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Attitude and the Mediating Role in Online Food Delivery Continuance Intention

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Abstract

Background: The online food delivery (OFD) sector has grown rapidly in Indonesia, necessitating scholarly examination of consumer behavior beyond initial adoption to understand continuance patterns in technology-enabled consumption.

Purpose: This research aims to analyze the effects of food safety risk perception, social influence, price savings, and time savings on consumers' continuance intention toward OFD services, with attitude as a mediating variable.

Method: A quantitative survey of 384 OFD users in Batam City, Indonesia, who had used the services three times in three months was conducted, and the data were analyzed using PLS-SEM.

Findings: Social influence, price savings, time savings, and food safety risk perception significantly affect attitude and continuance intention through the mediation of attitude. Food safety risk exhibits dual effects of direct negative and indirect positive effects through attitude.

Conclusions: Attitude serves as a critical mediator consistent with the Theory of Planned Behavior. OFD providers should strengthen food safety assurances, leverage social influence, emphasize efficiency benefits, and enhance positive attitudes to sustain consumer loyalty and long-term engagement.

Research implication: OFD service suppliers should strengthen consumer confidence by addressing food safety concerns, leveraging social influence, and emphasizing time and cost efficiency. Marketing and operations also improve positive consumer attitudes to support long-term engagement.

Keywords: attitude, continuance intention, food safety risk perception, online food delivery, price saving, social influence, time saving

JEL Classification: D12, M31

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PUBLIC INTEREST STATEMENT

This research advances the discourse on digital and sustainable marketing by analyzing the transformative impact of digitalization on consumer behavior and corporate marketing strategies. The study investigates the interrelation among consumer decision-making processes, digital engagement, and sustainability orientation, emphasizing how these dimensions contribute to the development of responsible and innovative marketing practices. The findings are expected to provide theoretical and practical implications for the formulation of marketing strategies that not only enhance business performance but also align with principles of environmental sustainability. Collaborative efforts among scholars, practitioners, and institutions are considered crucial for addressing these challenges and fostering a more sustainable and digitally integrated marketing ecosystem.



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1. Introduction

The Online Food Delivery (OFD) sector has experienced unprecedented growth in Southeast Asia, with Indonesia reported as the largest market in 2023, recording transaction values of approximately USD 4.6 billion (Koay et al., 2023). This expansion has been driven by increasing internet penetration, reaching 77% of the total population in 2024 (APJII, 2024), and the widespread adoption of mobile platforms such as GoFood, GrabFood, and ShopeeFood. Furthermore, the COVID-19 pandemic increased digital transformation, as consumers shifted from traditional dine-in services to contactless delivery options (Statista, 2025). Despite the growth trajectory, the OFD industry faces critical challenges that threaten service continuance. Food safety concerns remain prevalent, with 68% of Indonesian consumers expressing worry about hygiene standards during delivery (Ministry of Health Indonesia, 2023). In this context, delivery reliability remains an issue due to urban traffic congestion. Price sensitivity also influences purchasing decisions in price-conscious markets (Pitchay et al., 2022; Maimaiti et al., 2018; Ray et al., 2019). These challenges suggest an urgent need to understand initial adoption and sustained consumer engagement with OFD services. The gap directly impacts platform profitability and long-term market sustainability.

Existing literature has predominantly focused on satisfaction, perceived usefulness, and convenience as antecedents of OFD continuance intention (Hoang et al., 2023; Koay et al., 2023; Kurniawan et al., 2024). However, three critical research gaps remain unaddressed. First, the role of perceived food safety risk is a health-related concern with direct implications for trust. Loyalty has received limited empirical attention in the OFD context, particularly in developing markets where regulatory oversight may be inconsistent (Gupta & Duggal, 2021; Huang, 2023). Second, even though economic factors such as price saving and time saving are frequently cited as adoption drivers, the influence on continuance behavior through attitudinal pathways remains underexplored. Third, the mediating mechanism of attitude, theoretically positioned as a central link between external perceptions and behavioral outcomes, has not been systematically examined in OFD continuance models, despite the established importance in the Theory of Planned Behavior (TPB). This theoretical omission limits the understanding of the method used by consumers to psychologically process multiple competing factors (safety risks, cost benefits, social pressure) into sustained usage decisions.

Two theoretical models, namely the Technology Acceptance Model (TAM) and the TPB are used to evaluate OFD platforms. Kautsar et al. (2023) used TAM theory to identify the factors influencing Indonesian consumers' decisions to use the GrabFood app. The results show that the functionality, usability, and design of the application have a major effect on users' perceptions and intentions to use OFD facilities. Koay et al. (2023) used the TPB to examine millennials' use of meal delivery apps. Perceived behavioral control and social conventions are among the most significant factors influencing individuals' decisions to use platforms. Purwanti et al. (2025) investigated the dynamics of behavioral willingness in OFD using the TPB in conjunction with the TAM. This deduction uses the SOR (Stimulus-Organism-Response) model to show the effect of organizational processes on an individual's behavior in response to external stimuli.

A more holistic theoretical account of OFD continuance behavior than previous single-framework research is provided by synthesizing the models. A comprehensive understanding of consumer continuance intention in the OFD context is obtained through the situation of the analysis at the theoretical intersection. Therefore, this research examines the effects of

perceived food safety risk, social influence, price saving, and time saving on consumers' continuance intention toward OFD services, with attitude serving as a mediating variable. The research context is Batam City, Indonesia, a rapidly urbanizing economic hub with high digital literacy (85% smartphone penetration), a young demographic profile (median age 29 years), and robust OFD platform competition (Batam Statistics Bureau, 2024). Batam's characteristics make it an ideal case for analyzing OFD usage patterns in Indonesian urban centers, where technology adoption is high but regulatory and infrastructural challenges persist. This research contributes theoretically by empirically validating attitude as a critical mediating mechanism in OFD continuance models, extending TPB and SOR applications to digital consumption contexts. Managerially, actionable insights are offered for OFD platforms to enhance food safety communication, optimize pricing strategies, leverage social influence, and cultivate a positive consumer attitude to sustain long-term engagement in competitive markets.

