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E-COMMERCE RISK OF FOOD PRODUCT TO CONSUMER PURCHASE DECISIONS IN KALIMANTAN BARAT

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ABSTRACT

The increase in internet users and the trend of online food shopping have created risks that affect consumer purchase decisions when buying food products online. This research aims to examine how risk perception influences the purchasing decisions of online food products. This study was conducted in Pontianak, Kalimantan Barat. The region's expanding digital infrastructure offers significant e-commerce growth opportunities in the food sector. However, uncertainties and perceived risks may pose challenges for both consumers and the local industry. The sample was determined using convenience sampling. The data collected was primary data obtained from a questionnaire completed by 150 consumers of online food products. The variables involved in this research were financial risk, product risk, time risk, delivery risk, and consumer purchase decisions. The data analysis utilized Structural Equation Modelling (SEM) within a quantitative framework to explore and validate relationships between key variables. This included descriptive analysis to summarize data characteristics and Partial Least Squares (PLS) testing with SmartPLS 4 software. This approach will offer a thorough overview of the data and a detailed analysis of structural relationships. The research shows that delivery risk, financial risk, and product risk significantly affect consumer purchasing decisions, with delivery risk being the most influential. Changes in delivery risk will notably impact buying behaviour. In contrast, time risk does not significantly impact purchasing decisions, as evidenced by a path coefficient (0.069), t-value (1.007<t-table 1.96), and p-value (0.314>0.05).

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INTRODUCTION

The number of people using the internet in Indonesia has continuously increased. In 2022, around 210.03 million individuals, or 77.02% of the total population, used the Internet (APJII, 2022). The survey results showed a significant

change in people's behaviour, with a greater reliance on online platforms for food purchases. Consumers now prefer convenience and time efficiency, leading to fewer visits to physical stores and increased trust in online food delivery services (Das, 2018; Putri et al., 2023).

The Internet is used for business purposes and is called electronic commerce (e-commerce) (Xiao et al., 2020). The rise of internet usage and smartphones influences the increasing value of online transactions (Peemanee & Wongsahai, 2021; Ray et al., 2019). On the other hand, the increasing use of the internet has not fully fueled a significant interest in online shopping because the Internet is mostly used for chatting, social networking, browsing, and playing games (APJII, 2022).

Online transactions carry risks, including unexpected impacts and uncertainties. Each consumer action may lead to consequences that could result in disappointment (Y. Zhang et al., 2015). E-commerce systems that contain potential risks influence consumer behaviour in online transactions. Various literature reviews mention risk as a factor that influences purchase decisions (Bhukya & Singh, 2015; Masoud, 2013). Concerns about online transactions can be significantly impacted by risk (Habib & Hamadneh, 2021; Pavlou & Fygenson, 2006; Sahi et al., 2022). A lower consumer risk leads to a greater tendency for online shopping (X. Zhang & Yu, 2020). Several types of risks or losses may arise, including financial risk, psychological risk, physical risk of the product, product performance risk, social risk, delivery risk, and time-related risk. (Bhukya & Singh, 2015; Masoud, 2013; L. Zhang et al., 2012).

When making purchasing decisions, consumers are often influenced by concerns or fears related to the items they are considering. Consumers may feel a sense of risk when they cannot see the products visually. For instance, they might worry that the product won't work well, could get damaged, or that the actual product will not match their expectations after spending their money (Ariffin et al., 2018; Lăzăroiu et al., 2020; Y. Zhang & Zhang, 2022). Financial risk can arise when customers indirectly disclose sensitive information about their bank accounts. Potential hackers may take over consumers' e-commerce accounts, leading to financial losses. This can happen if they use an invalid credit card and exploit the stolen data for malicious purposes. E-commerce buyers also face additional risks known as time risks, which can include difficulties in choosing products or delays in product delivery. This situation can lead to wasted time while shopping (Balakrishnan et al., 2022; Forsythe et al., 2006). Additionally, there are potential losses in e-commerce during delivery, such as lost items, damage, or incorrect delivery addresses, that can cause delays (Iconaru, 2012).

