

Online food delivery in the post-pandemic era: moderating role of vaccine confidence

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Abstract

Purpose – In the post-pandemic period and following widespread inoculation against the infection, this research aims to pinpoint the variables that affect consumers' behavioural intentions (BIs) towards online food delivery (OFD) services. The study goes further to investigate the potential impact of vaccine confidence (VC) in modifying the association between consumers' BI to utilise OFD services and their actual usage behaviour (UB).

Design/methodology/approach – Using information gathered through a structured questionnaire from 372 Indian customers, a proposed model based on the technology acceptance model (TAM) and theory of planned behaviour (TPB) models was put to the test using structural equation modelling (SEM).

Findings – Results demonstrate that perceptions of ease of use, attitude (ATT) and perceived behavioural control (PBC) have a favourable and significant impact on behaviour intention amongst Indian OFD users. Contrary to what the TAM and TPB models had predicted, perceived usefulness (PU) and subjective norms (SN) did not significantly affect the BI of the sample of Indian OFD users. Furthermore, the association between BI and actual UB of OFD users is not moderated by the consumers' VC.

Practical implications – The study contributes by shedding light on the variables that affect Indian OFD users' BIs after the coronavirus disease 2019 (COVID-19) pandemic era and mass immunisation and whether VC has a role to play in affecting consumer behaviour, which will aid OFD service providers, eateries and marketers in redesigning their marketing plans.

Originality/value – The present study is the first in making a literary contribution through analysis of the moderating effect of VC on the relationship between BI and actual UB. Additionally, this study presents evidence from India, one of the first nations to implement widespread COVID-19 inoculation.

Keywords COVID-19, Vaccine confidence, TAM, TPB, Online food delivery services

Paper type Research paper

1. Introduction

Various aspects of human lives, businesses, economies, relationships and lifestyles have been globally affected by the COVID-19 outbreak (Silva *et al.*, 2022). The pandemic triggered a sense of panic, anxiety, confusion and fear amongst people, which led to development of

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protective behaviour in masses to prevent the infection. In the case of service industry, massive disruption has been witnessed in the businesses that thrive on face-to-face interactions with the public, namely education, entertainment, hospitality industry, etc., due to lockdown periods and social-distancing norms to be followed during the outbreak (Choe, Kim, & Hwang, 2021). But in order to thrive in the market, the restaurant business immediately adjusted to the new situation by replacing restaurant dining and implementing online food delivery (OFD) services. (Choe *et al.*, 2021). A rapid advent in the information and communication technology (ICT) has reformed the way internet is used for online shopping (Poon & Tung, 2022) and consequently, usage and uptake of OFD services increased (Li, Miroso, & Bremer, 2020). Consumers were stirred to switch to OFD services to prevent contamination risk (Laato, Islam, Farooq, & Dhir, 2020).

Existing research on OFD services has centred on the procedure of customer's adoption of services provided by OFD platforms and their behavioural intentions (BIs) towards usage of the same (Yeo, Goh, & Rezaei, 2017). Several studies in the recent years have demonstrated that the health concerns of the consumers related to COVID-19 infection and the fear of getting infected has led them to take preventive measures. Preference towards no human contact with restaurant employees, preference of OFD to dining at the restaurant, attention to the precautionary measures being taken by the restaurant along with its food delivery partner towards hygienic and no-contact delivery are examples that show that fear has changed the behaviour of the restaurant customers (Choe *et al.*, 2021; Poon & Tung, 2022).

During the pandemic lockdown, people living in isolation reformed their daily intake as a measure of precaution to avoid infection. As per the results of a recent American survey, approximately 41.7% of the participants said that they prefer ordering food from restaurants throughout the lockdown period, when they are confined to their homes (Statista, 2020). However, the situation was contradictory in the case of Indian OFD market. Indian market for OFD witnessed a decline due to COVID-19. Due to successive lockdown periods starting from 24th March, 2020, the delivery volumes of online food platforms experienced a decline (Trivedi, 2021). One of the critical issues that led to drop in online food ordering is the health status of the delivery personnel relative to COVID-19 infection (Trivedi, 2021).

