



Traditional Seafood Product Purchase Through E-commerce: The Impact of Perceived Risk and Benefit to Consumers' Intention to Buy

TIAN N. MA'RIFAT^{1*}, DWI SETIJAWATI¹, NIKEN H. WARDANI² AND ARIEF RAHMAWAN³

¹Fisheries Product Technology, Faculty of Fisheries and Marine Science, University of Brawijaya, Malang, Indonesia.

²Information System, Faculty of Computer Science, University of Brawijaya, Malang, Indonesia.

³Agroindustrial Technology, Faculty of Science and Technology, University of Darussalam Gontor, Ponorogo, Indonesia.

* CORRESPONDING AUTHOR: tiannurm@ub.ac.id

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Traditional seafood products in Indonesia are diverse, influenced by ethnicity and eating habits. However, the problem is the low level of consumption of seafood products in Indonesia. A limited number of traditional seafood products have entered e-commerce due to the need for more knowledge about consumer demand. In order to boost the purchase of traditional seafood products, consumers' perception needs to be explored as it plays a prominent role in a successful food product. The aim of this research is to analyse the impact of perceived risks and benefits on the purchase intention of consuming traditional processed seafood on e-commerce. Data were collected by using an online questionnaire with the number of respondents of 246 participants. This research results showed that security risk is the perceived risk factor that significantly influences the intention to buy seafood products on e-commerce. Another finding, consumers consider the product's benefit as a significant factor in buying traditional seafood on e-commerce. This paper provides novel insight into the body of knowledge about consumer perception of the risk and benefits of purchasing seafood through the online market, specifically related to product characteristics and benefits, as well as new sales methods.

1. Introduction

The utilization of digital technology has been escalating in the last decade as it permeates into broader parts of the community and economy. Electronic-based commerce (e-commerce), one of the most significant sectors in the digital economy, primarily accelerates value growth among digital users. Due to the pandemic, more people have shifted their purchasing methods from shopping in a retailer or mall to online buying. According to a survey report (DBS Bank, 2020), the Gross Marketing Value (GMV) of Indonesia's e-commerce

surged to US\$10 billion at the end of 2020. It showed that even though Covid-19 has negatively impacted the overall economic condition in Indonesia, e-commerce could be a potential sector for recovery. Moreover, e-commerce has become a booming trend for consumers buying food in Indonesia because of its convenience (Nugraha et al., 2019) and the one-stop shopping experience (Utami et al., 2019). Based on a survey from Indonesian e-commerce, food is the third most popular product category to be sought by cus-

tomers (Wihardja & Ali, 2021), so selling food products via e-commerce is one of the most potent ways to reach broader market segments.

Indonesia is one of the largest seafood producers in the world due to its location in fish-rich waters and its long fishing tradition. On the other side, seafood consumption in Indonesia is still low. Indonesia's fish consumption rate is relatively lower than the other ASEAN countries (Yee et al., 2017). In addition, the level of consumption is not evenly distributed among regions in Indonesia, as indicated by the fish consumption rate on Java island is much lower than the other islands, even though it has the highest population density (Arthatiani et al., 2018). This low level of fish consumption can be increased by introducing seafood products on e-commerce which can reach a wider range of consumers. Thus, this research is expected to be the basis for determining the strategies of entrepreneurs and the government to improve consumers' intention to buy seafood.

Previous studies have outlined the concept of perceived risk and health benefit separately in their impact on purchasing decisions. Based on the literature study, a limited journal specifically investigates the perceived risk of purchasing seafood through online platforms because it may be affected by multiple factors, from the intrinsic quality of seafood products to the distribution channel, and virtual transactions.

