From brick and mortar to click and order: consumers' online food delivery service perceptions post-pandemic

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Abstract

Purpose – This study explores consumers' intentions to utilize online food delivery services (OFDS) in a shared economy beyond the COVID-19 pandemic, employing the protection motivation theory (PMT) as the underlying framework.

Design/methodology/approach – Utilizing a random sampling technique, a quantitative approach was employed to gather responses from 347 Australian consumers. The proposed model was tested through covariance-based structural equation modelling.

Findings – The findings of this study demonstrate significant positive relationships between restaurant credibility, food quality, e-service quality, price, online food delivery applications, consumer e-satisfaction and e-loyalty. It reveals that consumers satisfied with OFDS may continue exhibiting e-loyalty intentions in a shared economy beyond COVID-19. The relationship between consumer e-satisfaction and e-loyalty intention is moderated by consumer-perceived COVID-19 risk.

Practical implications – This study offers practical implications for online food delivery providers, restaurants, regulators, application developers and policymakers. These implications aim to enhance the e-service quality, price value, usefulness and security of OFDS, along with strategies to improve the online food delivery application.

Originality/value – This study contributes to the existing body of knowledge by examining a unique selection of antecedents, including the OFDS app, to determine consumer e-satisfaction and e-loyalty in the context of a shared economy beyond COVID-19. The utilization of the OFDS app as a second-order construct adds a meaningful contribution to the OFDS literature. Furthermore, this study investigates and contributes to the limited understanding of the moderation effect of consumer-perceived COVID-19 risk on consumer e-satisfaction and their intended continued use of OFDS.

Keywords Online food delivery services, Satisfaction, Consumer risk, Loyalty, Sustainable development goals, Shared economy

Paper type Research paper

Introduction

The COVID-19 pandemic has left an undeniable mark on the global landscape by altering the everyday lives of individuals (Ababneh *et al.*, 2022), including how food is accessed and consumed (Hamid *et al.*, 2023). As countries implemented social distancing measures and lockdowns, there was a surge in demand for online food delivery services (OFDS), which became essential for consumers worldwide (Allah Pitchay *et al.*, 2022; Meena and Kumar,

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2022). As the pandemic subsides and society returns to the pre-pandemic normalcy (Agag *et al.*, 2022), it becomes critical to investigate the long-term implications of the changes in consumer behaviour and factors that motivate consumers sustained use of OFDS in a shared economy beyond the pandemic (Rasool *et al.*, 2021; Bargoni *et al.*, 2023; Lin *et al.*, 2023; Ranjbari *et al.*, 2023).

The expected growth of the OFDS market - predicted to reach US$0.19tn by 2023 with an annual growth rate of 12.33% - attests to its increasing importance in the modern shared economy. It offers both service providers and consumers flexibility and convenience, contributing to a shift in industry dynamics that implicates technology platforms, delivery personnel and restaurant consumers (Shroff *et al.*, 2022). Thus, it becomes crucial to consumer satisfaction and loyalty become paramount for the industry's continued evolution and success consumer (Meena and Kumar, 2022). Furthermore, the growth of the shared economy has set a backdrop for unique challenges and opportunities in the OFDS sector, and this intersection deserves in-depth investigation (Shroff *et al.*, 2022).

Although prior studies have explored the e-satisfaction and e-loyalty of consumers in OFDS (Alalwan, 2020; Shah *et al.*, 2020; Troise *et al.*, 2021; Zhuang *et al.*, 2021; Koay *et al.*, 2022; Pandey *et al.*, 2022; Wen *et al.*, 2022), the complexity of OFDS, especially considering the context of the shared economy, the long-term implications of the pandemic and changing risk perceptions, remains not fully understood (Francioni *et al.*, 2022; Koay *et al.*, 2022; Kwon *et al.*, 2023; Dogra *et al.*, 2023). The existing research either precedes the pandemic (Pigatto *et al.*, 2017; Yeo *et al.*, 2017; He *et al.*, 2019; Suhartanto *et al.*, 2019) or examines the pandemic era only (Francioni *et al.*, 2022; Meena and Kumar, 2022). With prior studies investigating OFDS applications and the importance of factors such as restaurant credibility, food quality, e-service quality and price value have been studied on consumer satisfaction, these factors were studied in isolation and did not account for the combined effect.

This study, therefore, aims to provide a comprehensive understanding of e-satisfaction and e-loyalty in the OFDS context by investigating the interplay of these factors. By doing so, it seeks to address identified gaps in the literature, construct a more robust model with enhanced predictive power and contribute to the generalisability of the results. In addition, this study intends to investigate the post-pandemic landscape, specifically addressing the lingering psychological and behavioural effects of COVID-19 on consumers' risk perception, which continues to impact consumer choices (Li *et al.*, 2021).

This study aims to address the above gaps in the literature by investigating the factors influencing consumers' continued intention to use OFDS in a shared economy beyond the pandemic in Australia. The justification for conducting this study in Australia is based on the population's diversity, effective management of the COVID-19 pandemic, stability of the economy, high Internet penetration rate and the rapidly growing OFDS industry. The following research questions (RQs) are formulated:

RQ1. What factors drive consumer e-satisfaction and e-loyalty towards OFDS in a shared economy?

