Evaluating E-Shoppers' Perceived Risk Affected Disruption During the Covid-19 Pandemic in Indonesia

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Abstract. This research aims to determine the risk perceived by Indonesian e-shoppers who have been disrupted affected for all life aspects during the Covid-19 pandemic. This study reexamining revealed the measurement scale to find the perceived risk of e-shoppers. The data was used online questionnaires and distributed to 236 respondents who had online shopping activities in Indonesia. Structural Equation Modeling (SEM) is used to process and analyze the eligible data for the CFA test. The results show four essential dimensions for perceived risk: high price risk, different product risk, illegal product danger, and post-purchase time delays the risk. Otherwise, the dimensions of deception risk, incapable service risk, isolation risk, unease risk, displeasure risk, and pre-purchase time delays risk are invalid and unreliable in measuring the perceived risk of Indonesian e-shoppers. The results also suggest that when challenged with a pandemic, e-commerce consumers in Indonesia react to security but appear to overlook the possible risks of shopping online.

Keywords: E-Shoppers · Perceived Risk · E-Commerce · Covid-19 Pandemic

1 Introduction

Electronic shopping (e-shopping) has revolutionized the better way to purchase goods and services, and it was becoming a new trend business model [1]. As a result of e-shopping, consumers have access to various options, extensive product information, and no time or space constraints, making it easier to purchase the online product than in a physical store [2, 3]. The increase in e-shopping and the number of shoppers made it critical for marketers to understand their purchasing habits [3, 4] better. Zhou et al. [4] argue that both academics and online retailers must understand the antecedents of consumer acceptance of e-shopping to the mutual understanding.

The ease of accessing the internet has encouraged consumers to shop online [5]; besides being accessible anytime and anywhere, the e-commerce transaction process is easy using credit cards, debit cards, e-wallets, e-money, e-payments, and QR codes [6]. The rapid growth of e-commerce, such as e-shopping, provides frauds potential with information about where the money is located [7]. Even while shopping online is convenient, it does not eliminate the need for due care. Because of examples of credit card

fraud, privacy issues, and things that never arrive at their destinations, online shoppers are apprehensive about shopping on the internet [8, 9].

While making a transaction through shopping websites, consumers still feel uncertain about many things. They often connect the purchase process and various product questions, correct payment, data privacy, confidentiality, and other inconvenience as a risk of transacting in e-shopping [8, 10]. In most cases, consumers' anxieties and insecurities about purchasing are referred to as their perceived risks. The majority of the existing literature was devoted to the advantages and challenges of internet marketing while it was still in its initial stages [11, 12].

According to the Cybercrime Team report, the most fraud crimes occurred in 2020, with any online shopping scams emerging via e-commerce and social commerce associated with online, e.g., Instagram, Whatsapp, and Facebook [13, 14]. The phenomenon of fraud incidents in online buying and selling forums enhances customer perceptions of online purchasing risk [15]. Some people, particularly those shopping online for the first time, are fearful about the extent of fraud involved with online shopping. Consumer concerns regarding a transaction are sometimes perceived risks [8, 16]. The perceived risk of online shopping is the subjective perception by the consumer of the potential loss of online shopping [17], and it is associated with uncertainties such as the probability of financial loss, the presence of defective or non-acceptable items, and whatever else [8].

Several researchers have discovered the perception of risk in harmful online shopping behavior, attitudes about usage behavior, and the intention to use e-commerce, among other factors [17]. Most of the literature focused on the advantages and disadvantages of online shopping when introducing e-business technology [18]. However, published studies which examined the dimensions of e-shoppers' perceived risk considered with the specific condition were still limited [8].

As pioneers in the field of perceived risk research, Forsythe and Shi [19] examined the four elements of the perceived risk that affect online customers (product performance risk, financial risk, psychological risk, and time/convenience risk). There were limitations to the scale devised by Forsythe and Shi [19] in that each component was measured using a single item for each dimension [16]. Many researchers, as a result, look for appropriate and generalized steps that emerge new dimensions, in a study conducted by Bashir et al. [8], who synthesized a variety of viewpoints, data, and facts on the perceived danger of online purchasing to develop a new scale that was then empirically validated. Although the research conducted by Bashir et al. [8] has produced a new measurement scale, it still needs to be revalidated because generalization of the scale may be restricted because there could be other thoughts of e-shoppers regarding the perception of risks belonging to diverse cultures/ nationalities.

