can be used to measure a concept precisely and correctly, and those with high validity are believed to have the ability to explain the research problem according to actual circumstances or events. Hair et al. (2010) considered an item to be valid when its factor loading is higher than 0.70. Meanwhile, the reliability was tested to ensure the question items show the same degree of precision, accuracy, stability, or consistency when measured at different times (Sekaran & Bougie, 2016), and an item is considered reliable when the lower bound for the Cronbach’s alpha coefficient is 0.70 (Hair et al., 2010). All the question items used in this study met the validity and reliability criteria by having factor loading higher than 0.70 and a reliability scale higher than 0.80. Therefore, all the final 29 items obtained from the pilot test were used as indicator variables in this study as shown in the questionnaire presented in Appendix A.

Online surveys usually take a longer period for data collection, but in this study, the time was limited to one week due to the rapidly changing na-

**Table 1.** Demographic profile of the respondents

	Items	Frequency	Percentage
Gender	Male	90	28.6
	Female	225	71.4
Age	17-25 years old	198	62.9
	26-35 years old	31	9.8
	36-45 years old	64	20.3
	46-55 years old	14	4.4
	Above 55 years old	8	2.5
	Employment status	Student	186
	Employee	87	11.4
	Entrepreneur	14	4.4
	Housewife	11	3.5
	Others	17	5.4
Expenses per month	< IDR 2,500,000	188	59.7
	IDR 2,500,000.– IDR 5,000,000	62	19.7
	IDR 5,000,000.– IDR 7,500,000	16	5.1
	IDR 7,500,000.– IDR 10,000,000	14	4.4
	> IDR 10.000.000	35	11.1
Online shopping intensity during the COVID-19 pandemic (per month)	1-3 times	61	19.36
	3-6 times	125	39.8
	7-10 times	102	32.3
	Above 10 times	27	8.6
Increased intensity of online shopping during COVID-19 pandemic	Increased	228	72.4
	Not increased	87	27.6

**Table 2.** Reliability and validity result

Constructs	Items	Standardized loading	Cronbach's alpha	CR	AVE
Perceived health risk	PHR1	0.858	0.943	0.936	0.786
	PHR2	0.906			
	PHR3	0.938			
	PHR4	0.842			
Security	SC1	0.776	0.913	0.907	0.710
	SC2	0.853			
	SC3	0.880			
	SC4	0.858			
Privacy	PV1	0.925	0.847	0.909	0.834
	PV2	0.901			
Non-deception	ND1	0.766	0.847	0.861	0.676
	ND2	0.942			
	ND3	0.744			
Reliability fulfillment	RF1	0.743	0.866	0.816	0.596
	RF2	0.781			
	RF3	0.792			
Service recovery	SR1	0.709	0.867	0.800	0.572
	SR2	0.767			
	SR3	0.790			
Online shopping behavior	OSB1	0.837	0.965	0.936	0.647
	OSB2	0.824			
	OSB3	0.831			
	OSB4	0.750			
	OSB5	0.761			
	OSB6	0.780			
	OSB7	0.811			
	OSB8	0.836			

ture of the COVID-19 pandemic. The survey was conducted from 7<sup>th</sup> to 13<sup>th</sup> of December, 2020, and a questionnaire was distributed to randomly selected college students, employees, entrepreneurs, and housewives that shopped online during the COVID-19 pandemic. 326 responses were received of which 315 were completed and used for the final analysis using the SEM Amos tool. Moreover, Hair et al. (2010) required sample size to be at least 5-10 times the number of indicators in a model to test a structural model with SEM and due to the use of 29 indicators in the current model, a sample size of 315 satisfied this requirement. Table 1 presents the details of the respondents' socio-demographic characteristics.

The results showed more than half of the respondents, represented by approximately 71.4 %, were women; 62.9 % were between 17 and 25 years old, 26 to 35 years old were 9.8 %, 36 to 45 years old were 20.3 %, 46 to 55 years old were 4.4 %, and those above 50 years were 2.5 %. Regarding the employment status, 75.2 % are students, 11.4 % are employees, 4.4 % are entrepreneurs, 3.5 % are

housewives, and 5.4 % have other occupations. All the respondents shopped online during the COVID-19 pandemic, where 14.9 % stated that they have never previously shopped online and started shopping online during this pandemic. Most of them stated the intensity to have increased during the period with 19.36 % shopping 1 to 3 times per month, 39.8 % – between 3 and 6 times, 32.3 % – between 7 and 10 times, and 8.6 % – more than 10 times.