2. Literature Review

2.1 SOR Theory

The SOR model provides a comprehensive theoretical framework to explain consumer behavior in OFD services. In this model, external stimuli (S), such as food-safety information, delivery reliability, and cost- or time-saving features, influence the internal organism (O), which represents consumers' cognitive evaluations and affective states, including perceived risk, attitudes, and emotions. These internal processes shape behavioral responses (R) and continuance or revisit intention (Liébana-Cabanillas et al., 2024; Ngo et al., 2025; Zhang et al., 2025). The present research uses the SOR framework for two main reasons. First, the translation of external service cues into psychological states acts as a proximal predictor of continuance intention. This aligns with the research's objective to link perceived risks and service benefits to sustained OFD usage. Second, it accommodates both cognitive and affective mediators to offer a robust theoretical foundation for testing the mediating mechanisms underlying consumer decision-making in OFD contexts (Kumar et al., 2021; Zhai et al., 2020).

2.2 The Influence of Social Influence on Attitude

A person's direct or indirect effect on others in influencing the opinions about a situation, product, or choice is referred to as social influence. According to (Pitchay et al., 2022; Jun et al., 2022), social influence affects attitude. This suggests that positive perceptions of facilities are strengthened by feedback from friends, family, websites, and other social validation sources. Social influence is vital in changing people's opinions about issues before meeting in person. This promotes a more favorable perception of OFD facilities (Koay et al., 2023).

H1: Social influence has a positive effect on attitude towards OFD facilities.

2.3 The Influence of Price Saving on Attitude

The perspective of the consumers on products or facilities is greatly influenced by price savings. Price cuts, discounts, promotions, or reductions provided by facilities to consumers are part of price saving. Research (Ayhün et al., 2024; Chakraborty et al., 2022) shows that price saving provides a positive and substantial effect on attitude. This occurs specifically in

situations where consumers can enjoy selected food without paying full price. Consumers realize the additional value associated with more affordable prices. Discounts or special prices convince consumers that the service is more valuable (Tan et al., 2024).

H2: Price saving has a positive effect on attitude towards OFD facilities.

2.4 The Influence of Time Saving on Attitude

Time-saving is a critical factor that influences buyer assessment and decision-making in a quickly evolving environment. According to (Ayhün et al., 2024; Khan et al., 2022), reducing time has a favorable effect on consumer sentiment. This implies that consumers view more flexibility, efficiency, and convenience. Consumers who use OFD facililt to increase the ordering procedure and enjoy meals have a positive attitude about the service because of the real advantages offered to improve the general quality of life (Ayhün et al., 2024).

H3: Time saving has a positive effect on attitude towards OFD facilities.

2.5 The Influence of Food Safety Risk Perception on Attitude

Food safety risk perception refers to the extent to which individuals are concerned about or aware of the potential consequences associated with consuming particular types of food. This affects people's perception of the facilities that offer food. Research (Gupta & Duggal, 2021; Huang, 2023) shows that food safety risk perception has been validated to generate a positive and substantial effect on attitude. Attitude is built based on the level of safety felt towards the food. Buyers tend to have a positive perception when food suppliers deliver products that guarantee safety and quality through proper packaging and certification. Therefore, decreasing perceptions about food safety issues can strengthen buyer trust and satisfaction to create a better view of OFD facilities (Huang, 2023).

H4: Food safety risk perception has a positive effect on attitude towards OFD facilities.

2.6 The Influence of Social Influence on Continuance Intention

By increasing trust, changing favorable attitudes, and strengthening purchasing power, recommendations from friends, family, and social networks significantly contribute to consumers' willingness to continue using OFD apps. Research by (Lee et al., 2019; Zhao & Bacao, 2020) showed that social influence had a significant effect on continuation willingness. This implies that people's purchase decisions are frequently influenced by the thoughts and experiences of others, including friends, family, and celebrities. Continued use of a meal-delivery service becomes more common when individuals observe that others, particularly those within the neighbourhood or immediate surroundings, are satisfied. The length of time people want to use OFD facilities is greatly influenced by factors including social standing, popularity, positive evaluations, and validated social standards (Pokhrel & Shah, 2022).

H5: Social influence has a positive effect on the continuance intention of OFD facilities.

2.7 The Influence of Price Savings on Continuance Intention

Facilities that offer discounts, promotions, or loyalty programs give consumers a sense of cost savings, increasing satisfaction, and encouraging continued use of OFD apps. Research (Alauddin & Akther, 2023; Zanetta et al., 2021) showed that price saving was validated to generate a positive and substantial effect on continuance intention. Greater satisfaction is reported to promote continued use of the service when buyers perceive receiving superior value. Consumers may continue using the service due to the exceptional reductions and benefits offered, without compromising convenience or quality. This is guaranteed through discounts, loyalty programs, and exceptional offers. Consumers often exhibit satisfaction and an increased propensity to persist with the service perceived to enhance value (Pramezvary et al., 2023).

H6: Price saving has a significant positive effect on the continuance intention.

2.8 The results of Time Saving on Continuance Intention

The temporal efficiency experienced by users, particularly through rapid delivery and streamlined ordering processes, can enhance contentment, which develops favorable attitude and reinforces the commitment to consistently use OFD facilities. Research by Guangsheng (2022) and Pramezvary et al. (2023) shows that time saving has been validated to generate a positive and substantial effect on continuance intention. These facilities create accessible, swift, and convenient mechanisms for locating and obtaining food. Users tend to continue engaging with a platform when perceived to save time by offering greater speed or improved efficiency relative to alternative options. Buyers may experience greater satisfaction and show increased willingness to engage with the OFD App on subsequent occasions when the time requirements are reduced (Guangsheng, 2022).

H7: Time saving has a significant positive effect on the continuance intention of OFD facilities.

2.9 The Influence of Food Safety Risk Perception on Continuance Intention

Users who possess assurance regarding the safety and cleanliness of the delivered meals show a higher likelihood of sustained service utilization. Therefore, service operators must uphold elevated and transparent safety protocols, addressing concerns related to food security. Research conducted by (Amin et al., 2021; Hong et al., 2023) reports that food safety risk perception has been validated to generate positive and substantial results on continuance intention. This suggests the likelihood that users will persist in using food delivery platforms after receiving confirmation of meal safety and adherence to stringent hygiene protocols. Platforms can effectively address buyer apprehensions regarding food security hazards by offering transparency and guaranteeing meal quality through appropriate packaging methods to enhance buyer confidence (Weiler & Gilitwala, 2024).

H8: Food safety risk perception has a significant positive effect on the continuance intention of OFD facilities.

