

# Roles of Food Safety on Customer Repurchase Intentions: The Mediation of Perceived Risk and Trust in Food Delivery Service in Bangkok during COVID-19

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## ABSTRACT

This research investigated the role of customers' food safety perception on their repurchase intentions and its mechanism via their perceived risk and trust in the food delivery business in the Bangkok area during the COVID-19 pandemic. The survey data were collected using self-administered questionnaires from 600 food delivery customers in Bangkok, and only 505 completed questionnaires were returned, with an 84.16% response rate. Partial least squares structural equation modeling was used in the data analysis, examining relationships between the variables. The results showed that perceived food safety could promote customer repurchase intentions directly ( $\beta = 0.275$ ;  $p < 0.001$ ). It could also lower perceived risk ( $\beta = -0.123$ ;  $p = 0.003$ ) and increase customer trust ( $\beta = 0.553$ ;  $p < 0.001$ ). The lower perceived risk could foster customer trust ( $\beta = -0.179$ ;  $p < 0.001$ ) and repurchase intentions ( $\beta = -0.121$ ;  $p = 0.003$ ). Customer trust also can escalate customer repurchase intentions ( $\beta = 0.445$ ;  $p < 0.001$ ). Sobel's test demonstrated that perceived food safety could also indirectly promote repurchase intentions by offsetting perceived risk ( $t = 1.960$ ;  $p = 0.049$ ) and promoting their trust ( $t = 8.254$ ;  $p < 0.001$ ) in the service providers that eventually increase their repurchase intentions. This research contributed new and additional knowledge and expanded the concept of the Social exchange theory and buying decision-making process to the context of the food delivery business that was still underexplored.

**Keywords:** Food Delivery Service, Perceived Food Safety, Perceived Risk, Customer Trust, Customer Repurchase Intentions

## บทบาทของความปลอดภัยในอาหารต่อความตั้งใจในการซื้อซ้ำ ของลูกค้า : การเป็นสื่อกลางของความเชื่อที่รับรู้ได้และความเชื่อมั่น ในการบริการส่งอาหารเดลิเวอรี่ในกรุงเทพฯ ในช่วง COVID-19

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### บทคัดย่อ

งานวิจัยนี้ศึกษาบทบาทของการรับรู้ความปลอดภัยด้านอาหารของลูกค้า ต่อความตั้งใจในการซื้อซ้ำและกลไกของความสัมพันธ์ผ่านการรับรู้ความเสี่ยงและความไว้วางใจในธุรกิจจัดส่งอาหารในเขตกรุงเทพฯ ในช่วงการระบาดของโควิด-19 ข้อมูลการสำรวจถูกเก็บรวบรวมโดยใช้แบบสอบถามจากลูกค้าของธุรกิจจัดส่งอาหารเดลิเวอรี่ จำนวน 600 รายในกรุงเทพฯ แบบสอบถามที่รอกครบถ้วนถูกส่งคืนมาเพียง 505 รายการ คิดเป็นอัตราการตอบกลับ 84.16% มีการใช้ Structural Equation Modeling ในการวิเคราะห์ข้อมูล โดยตรวจสอบความสัมพันธ์ระหว่างตัวแปร ผลการวิจัยพบว่า การรับรู้ถึงความปลอดภัยของอาหารสามารถส่งเสริมความตั้งใจซื้อซ้ำของลูกค้าได้โดยตรง ( $\beta = 0.275$ ;  $p < 0.001$ ) นอกจากนี้ยังสามารถลดความเสี่ยงที่รับรู้ได้ ( $\beta = -0.123$ ;  $p = 0.003$ ) และเพิ่มความไว้วางใจของลูกค้า ( $\beta = 0.553$ ;  $p < 0.001$ ) ความเสี่ยงที่ลดลงสามารถส่งเสริมความไว้วางใจของลูกค้า ( $\beta = -0.179$ ;  $p < 0.001$ ) และความตั้งใจซื้อซ้ำของลูกค้า ( $\beta = -0.121$ ;  $p = 0.003$ ) ความไว้วางใจของลูกค้ายังสามารถยกระดับความตั้งใจในการซื้อซ้ำของลูกค้า ( $\beta = 0.445$ ;  $p < 0.001$ ) การทดสอบของ Sobel แสดงให้เห็นว่าการรับรู้ถึงความปลอดภัยของอาหารสามารถส่งเสริมความตั้งใจซื้อซ้ำโดยอ้อมด้วยการลดความเสี่ยงที่รับรู้ได้ ( $t = 1.960$ ;  $p = 0.049$ ) และส่งเสริมความไว้วางใจของลูกค้า ( $t = 8.254$ ;  $p < 0.001$ ) ในผู้ให้บริการที่สามารถเพิ่มความตั้งใจซื้อซ้ำของลูกค้าในที่สุด งานวิจัยนี้ให้ความรู้ใหม่และขยายแนวคิดของทฤษฎีการแลกเปลี่ยนทางสังคมและกระบวนการตัดสินใจซื้อ ไปยังบริบทของธุรกิจจัดส่งอาหารเดลิเวอรี่ที่ยังไม่ได้รับการสำรวจมาก่อน

**คำสำคัญ:** บริการส่งอาหาร การรับรู้ถึงความปลอดภัยของอาหาร ความเสี่ยงที่รับรู้ได้ ความไว้วางใจจากลูกค้า ความตั้งใจในการซื้อซ้ำของลูกค้า