Following the Coronavirus (also known as Covid-19) pandemic, all countries over the world were prompted to close their borders and apply severe social distancing measures, prompting the vast majority of brick-and-mortar enterprises to expand their operations to online platforms [20]. Since online shopping eliminated the health risks associated with in-store purchases during the pandemic, some studies should examine whether it changed consumers' perceptions of the risks and barriers associated with online shopping, as well as their trust in overall e-business services and activities in both developing and developed markets [21]. In that sense, it would also be interesting to investigate how

pandemic Covid-19 affected consumers' risk perception regarding online shopping in different countries [22]. It is advisable to consider cultural differences caused by e-shoppers, especially in the deep pressure of Covid1–19 that disrupt e-shopping [23]. This study will determine the risk perceived by Indonesian e-shoppers who have been disrupted affected for all life dimensions during the Covid-19 pandemic.

2   Research Method

The research methods include confirmatory factor analysis and constructing dimensions of Indonesian e-shopper's perceived risk. Only consumers who regularly make online purchases were allowed to participate in this study. The customer is regular e-shoppers who make at least two online purchases per month. This way, the research can offer specific recommendations about what matters to regular e-shoppers' perceived risk when purchasing online. E-questionnaire was developed by Bashir et al. [1], which included 11 dimensions sent to randomly selected participants in the snowball sampling. The e-shoppers perceived risk dimensions were high price risk (HPR), deception risk (DecR), transaction failure risk (TFR), dissimilar product risk (DPR), incapable service risk (ISR), illegitimate product risk (IPR), isolation risk (IR), unease risk (UR), displeasure risk (DisR), pre-purchase time delays (PrePR), and post-purchase time delay (PostPR).

The sample identified 236 respondents who took the survey and completed it for further analysis. According to Hair et al. [24], a sample size of 200–500 is considered sufficient for SEM data analysis. The current sample size is large enough to conduct data analysis. Confirmatory factor analysis using Amos to test the initial assumption, evaluate the goodness of fit model, and test validity and reliability. The standard rule used to perform CFA for the measurement model and test the structural model is ensuring that the goodness-of-fit index (GFI), comparative fit index (CFI), and Tucker-Lewis index (TLI) are > 0.90 [25] and the root mean square error of approximation (RMSEA) should be < 0.08, and the $\chi2/df$ should be < 2.00 [26].

3   Result and Discussion

It was found that 236 people responded, providing a sufficient sample size for scale refinement following Bashir et al. [1] Gait and Worthington [27]. Nevertheless, 86% were female, and 14% were male respondents. Most of them had an age between 18 and 24 years (75%) and a personal monthly income of less than Rp 4.000.000 (49.15%). Table 1 also revealed that most respondents (47.03 percent) had experienced some form of online shopping at least twice in the previous month, which was a controversial aspect.

Five steps were conducted to assess the CFA assumption; the most common rule used was the outlier test, adequate sample test, normality test, multicollinearity, and singularity test. First, the outlier test assesses whose fairness of extreme data existence on the observation farthest from the centroid (Mahalanobis distance). All cases with a Mahalanobis d-square value with a p-value less than 0.05 will be excluded. Out of the 236 samples collected, 163 samples passed the outlier test, and that data was sufficiently for maximum likelihood (ML) estimation. CR skewness or kurtosis values between 2.58 are considered normal, and if that value exceeds, then multivariate normality fails to meet

Table 1. Demographic profile of the respondents (n = 236).

Characteristics of the Respondents		Frequency	%
Gender	Female	203	86.00
	Male	33	14.00
Age	Below 18	7	3.00
	18 – 24	177	75.00
	25 – 34	24	10.10
	35 – 44	17	7.20
	45 and above	11	4.70
Income	IDR 4.000.000 and below	116	49.15
	IDR 4.000.000 – 6.000.000	43	18.22
	IDR 6.001.000 – 7.000.000	24	10.18
	IDR 7.001.000 and above	53	22.45
Frequency of online shopping in a month	2 times	111	47.03
	3- 4 times	59	25.00
	5- 6 times	32	13.57
	More than 6 times	34	14.40

the assumption of normality. The sample covariance matrix has a determinant value of 0 based on the data processing results (zero). As a result, multicollinearity and singularity can be said to exist in the research data.

The CFA test evaluates whether a measured variable represents a previously formed dimension or dimension through data analysis. Bashir et al. and Weng [1, 4] developed a model of perceived risk for e-shoppers using eleven latent variables and thirty-eight indicators that were tested simultaneously. The overall fit indices of the measurement model are as follows: $\chi 2$ 164.162; $\chi 2$/df 1.53, p 0.058; GFI 0.912; CFI 0.905; TLI 0.891; and RMSEA 0.056. CFA results in Table 2 show that the indices are above the respective common acceptance levels; it concludes that the proposed model generally fits within the sample data (Table 2).