The research gap in this context can be emphasized in two main aspects. First, previous studies on risk perception and purchase intention in e-commerce have primarily focused on generic product categories. For instance, Haryani (2019) and Kim et al., (2008) found that risk significantly influences buying interest, while Novitasari & Baridwan (2015) found the opposite result. These studies have typically explored risk perception in e-commerce broadly, without examining specific product categories such as food products.

Second, the COVID-19 crisis has resulted in substantial transformations in consumer behaviour, especially regarding their perception of potential hazards linked with food products. Social distancing measures and reliance on e-commerce as a primary shopping channel have substantially altered transaction dynamics (Ayu

& Lahmi, 2020; Bhatti et al., 2020; Laming, 2020; Peemanee & Wongsahai, 2021). Consequently, most consumers overlook different possible threats (Karami & Wismiarsi, 2016) related to food products, particularly in the emerging realm of internet food business, which has garnered relatively little research attention so far.

It differs from past research in emphasizing food products specifically and performs a regional study focused on West Kalimantan. Through the use mixed-methods study, it utilizes both qualitative and quantitative data, allowing a more nuanced understanding of how the pandemic has redrawn risk perceptions and consumer behavior towards e-commerce.

RESEARCH METHOD

This research utilized quantitative methods in analyzing the data through descriptive statistics and Partial Least Squares (PLS) analysis. Consumer purchase decisions, time, product, financial, and delivery risks were among the variables used in the research.

This research was conducted in Pontianak City, West Kalimantan Province, because the location has the most food product services via the internet in West Kalimantan (BPS, 2022). Data were collected from March to May 2023 with a structured questionnaire as principal data (Roopa & Satya, 2012). The scale used is a Likert scale with a score of 1-5. The sampling method is convenience sampling (Nurdin & Hartati, 2019).

Convenience sampling was applied in this research because it is inexpensive and efficient in examining consumer behavior in relation to food product risk perception while shopping via electronic means. Though suitable in exploratory research, it is capable of introducing bias during selection, including selection bias, with effects on representativeness (Etikan et al., 2016). Validity was ensured through efforts to engage different demographic groups and places. Qualitative data were also integrated to take advantage of a better understanding, but with proper care when interpreting the data.

The sample consisted of internet-based e-commerce food product purchasers who were located in West Kalimantan in the last six months. It assisted in making sure participants had their most recent experiences to date with current consumer behavior and attitudes towards risk during a post-pandemic time period, with pertinent information because preferences are known to change rapidly (Bhatti et al., 2020).

The number of valid completed questionnaires gathered was 150. The sample size in the present study was established according to the method of analysis to be utilized, in our case maximum likelihood estimation (MLE). The recommended size of the sample lies between 100 and 200 (Waluyo, 2016). Data analysis adopted the Structural Equation Modelling (SEM) approach (Riandi, 2018; Yusnidar et al., 2014). PLS is a multivariate data analytical method which estimates the effect among the variables simultaneously, in order to predict, to explore data, and to derive structural models (Hair et al., 2019). SmartPLS 4 software is applied in SEM-PLS, consisting of three components: first, testing the measuring model; second, testing the structural model; and lastly, testing the goodness and suitability of the model (Hair et al., 2021).

This research examines four key risk dimensions of e-commerce transactions of physical goods like food. Financial Risk: Economic loss risk due to failed or

fraudulent transactions because payments are typically made upfront before product delivery (Forsythe et al., 2006; Petrescu et al., 2020). Product Risk: Product quality and condition apprehension at delivery time, for instance, receiving faulty items (Grewal et al., 2004; Nguyen et al., 2021). Time Risk: Delivery delay' impact on consumers' satisfaction, particularly for perishables (Chopra & Meindl, 2016). Delivery Risk: Loss of, damage to, or misdelivery of products due to a third-party logistics' intervention (Jun et al., 2022; Wu et al., 2024).

These risks are crucial as they affect the reliability of e-commerce transactions, especially for food, where timely delivery and quality are vital. Consumers prioritize practical concerns like safety and quality over social or psychological factors (Bauer, 1960; Featherman & Pavlou, 2003), aligning with research that highlights functional risks as significant for low-involvement products. The research conceptual model is illustrated in figure 1.