RQ2. How do consumer perceptions of COVID-19 risk moderate the e-satisfaction and e-loyalty association?

These questions are addressed through a quantitative approach collecting data from 347 consumers in Australia using co-variance-based structural model analysis. The findings contribute to the OFDS literature by providing a comprehensive model that incorporates factors such as restaurant credibility, price value, food quality and e-service quality. The resulting model has high predictive power for consumer satisfaction and provides

valuable insights into the long-term impact of the COVID-19 pandemic on consumer decision-making and behaviour. The study also provides meaningful evidence of the effects of COVID-19 risk perception in the post-pandemic context despite the world having greatly overcome the virus. The findings would benefit online food delivery providers, restaurants, regulators, app developers and policymakers, highlighting the importance of aligning the OFDS with the United Nation's Sustainable Development Goals (SDGs).

Literature review and hypothesis development

Protection motivation theory

The PMT, initially by Rogers (1975), is a social-psychological framework popularly used to understand human behaviour when faced with perceived threats. The theory proposes that an individual's protection behaviour is motivated by two processes: threat and coping appraisal. As such, it is applicable for this study context due to the profound effects of the COVID-19 pandemic on consumers' perceptions of risk relating to OFDS. The theory posits that consumers assess the threats (risk of contracting COVID-19) and their ability to manage the threat, driving their motivation to engage in protection behaviour (OFDS). Thus, the PMT provides a comprehensive framework to illuminate the intricate interplay of threat and coping appraisals in shaping consumers' e-satisfaction, e-loyalty and continued intention to use OFDS in a shared economy beyond the pandemic.

Restaurant credibility

Restaurant credibility is the level of trust a consumer places in a particular restaurant to deliver on its value promises (Al-Kilani and El Hedhli, 2021). Restaurant credibility positively impacts consumer perceived value, consistent with previous findings (Filieri *et al.*, 2018; Shah *et al.*, 2020). The more a restaurant is perceived as trustworthy and experienced, the more it will benefit consumers (Hlee *et al.*, 2019). Previous studies (e.g. Morhart *et al.*, 2015) found that consumers purchase online from well-known restaurants because they provide standardized food quality. Consumers also pay attention to the number of ratings given to a particular restaurant online when purchasing food from a restaurant using OFDS (Prasetyo *et al.*, 2021). However, a study by Chetan Panse *et al.* (2019) found that, though positive, restaurant credibility was not significantly associated with high consumer satisfaction towards OFDS, as consumers were ready to experiment with it and not worried about the restaurant's credibility. Nonetheless, given that most of the research has proven restaurant credibility to impact consumer satisfaction positively, we propose that:

H1. Restaurant credibility has a positive association with consumer e-satisfaction.

Food quality

Food quality is essential for a restaurant as it influences the consumer experience with any restaurant service (Ha and Jang, 2010). Indicators of restaurant food quality include variety, nutrition, taste, menu, presentation and size (Ha and Jang, 2010; Liu *et al.*, 2017). Food quality has been found to affect consumer perceptions of restaurant choice, restaurant satisfaction and repurchase intentions (Annaraud and Berezina, 2020; Liu *et al.*, 2017) in online food purchasing platforms. In OFDS, a consumer's need is food and the acquiring process begins when the consumer searches for and orders the food on their connected online device.

A study by Chang *et al.* (2014) confirmed that food quality affects consumers' online food purchases. Sjachroedin (2018) also found that food quality had a positive and significant effect on consumer satisfaction, indicating that consumers of restaurants and even OFDS consider food quality as the most important value in evaluating the transaction.

Suhartanto *et al.* (2019) further ascertained that casual dining and fast-food restaurants offering OFDS provide high-quality food to consumers and are superior to their competitors' foods. Hence, it is proposed that:

H2. Food quality has a positive association with consumer e-satisfaction.

E-service quality

The e-service quality is a concern that has emerged due to vast development in online technologies and is associated with both website and application services (Pigatto *et al.*, 2017). Consumers demand high e-service quality regarding efficient and effective service delivery when making online purchases. Thus, delivering high-quality websites and online applications is imperative for any business offering its products online, such as a restaurant offering OFDS (Suhartanto *et al.*, 2019). Jeon and Jeong (2017) stated that upholding a high-quality website and online application is essential to retaining consumers, motivating them to visit the website and securing their continued loyalty. Further, e-service quality is a vital determinant of consumer e-satisfaction (Sjachroedin, 2018). Several studies (e.g. Jeon and Jeong, 2017; Sjachroedin, 2018) also supported the positive association between e-service quality and satisfaction, where consumers emphasized the functional aspects of the website/online application, for example, information quality, ease of use and accessibility. Thus, the following is proposed:

H3. E-service quality has a positive association with consumer e-satisfaction.