Temesi et al., (2020) explored perceived risks that hinder fish consumption in a low-fish-consumption country, including psychological, physical, social, and functional risks. In another case, perceived risk is one of the factors influencing purchase intention during the Covid-19 outbreak (Hing & Vui, 2021). Nonetheless, this research does not identify specifically each type of risk arising from quality evaluation by customers, the impact of different supply chains, and financial factors. Additionally, the benefits also have been published as the main functional factor for consuming seafood (Sirot et al., 2012)(Uchida et al., 2017)(Jacobs et al., 2018). Those publications focus on balancing the health risk and benefits of seafood consumption. Therefore, this paper has filled the gap regarding the identification of various risks and their interaction with the benefits of traditional seafood in shaping consumer behaviour. The aim of this research is to analyse the impact of perceived risks and benefit

factors on to purchase intention of consuming traditional processed seafood on e-commerce. The following research question (RQ) for this study:

RQ. What is the influence of perceived risk and how does it benefit the consumers' intention to buy traditional seafood on e-commerce?

Wang et al., (2020) used several innovation-adoption characteristics that influence consumers' adoption of online food shopping (perceived social norm, perceived incentive, perceived complexity, and perceived relative advantage). Perceived social norm (PSN) refers to the perceived opinions of other people on an individual adoption of online food shopping, and it is positively linked to purchase intentions for online food shopping. Perceived complexity (PCL) is the degree of the usage complexity of online food shopping perceived by consumers, and it is negatively linked to the purchase intentions for online food shopping. It is in line with the research of Ardyanto & Riyadi, (2015) that the ease of using e-commerce influenced online purchasing decisions. Perceived relative advantage (PRA) is the perceived degree of the superiority of online food shopping compared to existing offline food shopping. Previous studies indicated that consumers perceived two main advantages of online food shopping compared to traditional offline shopping: purchase convenience (e.g., time-saving) and price advantage (e.g., money-saving), which positively influence consumers' attitudes, purchase intentions, or consumptions for online food shopping (Anesbury et al., 2016).

Perceived risk plays a significant part in determining consumer purchase intentions. Perceived risk relates to the degree of uncertainty and potentially negative consequences for the consumer from the online transaction (Kim et al., 2008). Ariffin et al., (2018) examined the relationship between five types of perceived risk and online purchase intention. Consumers will have a positive online shopping experience if consumers have lesser perceived risk levels on the internet. Han & Kim, (2017) examined a multi-dimensional perceived risk which includes financial, privacy, product, security, social, and time. In order to make a concise set of variables, some parameters were eliminated based on the closeness of the measurement point, such as the time-risk dimension being merged into the PRA variable and the social-risk dimension being merged into the PSN. Several researchers focused on the effect of



financial risk (FR) in online shopping. The result from Guru et al., (2020) stated that FR is one of the top-ranked considered by online consumers. FR includes consumers' concern about the possibility of monetary loss or wasting money (Rosillo-Díaz et al., 2020) and trusted sellers (Wang et al., 2020b). Besides FR, security risk (SR) plays a vital role in consumer intention due to the massive growth of the internet globally (Ariffin et al., 2018). SR is related to inadequate internet security of consumers' financial information (bank account and credit card number) and personal information, such as delivery address (Ariffin et al., 2018).

The product risk (PR) variable is used to measure the risk that arises because consumers cannot directly assess the product. Zhang (2016) and Charlebois et al. (2021) stated that one of the following problems for fresh food on e-commerce is the loss of user experience with the product. Online selling is different from conventional ones, where consumers can judge the products by smelling, holding, or even tasting the product sample to check the quality of the food. Ariffin et al., (2018) used product risk as one of the variables to predict consumer's online purchase intention. Several physical dangers associated with fish eating include choking on bones, allergic responses, spoiled fish, and pollutants such as heavy metals (Temesi et al., 2020).

Besides those various risks, It is commonly acknowledged that seafood plays a significant role in a healthy diet. According to several studies, most people are aware of the potential benefits of seafood for their health and nutritional status (Jacobs et al., 2015). The factor of perceived health benefit (B) is also utilized by (Minnens et al., 2020) to explore how health benefit is perceived by seafood consumers. In this research, the factors of health benefits were explored in a preliminary interview with respondents and also based on previous studies. Table 1 is a summary of the theoretical model formation.