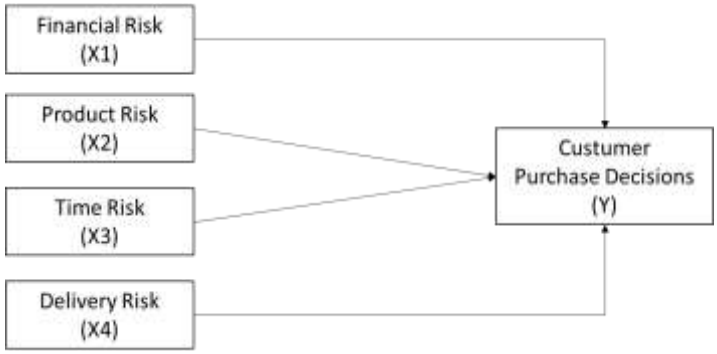

Figure 1.
Research Conceptual
Source: (Masoud, 2013)

Table 1. Research Measurement Variables and Indicators

Variables	Indicator	Sub Indikator	Statement
Perceived Risk (X)	Financial risk (X1)	X1.1 Waste	1. The ease of shopping online can make people more wasteful.
		X1.2 Security	2. The online shopping payment system is not safe
		X1.3 Price	3. Online shops can sell more expensive goods because of shipping costs
	Product risk (X2)	X2.1 Suitability	1. The product received does not match the image and specifications listed.
		X2.2 Satisfaction	2. It is difficult to judge product quality if you only look at the product image and description
		X2.3 Quality	3. The quality of the purchased product cannot be checked directly
	Time risk (X3)	X3.1 Trust	1. Consumers find it difficult to find trusted online shops

Variables	Indicator	Sub Indikator	Statement
		X3.2 Communication	2. Consumers must wait for the product delivery period
		X3.3 Punctuality	3. Online shops respond slowly when contacted by consumers when compared to shopping in person
	Delivery risk (X4)	X4.1 Lost	1. Consumers do not receive products that have been purchased online
		X4.2 Error	2. Product delivery may go to the wrong place or address
		X4.3 Delay	3. The delivery process does not match the specified time
		X4.4 Damage/defect	4. The delivery process causes food products to experience defects or damage
Customer purchase decision (Y)	Y1.1 Need recognition		1. I decided to shop for food products online because I felt hungry/thirsty
	Y1.2 Information search		2. I decided to shop for food products online as a result of searching for information independently
	Y1.3 Evaluation of alternatives		3. I choose to shop for food products online because I don't have time to cook or go buy food directly at a restaurant
	Y1.4 Purchase decision		4. I buy food products online to meet my needs quickly and practically
	Y1.5 Post purchase behavior		5. I have the desire to repurchase food products online

Source: (Forsythe et al., 2006; Javadi et al., 2012; Kotler, 2003; L. Zhang et al., 2012)