India began its massive vaccination journey against COVID-19 on January 16, 2021 and 1.56 billion vaccinations were done in a period of one year, making it one of the fastest vaccination initiation around the globe (Choudhary, Choudhary, & Singh, 2021). However, the country still suffers from lack of vaccine confidence (VC) amongst people. One of the main arguments advanced for the lack of trust in vaccines (22 % of those surveyed in each city, namely Mumbai, Delhi and Kolkata) is the doubt about the effectiveness of the vaccine in limiting the outbreak. The same issue has been highlighted in other surveys (Tamisetty *et al.*, 2021; Omer, 2022). Restaurants and OFD partners now specify to their customers during ordering online whether the food delivery personnel has been vaccinated and what is his current body temperature, so as to assure the customers that the OFD services are extremely safe and risk-free from transferring the COVID-19 infection whilst delivery.

This research seeks to identify the influencing factors of customer's behaviour intended for OFD services in the post-pandemic period and after mass immunisation against the infection. Previous studies primarily emphasise on identifying the variables influencing buyers' intent to adopt OFD services during the pandemic and extend further to analyse the role of "fear" in moderating the adoption intention (Hong, Choi, Choi, & Jung, 2021; Silva *et al.*, 2022). However, as India has gone through a massive vaccination journey in the past months and COVID-19 restrictions have been lifted in many states, it is imperative to study the role of "vaccine confidence" in affecting the customers' BIs and usage patterns towards OFD services.

2. Review of literature and development of hypotheses

2.1 Online food delivery services

Service for ordering food online is a means to order food directly from the restaurants through online websites or mobile applications and get it delivered to the doorstep (Troise, O'Driscoll, Tani, & Prisco, 2021). Amidst the pandemic, the emphasis on and preference towards contactless delivery amplified so as to stop the transmission of infection and ensure the safety of the customers as well as the delivery personnel. Several earlier studies have analysed the various factors that significantly impact the user's intent to utilise OFD services. Wang, Shen, Huang, and Liu (2021) emphasised that satisfaction amongst consumers and confidence in the OFD platform has a profound and favourable effect on the user's intent to continue the use of the service. San and Dastane (2021) illustrated that perceived benefits has highest influence on the user's intent to purchase from OFD platforms followed by the factors brand familiarity and quality of service. Whereas, Poon and Tung (2022) using the goal-directed behaviour model illustrated that perceived behavioural control (PBC) significantly influences user's intention and physical risk along with the risk of infection of COVID-19 has a detrimental impact on the intention of the user. Furthermore, Amin, Arefin, Alam, Ahammad, and Hoque (2021) implemented the theory of planned behaviour (TPB) model and validated that behavioural control, attitudes (ATTs), delivery hygiene and subjective norms (SN) were associated with both the behavioural intention (BI) to use and the intention to continue using. Previous researchers have used varied theoretical framework to explain intention to use OFD services, which includes Unified Theory of Acceptance and Use of Technology Model (UTAUT) model, Expectation-Confirmation Model (ECM) model, Task-Technology Fit Model (TTF) model, technology acceptance model (TAM) model, TPB model, model of goal-directed behaviour (MGB), etc.

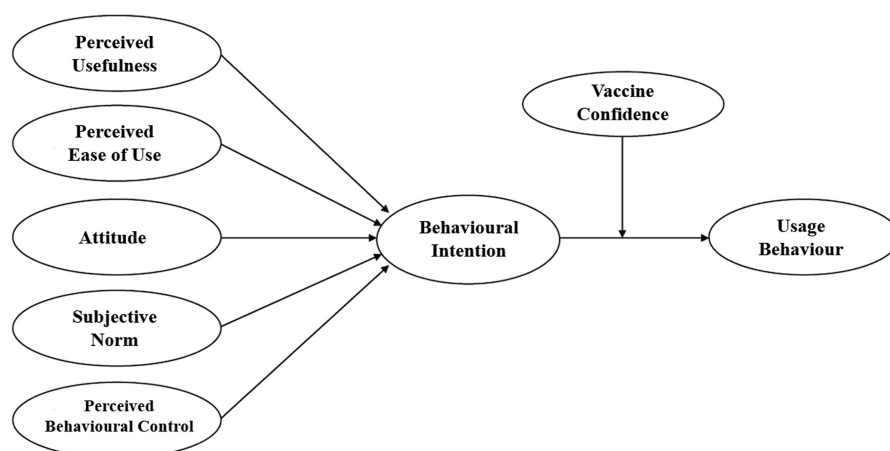
Therefore, based on the previous related researches and factors that have been associated with adoption of OFD services during the outbreak, this study integrates the constructs in TAM and TPB model to comprehend the deciding variables of the users' intent to utilise OFD services, which includes perceived usefulness (PU) and perceived ease of use (PEU) from TAM and ATT, subjective norm and PBC from TPB model. The study further extends the proposed model to integrate the factor "vaccine confidence" as a moderator between user's BI and usage behaviour (UB).