2.10 The Influence of Attitude on Continuance Intention

Attitude refers to how buyers perceive and evaluate experiences with OFD facilities. Continuance intention represents buyers' willingness to maintain service usage after the initial experience or over time. Research by (Hwang et al., 2021; Nguyen et al., 2019) shows that attitude significantly and positively influences continuance intention. Consumers are more inclined to maintain usage when a service meets the required needs (Allah Pitchay et al., 2022). Multiple factors, including convenience, time efficiency, order precision, and superior service quality, contribute to a positive perception of service usage (Permasih et al., 2024).

H9: Attitude has a significant positive effect on the continuance intention of OFD facilities.

2.11 The Influence of Social Influence on Continuance Intention Mediated by Attitude

People may be more inclined to continue using OFD facilities when friends, family, or comments on social networking sites say nice things. OFD facilities suppliers may provide clients with a nice experience to think highly of the service through the use of social influence. Research (Koay et al., 2023; Sin et al., 2022) shows that social influence has been validated to generate a positive and substantial effect on continuance intention mediated by attitude. Buyers who receive positive reviews from trusted sources rate the service as useful or practical and tend to have a more optimistic perspective. This positive view supports people in maintaining the willingness to continue using the service. Social influence creates a feeling among buyers that others expect the use of OFD facilities. Positive attitude formed through social influence can motivate the use of service (Allah Pitchay et al., 2022). The results of social influence on purchase intention, mediated by attitude, proved significant. This can affect attitude and continuance intention directly or indirectly in line with Purwanti et al. (2024).

H10: Social influence positively affects the continuance intention to use OFD facilities, mediated by attitude.

2.12 The Influence of Price Saving on Continuance Intention Mediated by Attitude

Real price savings for buyers can increase positive views of OFD facilities, strengthening the desire to continue using the service. Research (Hwang et al., 2021; Nguyen et al., 2019) shows that price saving has been validated to generate a positive and substantial effect on continuance intention mediated by attitude. The value and financial benefits associated with discounts or price cuts tend to show good interest in OFD products. This positive tendency supports the belief that OFD facilities are a smart alternative for spending or saving money. Buyers begin to feel more satisfied with the use of OFD when the cost of the service offers better value compared to eating at a restaurant or cooking at home. The belief that a service is economical can increase buyer satisfaction and the likelihood of continuing to use the service (Allah Pitchay et al., 2022).

H11: Price saving positively affects the continuance intention to use OFD facilities, mediated by attitude.

2.13 The results of Time Saving on Continuance Intention Mediated by Attitude

Consumers may save time using OFD facilities to purchase things fast and effortlessly. This makes consumers more inclined to leave a nice review and desire to keep using the service. Research (Belanche et al., 2020; Madiawati & Wijaksana, 2023) shows that time saving has been validated to generate a positive and substantial effect on continuance intention mediated by attitude. This shows that consumers express a stronger preference for OFD services when the platforms are easy to use and time-saving. OFD becomes a particularly suitable option for individuals with limited time. Continued use of the service is reinforced when consumers hold positive perceptions of the performance and convenience. People who value time often view OFD as a beneficial service since the concept frees up time for other events (Alauddin & Akther, 2023).

H12: Time saving positively affects the continuance intention to use OFD facilities, mediated by attitude.

2.14 The Influence of Food Safety Risk Perception on Continuance Intention Mediated by Attitude

People who think there are a lot of dangers with food safety, such as the chance of contamination or failure to follow hygiene requirements, may not like food delivery facilities. Research (Amin et al., 2021; Zanetta et al., 2021) shows that food safety risk perception has been validated to generate a positive and substantial effect on continuance intention mediated by attitude. Consumers have a good impression of a business when a meal delivery service satisfies the necessary food safety requirements. The facilities are used consistently because the provider is focused on food safety. People often think highly of a restaurant or service provider when good procedures are in place to handle food safety issues (Nadifatin et al., 2023).

H13: Food safety risk perception positively affects the continuance intention to use OFD facilities, mediated by attitude.

3. Conceptual Framework

The conceptual framework shows the effects of several variables on the sustained use of OFD facilities. Social influence, price saving, time saving, and food safety risk perception are critical factors needed to shape individuals' opinions. The connection between the features and the decision to persist in using the service is due to attitude. These factors have generated favorable sentiments that motivate clients to persist in purchasing meals online. The model suggests the dynamic interaction of the components and influence on individuals' behavior inside the OFD ecosystem (Figure 1).

The hypotheses of this research are as follows:

- H1: Social influence has positive results on attitude towards OFD facilities.
- H2: Price saving has positive results on attitude towards OFD facilities.
- H3: Time saving has positive results on attitude towards OFD facilities.
- H4: Food safety risk perception has positive results on attitude towards OFD facilities.
- H5: Social influence has positive results on the continuance intention of OFD facilities.
- H6: Price Saving has positive results on the continuance intention of OFD facilities.
- H7: Time saving has positive results on the continuance intention of OFD facilities.

H8: Food safety risk perception has positive results on the continuance intention of OFD facilities.

H9: Attitude has positive results on the continuance intention of OFD facilities.

H10: Social influence positively affects the continuance intention to use OFD facilities, mediated by attitude.

H11: Price saving positively affects the continuance intention to use OFD facilities, mediated by attitude.

H12: Time saving positively affects the continuance intention to use OFD facilities, mediated by attitude.

H13: Food Safety Risk Perception positively affects the continuance intention to use OFD facilities, mediated by attitude.