This study attempts to contribute to understanding perceived risk related explicitly to seafood purchases from e-commerce. Previous studies only focused on the risks impacted by online transactions and seafood as a consumer product purchased from the conventional market. Second, this paper integrates several theoretical approaches, various risks, and benefits of food online purchase, and intrinsic material of seafood such as contamination and functional aspects, to build a new consumer behaviour model. Last, the policy implication expected from this study is about the government's strategy to expand the market share of traditional seafood producers through online business training and proper production technique that can minimize risks.

Table 1. Summary of Model Formulation

No.	Variables	Relation to I (Intention to buy)	Reference
1	Perceived Social Norm (PSN)	positive	Wang et al., (2020)
2	Perceived Complexity (PCL)	negative	Wang et al., (2020)
3	Perceived Relative Advantage (PRA)	positive	Wang et al., (2020)
4	Financial Risk (FR)	negative	Rosillo-Díaz et al., (2020)
5	Product Risk (PR)	negative	Ariffin et al., (2018)
6	Security Risk (SR)	negative	Ariffin et al., (2018)
7	Product Risk of Seafood (PRI)	negative	Temesi et al., (2020), preliminary research
8	Perceived Health Benefit (B)	positive	Minnens et al., (2020), preliminary research

2. Materials and Methods

2.1 Data Source and measurement scale

Before the main survey began, the preliminary questionnaire was carried out by using CATA (Check-All-That-Apply) question to collect information quickly from respondents regarding the perceived risks and benefits of purchasing seafood products through e-commerce. One of the advantages of CATA questions is respondents can choose the response alternatives from a list without constraint on the number of responses (Kunz & Fuchs, 2018). The respondents for this survey were 42 respondents.

An online questionnaire is used to gather empirical data to assess the study's proposed hypotheses. There were three sections: (1) demographic data, (2) perceived risk and benefit factors, and (3) consumer response about buying traditional processed seafood on e-commerce. For the first section, demographic parameters are filled by choosing a category based on respondent condition. There are five variables in the second section and three variables in the third (see Table A1). The second and third segments are intended to evaluate the conceptual model. A five-point Likert scale is used in this section because it provides more accurate measures and respondents are more likely to think carefully about their answers with fewer choices. Based on Joshi et al., (2015), understanding all items and points on a scale requires a judgment time and a memory span. The questionnaire's items are modified from earlier studies published in the literature.

2.2 Data Collection Procedure

Collecting data begins with distributing an online questionnaire. The requirements to become respondents for the online questionnaire are 17 years old and have used e-commerce to buy food products. The requirement of age is based on the regulation for the legal user of e-commerce, while the second requirement is selected due to research interests to determine consumer perceptions based on their experience buying food products through e-commerce. Additionally, data collection was taken on August 2022 – September 2022 by utilizing an online questionnaire through Google Form survey software. The benefit of using Google Forms is the ability to distribute questions to

a large number of respondents. Similarly, the form is editable, so the survey maker or researcher is able to revise the questions anytime. There are some procedures to collect data, such as constructing questions to represent the research and distributing the questionnaire to the targeted group via WhatsApp, E-mail, and Telegram. After data was collected with the expected number of respondents, validity and reliability analysis was conducted, and proceed to statistical analysis.

2.3 Statistical Analysis

AMOS 22 is used to process a confirmatory factor analysis (CFA) to inspect the correlation among independent and dependent variables, as well as the convergent validity and discriminant validity tests to check the validity of the construct to ensure model adaptability.

3. Results

3.1 Evaluation of Measurement Model

- Convergent and Discriminant Validity

Convergent validity measures how well a constructed variable represents its latent variables, using the loading factor value for each construct. The validity criteria of the loading factor value are > 0.60 . Based on the result of the convergent validity test in AMOS 22, invalid indicators must be removed from the model with a loading factor value of < 0.6 , namely FR3 and PR 1. After removing these indicators, the loading factor values for all indicators are > 0.6 , indicating that they can be claimed as valid constructs.