2.2 The TAM and TPB models

Originally propounded by Davis (1989) and obtained from the theory of reasoned action (TRA), the technology acceptance model proposes that two factors, namely the perceived usefulness and PEU predict a user's choice to adopt a particular technology. Numerous researches have utilised the notion to explain why users accept certain information systems, as the model is parsimonious in nature (Song, Ruan, & Jeon, 2021). TAM, although has been used widely, it has been proved to be a reliable and valid model (Blagoeva, Mijoska, & Nestorovska, 2021).

The TPB is an extension of the Theory of Reasoned Action and was developed by Ajzen and Fishbein (1975). The theory postulates that the behavioural purpose of a person is influenced by SN, ATT and PBC (Ajzen, 1991). To explain BI of customers, the theory has been applied broadly (e.g. Soon & Wallace, 2017; Dwivedi, Alzubaidi, & Slade, 2021) and is considered as one of the most-suitable theories to study consumer behavioural phenomenon (Arora & Sahney, 2018) including health behaviour, social and environmental behaviour. The model's prediction ability has improved with the development of statistical tools and researchers have utilised it in longitudinal studies, structural equation modelling (SEM) and varied kinds of studies.

The current study suggests a model after combining the constructs of TAM and TPB model. According to Troise *et al.* (2021), "combining the TAM and the TPB provides a valid and significant model that can be used to understand OFD users' behavioural intentions." Figure 1 illustrate the proposed model for the current study.



Source(s): The authors' own

Figure 1.
Proposed
research model

2.3 Perceived usefulness and perceived ease of use

Davis (1989) has outlined PU as “the extent to which a person believes that using a particular technology will enhance her/his job performance.” OFD platforms’ perceived value can be reflected in the form of cost-effective services and comparison between services available. Previous researches have provided ample evidence as to the presence of an immediate impact of PU on consumer’s usage intention pertaining to a technology (Heijden, 2003; Park, Rhoads, Hou, & Lee, 2014).

Davis (1989) defined Perceived Ease of Use as “the degree to which a person believes that using a technology will be free from effort.” Evidently, the easier and hassle-free a technology is to use, the more the consumers will find themselves attracted and willing to use it regularly. Studies such as Oh, Cruickshank, and Anderson (2009), Moslehpour, Pham, Wong, and Bilgiçli (2018), etc. have demonstrated a clear association between consumers’ PEU and BI.

H1. BI is significantly and favourably impacted by PU.

H2. BI is significantly and favourably impacted by PEU.

2.4 Attitude

ATT is a cognitive aspect of the human behaviour. It conveys either a positive or a negative opinion in relation to the display of a particular behaviour or lack thereof (Ajzen & Fishbein, 1975). Human beings tend to evaluate the consequences of their behaviour before the performance, which is termed as ‘attitude’ (Athiyaman, 2002). Previous researches have articulated that the use of a technology can be facilitated by certain user ATTs which can act to reduce the barriers towards its adoption (Pavlou, 2002; Muñoz-Leiva, Climent-Climent, & Liébana-Cabanillas, 2017). Several studies have found ATT to be a dominant factor that significantly affects intention of the user to adopt and use the technology (Chu & Chen, 2016; Hussein, 2017).

H3. BI is significantly and favourably impacted by ATT.