### 3. RESULTS

The measurement model analysis was conducted to ensure the validity and reliability of data before the structural model was evaluated. The data were tested using Fornell and Larcker (1981) criteria. Thus, the loadings of individual items, the composite reliabilities (CRs) of each construct, and the average variance extracted (AVE) were measured. The loadings of individual items are required to be at least 0.7 for the data to be considered valid, CR has a recommended threshold of 0.8, and the AVE



**Table 3.** Structural parameter estimates

Hypothesized relationship	Estimate	P-Value	Conclusion
Perceived health risk → Online shopping behavior	0.707	0.000	Supported
Security → Online shopping behavior	0.170	0.000	Supported
Privacy → Online shopping behavior	0.152	0.000	Supported
Non-deception → Online shopping behavior	0.079	0.067	Not Supported
Reliability fulfillment → Online shopping behavior	0.218	0.000	Supported
Service recovery → Online shopping behavior	0.139	0.003	Supported

is expected not to be less than 0.5. The analysis showed that 2 items of the privacy indicator did not meet the criteria for the loadings of individual items and they were deleted, after which the CR and AVE verified the data met the established criteria. Therefore, it was concluded that the data in this study have sufficient levels of convergent validity and reliability in reflecting the construct as shown in Table 2.

The next step after determining the validity and reliability of the measurements was to evaluate the structural model. The goodness-of-fit indices were recorded to be GFI = 0.891, NFI = 0.927, CFI = 0.962, AGFI = 0.847, and RMSEA = 0.056. These met the criteria of Bagozzi & Yi (1988) and Hair et al. (2010), where GFI, NFI, and CFI were higher than 0.9, AGFI was higher than 0.8, and RMSEA was lower than 0.08 to indicate a sufficient fit between the model and the data observed in this study.

Table 3 showed that perceived health risk had a statistically positive significant effect on online shopping behavior ( $\beta = 0.707, p < 0.001$ ), therefore, *H1* is accepted. Moreover, the four hypotheses *H2a*, *H2b*, *H2d*, and *H2e* are also accepted with security ( $\beta = 0.170, p < 0.001$ ), privacy ( $\beta = 0.152, p < 0.001$ ), reliability fulfillment ( $\beta = 0.218, p < 0.001$ ), and service recovery ( $\beta = 0.139, p < 0.05$ ) observed to have a statistically positive effect on online shopping behavior. Meanwhile, *H2c* is not supported and this means that non-deception did not have a statistically positive effect ( $\beta = 0.079, p > 0.05$ ).

## 4. DISCUSSION

This study assessed perceived health risk, online retail ethics, and online shopping behavior during this COVID-19 pandemic with the main objective of providing a better understanding of these

concepts in Indonesian. The process, however, involved formulating several variables for perceived health risk and five for online retail ethics, including security, privacy, non-deception, reliability fulfillment, and service recovery.

The results showed that perceived health risk has an important role in influencing consumer behavior in online shopping during the COVID-19 pandemic. This was based on the potential to contract the virus when shopping physically in malls and shops and the feeling that online shopping can minimize this direct physical contact with subsequent prevention of the virus spread. This makes the consumers feel more secure and calmer due to the lower potential health risks provided by online shopping during the pandemic in comparison to malls and physical stores. Therefore, high perceived health risks in physical shopping motivated consumers to shop online during the COVID-19 pandemic. This finding is, however, different from the results obtained by Salem and Md Nor (2020) on the effect of COVID-19 on consumer behavior in switching from brick-and-mortar stores to e-commerce in Saudi Arabia, which showed perceived health risk not to be significant for e-commerce. It was shown that most of the consumers considered money fraud to be the highest risk of e-commerce.

The variables of online retail ethics consisting of security, privacy, reliability fulfillment, and service recovery also have a significant effect on online shopping behavior during the COVID-19 pandemic. This involved the ability to handle transactions using a good security system and protecting consumer financial information from unauthorized access as well as the provision of reliable and accurate retail services as promised. Moreover, post-purchase activities such as adequate response to consumer complaints and good efforts in restoring satisfaction after failure can encourage online shopping behavior for consumers during the

pandemic. Meanwhile, non-deception was found not to have a significant effect on the online shopping behavior of consumers during the pandemic. This variable indicates the perception of consumers that online retail websites do not use fraudulent or manipulative practices to persuade them to buy their offers. Respondents generally reported some online retailers to practice unfair persuasion activities by delivering products that do not match the description on their website and influencing consumers through excessive or fake promotions and advertisements. These, however, did not discourage consumers from shopping online during the pandemic, as they are more concerned with the perceived health risk, security, privacy, reliability fulfillment, and service recovery.