Furthermore, discriminant validity measures the correlation between indicators and the latent variables by empirical standards, based on the value of cross-loading. The result of each indicator has a more excellent loading value than other latent variables. It means that each indicator highly correlates with the latent variable to be measured.

- Reliability Test

The reliability test used in this model is composite reliability. The composite reliability test results show that all variables have values > 0.7 . Therefore, all variables are reliable.



3.2 Evaluation of Structural Model

The structural model evaluation uses the R-square value with the result of 0.605. This value fulfilled the rule of thumb value < 3.0 and showed an acceptable fit between the collected sample data and a hypothetical model. (Kline, 2011).

3.3 Hypothesis Testing Result

The hypotheses testing result for this research is measured by Estimate, Standard Errors (S.E.), Critical Ratios (C.R.), and P-Value (P), where acceptance or rejection of hypotheses is determined by the P-value (Filho et al., 2013). The criteria of significant relation are P-Value < 0.05 . The results of hypothesis testing can be seen in Table 2. Based on the table, the variables having a significant influence on I are perceived benefit (B), perceived social norm (PSN), and security risk (SR).

4. Discussion

The results of the confirmatory factor analysis (CFA) presented in the study suggest that several factors that were previously expected to influence consumers in buying seafood products through e-commerce platforms are not significant. These factors include (1) financial risk, (2) perceived complexity, (3) product risk, (4) perceived relative advantage, and (5) product risk of seafood.

The finding that financial risk is not a significant factor in influencing consumers' decision to purchase seafood products online may be surprising, as previous studies have identified financial risk as a major concern for online shoppers (Ariffin et al., 2018)(Guru et al., 2020). Financial risk refers to the risk of losing money due to overbudgeting or impulsive buying, or the risk of financial information being compromised (Rosillo-Díaz et al., 2020). One possible explanation for the insignificant influence of financial risk in this study could be the sample characteristics. The study may have included consumers who are more confident in their ability to navigate e-commerce platforms and make secure financial transactions online. Almost all respondents (246 out of 247) have a higher educational background, ranging from senior high school to undergraduate or graduate degrees. This finding is also supported by a report about the Indonesian Growth of E-commerce Users in 2020. The report stated that Indonesian consumers are becoming more confident in their ability to navigate e-commerce platforms and make secure financial transactions online (Google & Temasek, 2020).

Similarly, the insignificant influence of perceived complexity may be attributed to the growing ease of use of e-commerce platforms. As online shopping becomes more mainstream, consumers are becoming more familiar with the process and may no longer perceive it as complex or difficult. According to a report (Google & Temasek, 2020), the number of online shoppers in

Table 2. Hypothesis Testing Result

Hypotheses				P Values	Decision
H1.	B	-->	I	0.000	Accepted
H2.	FR	-->	I	0.681	Rejected
H3.	PCL	-->	I	0.835	Rejected
H4.	PR	-->	I	0.612	Rejected
H5.	PRA	-->	I	0.870	Rejected
H6.	PRI	-->	I	0.280	Rejected
H7.	PSN	-->	I	0.000	Accepted
H8.	SR	-->	I	0.041	Accepted

Indonesia reached 92 million in 2020. This represents a 12% increase from the previous year. This indicates a significant shift in consumer behaviour towards online shopping. Furthermore, the Indonesian government has also taken steps to promote e-commerce and digitalization in the country. In 2020, the government launched the "Making Indonesia 4.0" program, which aims to encourage the adoption of digital technologies and e-commerce among Indonesian businesses and consumers (Ministry of Industry and Trade, 2021).