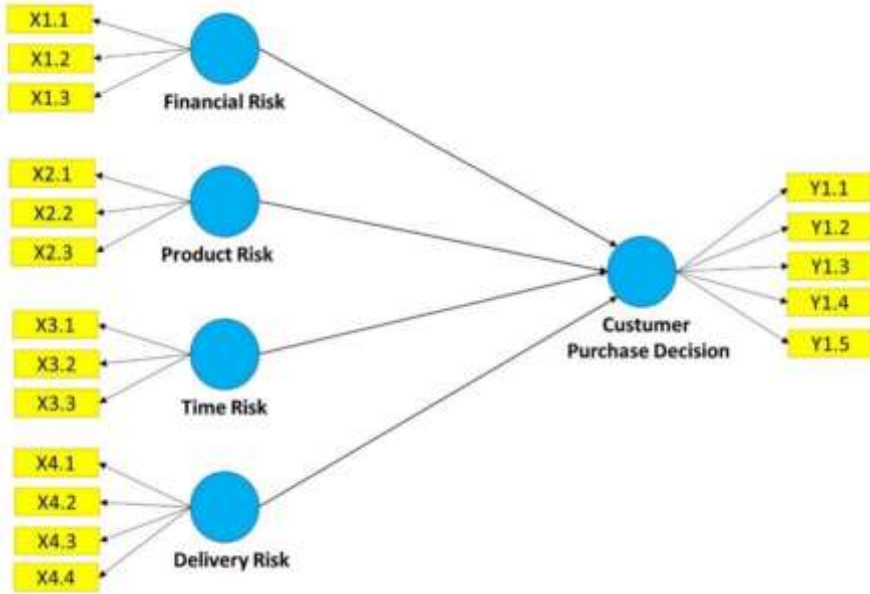

Figure 2.
PLS Model

RESULT AND DISCUSSION

Respondents Characteristic

Out of 150 participants, 64% were female respondents who identified as nomads or were from outside Pontianak (62.7%). The majority were aged 18-24 years old (34%), and most had graduated from Senior High School (48.7%). A significant portion of the respondents were married (72%).

The respondents were primarily college students (36%) with a monthly income range of 1 million to 2.5 million rupiahs (42.7%). The most commonly used e-commerce platforms for food products were Go-Food (47.3%) and Grab-Food (35.3%). Additionally, some participants utilized social media platforms such as Facebook (8%), WhatsApp (6%), Shopee-Food (2.7%), and Instagram (0.7%).

Most respondents reported using e-commerce platforms to purchase food products. Specifically, 31.3% used these services with a frequency of once a week, while 25.3% ordered more than once a week. Other frequency categories included three times a month (16.7%), once a month or less (15.3%), and one to two times a month (11.3%).

Analysis of Structural Equation Modelling - Partial Least Squares in Evaluation of Measurement Model

Before evaluating the measurement model, we first conduct a convergent validity evaluation, which is determined by the Loading Factor (LF) value and the Average Variance Extracted (AVE) value. Hair et al., 2021 stated that a Loading Factor (LF) greater than 0.70 and an Average Variance Extracted (AVE) greater than 0.50 indicate strong validity. Based on the results of the outer model evaluation, four indicators were found to be invalid, as they had LF scores less than 0.70: X1.2 (LF = 0.208), X3.2 (LF = 0.235), X4.1 (LF = 0.364), and X4.2 (LF = 0.074). Therefore, these indicator variables were removed from the model (Hair JR et al., 1998).

To ensure that convergent validity is achieved, we conducted an advanced process to analyze the second set of data, resulting in loading factor scores exceeding 0.70. By removing certain invalid indicators, we were able to retain those that met the validity criteria of being greater than 0.70, which are now considered valid (Picture 3). Additionally, each latent variable generated an Average Variance Extracted (AVE) value greater than 0.50 (Table 2).

Table 2. Composite Reliability dan Average Varian Extracted

Variable	Composite Reliability (>0,70)	AVE (>0,50)
Financial Risk	0.818	0.692
Product Risk	0.810	0.588
Time Risk	0.905	0.827
Delivery Risk	0.804	0.672
Consumer Purchase Decision	0.933	0.735

After conducting the construct validity test, the next step involved testing construct reliability using Composite Reliability (CR). Table 3 shows that all variables can be considered reliable, as their CR values are greater than 0.70.

Table 3. Fornell dan Lacker

	Financial Risk	Product Risk	Time Risk	Delivery Risk
Financial Risk	0.832			
Product Risk	0.659	0.767		
Time Risk	0.517	0.526	0.910	
Delivery Risk	0.486	0.564	0.404	0.820

The analysis of discriminant validity indicated that the root value of the Average Variance Extracted (AVE) for each variable is larger than the correlation values between the latent variables. This evaluation confirms that the variables—time risk, delivery risk, product risk, and financial risk—meet the criteria for high discriminant validity as set by Fornell and Larcker (Table 3).

Evaluation of Goodness and Fit Model

To determine whether the proposed model is viable, several metrics have been developed, including R-squared, Q-squared, SRMR (Hair et al., 2019), and the Goodness of Fit Index (GoF Index) (Henseler & Sarstedt, 2013). The following table presents the results related to the goodness-of-fit measures for the research model.