2.5 Subjective norm

According to Fishbein and Ajzen (1975), the subjective norm is the extent to which a person’s behaviour is influenced by the choices of the important individuals in their lives. Subjective

norm refers to the normative beliefs in the societal structure that influences the thoughts and actions of an individual. Several previous studies have verified that subjective norm directly and significantly affects user's BI (Tan, Sim, Ooi, & Phusavat, 2012; Alasmari & Zhang, 2019).

H4. BI is significantly and favourably impacted by subjective norm.

2.6 Perceived behavioural control

The TPB model deliberates that PBC is a primary predictor of intention of a user (Ajzen, 1991; Cristea & Gheorghiu, 2016). PBC denotes the effortless in the exercise of a specific behaviour by a person (Ajzen, 1991). It is the confidence of an individual in the prospect of successfully participating in a certain behaviour. Recent research has discovered a direct favourable impact of PBC on usage intention of the individuals for a technology (Kim, 2010; Fan *et al.*, 2021).

H5. BI is significantly and favourably impacted by PBC.

2.7 Behavioural intention and usage behaviour

It has been established that an individual's usage intention for a technology is a direct antecedent of their actual UB (Tarhini, Hone, & Liu, 2013). The BI indicates as to when an individual can be expected to perform a specific behaviour. However, this relationship can only hold true when the individual is free to make decisions voluntarily (Purwanto & Loisa, 2020). The TAM model claims that actual UB is governed by the user's BI, which itself is governed by what the user believes about the technology. The direct association between behaviour intention and UB is supported by a number of earlier studies (Tarhini *et al.*, 2013; Purwanto & Loisa, 2020).

H6. UB is significantly and favourably impacted by BI.

2.8 Vaccine confidence as a moderator between behavioural intention and usage behaviour

As per CDC (2022), VC denotes the conviction that a specific vaccine is dependable, safe and trustworthy. Initial polls on people's VC found poor confidence and considerable vaccination hesitancy, which predicted low acceptance and failure of mass COVID-19 inoculation. However, extremely high acceptance of COVID-19 immunisations was a result of information dissemination, popular trust in the government and high mortality rates. However, it is still questionable whether they have complete confidence in the same (Liu, Zhao, & Wan, 2023). Previous research has also discovered a "vaccine confidence gap" between the residents of various nations based on factors like age, gender, religion, etc (Liu *et al.*, 2023). The survival of the online distribution system may be threatened by the significant "vaccine confidence gap" amongst Indian citizens. VC has been linked with reduction in vaccine hesitancy. Vaccine hesitancy could be affected by the people's belief and trust in science (Sturgis, Brunton-Smith, & Jackson, 2021), their trust in the current government (Liu *et al.*, 2023), or their religious beliefs. Reduction in vaccine hesitancy would increase vaccine acceptance. An increase in immunisations would thus reduce the risk of contacting COVID-19. Reduction in perceived risk has been positively linked with favourable BI amongst consumers (Amirtha, Sivakumar, & Hwang, 2021; Chen, Jia, & Wu, 2023). Previous studies have given evidence that perception of health amid the COVID-19 outbreak (Pahrudin, Chen, & Liu, 2021), vaccine ATT (Akhrani *et al.*, 2022), vaccination intention (Gursoy, Can, Williams, & Ekinci, 2021) and safety protocols (Cahigas *et al.*, 2022) during the pandemic has a substantial impact on BI. Previous studies have regarded COVID-19 precautionary measures and health perception as a moderator between proven factors affecting intention (ATT, SN, etc.) and BI (Pahrudin *et al.*, 2021). Nevertheless, research has indicated that a technology's usage may not always follow from a favourable intention to use it (Norberg, Horne, & Horne, 2007). A possible cause of this

inconsistency between intention and actual usage is the modification in intention either due to a new information or unanticipated difficulties to convert the intention to action (Tao, 2009). In the present study we posit that VC towards COVID-19 vaccines act as a moderator between behavioural intention and actual UB of the users of OFD services.

H7. The relationship between BI and UB is significantly and favourably moderated by VC.

3. Research design

3.1 Questionnaire design and data collection

A structured questionnaire was employed to gather the data for the investigation. The items for measuring several constructs were taken from previously published standardised questionnaires. The variables UB, BI, SN and PBC and ATT (ATT) have been measured by 3 items each, whereas PEU and PU have been measured by 4 items each. The variable VC has been measured by 5 items. The questionnaire employs a 5-point Likert scale to assess the view of the participants about an item.