The study found that product risk has an insignificant influence on consumers' e-commerce purchasing behaviour. The questionnaire elaborated on the types of perceived product risk when purchasing food products on e-commerce, such as (1) the absence of the ability to directly touch or taste the food product, (2) concerns about receiving food products of lower quality than expected, and (3) inaccurate product descriptions. These factors may not be significant due to the level of consumers' trust, which is impacted by the reputation of the platforms, as well as ratings and reviews from other customers (Ullal et al., 2021). Therefore, it is possible that different aspects of product risk could have varying degrees of influence on consumers' e-commerce purchasing behaviour.

Perceived relative advantage is another factor that was found to be insignificant in the CFA. One possible explanation for the insignificant influence of perceived relative advantage in this study could be that the advantages of buying food products online are not clear to the respondents. The items for this factor consist of time-saving and greater price discounts of buying food products through e-commerce compared to conventional purchase, which could overlap with the measurement of other questionnaire items about benefit factors of seafood purchase from online shopping. These benefits include high nutritional value, unique taste, halal status, affordable price, and ease of processing.

As a result, the perceived social norm positively impacts consumers' intention to buy traditional seafood products on e-commerce. The influence of consumers on online purchases comes from their family members and closest friend. They also perceived that, based on their social references, buying food products is an excellent way to live. This result is in line with

former studies on online shopping (Çelik, 2011)(Srinivasan, 2015). Related to online shopping, consumers believe that their friends and relatives can strengthen their openness and online engagement. Therefore this belief contributes to shaping their behaviour in purchasing products through e-commerce (Aldhmour & Sarayrah, 2016).

Security risk is also a significant factor influencing consumers to buy seafood products through e-commerce. The previous studies also resulted in a significant relationship between security risk and online purchases (Thakur & Srivastava, 2015)(Ariffin et al., 2018). In this research, even though consumers are worried about the security factor in e-commerce transactions, this positively impacts their interest in shopping. This phenomenon can occur because of an increase in the performance of e-commerce which can guarantee customer data security.

The most substantial impact of buying traditional seafood products in e-commerce is from benefit factors. From this finding, traditional seafood products' intrinsic quality and functionality can influence consumers to buy seafood products on e-commerce. Thus, the outcome of the study recommends that online businesses strongly consider product quality and maximize their promotion to highlight the benefits of their product on online platforms. The further strategy to provide critical aspects of seafood products on e-commerce has been studied by Taka, (2022) by using a text mining approach. The tool is useful for analysing unstructured data and identifying key themes and patterns. It allows researchers to gain insights into customer perceptions and preferences, which can be used to improve product design, marketing strategies, and customer satisfaction with seafood products on e-commerce.

5. Conclusion

The study intended to measure perceived risk factors influencing consumers to buy traditional seafood products on e-commerce. The result of this study shows that among the several risks proposed in the model, only financial risk significantly influences consumer behaviour. In addition, other factors that influence consumer purchases of traditional seafood products are social norms and perceived benefits. The