Tables 4. Goodness of fit Result

Goodness of fit measures	Cut off value	Results	Conclusion
R square	0.66	0.654	High influence
Q square	>0.50	0.629	High influence
SRMR	0.08-0.10	0.099	Acceptable fit
GoF Index	0.36	0.668	High GoF

Evaluation of Structural Model

Evaluations of the structural model are based on testing the impact of research variables. Structural model evaluation consists of three steps. First, we check multicollinearity amongst the variables with Inner Variance Inflation Factor (VIF). If the Inner VIF value is smaller compared to 5, then there is no problem of multicollinearity amongst the variables (Hair et al., 2021). Secondly, we checked the impact of the variables via the value of the t-statistic and p-value. If the value of the t-statistic is greater compared to 1.96 (t-table critical value) or the value of the p-value is smaller in comparison with 0.05, then there is noticeable impact on the variables. Finally, we considered the value of f-square, which reflects the level of variable influence on the structural level based on certain criteria: f-square = 0.02 is weak, f-square = 0.15 is moderate, f-square = 0.35 is high (Hair et al., 2021).

The results of estimation were such that the estimates of Variance Inflation Factor (VIF) were: financial risk (VIF = 1.947), product risk (VIF = 2.170), time risk (VIF = 1.506), and delivery risk (VIF = 1.537). These estimates indicate that the level of multicollinearity in the data is low (VIF < 5). The observation presents evidence in support of the robustness and unbiased estimates of the Structural Equation Modelling (SEM) parameters through Partial Least Squares (PLS). An examination of the influence among the variables can be found in Table 5.

Table 5. Path Coefficient and Testing the Influence Among Variables

Variable Pengujian	Path Coefficient	t-value	p-value	f-square
Delivery risk → customer purchase decision	0.573	10.256	0.000	0.619
Financial risk → customer purchase decision	0.186	02.779	0.005	0.051
Product risk → customer purchase decision	0.126	02.127	0.033	0.021
Time risk → customer purchase decision	0.069	01.007	0.314	0.009