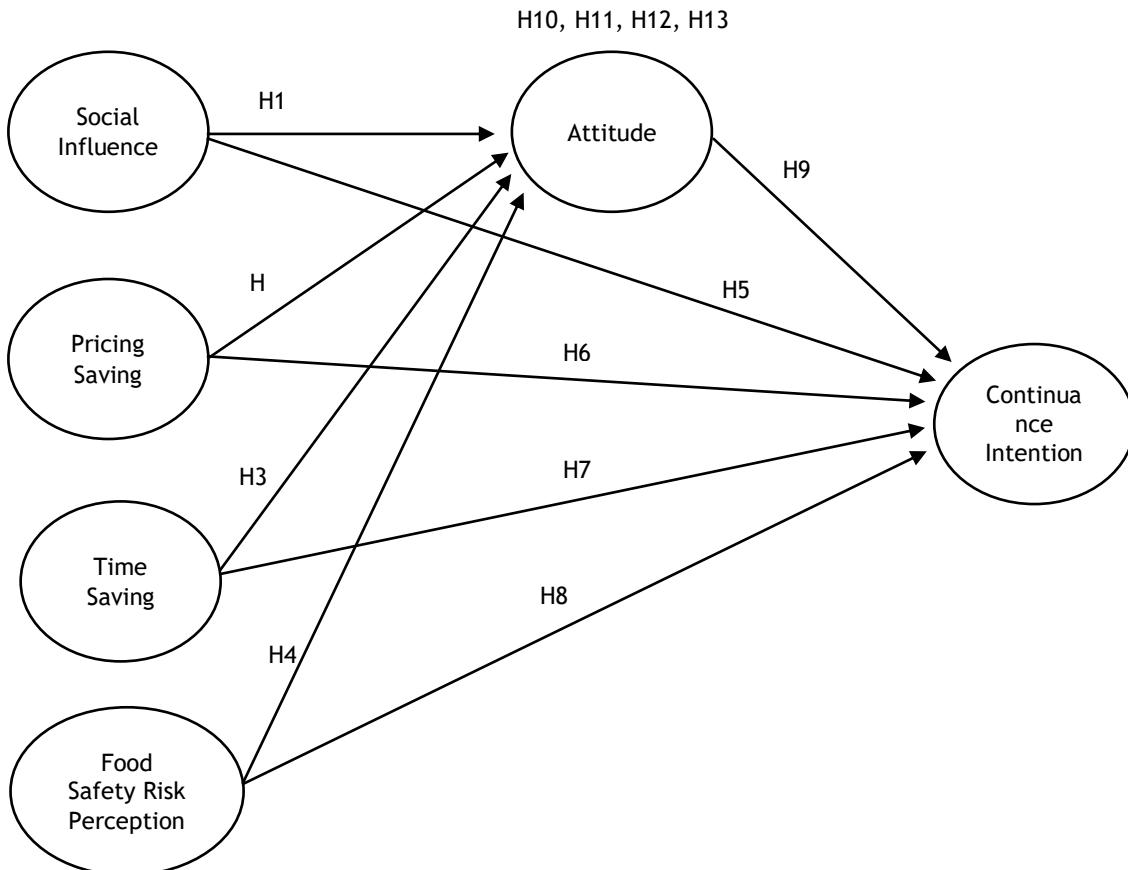


Figure 1. Conceptual framework of continuance intention of OFD impacted by attitude influenced by social influence, price saving, time saving, and food safety risk perception

4. Methods

4.1 Research Design

This research adopted a quantitative survey to examine the factors influencing consumers' continuance intention to use OFD services in Batam City. According to Hair et al. (2019), a quantitative method is well-suited for analysing relationships between variables and empirically testing hypotheses using numerical data. Respondents were selected through purposive sampling, targeting individuals who had used OFD services three times in the preceding three months to ensure adequate user experience and relevance to the research

objectives. Data were collected through a structured digital questionnaire designed to measure key variables, including perceived food-safety risk, delivery timeliness, delivery cost, application usability, and social influence. A survey method was selected to allow the collection of standardized data from a relatively large sample, facilitating statistical analysis and generalization within the research context. This methodological choice ensures robustness in testing the hypothesized direct and mediating results in line with the clarification of perceptions and attitudes.

4.2 Sampling

The research site was strategically set in Batam City due to its large urban area with rapid economic and demographic growth. This lifestyle is highly integrated with digital technology and the active presence of multiple OFD service suppliers. These characteristics make Batam a representative and relevant context for examining consumer continuance intention in Indonesia. The target subset in this research is not the entire population of Batam but specifically active OFD users. This criterion ensures that respondents have adequate familiarity and experience with the service, thereby increasing the validity of their responses. Even though the Batam Statistics Office (BPS) reported a total population of 1,276,930 in 2024, the actual interest is the subset of individuals who meet the definition of active OFD users. Since precise figures on the subgroup are unavailable, the minimum sample size was determined using the Krejcie and Morgan (1970) reference table for large populations (>1,000,000). This recommends a minimum of 384 respondents to achieve a 95% confidence level with a 5% margin of error. The method ensures methodological rigor while acknowledging the practical limitations in estimating the exact size of the OFD user population in Batam.

4.3 Measurement

The measurement instruments were adapted from established literature and contextualized for the Indonesian OFD service environment. This adaptation process comprised two stages, namely (1) translating original measurement items from English to Indonesian using back-translation procedures to ensure semantic equivalence (Brislin, 1970), and (2) modifying item wording to reflect the specific characteristics of OFD platforms commonly used in Indonesia.

A five-point Likert scale was used to assess all constructs, ranging from "strongly disagree" (1) to "strongly agree" (5). The research framework comprises six primary constructs, namely social influence, price savings, time savings, perceived food safety risk, attitude, and continuance intention. Table 1 presents the operational definitions, measurement indicators, and source references for each variable. The indicators have been translated into Indonesian and contextually adapted to reflect the OFD service experience in Indonesia, ensuring cultural and linguistic appropriateness for the target population.

Table 1. Operational definition of related variables and factors influencing continuance intention in OFD

Variables	Operational Definition	Indicators	Sources
Social Influence (SI)	The level of influence of the social environment (family, friends, social media) on the use of OFD facilities.	1) I use the OFD App because my close relatives and friends also use these services. 2) I use the OFD App since my community also uses these services.	(Kurniawan et al., 2024)

Table 1. Operational definition of related variables and factors influencing continuance intention in OFD (Continue)

Variables	Operational Definition	Indicators	Sources
Social Influence (SI)	The level of influence of the social environment (family, friends, social media) on the use of OFD facilities.	<ul style="list-style-type: none"> 3) I think my social status will be enhanced when using the OFD App. 4) I use the OFD App because social media messages and promotional content influence my decisions. 5) I use OFD App due to the impact of social media personalities I follow. 	(Kurniawan et al., 2024)
Price Saving (PS)	<p>Consumer perception that the use of OFD facilities provides</p> <p>Cost savings compared to other alternatives.</p>	<ul style="list-style-type: none"> 1) I consider that the OFD App offers fair and budget-friendly pricing. 2) I can reduce costs by evaluating prices across multiple OFD facilities suppliers. 3) The cost of purchasing food through the OFD App is reasonably priced, given the food quality and service I receive. 4) I prefer to search for OFD facilities suppliers to obtain cost-effective meals. 5) I can reduce expenses because the OFD company I use frequently offers discounts and promotional deals. 	(Kurniawan et al., 2024)
Time Saving (TS)	Consumer perception that using OFD facilities saves time in the food purchasing process.	<ul style="list-style-type: none"> 1) I believe that using an OFD facilities application is quite beneficial when ordering meals. 2) I consider that using an OFD facilities application is extremely advantageous when ordering meals. 3) I think that by using internet applications for food delivery platforms during the ordering process, I can conserve time. 4) Using an OFD facilities application to make meal purchases promptly is extremely significant to me. 	(Pitchay et al., 2022)