## INTRODUCTION

Due to the shift in people's lifestyles, the food delivery service has grown significantly worldwide, particularly in big cities (Griesbach, Reich, Elliott-Negri, & Milkman, 2019). As the capital of Thailand, Bangkok is one of the big cities with a high population in Southeast Asia (C. Liu, Mao, Bunditsakulchai, Sasaki, & Hotta, 2020). With the hectic lifestyle of people in Bangkok, where they spend hours in heavy traffic commuting between home and work (Khanthavit, 2021), food delivery businesses can fulfill their needs and expand their ventures competitively. From 2014 to 2018, the food delivery business in Thailand enjoyed over a 10% annual growth rate, while the restaurant business grew only 3–4% over the same period (Limsarun, Navavongsathian, Vongchavalitkul, & Damrongpong, 2021). With the impacts of the historical pandemic COVID-19 that has been around for years, people had to stay and work from home for months, and restaurants were forced to prohibit providing dine-in service, and food delivery seemed to be the only choice for them (Gamjorn, 2020; Sunthornpan & Hirata, 2021). The industry grew from 156.11 to 213.22 million USD in 2019 from the previous year and 319.50 million USD in 2020 and jumped to 400.20 million USD in 2021 (Manakitsomboon, 2021). However, it is fortunate that the COVID-19 situation in Thailand has been recovering, and restaurants have started to resume their services, causing the projected growth to continue decreasing in the following years (Manakitsomboon, 2021). As a result, people can now resume their lifestyle even though it is not the same. Even though restaurants can now open for customers to eat in, and food delivery is no longer the only choice for people, the food delivery business continues to grow and lead to more intense competition (Gamjorn, 2020; Sunthornpan & Hirata, 2021). As the competition grows, it is vital for food delivery businesses to gain competitive advantages to achieve sustainable business goals. One of the critical indicators of a food delivery business's success is the intention of customers to reorder food from them, which can potentially lead to long-run business success (Ratasuk & Gajesanand, 2020; Yeo, Tan, Teo, & Tan, 2021). Even though food delivery companies compete by providing a wide selection of restaurants and menus, convenient and fast delivery services, and many more, many other factors are expected to give a food delivery company a competitive advantage. In the light of the pandemic that people are fragile and sensitive to their health and safety, customers' food cleanliness and safety perception concerning the cleanliness and hygiene of the food and its handling process is playing a more critical role in customers' buying decision-making process (Cui, Jiang, Deng, & Zhang, 2019; Ha, Shakur, & Do, 2019). Food safety is critical for consumers in evaluating their restaurant options associated with perceived food and service quality (Cha & Borchgrevink, 2019).

However, despite its importance, this topic has not received enough attention from scholars in the foodservice industry. Given the importance of food safety for consumers in the restaurant business, food delivery service providers should realize its impacts on their businesses, resulting in their success or failure. Even though there are studies on the roles of perceived food safety in promoting customer repurchase intentions, the direct impact of customers' perceived food safety on their repurchase intentions has been limitedly explored (Loh & Hassan, 2021; Wang & Tsai, 2019). This study aimed to analyze the roles of perceived food safety on customer repurchase intentions in the food delivery business in Bangkok

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and its mechanism. The mediating roles of customer trust and perceived risk between the two variables were investigated. The mediations were expected to provide a better understanding of their relationship.

## **LITERATURE REVIEW**

This study examined and analyzed the relationships among four variables, namely perceived food safety, customer repurchase intentions, customer trust, and perceived risk, according to the social exchange theory and buying decision-making process. They are listed as the following.

### **Perceived Food Safety**

Food Safety refers to handling, preparing, and storing food to reduce the risk of individuals becoming sick from foodborne illnesses and is the primary and essential factor required for food products (Fung, Wang, & Menon, 2018). Consumers primarily expect all food they buy to be safe to consume, and thus, a severe negative feeling is generated once food safety is absent (Bouranta, Psomas, & Vouzas, 2018; Chang, Chou, & Lo, 2014; Ilie & Georgescu, 2019). It concerns physical, chemical, and biological hazards that can cause foodborne illness (Wang & Tsai, 2019). Food safety is an important topic centered on several parties, including governmental organizations, food producers, and consumers. In particular, food service businesses are often criticized once consumers face food safety issues; therefore, they should maintain positive consumer perceptions of food safety. The concept of food safety has been applied widely throughout the food supply chain in food industries worldwide (Focker & van der Fels-Klerx, 2020; Fung et al., 2018). Many studies explore the roles of food safety in food production (Carvalho, 2017; Jagadeesan et al., 2019). Food safety's roles have also been investigated in the food delivery service, yet it is still limited (Chandrasekhar, Gupta, & Nanda, 2019; Sharma, Dhir, Talwar, & Kaur, 2021). For example, Hong, Choi, Choi, and Joung (2021) investigated the effect of food safety risk perception on online food delivery usage intentions during the COVID-19 pandemic.

### **Customer Repurchase Intentions**

Attracting new customers is critical for businesses while maintaining existing customers is critical. Companies need to make their customers revisit and repurchase; otherwise, their businesses would not be secure and sustainable. Maintaining existing customers and building their loyalty is not simple. Businesses are required to contribute a great deal of effort and collaboration from everyone in companies (Ratasuk & Gajesanand, 2020). Customer repurchase intention is defined as customers' willingness to repurchase goods and services from the same businesses (L. Chen, Li, & Liu, 2019; Loh & Hassan, 2021; Oreg, Bartunek, Lee, & Do, 2018; Yeo et al., 2021). Customer repurchase intention is a critical indicator for long-run business success. It shows products' ability and services to satisfy and fulfill customers' needs, leading to business profitability and sustainability (Ratasuk & Gajesanand, 2020).