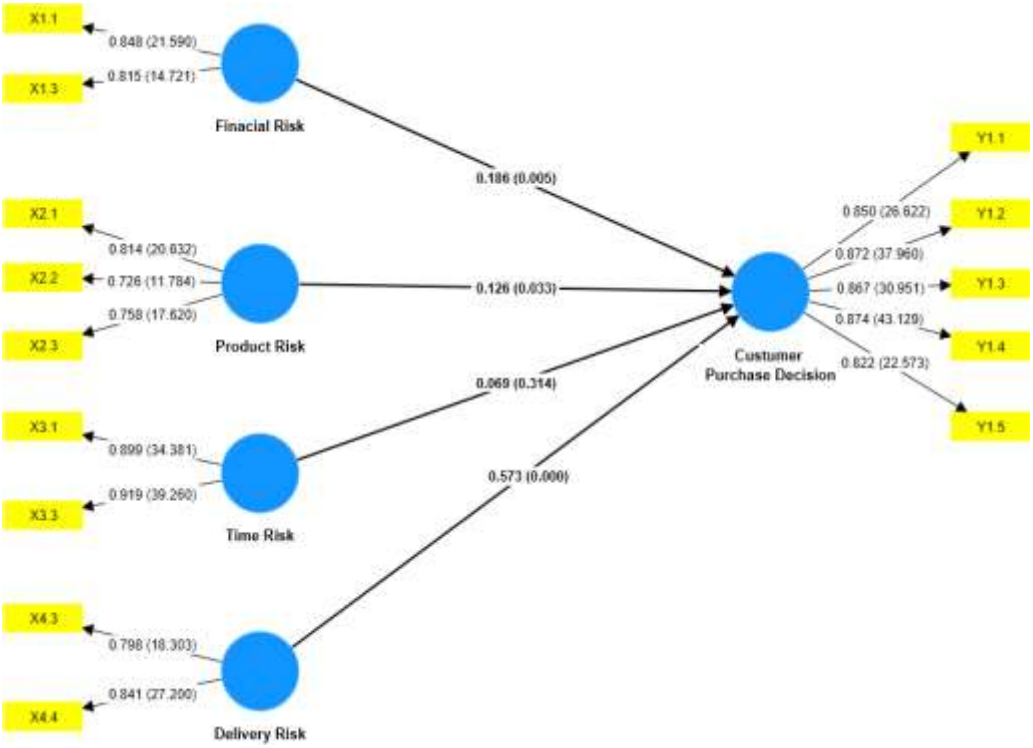

Figure 3.
Loading Factor, Diagram Path Coefficient, and P-value

Based on the bootstrapping results of the tested variables shown in Table 3, it is evident that delivery risk, financial risk, and product risk have significant impacts on consumer purchase decisions. Delivery risk has the greatest direct influence on purchase decisions when compared to financial risk and product risk. This finding indicates that any change in delivery risk will significantly affect purchase decisions. However, the situation is different for time risk. The analysis showed that time risk does not have a significant impact on consumer purchase decisions, as evidenced by a path coefficient of 0.069, t-value (1.007 < t-table 1.96), and p-value (0.314>0.05).

Factors that Influence the Purchasing Decisions of Online Food Products

Delivery Risk Affected the Purchasing Decisions tf Online Food Products

Delivery risk is also the overriding factor in consumer purchase decisions in the food market internet-based. One of the major problems is the inability of the consumer to exert much control over food product conditions during delivery. This occurs most particularly with perishing products or products requiring special treatment because delays or damage while in carriage leads to quality product compromise and potential health hazard. Effective and safe delivery serves to guarantee the food gets to the consumer in the best quality possible (Huang, 2020). Studies also identified more pronounced shipping risks in the food sector with their attendant effects on consumer satisfaction as direct. Spoiled or late products tend to lead to dissatisfaction and quality product decay (Kumar, 2017).

Shipping risk is particularly high in regions with relatively poor logistical infrastructure development. For example, in Southeast Asia, the transportation infrastructure is likely to be more basic compared to locations such as the United States, so shipping risk is higher. This differential also indicates the importance of delivery reliability during food shopping via the internet (Neama et al., 2016). In comparison with others such as the fashion business, social and product risks are relatively more important (Lin et al., 2023).

Effects of delivery risks are more visible when food products experience issues such as damage, leakage, or loss of freshness while being delivered. These problems might render the product uneatable, bringing dissatisfaction to customers and health risk (Jun et al., 2022; Wu et al., 2024). In addition to the above, delivery errors, such as incorrect products or differences in quantity being delivered, might also adversely affect consumer trust and render an effect on vendor credibility. Other than the above, improper handling, especially with products requiring cool temperatures, also diminishes food quality and safety. In some cases, there also lies a cross-contamination possibility (Karami & Wismiarsi, 2016), further making the challenge of marketing food products over the internet more pronounced.

Another significant issue with online food consumers is the likelihood of late delivery. Longer delivery time, especially when the consumer is far away from the vendor, decreases food quality, causing it to go bad and be a waste. Such food products may even spoil on the way to the consumer, who becomes exposed to health risks. Iconaru (2012) contributes the aspect that customers care a lot about the accuracy of estimated time of delivery, because shipping delays lead to intense dissatisfaction.

Tham et al., (2019) point out that delays and delivery failures negatively affect consumer behavior and decisions in online food shopping. This aligns with the findings of Al Kailani & Kumar (2011); Dias et al., (2022), who stress that delivery risk is a key factor influencing purchasing decisions on e-commerce platforms. The uncertainty surrounding delivery can create hesitation among consumers, as they worry whether their orders will arrive as expected. Many customers also feel that shipping companies do not take responsibility for delivery errors (Tsai & Yeh, 2010).

Given the vulnerabilities of food products during delivery, online marketers must offer tailored delivery options that address specific needs. Offering a variety of delivery systems allows consumers to select the service that best meets their

requirements, ensuring the safe and timely arrival of their purchases (Fihartini & Ramelan, 2017) .

Financial Risk Affected the Purchasing Decisions of Online Food Products

Financial risk is a crucial factor deciding consumers' decisions while purchasing food products via the internet. One of the major problems is product quality ambiguity. Consumers fear the delivered product may fail to match the description or expectations and thus cause dissatisfaction. In such a case, they would have to rebuy a better product or incur a financial loss should returns or exchange fall outside their capabilities (Petrescu et al., 2020). Maignan & Lukas (1997) define financial risk while purchasing via the internet as the perceived probability of financial loss, especially when consumers make an outlay of funds on products not meeting their functional expectations.