Table 1. Operational definition of related variables and factors influencing continuance intention in OFD (Continue)

Variables	Operational Definition	Indicators	Sources
Food Safety Risk Perception (FSRP)	Perception of risk related to food safety ordered through OFD facilities.	1) I consider that the food handling methods by OFD App elevate the risk of foodborne illness for buyers. 2) I think that the primary food safety concern is the contamination of meals provided by the OFD App. 3) I believe that meals supplied by the OFD App may be contaminated with bacteria or other pathogens that can cause sickness in recipients.	(Weiler & Gilitwala, 2024)
Attitude (ATT)	Individual assessment or perception of the use of OFD facilities in general.	1) Purchasing food through the OFD App is logical. 2) The OFD App is an excellent method to order meals. 3) Ordering food via the OFD App is reasonable. 4) Using the OFD App to purchase food offers multiple benefits.	(Pitchay et al., 2022)
Continuance Intention (CI)	Users' desire to continue using OFD facilities in the future.	1) I intend to continue using the OFD App in the future. 2) I will attempt to use the OFD App in my everyday routine. 3) I plan to keep using the application for the OFD App. 4) I have resolved to order food in the future through the OFD App.	(Pitchay et al., 2022)

4.4 Data Collection

Data were obtained through a Google Forms survey distributed via Instagram and WhatsApp, which facilitated broad, non-random access to potential respondents. This method enabled efficient data collection and reflected a form of convenience and snowball sampling that might introduce selection bias. The survey incorporated a screening question requiring participants to confirm the use of OFD services at least three times in the past three months to ensure respondent eligibility. The participants who met the criterion were permitted to proceed with the questionnaire. A total of 384 valid responses were collected, in line with the minimum sample size requirements. The data collection took place over 6 months, ensuring consistency in capturing consumer perceptions within a specific temporal frame. The non-probability sampling limits the generalizability of the results and provides practical access to active OFD users in Batam.

4.5 Data Analysis

PLS-SEM was adopted using SmartPLS version 4 to analyse the data. This analysis was considered appropriate because it allows simultaneous assessment of measurement models

and structural relationships among multiple latent constructs, even under conditions of non-normal data distributions and relatively complex models (Hair et al., 2021). PLS-SEM was conducted using Smart-PLS 4.0 to test the proposed hypotheses and evaluate measurement quality. The four-step analytical procedure included assessing measurement reliability through outer loadings, Cronbach's alpha, and composite reliability indices, followed by validation of convergent and discriminant validity using AVE and established criterion thresholds (Hair et al., 2019). These processes were conducted to check the accuracy and dependability. The hypothesis was tested using the bootstrap method to estimate the route coefficient and R-squared (coefficient of determination).

5. Findings

5.1 Respondent Characteristics

The demographic attributes of the 384 survey respondents are presented in this section. Characterizing the sample is necessary to contextualize the outcome results and assess the representativeness of the overall OFD consumer population in Batam City. Table 2 shows the distribution of respondents across critical demographic categories, namely gender, generational group, educational background, frequency of OFD application use, and preferred delivery platform.

Table 2. Demographic profile of respondents

Demographic Variable	Category	Frequency	Percent
Gender	Male	91	23.7
	Female	293	76.3
Age Generation	Generation Z (12-20 years)	240	62.5
	Millennials (21-40 years)	108	28.1
	Generation X (41-56 years)	28	7.3
	Baby Boomers (57+ years)	8	2.1
Education Level	Junior High School or below	24	6.3
	Senior High School/Vocational	292	76.0
	Diploma/Associate Degree	28	7.3
	Bachelor's Degree	32	8.3
	Master's Degree or above	8	2.1
	Frequency of OFD Usage	169	44.0
	4-6 times per week	121	31.5
	7-10 times per week	62	16.1
	More than 10 times per week	32	8.4
	Preferred OFD Platform	242	63.0
	GoFood	103	26.8
	GrabFood	39	10.2
	Total	384	100.0

5.2 Reliability and Validity Test

Indicator reliability constitutes the initial stage of the four-step assessment, measured through outer loading values that should meet or exceed 0.885 (Hair et al., 2019). Table 3

shows that all indicator loadings surpassed 0.708. The subsequent stage examined internal consistency reliability through Cronbach's alpha (threshold: 0.70) and composite reliability (threshold: 0.60) metrics (Hair et al., 2022). The data show that the constructs successfully passed validity testing across Outer Loading, AVE, Cronbach's Alpha, and Composite Reliability parameters.

Table 3. Outer loadings, AVE, Cronbach's alpha, composite reliability

Variables	Outer Loading	Average Variance Extracted	Cronbach Alpha	Composite Reliability
Attitude				
ATT.1	0.771			
ATT.2	0.796	0.539	0.712	0.823
ATT.3	0.724			
ATT.4	0.636			
Continuance Intention				
CI.1	0.694			
CI.2	0.722	0.528	0.700	0.817
CI.3	0.788			
CI.4	0.698			
Food Safety Risk Perception				
FSRP.1	0.888			
FSRP.2	0.861	0.771	0.852	0.910
FSRP.3	0.885			
Price Saving				
PS.1	0.704			
PS.2	0.751			
PS.3	0.731			
PS.4	0.698	0.520	0.692	0.813
Social Influence				
SI.1	0.691			
SI.2	0.708			
SI.3	0.792	0.536	0.784	0.852
SI.4	0.718			
SI.5	0.741			
Social Influence				
TS.1	0.741			
TS.2	0.779	0.550	0.728	0.830
TS.3	0.670			
TS.4	0.773			

Discriminant validity was assessed by contrasting the square root of AVE for each construct against the correlation magnitudes with the remaining constructs following the Fornell-Larcker criterion. The bolded diagonal values representing the square root of AVE consistently outperformed all off-diagonal correlation coefficients. This suggested adequate

discriminant validity since each construct reported greater variance sharing with the indicators than with other latent variables (Table 4).