## Customer Trust

Trust is an essential factor that maintains the relationships in society, enabling it to function irregularly (Božič, Siebert, & Martin, 2020; Devine, Gaskell, Jennings, & Stoker, 2021). Trust is defined as a person's adamant belief or expectancy that a person can be relied on and fulfill his or her obligations (Božič et al., 2020; Ratasuk & Charoensukmongkol, 2019). In the business, customer trust is the optimistic feeling of customers toward products and services or companies that will provide the quality they expect (Ye, Ying, Zhou, & Wang, 2019). This customer trust is complex and requires a certain period to develop, and it is built through customers' satisfactory experience with products and services (Jalilvand, Vosta, Mahyari, & Pool, 2017). Customer trust can cause many desirable results, for instance, customer loyalty, repurchase intentions, and customer satisfaction (Iglesias, Markovic, Bagherzadeh, & Singh, 2020; Islam et al., 2021; Lam, Lau, & Cheung, 2016).

## Perceived Risk

Customers' perceived risk refers to their expectation of losses and undesired outcomes of buying a product or service (Ariffin, Mohan, & Goh, 2018). Perceived risk plays a vital role in the consumer decision-making process; their perception of risk is critical in their alternative evaluation and purchasing actions. Consumers perceive a higher risk when facing unstable or negatively unexpected situations. Perceived risks in products and services discouraged business intentions and activities (Ariffin et al., 2018; Casidy & Wymer, 2016; Hussain, Ahmed, Jafar, Rabnawaz, & Jianzhou, 2017). For example, Pattanapomgthorn, Sutduean, and Keohavong (2020) revealed that perceived risk decreases customers' buying intention toward GM food.

## Social Exchange Theory

The main idea of social exchange theory is based on the concept that a relationship between two people or parties can be developed by analyzing and comparing both parties' costs and benefits (Cook, Cheshire, Rice, & Nakagawa, 2013). This theory does not measure a relationship based on emotions. Instead, it relies on empirical methods, mathematics, and logic to determine balance within a relationship. It can measure the balance of various relationships, such as romantic relationships, friendships, and even business relationships. The foundation of social exchange theory stands on various assumptions focusing on human nature and the nature of various types of relationships. This theory assumes that a person always seeks rewards while avoiding punishment. Hence individuals tend to interact and develop relationships to maximize their profit with minimal cost. They also analyze the costs and benefits before engaging in a relationship with a person. The results will vary from person to person or even the same person in different scenarios. Researchers widely adopt the social exchange theory to explain relationships and phenomena in business and marketing (Paparoidamis, Katsikeas, & Chumpitaz, 2019). In business contexts, the social exchange theory has been applied to explain the relationship between organizations

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and their customers developed from exchanging benefits between the two parties (Paparoidamis et al., 2019).

**Buying Decision-Making Process**

Kotler, Kartajaya, Huan, and Liu (2012) describe the buying decision-making process as six stages of how customers make their purchase decisions, including problem recognition, information search, alternative evaluation, purchase intention, purchase decision, and post-purchase behavior. Marketers widely use this process to understand their customers, and this study focuses on post-purchase behavior. In this stage, customers review and evaluate their purchasing experience to make future decisions. Customers must decide whether they will repurchase depending on their prior experience with products and services (Ratasuk, 2019). Their satisfaction would lead to repurchase intention and willingness to share their good experience with others, while their dissatisfaction would lead to switching to other brands and spreading their concerns. Therefore, this post-purchase stage is a critical factor in indicating sustainability and the success of businesses.



**Figure 1:** The Buying Decision-Making Process (Ratasuk & Gajesanand, 2020)

**Hypotheses Development**

All hypotheses were developed on the ground of the social exchange theory and the buying decision-making process as follows:

**Perceived Food Safety and Customer Repurchase Intentions**

Consumers have been paying more attention to food safety and using it as an essential factor in their buying decision-making because it affects their health benefits (Wang & Tsai, 2019). According to the social exchange theory and buying decision-making process, customers use their experience with products and services to determine their post-purchase actions, whether switching to other businesses or staying with the same companies (Ratasuk & Gajesanand, 2020). Thus, unhygienic food and delivery conditions that may be skeptical about posing some harm to their health can diminish the chance of repurchasing (Ma et al., 2021; Wang & Chu, 2020; Wang & Tsai, 2019). According to Loh and Hassan (2021), perceived food safety risk indirectly discourages repurchase intentions of the food truck business, which

means the lower the food safety level they perceive, the lower the repurchase intentions they have. Thus, the following hypothesis was proposed.

H1: Perceived food safety has a positive association with customer repurchase intention

### **Food Safety, Customer Trust, and Customer Repurchase Intention**

Pleasant experience with products and services creates positive feelings, emotions, and attitudes and promotes trust (Božič et al., 2020). Food safety, which can lead to customer satisfaction and a pleasant experience with products and services, also fosters customer trust (Cha & Borchgrevink, 2019). According to W. Chen (2013), customer trust and perceived food safety positively depend on each other and that customers feel more confident and trust in their food and food service providers when they perceive fewer or no food hazards. Once Customers trust their food and the service providers, they tend to be driven to repeat their business with the providers (Chinomona & Dubihlela, 2014; Y. Liu & Tang, 2018; Sullivan & Kim, 2018; Upamannyu, Gulati, Chack, & Kaur, 2015). The social exchange theory can explain this that customers' satisfaction, which is developed from the outweighing of benefits over costs of experiencing products or services, fosters positive attitudes granting them the confidence to stay in a relationship with a business and repeat their support (Chou & Chen, 2018; Liang, Choi, & Joppe, 2018; Marakanon & Panjakajornsak, 2017; Qalati et al., 2021; Trivedi & Yadav, 2020). Hence, the following hypothesis was proposed.