Price

Price is an important stimulus for consumers in making a purchase. Price, which includes food, tax and delivery price, can determine consumer willingness to pay and their perceptions towards online food purchases (Prasetyo *et al.*, 2021). Consumer perceptions towards online food purchases can be measured by how much money they can save in the OFDS context. For instance, Yeo *et al.* (2017) suggested that the money-saving aspect of OFDS influences consumers' perceptions of continued purchase intentions. Other studies have identified price as an important element in determining the use of OFDS (Alalwan, 2020; Cho *et al.*, 2019). Although consumers may want to use OFDS, they may cancel the order if the price is too high (Prasetyo *et al.*, 2021). Kaur *et al.* (2021) also stated that consumers ordering through OFDS are mostly price-sensitive and seek a price advantage. Past studies (e.g. Suhartanto *et al.*, 2019) have also stated that consumers intend to repurchase even if the price increases due to higher driven value perceptions of a particular product/service satisfaction. Moreover, by having a meal at a lower price or by providing other services, such as free delivery, consumers are encouraged to continue purchasing through OFDS (Li *et al.*, 2020). Also, consumers can easily compare prices from one website to another for products or services matching their needs (Ali *et al.*, 2021; Moslehpour *et al.*, 2018). Therefore, the following is proposed:

H4. Price has a positive association with consumer e-satisfaction.

Online food delivery application

The recent influx of consumers of OFDS usage can be attributed to the current pandemic and consumer safety (Partridge *et al.*, 2020). OFDS uses technology through a website or smartphone application to order food from restaurants and deliver it to the consumer's location (Ali *et al.*, 2021; Partridge *et al.*, 2020; Sjachroedin, 2018). OFDS employs food delivery applications such as Uber Eats, DoorDash, Foodora and Eat Easy to assist consumers in purchasing food from restaurants such as Mcdonald's, Pizza Hut, Domino and KFC (Sjachroedin, 2018; Yeo *et al.*, 2017). OFDS applications allow consumers to view food

choices/menus, select, pay for meals and track orders with a click of a button (Chai and Yat, 2019). OFDS application provides consumers with time, convenience and ease of service; for instance, the application's easy navigation design contributes to the value of service and consumer retention (Ganapathi and Abu-Shanab, 2020; Partridge *et al.*, 2020). In addition, the OFDS application provides consumers with reviews of restaurant outlets, promotion deals and safe payment platforms that increase consumer usage (Goh *et al.*, 2017; Yeo *et al.*, 2017). The OFDS application has also allowed food retailers to enhance food order systems and productivity and expand current clientele reach (Chai and Yat, 2019). A study by Wang *et al.* (2019) highlighted that consumers' positive attitude toward OFDS was attributed to the quality of services and useful information provided through the application systems. Another study by Kapoor and Vij (2018) found that the ease of use of information and the visual and navigational design of mobile applications influenced consumer adoption. Therefore, we propose:

H5. Online food delivery application has a positive association with consumer e-satisfaction.

E-satisfaction creates a unique position in a consumer's mind through positive perceptions regarding the value of online purchases (Al Amin *et al.*, 2021). The quality of products and services provided through OFDS affects consumer satisfaction, subsequently influencing loyalty (Chang *et al.*, 2014; Suhartanto *et al.*, 2018). E-loyalty can be described as a consumer's commitment to consistently revisit and recommend sites, purchase goods/services and recommend this to others. In the OFDS setting, satisfied consumers repurchased from the same sites, endorsed OFDS and spread positive word of mouth (Pee *et al.*, 2019). Further, e-satisfaction is associated with assessing a consumer's prior experience with a product or service (Suhartanto *et al.*, 2018). Suhartanto *et al.* (2019) argued that consumers repurchase when a product or service exceeds expectations (Suhartanto *et al.*, 2019). Paramount elements that have an impact on consumers loyalty are the e-service provided (Jeon and Jeong, 2017) in terms of website features, the quality of food, menu variety (Liu *et al.*, 2017) and healthiness and taste (Namkung and Jang, 2007). In a study by Namkung and Jang (2007), product and service satisfaction affected repurchases from food outlets and recommendations to others. Despite high interest in OFDS, literature on what motivates consumer loyalty is scarce (Kedah *et al.*, 2015; Yeo *et al.*, 2017). Research conducted in the restaurant setting highlighted that the loyalty of consumers was mitigated by two factors: food quality and service quality (Kedah *et al.*, 2015; Yeo *et al.*, 2017), which directly influenced consumer satisfaction and repurchase intentions. In the OFDS scenario, a loyal consumer orders food regularly (Suhartanto *et al.*, 2018) and repurchases services (Gursoy *et al.*, 2014). Studies by Kim *et al.* (2009) and Suhartanto *et al.* (2018) highlighted that loyal consumers often purchased and paid premium service prices. Therefore, we posit the following:

H6. E-Satisfaction has a positive association with e-Loyalty intention.

The moderating effect of consumer risk perception

The literature highlights the significant impact of various factors on the continued use of OFDS (Prasetyo *et al.*, 2021; Shah *et al.*, 2021; Suhartanto *et al.*, 2019). A critical factor is consumer risk perception, which profoundly influences the use of OFDS. Kartono and Tjahjadi (2021) shed light on this aspect by discovering that consumers continue to use OFDS despite known risks, such as insecure transactions and potential mishandling of orders. Moreover, in the current pandemic, consumer risk perception extends to concerns about the virus. The shift towards online food ordering can be viewed as a response to perceived COVID-19-related risks associated with restaurant dining (Prasetyo *et al.*, 2021). This perspective aligns with the "Protection Motivation Theory", which suggests that

people respond to perceived threats, such as the COVID-19 pandemic, by taking actions to protect themselves - in this case, choosing OFDS over traditional dining (Rogers, 1975). According to Suhartanto *et al.* (2019), this new behaviour of consumers, in turn, increases their satisfaction with OFDS, which is known to influence repurchase intentions. Considering these insights, this study posits a moderating effect of consumers' risk perception of COVID-19 between consumer e-satisfaction and e-loyalty. Therefore, the following hypothesize is proposed:

H7. Consumer risk perception (COVID-19) strengthens the positive association between e-Satisfaction and e-Loyalty intention.