Another root of financial risk lies in the additional shipping cost. Consumers do not like high shipping costs and particularly so when the shipping cost does not align with their level of satisfaction with their internet shopping experience. Additional shipping costs have a tendency to increase the overall expenditure, which makes internet shopping for food services undesirable (Istiqomah & Marlena, 2020).

Aside from this, convenience and ease of acquisition via the internet can also be an impulsive and consumptive stimulus. Consumers can be enticed to purchase things beyond what is necessary, therefore bringing about unnecessary costs and potential strain on budgets. This stimulus can create the illusion that online food acquisition breeds excess and waste (Handayani & Nilasari, 2021). Jacoby & Kaplan (1972) also hold the viewpoint that financial risk is also excessive costs and the possibility of being duped or deceived when conducting transactions on the internet.

Deception and cheating are also problems escalating financial risk when purchasing food from the internet. Vendors can be dishonest concerning the quality of the product or include hidden charges, and this breeds suspicion among consumers. In addition, online dealings involve the sharing of confidential information such as bank card details and personal information. This information is easily misused and become a financial loss if not well protected (Paul, 1996). Therefore, a section of consumers are fearful and preserve financial information from exposure when turning to the internet for purchasing.

The matter becomes more serious when vendors are unwilling to provide refunds or compensation for substandard foods. Inability to clearly disclose return arrangements or unsatisfying customer service resolution of complaints becomes increasingly difficult for consumers to accept and can give rise to erosion of trust. This reduces consumers' reluctance to conduct food store procurements over the internet (Baek & Oh, 2019; Masoud, 2013).

Financial risks of buying foods over the internet are a consequence of various factors including uncertainty of food quality, expensive delivery fees, impulsive buying habits, fraudulent risk, and low protection for consumers. Financial risks of this nature can influence the behavior of consumers to a great extent and reduce the purchasing intent of foods over the internet.

Product Risk Affected the Purchasing Decisions of Online Food Products

Product risk is among the key variables influencing consumers' decision to purchase in an internet food purchasing scenario. Compared to physical stores, consumers who purchase from the internet are not capable of tangibly touching,

feeling, or sampling the product before an order is made. For this reason, there exists doubt about the product's true quality, size, and physical appearance. In a majority of situations, details about the product being sold on an e-platform are few or misleading, therefore causing confusion among consumers. Most consumers rely on product descriptions and images, but they are ever misleading or do not include essential information, leading to disappointment in a transaction outcome (Amsl et al., 2023; Jarvenpaa et al., 1999; Necula, 2023).

This becomes particularly problematic when there is a discrepancy between the product sold and the product defined on the site. In many cases, the product can differ drastically from what is represented or what is defined on the site, and the customer ends up being disappointed and unsatisfied (Kim et al., 2008). This miscommunication identifies one of the major issues of product risk in online retailing, the customer cannot get to experience the sensory attributes of the food in person, for instance, texture, crispiness, or aroma. According to Diaz et al., (2019); and Nguyen et al., (2021), textual descriptions alone do not tend to include all of the attributes of food products, so it becomes difficult for buyers to make decisions.

Additionally, food bought over the internet will be exposed to further risks, including receipt of fake or aged food items not adhering to standards of safety or law. This is particularly important if one considers matters of halal certification, nutritional value, or date of expiration. Inasmuch as a person will not be able to touch and feel the goods first, the buyer will be exposed to more doubt concerning the authenticity and safety of the product. This is not only a quality issue but also a health hazard.

In cases where the received food product is not to a customer's satisfaction, damaged, past its date of expiration, or deceptive, a return or refund is harder to navigate than in brick-and-mortar retail spaces. The additional efforts necessary to correct any of these scenarios may discourage customers from recouponing or, worse, engage in future online food transactions. These impediments can create a sense of distress and anxiety and therefore nullify consumers' trust in the internet as a means of food acquisition.

Time Risk does not Significantly Affect the Purchasing Decisions of Online Food Products

Time risk, or the potential loss of time during the shopping process, appears to have a minimal effect on consumers' decisions to purchase food online. This finding aligns with Masoud (2013), who argued that time-related concerns do not significantly influence consumer behaviour in the context of online shopping. The growing efficiency of food e-commerce platforms, through rapid delivery services, real-time tracking systems, and improved refrigerated packaging, has greatly reduced concerns about delays and time-related uncertainties (Chopra & Meindl, 2016). While time risk was initially seen as a barrier to adopting e-commerce (Gefen, 2000), the development of reliable logistics and customer service has increased consumer trust (Kawidiharja & Rakhman, 2024).