H2: Customer trust positively mediates the relationship between perceived food safety and customer repurchase intention

### **Food Safety, Perceived Risk, and Customer Repurchase Intention**

Unlike non-food hazards, food safety can lead to severe foodborne illness; thus, unhygienic conditions and environments can create risks to consumers (Pattanapomgthorn et al., 2020). Food safety concerns, such as food temperature, hygiene of food handlers, and the surrounding environment customers perceive when receiving their food, can determine the perceived risk to their health (Ha et al., 2019; Nardi, Teixeira, Ladeira, & de Oliveira Santini, 2020). When individuals perceive a certain level of risk, they tend to be reluctant to make a purchase decision (Marakanon & Panjakajornsak, 2017). After they have experienced their first purchase, they tend to be aware of possible risks for their next purchase and behave according to their perceived risk (Marriott & Williams, 2018; Qalati et al., 2021; Yeo et al., 2021). Marriott and Williams (2018) found that decreased risk perception can promote customers' repurchase intention in mobile shopping in the UK. Qalati et al. (2021) also found a significant negative association between perceived risk and customer repurchase intentions in online shopping. This process is in line with the social exchange theory that once perceived food safety which is a desirable factor to customers, offsets perceived risk, which is viewed as a negative one, customers' repurchase intentions,

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which is a relationship between customers and businesses, will be promoted. Hence, the following hypothesis was proposed.

H3: Perceived risk positively mediates the relationship between perceived food safety and customer trust

## **METHODOLOGY**

### **Sample and Data Collection Procedure**

The context of this study focuses on customers of food delivery service companies who reside in the Bangkok area. These customers must regularly use food delivery services carriers provide via their mobile applications. Self-administered questionnaires were employed as the survey tool to collect data. The questionnaire includes a cover letter stating clearly the research objectives and instructions. The questionnaires contain two main parts: participants' characteristics and question sets measuring participants' attitudes towards latent variables in the research model. The samples were selected using a purposive and stratified random sampling method. A total of 500 food delivery customers from 50 districts of Bangkok were initially approached. Ten qualified customers who use food delivery service at least three times a week were randomly approached in each district and asked whether they were qualified before participating in the survey. Participation in the survey was voluntary. The survey was conducted starting from mid of January and ending in late February 2021. The collected data were held anonymously.

### **Measurements**

All variables were measured using scales adapted from previous studies that have been proven valid and reliable. All question items measuring each variable were rated on five-point Likert scales, including (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

Customer repurchase intentions will be measured using the four-item scale adapted from Sullivan and Kim (2018). Sample question items are "If I were to use food delivery service again, I would likely use the same company." and "If I could, I would like to reorder from this company for my next purchase."

Customer trust will be assessed by the three-item scale adapted from Devine et al. (2021). Sample question items are "Overall, I have complete trust in the food delivery company." and "The food delivery company honestly treats me in every transaction."



Perceived risk will be measured using the four-item scale adapted from Yu, Neal, and Sirsat (2018). Sample question items are “Using the food delivery service of this company exposes me to overall risk.” and “I do not feel safe using the food delivery service of this company.”

Perceived food safe will be measured using the six-item perceived scale adapted from (Bouranta et al., 2018) and Cha and Borchgrevink (2019). Sample items are “this food delivery company is capable of ensuring food safety.” and “Food deliverer keeps hygiene mask on at all times.”

### **Control Variables**

Five control variables, namely gender, education, income, and age, were included in this study. Scholars widely employ these demographic variables to affect consumer behaviors in business and management contexts.

### **Data Analysis**

This study employed partial least square structural equation modeling (PLS-SEM) to examine the proposed research model. PLS integrates a principal component analysis (PCA), path analysis, and a set of regressions to estimate the model’s paths standardized regression coefficients, and measurement items’ factor loadings (Chin, 1998; Lin et al., 2020). Unlike others, PLS effectively produces more accurate results when the data is from a small sample or not normally distributed than other structural equation modeling techniques (Joe F Hair, Sarstedt, Ringle, & Mena, 2012). WarpPLS 7.0 program is selected because it is the latest version that has been improved from previous versions in many functions. Before the PLS-SEM proceeds, descriptive statistics, validity and reliability tests, normality tests, multicollinearity tests, and model-fit indices are used to evaluate the model quality.

The data collection methodology and a self-administered questionnaire have been reviewed and met all Research Ethics Committee (REC) requirements, granting a reference number of PIM-REC 036/2563.

## **RESULTS**

The sample of 505 food delivery customers who participated in this study and the descriptive statistics of their characteristics, including gender, age, income, and education, are presented in Table 1. The sample includes 275 female participants (54.46%) and 230 male participants (45.54%). Two hundred eighty-nine participants (57.23%) are 21 to 30 years old, and 115 (22.77%) are 18 to 20. Two hundred participants (39.60%) earn from 10,001 to 20,000 Baht per month, and 141 (25.94%) earn less than 10,000 Baht per month. Two hundred ninety-six participants (58.16%) have an undergraduate degree, 72 (14.26%) have an associate degree, and the same number have a high school diploma.