Based on the literature and theoretical background review, a conceptual framework comprises seven hypotheses. Figure 1 depicts the hypothesized relationships of restaurant credibility, food quality, e-service quality, price and online food delivery application with consumer e-satisfaction. Consumer e-satisfaction then facilitates e-loyalty intentions of using OFDS beyond COVID-19. Lastly, the moderating relationship between consumer risk perception of COVID-19 with e-satisfaction and e-loyalty intentions of using OFDS beyond COVID-19 are depicted below.

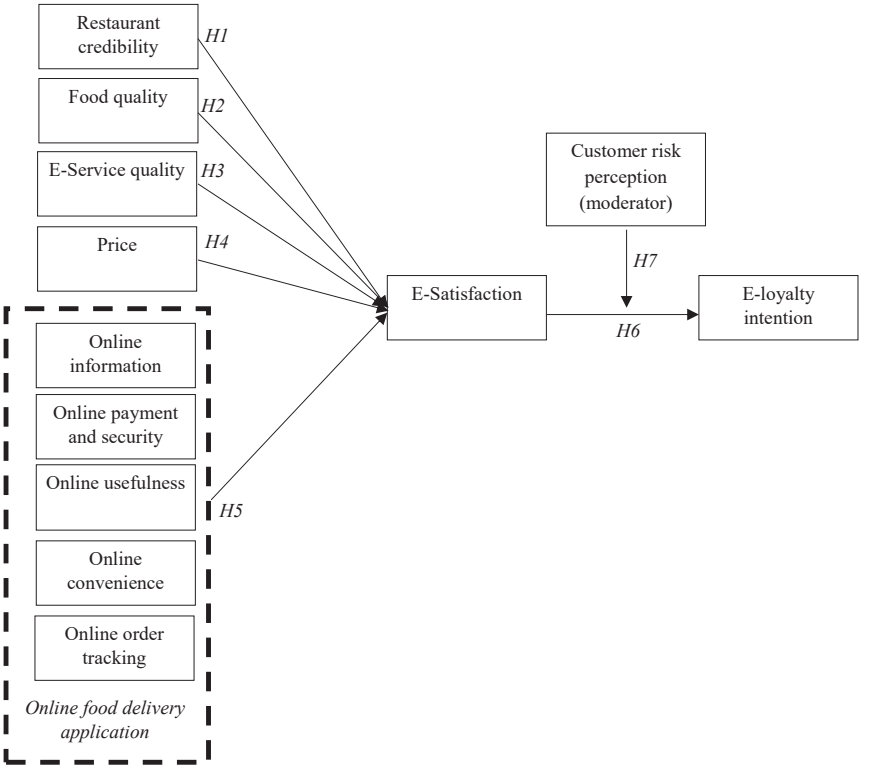


Figure 1.
Conceptual framework

Source(s): Authors work

Methodology

Questionnaire development

The scales and measurement items used in the survey instrument were validated in prior studies. Restaurant credibility and food quality were adopted by Kim and Song (2020) and Prasetyo *et al.* (2021). E-service quality was adopted from Jeon and Jeong (2017) and Suhartanto *et al.* (2019). Price value was adopted from Kaur *et al.* (2021) and Prasetyo *et al.* (2021). Online information was adopted from Kapoor and Vij (2018). Online payment and safety was adopted from Ko (2016) and Prasetyo *et al.* (2021). Online usefulness was adopted from Moslehpour *et al.* (2018). Online convenience was adopted from Jeng (2016) and Yeo *et al.* (2017). Online order tracking was adopted from Correa *et al.* (2018). Respondents' perceptions of how much they agree or disagree with a particular statement were captured using a seven-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree).

Data collection and participants

The survey instrument used in this study was an online questionnaire developed using the *SurveyMonkey* web survey platform. SurveyMonkey is a popular data collection platform (Sharma *et al.*, 2022a; Singh and Sharma, 2022; Slack *et al.*, 2023). The pilot study involved 30 respondents, which assisted in enhancing the readability of the survey instrument being improved before the main survey. Links to the questionnaire were circulated to Australian consumers using a sponsored advertisement on Facebook. This data collection method was previously employed effectively in other studies (Sharma and Singh, 2022; Sharma *et al.*, 2022b; Singh *et al.*, 2022). This resulted in data being collected from 347 consumers from November to December 2022. Table 1 details the demographic profile of the respondents.