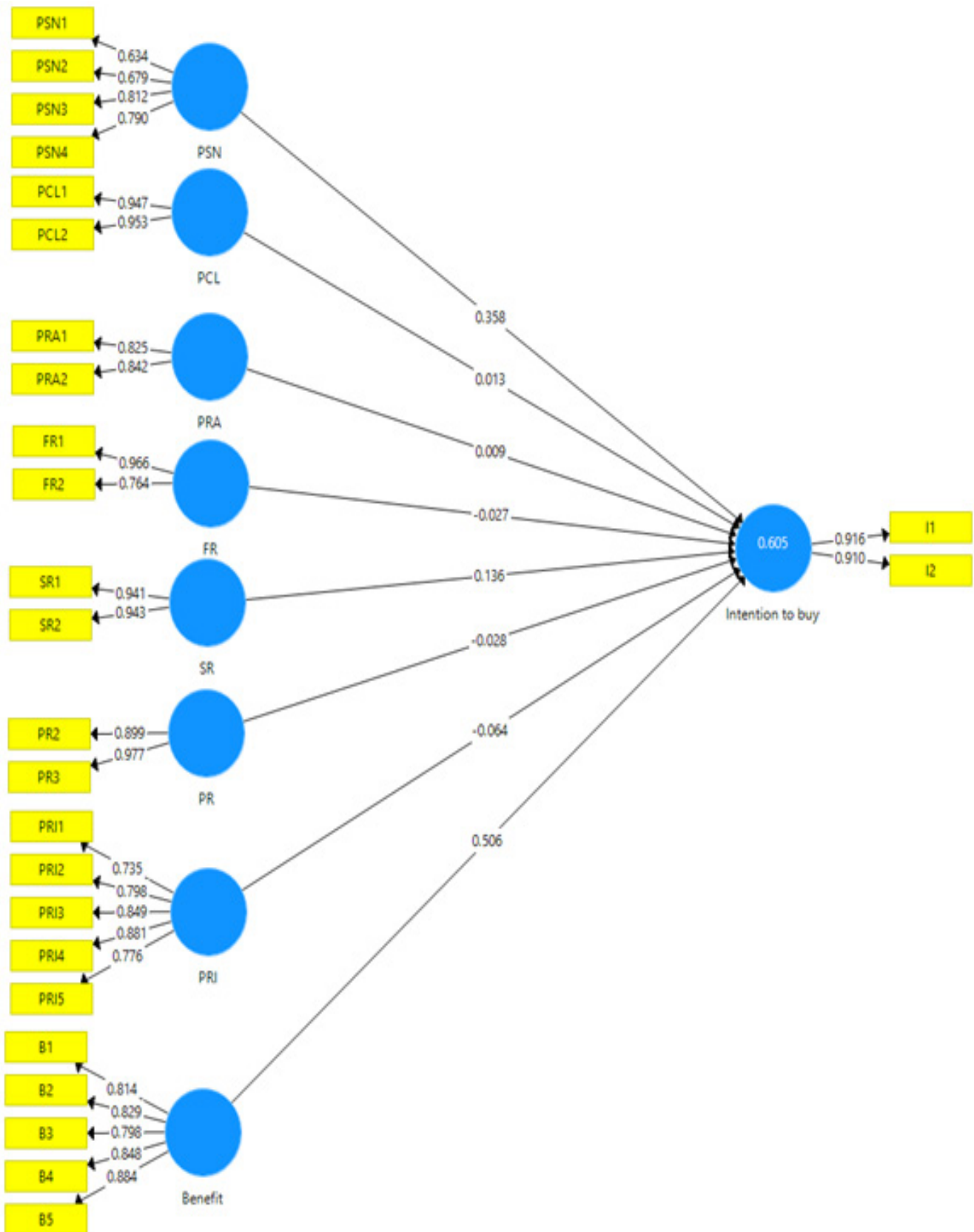


Figure 1. The Result Model of Confirmatory Factor Analysis

study has some limitations regarding predictive model formulation due to the absence of respondents' experience with traditional seafood purchases. Furthermore, the study has yet to consider online shopping in the specific context of traditional seafood e.g. smoked tuna.

The research findings have theoretical implications for the understanding of consumer behaviour in the context of seafood purchases on e-commerce. The significant influence of security risk on the intention to buy seafood products online highlights the importance of trust and security in the e-commerce environment. Furthermore, the finding that consumers consider product benefits as a significant factor in buying traditional seafood on e-commerce highlights the importance of understanding consumers' attitudes towards product characteristics when it comes to seafood purchases online.

The first practical implication of the results is that e-commerce platforms and seafood retailers should prioritize the security measures of their online transactions to reduce consumers' perceived security risks and increase their intention to buy seafood products online. Second, e-commerce platforms should focus on providing clear and accurate information about the benefits of seafood products, such as nutritional value, taste, and freshness, to attract and retain customers.

Conflict of interest

The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results

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