Table 4. Fornell-Larcker criterion

Variables	ATT	CI	FSRP	PS	SI	TS
Attitude (ATT)	0.734					
Continuance Intention (CI)	0.574	0.726				
Food Safety Risk Perception FSRP	0.595	0.285	0.878			
Price Saving PS	0.635	0.563	0.488	0.721		
Social Influence (SI)	0.725	0.525	0.638	0.631	0.732	
Time Saving (TS)	0.523	0.500	0.321	0.459	0.463	0.742

Note: ATT: Attitude, CI: Continuance Intention, FSRP: Food Safety Risk Perception, PS: Price Saving, SI: Social Influence, TS: Time Saving

5.3 Hypothesis Testing

Table 5 and Figure 2 present an analysis of the p-values, t-statistics, and path coefficients, confirming that all hypotheses (H1-H13) are statistically significant. The p-values are below 0.05, providing robust evidence for the hypothesized relationships.

Table 5. Hypothesis testing

Hypothesis	Path coefficient	p-value	Conclusion
Social Influence → Attitude	0.388	0.000***	Significant Positive
Price Saving → Attitude	0.213	0.000***	Significant Positive
Time Saving → Attitude	0.182	0.000***	Significant Positive
Food Safety Risk Perception → Attitude	0.186	0.002**	Significant Positive
Social Influence → Continuance Intention	0.190	0.043*	Significant Positive
Price Saving → Continuance Intention	0.267	0.000***	Significant Positive
Time Saving → Continuance Intention	0.210	0.002**	Significant Positive
Food Safety Risk Perception → Continuance Intention	-0.189	0.021*	
Attitude → Continuance Intention	0.263	0.003**	Significant Positive
Social Influence → Attitude → Continuance Intention	0.101	0.007**	Significant Positive
Price Saving → Attitude → Continuance Intention	0.056	0.019*	Significant Positive
Time Saving → Attitude → Continuance Intention	0.049	0.034*	Significant Positive
Food Safety Risk Perception → Attitude → Continuance Intention	0.050	0.047*	Significant Positive

** Significant at p<0.01

The t-statistics exceed the critical value of 1.96, indicating significance. For instance, the path coefficient for Social Influence to Attitude ($SI \rightarrow ATT$) is 0.388, with a p-value of 0.000, showing a substantial positive result. The path from price saving to attitude ($PS \rightarrow ATT$) has a path coefficient of 0.218 and a p-value of 0.000, indicating a significant positive effect. Conversely, food safety risk perception to continuance intention ($FSRP \rightarrow CI$) suggests a path coefficient of -0.189, with a p-value of 0.021, showing a negative result on continuance intention. The path from Attitude to Continuance Intention ($ATT \rightarrow CI$) has a path coefficient of 0.263 ($p = 0.003$), indicating the mediating role of attitude in the relationship. The results stated the significant roles of social influence, cost savings, time efficiency, and food safety perception in shaping consumers' attitudes and continued intention to use the OFD app.

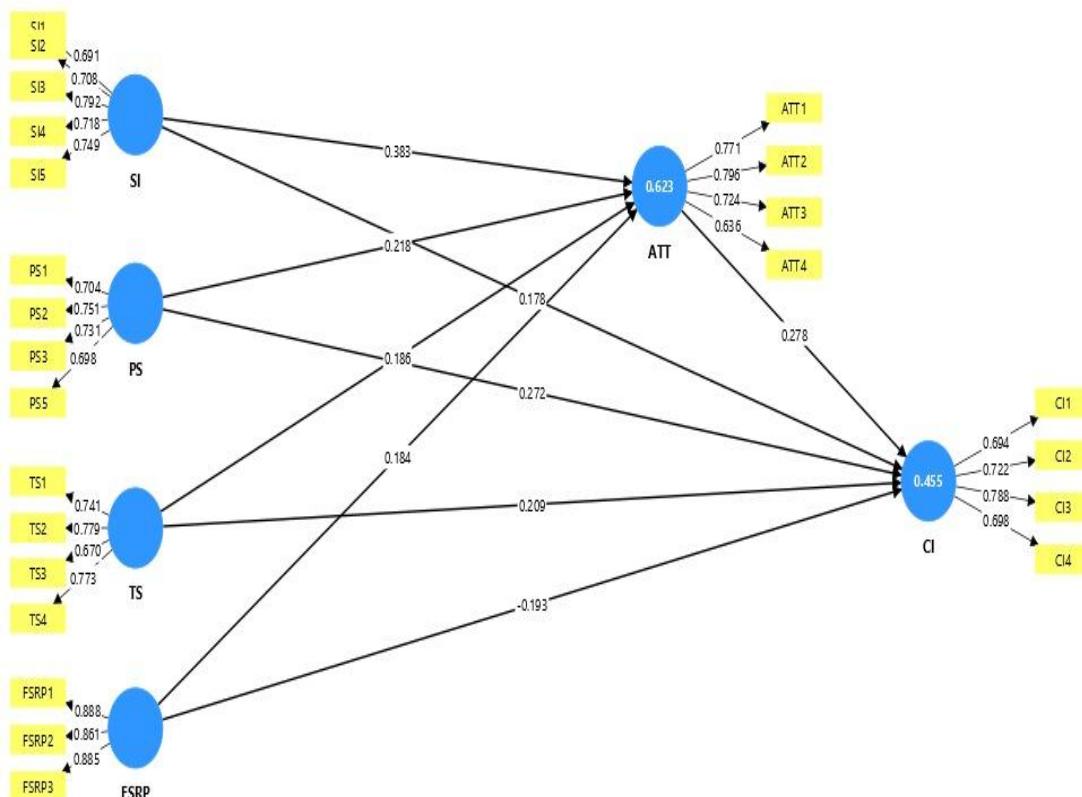


Figure 2. PLS algorithm

6. Discussion

6.1 The Effect of Social Influence on Attitude

Social influence has been validated as having a positive and substantial impact on attitude, confirming the validity of Hypothesis 1. This shows that recommendations from friends, family, social media platforms, and various forms of social validation influence buyer decisions. Before direct interaction with the service, consumers' attitudes are heavily shaped by social factors, contributing to a more favorable perception of the OFD system (Koay et al., 2023). Social influence plays a significant role in shaping buyer attitude. As validated by (Pitchay et al., 2022; Jun et al., 2022), Social Influence has a particularly strong impact on forming a positive attitude. Individuals tend to follow suit due to social norms that promote conformity to the behaviors of people when close friends, family, or the local community use OFD services. Additionally, the use of OFD services can enhance social image as an attractive option for practical reasons and a reflection of a modern and trend-conscious

lifestyle. Advertising and the influence of social media play an essential role in shaping positive perceptions of OFD services by emphasizing the convenience and ease of use. These factors collectively contribute to a favorable buyer perception of OFD. The use of the services is consistent with social trends and practical needs (Koay et al., 2023).