Data analysis

A combination of SPSS (version 27) and AMOS (version 27) software was used to conduct covariance-based structural equation modelling (CB-SEM). CB-SEM is a popular method

Characteristics	N	%
Gender		
Female	186	53.6
Male	161	46.4
Age		
18–21 years	102	29.39
22–31 years	113	32.5
32–41 years	86	24.78
42–51 years	42	12.1
52–61 years	3	0.86
62 years and above	1	0.29
Qualification		
Secondary school	99	28.53
Diploma/certificate	48	13.83
Bachelors education	139	40.05
Postgraduate education	39	11.24
Others	22	6.34

Note(s): Aggregate percentages are slightly more or less than 100 due to rounding off
Source(s): Authors work

Table 1. Respondents' demographic profile

used in prior studies to understand consumer behaviour (Singh *et al.*, 2021; Sharma *et al.*, 2021).

Results

Common method bias (CMB)

Herman's single-factor test was used to calculate CMB. The computation revealed a variance of 29.61%, which was lower than the 50% threshold suggested by Podsakoff *et al.* (2003) and confirmed an absence of CMB.

Measurement model assessment

Cronbach's alpha values confirmed the internal consistency of the study's variables, and factor loadings were all above 0.60 and confirmed content validity (Table 3). Also, average variance extracted (AVE) values being higher than 0.50 confirmed convergent validity, and discriminant validity was confirmed as the inter-variable correlation scores were less than the square root of the AVE values of the respective variables (Goodhue, 1998). Confirmatory factor analysis (CFA) results were also within the recommended limits ($CFI = 0.95$, $TLI = 0.95$, $RMSEA = 0.05$, $\chi^2/df = 1.76$), and according to Hair *et al.* (2006), these values would suggest a good model fit. Refer to Tables 2 and 3 for discriminant validity and the measurement of the constructs employed in this study.

Additional assurance for discriminant validity was ascertained by performing heterotrait-monotrait (HTMT) as per Henseler *et al.* (2014) suggestion. The values for HTMT were less than 0.85, which further confirmed discriminant validity. This result is shown in Table 4.

Control variables

The socio-demographic factors of this study did not influence the dependent variables of this study. That is, gender, age and qualification were not found to have a confounding effect on the dependent variables in this study, i.e. e-satisfaction and e-loyalty intention.

Structural model

To test the proposed hypothesis and confirm the fit of the overall model, path analysis was performed. Results confirmed a good model fit ($CFI = 0.93$, $TLI = 0.92$, $RMSEA = 0.03$, $\chi^2/df = 1.96$). The results of the testing of the hypotheses confirm that all six hypotheses tested were supported: H1 ($\beta = 0.36$***), H2 ($\beta = 0.41$***), H3 ($\beta = 0.48$***), H4 ($\beta = 0.39$***), H5 ($\beta = 0.37$***) and H6 ($\beta = 0.43$***). This study's model explains 67% of the variance in e-satisfaction ($R^2 = 0.67$) and 49% in e-loyalty intention ($R^2 = 0.49$). These R^2 values suggest that this study's model has a strong power for prediction (R^2 values of 0.33–0.67) (Chin, 1998 as cited in Henseler *et al.*, 2014, p. 303) of attitude towards e-satisfaction and e-loyalty intention. It is further suggested that this study's results confirm that this model is suitable for predicting e-satisfaction and e-loyalty intention. See Table 5 for detailed results.

Moderation analysis

Subsequently, the moderating relationship revealed consumer risk perception strengthened the positive relationship between e-satisfaction and e-loyalty intention. Therefore, H7 was confirmed. Figure 2 details the moderation results.

Discussion

The study's findings provide significant insights into the factors driving consumer e-satisfaction and e-loyalty towards OFDS, particularly in a shared economy and in a post-

Table 2. Discriminant validity test

	α	CR	AVE	MSV	MaxR(H)	RCD	FQT	SQT	PRC	OIF	OPS	OUF	OCN	OOT	EST	CRP	ELT
RCD	0.89	0.85	0.59	0.51	0.92	*0.84*											
FQT	0.88	0.91	0.62	0.5	0.92	0.12	*0.87*										
SQT	0.85	0.93	0.7	0.47	0.87	0.31	0.14	*0.83*									
PRC	0.86	0.9	0.64	0.48	0.86	0.08	0.27	0.24	*0.75*								
OIF	0.88	0.92	0.66	0.48	0.94	0.19	0.37	0.48	0.02	*0.9*							
OPS	0.83	0.9	0.64	0.42	0.91	0.21	0.24	0.31	0.08	0.17	*0.8*						
OUF	0.85	0.95	0.64	0.44	0.92	0.16	0.25	0.07	0.31	0.3	0.37	*0.85*					
OCN	0.82	0.9	0.69	0.52	0.85	0.02	0.19	0.25	0.18	0.09	0.16	0.09	*0.79*				
OOT	0.84	0.89	0.67	0.56	0.87	0.1	0.34	0.15	0.05	0.21	0.34	0.34	0.26	*0.88*			
EST	0.9	0.92	0.7	0.46	0.92	0.22	0.22	0.48	0.43	0.14	0.42	0.44	0.42	0.36	*0.8*		
CRP	0.87	0.89	0.62	0.45	0.93	0.11	0.38	0.05	0.08	0.35	0.45	0.08	0.35	0.08	0.21	*0.84*	
ELT	0.86	0.93	0.66	0.51	0.89	0.14	0.41	0.12	0.21	0.46	0.24	0.24	0.13	0.28	0.36	0.28	*0.87*