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**Table 1:** Sample Characteristics

Characteristics		Descriptive Statistics
Gender	Male	230 (45.54%)
	Female	275 (54.46%)
Age	18 to 20 years old	115 (22.77%)
	21 to 30 years old	289 (57.23%)
	31 to 40 years old	78 (15.45%)
	41 to 50 years old	12 (2.38%)
	51 to 60 years old	7 (7.3%)
	Older than 60 years old	1 (0.20%)
Income (per month)	Less than 10,000 Baht	141 (25.94%)
	10,001 to 20,000 Baht	200 (39.60%)
	20,001 to 30,000 Baht	130 (25.74%)
	30,001 to 40,000 Baht	30 (5.94%)
	40,001 to 50,000 Baht	5 (0.99%)
	More than 50,000 Baht	4 (0.79%)
Education	Lower than high school	14 (2.77%)
	High school	72 (14.26%)
	Associate degree	72 (14.26%)
	Undergraduate degree	296 (58.16%)
	Master degree	45 (8.91%)
	Doctoral degree	4 (0.79%)

The model quality was tested in various dimensions: First, the model's convergent validity was ideal if its factor loadings were at least 0.7. In Table 2, all variables' factor loadings were above 0.7, indicating that the model's convergent validity was ideal.

**Table 2:** Indicator Loadings and Cross-Loadings of Latent Variables

	Replnt	FSafety	CTrust	Risk
Replnt1	(0.844)	0.015	-0.077	0.010
Replnt2	(0.806)	0.004	0.047	-0.024
Replnt3	(0.804)	0.043	-0.029	-0.011
Replnt4	(0.792)	-0.064	0.064	0.024
FSafety1	0.191	(0.811)	-0.126	-0.035
FSafety2	0.065	(0.811)	-0.004	-0.029
FSafety3	-0.077	(0.828)	0.001	0.056
FSafety4	-0.108	(0.811)	0.026	-0.034
FSafety5	-0.077	(0.740)	0.112	0.046
CTrust1	0.076	0.050	(0.771)	-0.031
CTrust2	0.020	-0.030	(0.779)	0.003
CTrust3	-0.059	0.042	(0.784)	0.003
CTrust4	-0.035	-0.059	(0.814)	0.024
Risk1	0.106	-0.025	-0.074	(0.914)
Risk2	-0.038	-0.030	0.050	(0.903)
Risk3	-0.007	0.028	0.009	(0.904)
Risk4	-0.061	0.027	0.015	(0.923)

**Note(s):** Replnt = customer repurchase intentions, FSafety = perceived food safety intention, CTrust = customer trust, and Risk = perceived risk

Second, the model has tested its discriminant validity by comparing its square root values of the average variance extracted (AVE) with other relevant correlations of each variable (Sarstedt, Hair Jr, Cheah, Becker, & Ringle, 2019). Table 3 shows that the AVEs of all variables are higher than their correlations with other variables indicating a satisfactory level of discriminant validity of the model (J.F. Hair, Sarstedt, Ringle, & Gudergan, 2017). Third, Cronbach’s alpha and composite reliability coefficients were used to verify the model’s reliability, which both are suggested to be no less than 0.7 to be acceptable (McNeish, 2018). The lowest coefficient is 0.795, which means the model’s reliability was satisfied, as shown in Table 3. Fourth, the model’s multicollinearity was tested using the full variance inflation factor (VIF) values, which should not be over 3.3 to be ideal and 5 to be maximum to accept (Kock & Lynn, 2012; Senaviratna & Cooray, 2019). The model’s highest full VIF was 2.192, lower than 3.3 indicating no sign of a severe multicollinearity issue. Finally, the model was tested for a possibility of common method bias (CMB), which can also be identified when the full collinearity VIFs are higher than 3.3 (J.F. Hair et al., 2017; Kock, 2017); thus, the CMB is not a critical issue.

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**Table 3:** Variables’ Correlations and Reliability

Variables	Cronbach's	Composite	Replnt	FSafety	CTrust	Risk	Gen	Age	Income	Edu
	Alpha	Reliability								
	Coefficient	Coefficient								
Replnt	0.827	0.885	(0.812)							
FSafety	0.860	0.899	0.625**	(0.801)						
CTrust	0.795	0.867	0.685**	0.637**	(0.787)					
Risk	0.932	0.951	-0.118**	-0.027	-0.070	(0.911)				
Gen	1.000	1.000	-0.122**	-0.140**	-0.153**	0.129**	(1.000)			
Age	1.000	1.000	-0.008	-0.043	-0.020	0.033	0.050	(1.000)		
Income	1.000	1.000	0.122**	0.135**	0.117**	-0.143**	0.010	0.600**	(1.000)	
Edu	1.000	1.000	0.161**	0.121**	0.113*	-0.074	-0.007	0.249**	0.431**	(1.000)

**Note:** \*\* and \* mean a p-value of <0.01 and ≤ 0.05, respectively;

**Note(s):** Replnt = customer repurchase intentions, FSafety = perceived food safety intention, CTrust = customer trust, Risk = perceived risk, Gen = gender, Age = age, Income = income, and Edu = education

According to the normality test results from the PLS analysis shown in Table 4, the data distribution of all variables in this study, consisting of customer repurchase intention, perceived food safety, customer trust, perceived risk, gender, age, income, and education, are not normally distributed. According to Joseph F Hair et al. (2019), PLS-SEM is appropriate for a complicated research model with several constructs and relationship paths. Still, it also works effectively with small sample sizes and does not require the data to be normally attributed. Therefore, the normality test results indicate that PLS-SEM is suitable for this research.