6.2 The Effect of Price Saving on Attitude

Price savings have been shown to yield positive, substantial results on attitude, as hypothesis 2 is supported. This happens particularly when users can enjoy meals without paying the full price. Discounts or special price offers encourage buyers to believe that the service is more valuable (Tan et al., 2024). Price savings significantly affect perception of OFD facilities (Ayhün et al., 2024; Khan et al., 2022). The reduction of expenses through competitive pricing, discounts, or promotional offers forms a more favorable perception of OFD facilities. The superior value for expenditure increases satisfaction and strengthens commitment to sustained platform usage. Users who can reduce costs by evaluating prices among various suppliers are more inclined to develop a budget-conscious mindset, affecting the overall perception and loyalty toward OFD systems. Therefore, price saving directly affects buyer attitude by generating a perception of financial advantage, enhancing positive sentiments, and improving the probability of continued OFD facilities utilization (Chakraborty et al., 2022).

6.3 The Effect of Time Saving on Attitude

Time saving has been validated to generate positive and substantial results on attitude since hypothesis 3 is supported. The results are in line with Pitchay et al. (2022); Khan et al. (2022); Chakraborty et al. (2022); Ayhün et al. (2024); Tan et al. (2024), where time saving provides a positive and significant impact on attitude. OFD facilities allow buyers to save time throughout the ordering process and enjoy food, which promotes more positive perceptions toward the service (Ayhün et al., 2024; Tan et al., 2024).

6.4 The Effect of Food Safety Risk Perception on Attitude

Food safety risk perception has been validated to generate positive and substantial results on attitude since hypothesis 4 is supported. The results are in line with Gupta and Duggal (2021); Huang (2023); Madiawati and Wijaksana (2023); Asyrafi and Hidayat (2023); Amin et al. (2021), where food safety risk perception provides a positive and significant impact on attitude. This suggests that buyers develop an attitude based on food security. Favourable perspectives are maintained when food delivery platform suppliers ensure safety and quality through transparent packaging, business establishment cleanliness, and safety certifications. Therefore, diminished worries about food safety concerns can enhance buyer confidence and satisfaction to create positive perceptions of the OFD app (Amin et al., 2021; Huang, 2023).

6.5 The Effect of Social Influence on Continuance Intention

Social influence has been validated to generate a positive and substantial effect on continuance intention since hypothesis 5 is validated. The results are in line with Lee et al. (2019); Zhao and Bacao (2020); Muangmee et al. (2021); Zanetta et al. (2021); Pokhrel and Shah (2022), where the opinions and experiences of others, including friends, relatives, and influencers, frequently result in buyer behavior. Buyers tend to maintain usage of specific food delivery platforms within their social circle or community, showing satisfaction with the

service. Buyer commitment to sustained usage of the OFD App is significantly affected by social standing, popularity factors, favorable feedback, and established social conventions (Muangmee et al., 2021; Pokhrel & Shah, 2022).

6.6 The Effect of Price Saving on Continuance Intention

Price saving has been validated to generate a positive and substantial effect on continuance intention since hypothesis 6 is validated. The results are in line with Lee et al. (2019); Zanetta et al. (2021); Alauddin and Akther (2023); Pramezmary et al. (2023), where price saving provides a positive and significant impact on continuance intention. This suggests that satisfaction increases when consumers perceive substantial value through cost savings. Continued use is supported by the perception that meaningful financial benefits can be obtained without compromising quality or convenience. Some of the perks include discounts, loyalty programs, competitive rates, and great deals. These deals make buyers more likely to keep using OFD facilities for a longer period (Alauddin & Akther, 2023; Pramezmary et al., 2023).

6.7 The Effect of Time Saving on Continuance Intention

Time saving has been validated to generate a positive and substantial effect on continuance intention since hypothesis 7 is validated. The results are in line with Guangsheng (2022); Alauddin and Akther (2023); Pramezmary et al. (2023); Weiler and Gilitwala (2024), where time saving provides a positive and significant impact on continuance intention. This shows that the platform offers convenience, results, and accessibility in locating and obtaining food. The platform conserves time through streamlined ordering procedures, rapid delivery, adaptability, and temporal efficiency compared to alternative options. Time efficiency enhances user satisfaction and strengthens the commitment to sustained usage of the OFD App over extended periods (Guangsheng, 2022; Weiler & Gilitwala, 2024).

6.8 The Effect of Food Safety Risk Perception on Continuance Intention

Food safety risk perception has a significant negative effect on continuance intention since hypothesis 8 is validated. The results are in line with Alauddin and Akther (2023); Muangmee et al. (2021); Ayhün et al. (2024); Troise et al. (2021), where food safety risk perception has a significant negative effect on continuance intention. Buyers experience a decrease in trust and feel uncomfortable continuing to use the service when aware of the risk related to food safety. This perception of risk can give rise to psychological discomfort, concerns about the effect on health, and doubts about the quality and safety of the food available. The willingness to continue using or purchasing food from the service tends to decrease due to increased perceptions of food safety risks. Buyers will prefer to look for other options that are considered safer to maintain health. Therefore, the perception of risk related to food safety is a major inhibiting factor in maintaining loyalty or continued use of the service, because personal safety is a priority in the decision-making process (Ayhün et al., 2024; Troise et al., 2021).

6.9 The Effect of Perception on Continuance Intention

Attitude has been validated to generate a positive and substantial effect on continuance intention since hypothesis 9 is validated. The results are in line with Nguyen et al. (2019); Hwang et al. (2021); Belanche et al. (2020); Troise et al. (2021); Pitchay et al. (2022), where

attitude provides a positive and significant impact on continuance intention (Eugine Tafadzwa Maziriri et al., 2023). A supportive attitude is formed when the user experience is considered satisfactory and meets expectations. Various factors play a role in the perspective, including convenience, support from the social environment, and marketing strategies. These factors play a role in increasing the likelihood of buyers staying connected to the service in the long term (Pitchay et al., 2022).

6.10 The Effect of Social Influence on Continuance Intention Mediated by Attitude

Social influence has been shown to have a positive, substantial effect on continuance intention, mediated by attitude, as hypothesized in hypothesis 10. This shows that social influence plays a role in building buyer trust in OFD facilities. Buyers with positive experiences from trusted sources often consider the service useful or practical and have a higher level of optimism. This positive attitude supports people in maintaining the willingness to use the service. Social influence also refers to normative pressure, where buyers are expected to use OFD facilities. Since OFD users consider the behaviour as a normal concept, the positive attitude that arises from social influence promotes the continuous use of OFD facilities (Kautsar et al., 2023; Koay et al., 2023).