Note(s): The italicfaced diagonal elements are the square root of the variance shared between the constructs and their measures. Off-diagonal elements are the correlations between constructs. RCD: Restaurant Credibility; FQT: Food Quality; SQT: E-Service Quality; PRC: Price; OIF: Online Information; POS: Online Payment and Security; OUF: Online Usefulness; OCN: Online Convenience; OOT: Online Order Tracking; EST: E-Satisfaction; CRP: Customer Risk Perception; ELT: E-Loyalty Intention

Source(s): Authors work

Factor and item description		SL	SMC
Restaurant credibility	RCD1	0.78	0.61
	RCD2	0.75	0.56
	RCD3	0.77	0.59
	RCD4	0.76	0.58
Food quality	FQT1	0.72	0.52
	FQT2	0.76	0.58
	FQT3	0.81	0.66
	FQT4	0.83	0.69
	FQT5	0.76	0.58
	FQT6	0.83	0.69
E-service quality	SQT1	0.86	0.74
	SQT2	0.82	0.67
	SQT3	0.87	0.76
	SQT4	0.81	0.66
	SQT5	0.86	0.74
	SQT6	0.78	0.62
Price	PRC1	0.79	0.62
	PRC2	0.8	0.64
	PRC3	0.76	0.58
	PRC4	0.78	0.61
	PRC5	0.87	0.76
Online information	OIF1	0.78	0.61
	OIF2	0.77	0.59
	OIF3	0.82	0.67
	OIF4	0.84	0.71
	OIF5	0.81	0.66
	OIF6	0.86	0.74
Online payment and safety	OPS1	0.74	0.55
	OPS2	0.83	0.69
	OPS3	0.8	0.64
	OPS4	0.79	0.62
	OPS5	0.82	0.67
Online usefulness	OUF1	0.78	0.61
	OUF2	0.81	0.66
	OUF3	0.83	0.69
	OUF4	0.75	0.56
	OUF5	0.76	0.58
	OUF6	0.84	0.71
	OUF7	0.82	0.67
	OUF8	0.85	0.72
	OUF9	0.74	0.55
	OUF10	0.81	0.66
	OUF11	0.78	0.69
	OUF12	0.79	0.56
Online convivence	OCN1	0.81	0.66
	OCN2	0.79	0.62
	OCN3	0.86	0.74
	OCN4	0.85	0.72
Online order tracking	OOT1	0.74	0.55
	OOT2	0.88	0.77
	OOT3	0.79	0.62
	OOT4	0.85	0.72

Table 3.
Confirmatory factor analysis

(*continued*)

Factor and item description		SL	SMC
E-satisfaction	EST1	0.85	0.72
	EST2	0.87	0.76
	EST3	0.82	0.67
	EST4	0.84	0.72
	EST5	0.8	0.64
Consumer risk perception	CRP1	0.76	0.58
	CRP2	0.8	0.64
	CRP3	0.74	0.55
	CRP4	0.85	0.72
	CRP5	0.79	0.62
E– Loyalty	LYT1	0.81	0.66
	LYT2	0.84	0.71
	LYT3	0.73	0.53
	LYT4	0.8	0.64
	LYT5	0.84	0.71
	LYT6	0.85	0.72
	LYT7	0.81	0.66

Source(s): Authors work

Table 3.

	PVL	EST	CRP	ELT
PVL				
EST	0.14			
CRP	0.17	0.31		
ELT	0.26	0.52	0.29	

Source(s): Authors work

Table 4.
HTMT analysis

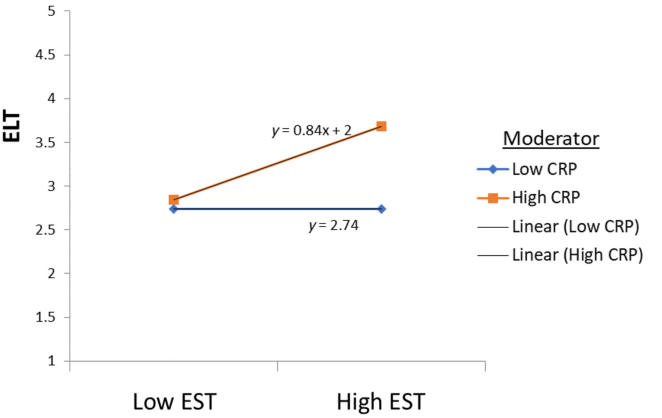
Structural paths	B	se	*t*	*p*	Supported?
RCD → EST	0.36	0.04	20.54	$p < 0.001$	Yes
FQT → EST	0.41	0.04	2.33	$p < 0.001$	Yes
SQT → EST	0.48	0.03	13.21	$p < 0.001$	Yes
PRC → EST	0.39	0.05	27.21	$p < 0.001$	Yes
OFD → EST	0.37	0.04	3.87	$p < 0.001$	Yes
EST → ELT	0.43	0.03	15.14	$p < 0.001$	Yes

Source(s): Authors work

Table 5.
Direct relationship results

pandemic scenario. This discussion presents a thorough analysis of the theoretical contribution towards addressing the identified research gaps, as stipulated by our research questions and elucidates the link between the introduction, literature review, and the results drawn from our study.