The following Fig. 1 illustrates a model that has been modified in order to produce a more valid and fit model. In addition to making modifications, invalid indicators of each dimension were eliminated, and an estimate of the error must always be made by looking at the most significant modification index value and then re-estimating it.

The CFA result indicates that deception, a transaction failure, dissimilar product, incapable service, illegitimate product, isolation, unease, and displeasure are significantly supported by all their indicators. The other simultaneous testing of all eleven dimensions and 38 indicators identified four insignificant indicators. The four indicators are as follows:(1) over-charged fees on e-payment- HPR3, (2) over-charged fees on product delivery by the e-shop - HPR4, both on High Price Risk dimension, (3) irritation of not achieving the buying goals - DisR3 on Displeasure Risk dimension, and (4)

Table 2. GoF of CFA test.

The GoF	Cut-Off Value	Result	Model Evaluation
$\chi 2$	Small	264,162	
$\chi 2$/DF	≤ 2,00	1,513	Good Fit
P-value	≥ 0,05	0,058	Good Fit
GFI	≥ 0,90	0,912	Good Fit
CFI	≥ 0,90	0,905	Good Fit
NFI	≥ 0,90	0,773	Poor Fit
TLI	≥ 0,90	0,891	Marginal Fit
RMR	≤ 0,05	0,050	Good Fit
RMSEA	≤ 0,08	0,056	Good Fit
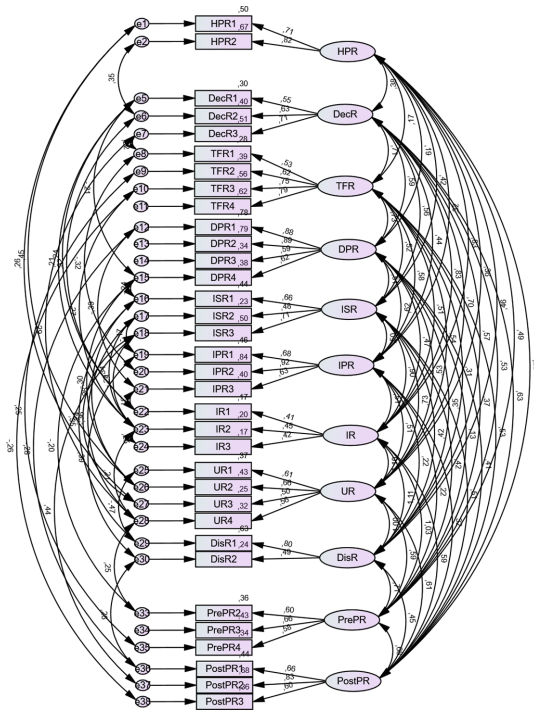
Fig. 1. Modified confirmatory factor analysis.

searching for the appropriate e-shop -PrePR1 on form Pre-Purchase Time Delays Risk dimension. The findings revealed that the high price risk dimension is more significantly affected by the different price offered risk and loss of discount value than the lower price

risk dimension. Displeasure risk indicators, except for irritation at not meeting purchasing objectives, had significantly increased in development. The risk of pre-purchase time delays is created by indicators of communications or chats with e-sellers, payment procedures of e-shops, and system fluctuations.

Furthermore, convergent and discriminant validity has been used for validating the dimension. Table 3 showed that the AVE value of each dimension is more than 0, 5, and the square root of the AVE value of each dimension is more significant than its correlation with another dimension. It concluded that each dimension of e-shoppers' perceived risk was valid. This study presented the valid and reliable dimension of Indonesia e-shopper perceived risk: High Price Risk, Dissimilar Product Risk, Illegitimate Product Risk, and Post-Purchase Time Delays Risk.

Several dimensions, such as deception risk, incapable service risk, isolation risk, unease risk, displeasure risk, and pre-purchase time delays, were unreliable because the CR value was less than 0.7, shown in Table 3. Besides that, those dimensions are unreliable; despite their validity, they will not be used in further investigation. Only transaction failure risk dimension, which is reliable but not valid, had expressed how Indonesia e-shopper has less online shopping experience.

The table above revealed that Deception Risk, Incapable Service Risk, Isolation Risk, Unease Risk, Displeasure Risk, and Pre-Purchase Time Delays Risk are invalid and not reliable dimensions in measuring the Indonesian e-shoppers perceived risk. While most respondents have less e-shopping experience per month than they could have had if they had not been a victim of identity theft, their expectations and satisfaction with services on e-commerce when they shop online are met. When shopping online, the average e-shopper does not require a long time and does not concern with being detached.