The coefficient value of each variable showed perceived health risk to be more dominant in influencing online shopping behavior of consumers than the variables for online retail ethics, and this can be associated with the higher concern of the consumers for their health during the pandemic. Moreover, the empirical results also showed that 72.4% of the respondents reported an increase in

online purchases during the COVID-19 pandemic with an intensity of 3 to 10 times shopping activities in a month. They also avoided going to malls and shops considered to be crowded and risky, but prefer to shop online because it allows being done from home without physically interacting with other people, saves their time, provides more product choices and lower prices. They also consider that online shopping would enable them to accomplish shopping healthier and enhances their health safety performance during this COVID-19 pandemic.

These findings are in line with Grashuis et al. (2020), who studied grocery shopping preferences during the COVID-19 pandemic, and showed the trend in the number of cases that affected food shopping preferences of consumers in an environment with the high spread of the virus observed to be unable to visit stores and tend to buy things through the delivery method. Gao et al. (2020) also studied the impact of the COVID-19 epidemic on the adoption of e-commerce in China for food products and found the share of confirmed cases to be increasing the possibility of consumers purchasing food online.

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## CONCLUSION

This study has highlighted the effect of perceived health risk and customer perception of online retail ethics on consumer online shopping behavior during the COVID-19 pandemic in Indonesia. The literature review showed that the effect of online retail ethics on attitude to the website, trust in the website, customer satisfaction, customer loyalty, word-of-mouth, revisit intention, and repurchase intention is proved. Meanwhile, the effect of online retail ethics combined with perceived health risks on online shopping behavior especially during the COVID-19 pandemic is not fully examined. Therefore, this study has contributed to the literature by investigating the effect of perceived health risk and five variables of online retail ethics including security, privacy, non-deception, reliability fulfillment, and service recovery on online shopping behavior.

The results showed that the perceived health risk and four variables of online retail ethics including security, privacy, reliability fulfillment, and service recovery affect consumer online shopping behavior. This means higher potential health risks in a physical store and positive consumer perceptions of the behavior of online retail websites in providing services can encourage consumers to shop online during the COVID-19 pandemic. This study proved that the COVID-19 pandemic has been changing the shopping behavior and preferences of consumers. Due to the fear of the virus, they tend to shop online to minimize physical contact and curb the spread of the virus to maintain their health and those of their families.

This study did not include the mediating and moderating variables perceived to be related to the evaluation of perceived health risk, online retail ethics, and online shopping behavior. Therefore, it is suggested that consumer attitude and experience are added as the mediating variables or social, cultural, and personal attributes of consumers as the moderating variables in future studies to obtain a deeper understanding of the situation.

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## APPENDIX A

Table A1. Questionnaire items

Constructs	Measurement Item	Loading
Security	The online store has adequate security features	0.776
	The security policy of online store is easy to understand	0.853
	The online store has clear terms and conditions of transactions	0.880
	The online store offers secure payment methods	0.858
Privacy	The online store guarantees the confidentiality of consumer personal information	0.925
	The online store protects consumer personal information from hacking	0.901
	The online store does not collect my personal information excessively	0.388**
	When completing a transaction on the online store, I provide personal information such as full name, telephone number, email address and residential address	0.449**
Non-deception	The online store exaggerates the product benefits and characteristics of its offerings*	0.766
	The online store takes advantage of less experienced consumers to make them purchase goods*	0.942
	The online store tries to persuade through deceptive advertisements and promotions*	0.744
Reliability fulfilment	The price displayed on the online store website is in accordance with the price charged to the consumer	0.743
	When shopping for products online, I receive them according to what I ordered	0.781
	The online store website serves consumers as its promised	0.792
Service recovery	The online store responds to customer complaints promptly	0.709
	The online store website has a compensation policy for any failures of products/services	0.767
	The online store website has a reliable service recovery tracking system to identify customer satisfaction	0.790
Perceived Health risk	Shopping in physical store during this COVID-19 pandemic allowing direct contact when making transactions	0.858
	Shopping in physical store during this COVID-19 pandemic has a high potential of being infected by the virus	0.906
	Shopping in physical stores could be expand the chain of the virus spreading during this Covid-19 pandemic	0.938
	Shopping in physical store during this COVID-19 pandemic made me unsafety	0.842
Online shopping behavior	I prefer to shop online during this COVID-19 pandemic	0.837
	I shop online because I don't need to go to shops / malls during the COVID-19 pandemic	0.824
	I shop online during this COVID-19 pandemic to keep my healthy	0.831
	I shop online during this COVID-19 pandemic because it saves my time	0.750
	I shop online during the COVID-19 pandemic because I could get detailed product information on the online store website	0.761
	I shop online because online stores provide a wider selection of products during this COVID-19 pandemic	0.780
	I shop online during the COVID-19 pandemic because the online store has competitive prices	0.811
I shop online during the COVID-19 pandemic because it is flexible	0.836	

Note: \* means reverse questions; \*\* means loading factor less than 0.5 (removed from statistical analysis).