RQ1 queried the factors influencing consumer e-satisfaction and e-loyalty towards OFDS in a shared economy. Our findings showed that the model's explanatory power (R2), 48.9% variance, was explained for e-loyalty, and 56.14% was explained for e-satisfaction. Both values exceed the recommended R2 value of 40% (Straub *et al.*, 2004). Restaurant credibility showed a positive association with consumer e-satisfaction. The significant positive association could be attributed to a particular restaurant's brand name, the trustworthiness



Source(s): Authors work

Figure 2.
Customer risk perception strengthens the positive association between e-satisfaction and e-loyalty intention

of its services and overall ratings and reviews that increase consumer e-satisfaction. This is consistent with Filieri *et al.* (2018) and Shah *et al.* (2020) findings. In addition, the results show that the intention to use OFDS post-pandemic is quite significant, with a strong positive association between credibility and e-satisfaction, in contrast to the Chetan Panse *et al.* (2019) study. Second, consumers were more satisfied with the overall quality of food available through OFDS. Consumers relied on OFDS because the food was free of tempering and hazards and consistent in taste and appearance. These findings are consistent with those of Chang *et al.* (2014) and Sjachroedin (2018). As a result, the findings of this study supported the significant positive relationship between food quality and consumer e-satisfaction. Consumers found the e-service quality of OFDS dependable, simple to use and accessible. The user-friendly platform of OFDS provided adequate services, allowing consumers to rely on the website and place food orders online. Most importantly, this enabled consumers to pay for the services they received securely. As a result of the overall e-service quality of the OFDS, consumers rely heavily on this medium to order food easily. These results are consistent with previous research (e.g. Jeon and Jeong, 2017). Thus, e-service quality positively affected consumer e-satisfaction with the use of OFDS. Moreover, the findings indicate a strong relationship between price and OFDS. The study discovered that, despite adding delivery costs to OFDS, the food price remained reasonable and consumers were pleased to receive the value of their purchases conveniently (Prasetyo *et al.*, 2021). This encourages consumers to use OFDS regularly and reduces major barriers to using OFDS following COVID-19 (Suhartanto *et al.*, 2019). Furthermore, the survey revealed that reliable online food delivery apps increased consumer e-satisfaction. Consumers who were satisfied with delivery application systems such as mobile accessibility, user-friendly interface and online order tracking system demonstrated their reliance on OFDS after COVID-19. The pandemic brought the world to a standstill and restrictions in movement made consumers indulge more in their smartphones and explore mobile applications (Tran, 2021). This prompted OFDS vendors to easily facilitate online applications to entice consumers to increase their use of such services, which included daily promotions, discounts and coupons (Ganapathi and Abu-Shanab, 2020; Partridge *et al.*, 2020). Thus, a safe, secure, reliable and robust online food delivery application system increased consumer e-satisfaction when using OFDS. Additionally, this study showed that OFDS-satisfied consumers might continue to display e-loyalty intentions beyond COVID-19. This finding is consistent with Prasetyo *et al.* (2021) and Suhartanto *et al.* (2019), who stated that consumer e-satisfaction from OFDS transactions

creates greater value for its consumer. Thus, the relationship between e-satisfaction and e-loyalty is also validated in our findings. Despite consumer risk perceptions of dining in restaurants and dining through social distancing, consumers may continue to use OFDS beyond COVID-19. Communities were fearful due to the COVID-19 outbreak and consumer risk perception enhanced the link between e-satisfaction and e-loyalty of using OFDS. Due to their likelihood of continued e-loyalty intentions to OFDS and higher levels of consumer satisfaction, more consumers may choose OFDS beyond COVID-19. As such, RQ2 was addressed by this study.

Theoretical implications

This study's findings make a valuable contribution to the literature on OFDS by applying the lens of the PMT to shed light on the interplay between risk perceptions and protective behaviours in the context of food delivery services, thereby addressing critical gaps in the existing body of knowledge. First, by incorporating various factors such as restaurant credibility, price value, food quality, and e-service quality within the PMT framework, the study provides comprehensive insights into consumer e-satisfaction and e-locality. This holistic investigation addresses the limitations of the prior studies where factors were explored in isolation to provide and more reliable and robust model, specifically, the predictive power of e-satisfaction of OFDS. The high predictive power of 67% for consumer satisfaction is much higher than other studies on OFDS (Suhartanto *et al.*, 2019; Annaraud and Berezina, 2020; Erkmen and Turegun, 2022; Koay *et al.*, 2022). Second, the post-pandemic context captures the enduring behavioural and psychological effects of COVID-19 on the consumer. The findings provide insights into the long-term implications of the COVID-19 pandemic on the satisfaction and loyalty of consumers in the OFDS context. Third, the study's examination of the risk perception of COVID-19 on the e-satisfaction and e-loyalty association in the post-pandemic era, as informed by PMT, highlights the ongoing impact of the COVID-19 pandemic, thereby deepening our understanding of its enduring influence. These contributions facilitate a nuanced understanding of the dynamic interplay between OFDS and shared economy and offer valuable practical implications for stakeholders and the alignment with the United Nation's Sustainable Development Goals (SDGs).