In this study, only four dimensions measure the perceived risk of Indonesian e-shoppers; High Price Risk, Dissimilar Product Risk, Illegitimate Product Risk, and Post-Purchase Time Delays Risk. Differences in culture and nationality are one of the reasons why this research is different from previous research. The consumptive culture

Table 3. Validity and reliability of dimensions.

	CR	AVE	HPR	DecR	TFR	DPR	ISR	IPR	IR	UR	DisR	Pre PR	Post PR
HPR*)	0.736	0.583	0.764										
DecR	0.666	0.402	0.379	0.634									
TFR	0.772	0.463	0.172	0.705	0.681								
DPR*)	0.838	0.572	0.194	0.591	0.735	0.756							
ISR	0.653	0.392	0.423	0.557	0.516	0.508	0.626						
IPR*)	0.793	0.568	0.319	0.439	0.576	0.617	0.503	0.754					
IR	0.401	0.183	0.833	0.827	0.510	0.474	0.898	0.509	0.428				
UR	0.673	0.342	0.356	0.695	0.537	0.529	0.725	0.512	1.101	0.585			
DisR	0.595	0.437	0.459	0.573	0.312	0.348	0.416	0.218	1.109	0.998	0.661		
PrePR	0.642	0.375	0.493	0.528	0.372	0.125	0.422	0.221	1.033	0.595	0.713	0.613	
PostPR*)	0.743	0.595	0.279	0.631	0.526	0.408	0.506	0.322	0.591	0.611	0.451	0.679	0.704

*) valid and reliable dimension

in Indonesia encourages the development of e-commerce to meet consumer needs to make shopping more accessible, more comfortable, and safer.

The results of this study are different from the findings of Bashir [8], especially from the perceived risk dimension, which is recognized as affecting consumer attitudes and behavior for online shopping. This difference has given an understanding of the culture and the Indonesian's preference towards online shopping, which was accelerated by the social restriction policy during the Covid19 pandemic. These results have explained the characteristics of customers who receive additional charges for product and delivery costs in online shopping if the seller or system provides rational explanations and reasons.

However, other analyses suggest that e-shoppers are not really in a deal when the price offered in e-commerce is higher than that offered in the traditional or physical market. These facts are because consumers can compete for lower prices and begin receiving more significant discounts in e-commerce than in the traditional market. E-shoppers are conclusive in their presumption that there are differences between the products displayed in e-commerce and the original products in terms of shape, size, function, and color [11]. As a result, they prefer to purchase products directly from the retailers' websites. It showed that e-shoppers would find it difficult to return if they got the wrong product, which is why consumers prefer to buy products directly from the stores. This result was confirmed as a result of e-shoppers' considerations about the legality and quality of the product [22].

Furthermore, the consistency of reviews of stores and products in e-marketplaces is highly debatable, while many people still rate it carelessly. When shopping online, many consumers oppose the experience, believing that they must wait excessive time to receive their product. Customers also have difficulty returning damaged or faulty goods [20]. Hence, managers must constantly communicate with shoppers during the post-purchase phase to identify plausible reasons for regret and address them immediately [28]. This study explores to compare online shopping perceived risk during COVID-19 crisis periods with a sample from Indonesia. The findings indicate a critical role that online shopping can perform during a crisis and contribute to our understanding of online shopping behaviors during other possible public health emergency scenarios [29].

According to its exploratory approach, this study has limitations regardless of its interesting findings and potentially significant implications. First, there was no investigation of the perceived customer risk associated with certain products and services. Due to the limited generalizability of these findings, it appears that future research should be conducted using more specialized products and services [15]. This study has presented a systematic understanding of consumers' perceived risk, most importantly, affected the economic disruption during the Covid-19 pandemic. The study's findings emphasize the importance of risk-perceived shopping value generated by consumers through the online business environment, thus enhancing convenience, loyalty, and intentions to use online shopping.

4   Conclusion and Contribution

From the discussion, it is essential to determine that Indonesian e-shoppers perceive the following risk dimensions: high price risk, dissimilar product risk, illegitimate product risk, transaction failure risk, and post-purchase time delays the risk. E-shoppers are

concerned with obtaining a low price and the legality and quality of their purchasing product. A frequent complaint from online shoppers is that they are mistreated or receive products that do not match the pictures and descriptions posted on the website and must go through a long, drawn-out process to return the item.

As a result of this study, marketers, and developers will be made aware of the importance of -shoppers perceived risk to implement effective risk reduction strategies in the online business environment. This study may have specific limitations in sample representation because data collection took place in a geographically restricted area of Indonesia. Further research may include information on respondents' origin and frequency of internet use to guarantee that the research conclusions are more valid when gathering data.

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