6.11 The Effect of Price Saving on Continuance Intention Mediated by Attitude

Price saving has been validated to generate a positive and substantial effect on continuance intention mediated by attitude since hypothesis 11 is validated. Buyers possess a high interest in repurchasing OFD products when prices are reasonable with the product quality (Elverda et al., 2025). This positive attitude strengthens the view of OFD facilities as an important alternative in terms of spending. Buyers begin to feel satisfaction in using OFD when the cost of the service provides a more valuable experience compared to eating at a restaurant or cooking at home. The belief that a service offers financial benefits can increase pleasure (Chakraborty et al., 2022).

6.12 The Effect of Time Saving on Continuance Intention Mediated by Attitude

Time saving has been validated to generate a positive and substantial effect on continuance intention mediated by Attitude since hypothesis 12 is validated. This shows that buyer perceptions of OFD are increasingly positive when experiencing convenience. OFD is a clear solution in situations requiring fast time handling. The tendency to continue using the service increases in line with the positive view. Buyers who put time into the main position tend to consider OFD as a useful and convenient service. This positive perception arises from the allocation of more time to other interests, reinforcing the willingness to continue using OFD services (Belanche et al., 2020; Madiawati & Wijaksana, 2023).

6.13 The Effect of Food Safety Risk Perception on Continuance Intention Mediated by Attitude

Food safety risk perception has been shown to have a positive and substantial effect on continuance intention, mediated by attitude, as hypothesized in hypothesis 13. People who use OFD feel safer in adopting the service since food safety is a top priority. Consumers who are aware of appropriate measures to address food safety concerns tend to hold more favorable perceptions of the service. For example, consumers are more likely to use OFD

services regularly when the platform provides clear and transparent information regarding food sources, packaging, and hygiene certifications (Hong et al., 2023; Zanetta et al., 2021).

6.14 Managerial Implication

The results offer actionable strategies for OFD service providers to improve consumer continuance intention. Managers should use community-based marketing strategies, such as referral programs and influencer collaborations, to build strong social proof and promote usage, since social influence has a big impact. To address price and time-saving motivations, platforms must optimize delivery algorithms for speed and reliability while offering competitive value through loyalty rewards or bundled deals. Mitigating food safety risk perception is critical, and providers are expected to enforce strict hygiene protocols, such as implementing safety seals and displaying merchant hygiene ratings, to build trust and reduce consumer anxiety. Managers can improve a favorable consumer attitude, which serves as the central mechanism for sustaining long-term engagement and loyalty in the competitive OFD market by addressing these factors.

6.15 Theoretical Implication

This research contributes to digital consumer behavior literature by extending the SOR framework to the OFD context in developing markets. The results theoretically validate the integration of TAM, TPB, and SOR perspectives, establishing attitude as a critical mediating mechanism. Furthermore, this research refines risk perception theory by elevating food safety risk as a distinct and crucial determinant in digital services, showing the interaction of health sensitivities with value propositions to drive continuance intention. These insights advance the understanding of sustained engagement in technology-enabled services characterized by uncertainty and competing values.

6.16 Limitations

This research is subject to several limitations that should be acknowledged. First, the geographical scope is restricted to OFD users in Batam City, which limits the generalizability of the results to broader national or international contexts. Future research could expand to multiple regions or cross-country comparisons to strengthen external validity. Second, the reliance on an online survey may introduce self-selection bias and potential variability in respondents' comprehension of the questionnaire. Subsequent analysis can use mixed or complementary qualitative methods, such as interviews or focus groups, to validate and enrich the results. Third, the quantitative method adopted may not fully capture the emotional and psychological dynamics underlying consumer behavior. Future research should integrate experimental or longitudinal designs to explore the aspects more deeply. Finally, the present model does not consider the mediating variables influencing continuance intention. Expanding the model to incorporate additional constructs, including trust, habit, or perceived enjoyment, offers a more comprehensive understanding of OFD usage behavior.

7. Conclusions

In conclusion, this research examines the factors influencing consumers' continuance intention toward OFD services in Batam City, Indonesia, using an integrated TAM-TPB-SOR framework. Analysis of data from 384 OFD users confirms that social influence, price, and time saving, as well as perceived food safety risk, significantly affect attitude and

continuance intention. The results confirm the mediating role of attitude as the main reason influencing continuance intention. Therefore, social influence, price and time saving, and risk perceptions do not automatically lead to continued use. These variables foster a positive attitude, motivating users to remain loyal to the service.

An important result is the dual effect of food safety risk perception. The concept directly reduces continuance intention through positive attitude formation. This suggests consumers balance risk concerns with trust-building mechanisms and service benefits, validating attitude as a critical mediating construct that synthesizes external stimuli into behavioral outcomes. Theoretically, this research (1) extends SOR to health-sensitive digital services in developing markets, (2) refines risk perception theory through dual-pathway effects, (3) integrates TAM, TPB, and SOR through attitude as a central mediating mechanism, and (4) establishes food safety risk as a significant construct in digital consumption. OFD providers should (1) enhance food safety communication through transparency and certifications, (2) leverage social influence using reviews and influencer partnerships, (3) emphasize cost and time efficiency through promotions and streamlined processes, and (4) cultivate a positive attitude through consistent service quality. Limitations include cross-sectional design, geographic specificity to Batam, self-reported data bias, and exclusion of variables such as trust or habit. Future research should use longitudinal designs, expand to diverse contexts, incorporate additional constructs, use mixed methods, and examine demographic or platform-specific moderators to deepen understanding of digital service continuance in developing markets.

8. Recommendation

This research proposes some strategic initiatives used to enhance competitiveness and buyer satisfaction. First, organizations should use renowned figures, influencers, and client testimonials to cultivate trust and enhance the attraction of services. Second, discount and loyalty programs must be expanded to attract and retain buyers by providing opportunities for savings. Third, enterprises should use real-time order monitoring technology to enhance service speed and efficiency. This enhances consumers' comfort and knowledge. Fourth, the aspects of food safety must be ensured, including secure packaging, hygienic distribution, and the certification of partner restaurants to guarantee the quality and safety of the food. Future analyses use mixed methods to enhance comprehension of buyer cognition and emotions, while expanding the research area to obtain more representative data and robust generalizations.

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