One key reason for this declining concern is the clarity of information regarding delivery timelines. Platforms now clearly communicate estimated arrival times, which helps consumers set realistic expectations (Park & Kim, 2003). When deliveries are consistently on time or even early, consumers view the shopping process as efficient and dependable. As Rohm & Swaminathan, (2004) suggest,

consumers tend to prioritize convenience over small time delays, perceiving online shopping as more time-saving than visiting physical stores.

Furthermore, repeated positive delivery experiences help strengthen trust and form habitual online shopping behaviour, further minimising time-related concerns (Pavlou, 2003). As technology advances and logistics networks become more integrated globally, consumer attention has shifted from time risk toward more pressing concerns such as pricing and product quality (Kim et al., 2008). Although delivery infrastructure remains more robust in developed countries, global e-commerce trends indicate that time risk is decreasing worldwide.

Another advantage of food e-commerce is the flexibility it offers. Consumers are no longer bound by store operating hours, as online platforms allow them to shop at any time (Belanche et al., 2020; Jun et al., 2022). This flexibility significantly reduces the pressure of time and enhances the overall convenience. In addition, if communication issues arise, such as slow responses from a seller, consumers can easily switch to other sellers without wasting time.

The cyber malls' virtual nature also allows for searches for products. Consumers can search for food products using search fields, filters, and categories more efficiently than on shelves. Although poor decisions still equal wasted time, reliable delivery forecasts allow consumers to plan and reduce uncertainty.

To minimize time- and delivery-related risks to a minimum, consumers should choose reputable sellers, study return and quality policies, and employ appropriate delivery options, especially for perishable goods. Fast delivery services are particularly recommended for time-perishable or delicate food products. Regular checks on an order's status and swift resolution of any issue also provide a high level of efficiency.

But consumers do not make careless purchases and squander time if they price-compare, read reviews of a product, and pay securely. Careful thinking and cross-platform price comparison to add value and reduce remorse are emphasized by Istiqomah & Marlena, (2020) and also by Pramono et al., (2020).

Finally, time-related problems can be addressed by online shops through adaptable delivery schemes, guarantees for defective goods, and promotions such as free shipping. Aside from increasing customer satisfaction, such actions also encourage repeat sales (Fihartini & Ramelan, 2017).

CONCLUSION

This research identifies four dimensions of risk: delivery risk, financial risk, time risk, and product risk. From the outcome of tests performed, it was found that there are three of the risks that actually influence consumers' decision-making for procuring online food products, and there is one dimension that does not influence decision-making.

Delivery risk, financial risk, and product risk factors all have significant effects on the decision to buy an online food product. Compared to time risk, it does not have a considerable influence on consumers' decisions to buy. Of them, delivery risk has the greatest impact compared to financial risk and product risk.

This study focused on four dimensions of risk: delivery risk, product risk, financial risk, and time risk, while many other dimensions were not addressed. Including additional dimensions could offer a more comprehensive perspective on

the risk perception of online food products. Further sampling could be conducted among e-commerce consumers from diverse sociodemographic backgrounds to ensure broader data distribution. Targeting specific demographic groups, such as millennials, could also yield more segmented results. Moreover, it's important to note that risk perception may vary between market segments; for instance, financial risk may be more significant for low-income consumers than for high-income ones.

AUTHOR CONTRIBUTION STATEMENT

[Author 1]: responsible for methodology, data collection, data analysis, drafting the initial manuscript, and manuscript editing. [Author 2]: contributed to research conceptualization, provided supervision, and offered guidance. [Author 3]: contributed to research conceptualization, provided supervision, and offered guidance. All authors have reviewed and approved the final version of the article.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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ETHIC STATEMENT

Ethical review and approval were waived for this study as it did not involve any intervention and posed minimal risk to participants. Nevertheless, informed consent was obtained from all respondents before participation, and all data were anonymized and kept confidential.

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