**Table 4:** Normality Test Results

	Replnt	FSafety	CTrust	Risk	Gender	Age	Income	Edu
Normal-JB	No	No	No	No	No	No	No	No
Normal-RJB	No	No	No	No	No	No	No	No

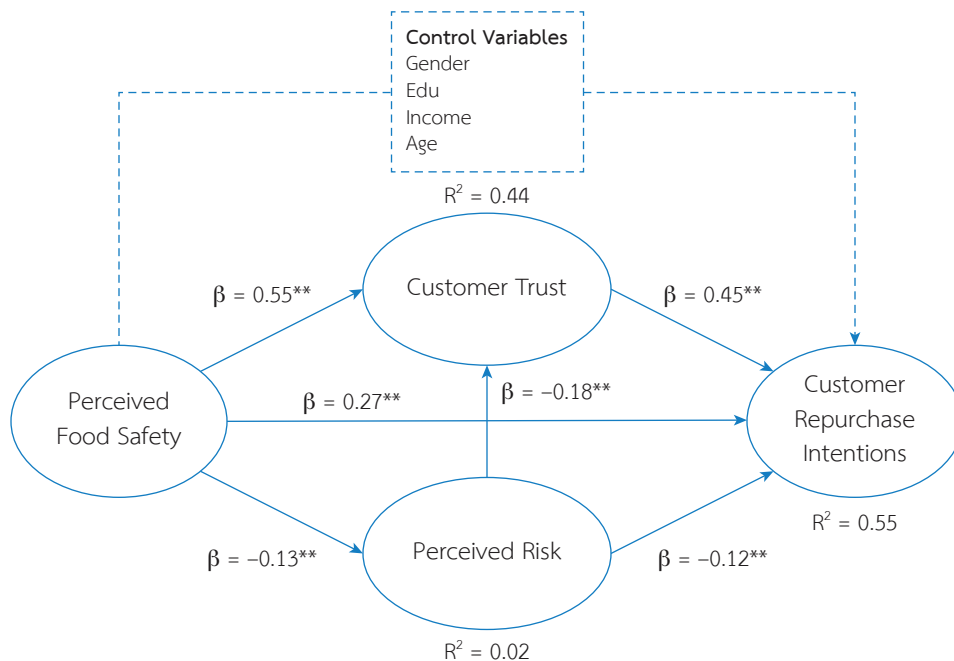
Moreover, the model’s overall quality was tested using the ten model-fit indices from the PLS-SEM analysis presented in Table 5 (Kock, 2017). The results show that all indices were satisfied, which means this research model has sufficient quality.

**Table 5:** PLS-SEM’s Model Fit Indices

Model Fit Indices	Coefficient	Result
Average path coefficient (APC)	0.174**	Significant
Average R-square (ARS)	0.274**	Significant
Average adjusted R-square (AARS)	0.269**	Significant
Average variance inflation factor (AVIF)	1.263	Ideal
Average full variance inflation factor (AFVIF)	1.655	Ideal
Tenenhaus GoF index (GoF)	0.481	Large
Simpson’s paradox ratio (SPR)	0.857	Acceptable
R-square contribution ratio (RSCR)	0.997	Acceptable
Statistical suppression ratio (SSR)	0.929	Acceptable
Nonlinear bivariate causality direction ratio (NLBCDR)	0.929	Acceptable

**Note:** \*\* means a p-value of < 0.01.

The PLS-SEM analysis results are presented in figure 2 and explained in detail as follows:



**Figure 2:** Structural Equation Model Results

**Note:** \*\* means a p-value of < 0.01.

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Hypothesis 1: Perceived food safety is positively associated with customer repurchase intentions. The results showed a significant positive association between the two variables ( $\beta = 0.275$ ;  $p < 0.001$ ). Thereby, hypothesis 1 was supported.

Hypothesis 2: Customer trust positively mediates the relationship between perceived food safety and customer repurchase intentions. The results revealed a significant positive relationship between perceived food safety and customer trust ( $\beta = 0.553$ ;  $p < 0.001$ ) and a significant positive relationship between customer trust and customer repurchase intentions ( $\beta = 0.445$ ;  $p < 0.001$ ). Also, according to the results from the Sobel test suggested by Hayes and Preacher (2014), customer trust has significant positive mediation on the relationship ( $t = 8.254$ ;  $p < 0.001$ ). As a result, referring to hypothesis 1 and the Sobel test result, this can be concluded that customer trust partially mediates the relationship between perceived food safety and customer repurchase intentions. Therefore, hypothesis 2 was confirmed.

Hypothesis 3: Perceived risk positively mediates the relationship between perceived food safety and customer repurchase intentions. The results revealed a significant negative relationship between perceived food safety and perceived risk ( $\beta = -0.123$ ;  $p = 0.003$ ) and a significant negative relationship between customer trust and customer repurchase intentions ( $\beta = -0.121$ ;  $p = 0.003$ ). In addition, according to the results from the Sobel test suggested by Hayes and Preacher (2014), perceived risk positively mediates the relationship ( $t = 1.960$ ;  $p = 0.049$ ). As a consequence, referring to hypothesis 1 and the Sobel test result, this can be concluded that perceived risk partially mediates the relationship between perceived food safety and customer repurchase intentions. Therefore, hypothesis 3 was supported.