Practical implications

This study's findings would benefit online food delivery providers, restaurants, regulators, application developers, and policymakers. Results confirm the importance of restaurant credibility, highlighting the need for online food delivery providers to provide consumers with transparent information about each restaurant, such as photos, ratings and reviews. Meanwhile, policymakers and regulators must implement appropriate hygiene and safety regulations, provide restaurants with support for best practices and ensure that penalty is enforced for non-compliance. Restaurants must prioritize food quality and safety, deliver excellent consumer service and invest in social media engagement and marketing to build a reputation. For instance, the success of regulatory actions in Singapore, which has implemented stringent food safety regulations and established strict penalties for non-compliance, is a testament to the necessity of a strong regulatory framework. Online food delivery providers can enhance food quality by partnering with restaurants that prioritize using fresh ingredients, preparing meals to order, and having proper storage and food handling practices. Regulators and policymakers can promote sustainable and responsible food-sourcing practices and incentivize restaurants to prioritize food quality and safety. E-service quality can be enhanced by online food delivery providers investing in efficient and user-friendly online platforms for ordering and tracking deliveries, providing consumers with timely and accurate delivery updates and offering responsive consumer service. It is

essential that online food delivery providers partner with restaurants that invest in their platforms for ordering and delivery and prioritize accurate and timely order delivery. Companies like Deliveroo have demonstrated the potential of partnerships with restaurants that prioritize food quality, exemplified through their commitment to freshly prepared, made-to-order meals and proper food handling practices. Policy markets and regulators can provide the standard and guidelines for restaurants and online food delivery providers, ensuring transparency and fair practices for pricing and delivery. Price value can be enhanced by online food delivery providers offering promotions, competitive pricing, discounts to attract and retain consumers and partnerships with restaurants offering value meal options. There is a need for policymakers and regulators to implement policies to promote fair pricing practices for both online food delivery providers and restaurants and give local and small restaurants support to compete in the online food delivery market. App developers can enhance online information by providing accurate and detailed information about restaurants, including operating hours, pricing, menu, reviews and ratings from previous consumers. Integrating GPS technology and maps can help consumers locate restaurants and track their real-time deliveries. The enhancement of security and payment should also be a focus for app developers to provide consumers with easy-to-use and secure payment methods such as digital wallet options or credit cards and ensure consumer data security by integrating fraud protection and encryption technology. For example, biometric or two-factor authentication is being added for security. Application developers might take inspiration from platforms like Zomato, which provides comprehensive restaurant information and has integrated advanced features like GPS technology for a better user experience. Similarly, Uber Eats has enhanced its payment security through integrated encryption technology and two-factor authentication. Usefulness needs to be enhanced by app development through features that make online food delivery more enjoyable and convenient for consumers. This can include customizing orders based on dietary restrictions and preferences, one-click reordering and personalized recommendations based on previous orders. It is essential to enhance the usefulness of applications through user-centred features, as exemplified by Postmates, which allows users to customize orders, schedule deliveries in advance and provide personalized recommendations based on past orders. Geo-location can also be integrated to allow consumers to reorder early from their preferred restaurants without searching for them. App developers can enhance the tracking of orders by providing notifications and real-time updates about order status, including the time it was received, prepared and dispatched for delivery to the consumer. Integration of GPS technology can provide accurate estimated delivery times and the ability for consumers to track the delivery driver's location in real time. Additionally, these findings can assist in the global efforts to achieve the SDGs. By gaining a better understanding of consumer behaviour concerning OFDS, businesses can enhance consumer satisfaction and loyalty and foster job creation, business growth and economic development. This aligns directly with SDG 8: Decent Work and Economic Growth, highlighting the importance of inclusive economic growth that offers opportunities for all, particularly those in vulnerable sectors. Additionally, the study's findings are also instrumental in assisting technology providers, regulators and policymakers in identifying potential areas for investment and innovation to ameliorate the OFDS. This addresses SDG 9: Industry, Innovation and Infrastructure. Doing so promotes resilient infrastructure, inclusive and sustainable industrialization and fosters innovation, which is paramount for the OFDS in this digital age. This study also has implications for sustainable and responsible practices. For instance, food delivery platforms can optimize their operations to reduce waste, minimize environmental footprint and improve overall efficiency, contributing towards SDG 12: Responsible Consumption and Production. It also encourages the use of sustainable methods of food production and supply, ensuring that the long-term health of our environment is kept at the forefront. All in all, the alignment of the

OFDS with the SDGs is more than possible; it is a critical step towards a more equitable and sustainable future in the circular economy. This study's findings lay the groundwork for this alignment, presenting opportunities to connect everyday business operations with the broader societal goals that the SDGs embody consumer.

Limitations and directions for future research

Despite this study making important theoretical and practical contributions, the study's limitations need to be acknowledged. These limitations also provide valuable directions on where future investigation is needed. First, the contextual limitation of this study conducted from a single-country perspective (i.e. Australia) limits the generalisability of the findings to other cultures and countries. Future studies could attempt to replicate this study in developed countries. Second, the study's cross-sectional design limits the establishment of cause-and-effect relationships. Future studies could employ longitudinal or experimental designs to address this issue. Third, using self-reported data has limitations, including social desirability bias, memory bias, response rate bias and limited generalizability. Future research can consider supplementing self-reported data with objective measures, using randomized controlled trials and cross-validating self-reported data with other sources.

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