Apart from the three proposed hypotheses, the linkage between perceived risk and customer trust was also investigated as the mechanism of the positive relationship between perceived food safety and customer trust. Referring to hypothesis 3 that perceived food safety has a negative association with perceived risk ( $\beta = -0.123$ ;  $p = 0.003$ ) and the findings also showed a negative association between perceived risk and customer trust ( $\beta = -0.179$ ;  $p < 0.001$ ), the mediation of perceived risk between perceived food safety and customer trust was tested. According to the Sobel test results suggested by Hayes and Preacher (2014), perceived risk has significant positive mediation on the relationship ( $t = 2.303$ ;  $p = 0.021$ ). In addition, according to the negative association between perceived risk and customer trust ( $\beta = -0.179$ ;  $p < 0.001$ ) and the positive relationship between customer trust and customer repurchase intentions ( $\beta = 0.445$ ;  $p < 0.001$ ), The Sobel test results suggested that customer trust negatively mediates the relationship between perceived risk and customer repurchase intentions. ( $t = -3.797$ ;  $p < 0.001$ ). Consequently, perceived risk and customer trust positively mediate the relationship between perceived food safety and customer repurchase intentions.

Moreover, the effects of control variables on perceived food safety and customer repurchase intentions were also reported. The findings showed that gender only has a significant negative association with perceived food safety ( $\beta = -0.135$ ;  $p < 0.001$ ). Age is significantly and negatively associated with

perceived food safety ( $\beta = -0.074$ ;  $p = 0.047$ ) and significantly and positively associated with customer repurchase intentions ( $\beta = 0.093$ ;  $p = 0.018$ ). Income is significantly and positively associated with perceived food safety ( $\beta = 0.166$ ;  $p < 0.001$ ). Furthermore, education is significantly and positively associated with both perceived food safety ( $\beta = 0.159$ ;  $p < 0.001$ ) and customer repurchase intentions ( $\beta = 0.088$ ;  $p = 0.023$ ).

## DISCUSSION AND CONCLUSION

This study investigated the role of perceived food safety on customer repurchase intentions and its mechanism via perceived risk and customer trust in the food delivery business in Bangkok during the COVID19 outbreak.

The findings indicated that customers who perceive a high level of food safety tend to have higher repurchase intentions than ones who perceive less food safety from food delivery service, which is in line with prior research that food safety is an essential factor that creates positive outcomes to customers and businesses (Loh & Hassan, 2021; Wang & Chu, 2020; Wang & Tsai, 2019). Even though, as mentioned earlier, the number study on the direct effect of food safety on customer repurchase intentions is still limited, some studies explored the roles of food safety on other variables that link to repurchase intentions (Loh & Hassan, 2021; Wang & Chu, 2020; Wang & Tsai, 2019). For example, the study of Wang and Tsai (2019) found that perceived food safety promotes health benefit perception, which is positively associated with the repurchase intentions of traceable fresh food consumers in Taiwan. Wang and Chu (2020) also found a consistent result in the context of certified functional foods. Similarly, Loh and Hassan (2021) investigated the impact of food safety risk and found it promotes a positive attitude that fosters food truck consumers' repurchase intentions.

Consequently, the investigation of the direct contribution of perceived food safety on customer repurchase intentions in this study provides new knowledge and evidence in the food safety study. Moreover, the findings showed that trust and perceived risk are essential in driving customer repurchase intentions. This finding complements the study of Marriott and Williams (2018) and Qalati et al. (2021), who found a negative association between perceived risk and customer repurchase intentions in online shopping, and Sullivan and Kim (2018), who found a negative contribution of perceived risk and a positive contribution of online trust on repurchase intention in online shopping websites in South Korea. The results also indicated that the two variables are essential factors in how perceived food safety promotes customer repurchase intentions. The positive mediating roles of customer trust and perceived risk reflect the importance of food safety in making customers feel more confident and safer with delivered food, in particular during the COVID-19 pandemic when health concern is raised as a priority which supports the findings of Wang and Chu (2020) and Wang and Tsai (2019). The relationship between perceived risk and customer trust and their mediating roles were also tested as the mechanism of the relationship between perceived food safety and customer repurchase intentions. The results revealed that customers with a high level of perceived food safety tend to perceive a lower degree of risk from consuming their

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food and tend to trust the delivery service providers and the restaurants promoting their repurchase intentions. Inferred to the findings, customers tend to view the low level of food safety as a risk that threatens them and makes them defensive that they will not go back to support the businesses again (Nardi et al., 2020; Yu et al., 2018). This mechanism parallels the study of Wang and Tsai (2019) that found that perception of food benefit and affective commitment are the mechanisms that help food safety perception drive the repurchase intention of traceable fresh food consumers in Taiwan. It is also in line with the findings of Loh and Hassan (2021), who found that perceived food safety risk prohibits customers from having positive attitudes, which fosters their repurchase intentions of food truck products in Malaysia.

Considering the control variable results, the negative association between gender and perceived food safety can be interpreted as female customers being more concerned with the level of food safety in the food delivery service than male customers. The negative association between age and perceived food safety can also be interpreted as the younger the customers, the more concerned with food safety on the food delivery. Moreover, its positive association with repurchase intentions indicates that older customers are more likely to repeat their purchases than younger ones. The positive relationship between income and food safety indicates that customers with higher income have more concerns with food safety than those with lower income. Lastly, the positive relationships between education with both food safety and repurchase intentions can be interpreted that customers with higher education pay more attention to the level of food safety in their food delivery and also tend to repeat their purchases with the same food delivery service providers and restaurants than ones with lower education.

### **Theoretical Contributions**

The research's findings provide a theoretical contribution to the literature on food safety studies and customer repurchase intentions in the foodservice industry. From the theoretical perspective, the findings are harmonious with the prediction of the social exchange theory, which focuses on the relationships between individuals developed by the offset of their perceived benefits over costs they have to pay (Cook et al., 2013; Paparoidamis et al., 2019; Ratasuk, 2021). From the perspective of the social exchange theory, food safety's role is beneficial to customers making them perceive lower risk allowing them to be more confident in foods and services delivered and intend to repeat their purchases (Wang & Tsai, 2019). Because food safety is the practice of handling, preparing, and storing food that best reduces the risk of individuals becoming sick from foodborne (Fung et al., 2018). As this minimizes perceived risks and harms to their health, customers are more likely to develop a positive emotion and confidence toward the food delivery service providers and restaurants, which is where trust is developed (Y. S. Chen & Chang, 2013). When their trust in the food delivery service providers and restaurants is developed, customers will likely return to the businesses to repeat their purchasing when they are hungry (Y. Liu & Tang, 2018; Sullivan & Kim, 2018). This mechanism allows food delivery and restaurant businesses



to promote their customers' repurchase intentions (Loh & Hassan, 2021; Wang & Chu, 2020; Wang & Tsai, 2019). Overall, by integrating the role of perceived food safety with the perspective of social exchange theory, this research adds theoretical clarification that explains the necessity of food delivery and restaurant businesses to develop customer repurchase intentions that are essential for them to achieve a sustainable business success thereby.

The primary findings from this study also provide several empirical contributions to prior food safety research. First, the effects of perceived food safety in the food delivery context provided additional evidence to prior food safety research that rarely has been investigated. This research advances our understanding by analyzing the role of food safety in the buying decision process and showing that it also can be conceptualized as an essential factor in the food delivery buying process. In addition, this research proves that food safety may be integrated with other factors to promote desirable business outcomes by prohibiting the level of uncertainty that may occur in the buying decision process. Food safety allows customers to be confident in foods and services provided by businesses because they overcome possible harms and risks to their health. Given the limited amount of research that has considered food safety as an antecedent of repurchase intentions, this research suggests that it is still necessary for future studies to expand the concept of food safety by focusing more on its contributions to other desirable business outcomes to broaden our knowledge of the benefits of food safety in the foodservice perspective. Further, this study provides additional evidence about food safety's beneficial effects on customer trust and perceived risk, which remains an underexplored area in food safety research. Although the interest in food safety research has expanded exponentially, there still are a limited number of studies to date that provide evidence to support the effects of food safety on customer repurchase intentions in the foodservice industry. In particular, this research provides evidence of the direct contribution of food safety to customer repurchase intentions (Loh & Hassan, 2021; Wang & Chu, 2020; Wang & Tsai, 2019). Instead, this study offers an additional contribution by defining customers' repurchase intentions overall as the outcome variable. This finding also proves the essential role of food safety in promoting food delivery customers' repurchase intentions. Moreover, the results that supported the significant mediating effect of trust and perceived risk in the influence of customers on repurchase intentions added vital evidence to clarify the mechanism by which food delivery service providers and restaurants can generate customer repurchase intention outcomes. In particular, this finding extends previous research that overlooked the benefits and mechanism of food safety, which is essential for businesses to manipulate uncertainty and cultivate customers' trust (Wang & Tsai, 2019). This result suggests that without perceived risk and trust, it may be difficult for businesses with high food safety to achieve customer repurchase intentions. Given that the research on food safety's role in the foodservice industry, particularly in the food delivery business, is still limited, there remains room for future research to explore what other factors or mechanisms might allow businesses with a high level of food safety to achieve other desired business outcomes.

## **Practical Contributions and Suggestions**

The research findings provide practical contributions to the management of food delivery companies and restaurants. Managers can use this research as a guideline to improve their service and create competitive advantages. They can also apply it to enhance their delivery service, particularly in the COVID19 pandemic when dine-in service is still limited, and many people are reluctant to dine out in a restaurant. According to the results, managers should pay more attention to food safety by providing food safety and other related training to their employees. Support and sponsor their employees to undertake food safety standards courses or programs. Also, enact strict policies, rules, and regulations controlling employees' practices as food handlers. Regularly check and provide their employees with hygiene and good-conditioned workplace, uniforms, equipment, and tools. Ensure quality communication channels with customers. Always obtain customer feedback and strictly take serious responses and actions when a problem is detected. Promote food safety as a business feature. Businesses should consider promoting food safety as part of marketing content. These are supposed to reduce the risk perceived by customers and develop their confidence and trust in companies and restaurants that would eventually create their intentions to repeat their support. Moreover, food delivery businesses and restaurants can use the control variable findings in developing effective marketing strategies and campaigns to achieve sustainable success.

## **Limitations and Recommendations for Future Studies**

Even though this research contributes to various new knowledge and evidence supporting the existing related literature, especially in the food delivery and restaurant industry, there are still some limitations. First, the data were collected from only ten samples for each district that may not be a good representative of others in the same district, limiting the findings' generalizability. A future study should increase each district's sample size or study each separately because each district has different characteristics. Secondly, this research collected only cross-sectional data, so the ability to analyze and identify causal relationships and directions was limited. Hence, the findings could only be explained in terms of correlation yet causation. A future study is suggested to plan a more extended period for data collection. Finally, the self-administered survey used in the research may have caused a subjective bias in the results. Future research is suggested to collect data from various sources and other stakeholders.

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