A test survey was done on 68 individuals so as to verify the overall reliability of the questionnaire. The participants in the pilot study belonged to 6 different cities of Uttar Pradesh, namely Varanasi, Gorakhpur, Mirzapur and Ghazipur, Noida and Lucknow and the questionnaires were distributed by the researchers and through relatives and friends. Complete and valid responses were received on 54 questionnaires out of 68 questionnaires distributed, which amounts to a valid rate of 79.41%. Cronbach's α was applied through Statistical Package for Social Sciences (SPSS) 20 to access the items' reliability. The results revealed a Cronbach's α value of 0.834 for a sample of 54 respondents, implying that the questionnaire was satisfactorily consistent and reliable. Table 1 depicts the constructs and items used in the questionnaire.

3.2 Study sample and data collection

The residents of the state of Uttar Pradesh form the sample for the study. Questionnaires were administered to those individuals who had used the OFD system at least once. A total of 411 questionnaires were handed out, from which 372 valid and fully completed questionnaires were received, corresponding to a 90.51% response rate. The sample size determination for the study was based on the criteria specified by Zikmund, Babin, Carr, and Griffin (2009), wherein if the estimated population size is between 5,00,000 to ∞ , the sample size must not be less than 322. The amount of questions in the study's questionnaire as a whole are 28 in number, moreover the study's sample size is more than five times the number of items and a minimum size of 100 respondents, thereby fulfilling the criteria of an adequate sample size (Dhall, 2020). Data collection was from October 2022 to February 2023. Table 2 enlists the sample respondents' demographic framework.

3.3 Reliability and validity measurement

Table 3 depicts, the overall reliability of questionnaire items which was tested using Cronbach's α and has a value of 0.935, signifying that the questionnaire has good and acceptable reliability. The Kaiser–Meyer–Olkin (KMO) Measure is 0.901 and the Bartlett's Test is significant, indicating that the sample is adequate, valid and meets the conditions for factor analysis.

4. Data analysis and interpretation

4.1 Descriptive statistics

The number of respondents who had been infected by COVID-19 in the past were 17.70%, whereas the remaining 82.3% participants were never infected by COVID-19. However, all the respondents of the study had been vaccinated for COVID-19. Regarding the frequency of use

Table 1.
Constructs of the
questionnaire and the
corresponding items

Construct	Code	Source
UsageB	UsageB1	Puriwat and Tripopsakul (2021)
	UsageB2	
	UsageB3	
BI	BI1	Puriwat and Tripopsakul (2021)
	BI2	
	BI3	
SN	SN1	Ventakesh, Morris, Davis, and David (2003) and Zhao and Bacao (2020)
	SN2	
	SN3	
PBC	PBC1	Troise <i>et al.</i> (2021) and Poon and Tung (2022)
	PBC2	
	PBC3	
PEU	PEU1	Troise <i>et al.</i> (2021)
	PEU2	
	PEU3	
	PEU4	
VC	VC1	Vallis and Glazer (2021) and Williams, Nguyen, Chiappa, Fedeli, and Wassler (2022)
	VC2	
	VC3	
	VC4	
	VC5	
PU	PU1	Troise <i>et al.</i> (2021)
	PU2	
	PU3	
	PU4	
ATT	ATT1	Troise <i>et al.</i> (2021) and Poon and Tung (2022)
	ATT2	
	ATT3	
Source(s): The authors' own		

of OFD services prior to the outbreak, majority of the respondents (50%) had a frequency of using it at least once every month. After the start of the pandemic, 25.80% respondents had never used the OFD system, 8.10% respondents had used the system only once, 8.90% respondents had used the system at least once every three months, 16.90% respondents had used it at least once every two months, 28.22% respondents had used it at least once every month, 5.60% respondents had used it at least once a week and 6.50% respondents had used the system several times a week. After the pandemic began, none of the responders had utilised the system multiple times per day.

4.2 Path analysis

The study's conceptual framework was tested using the technique of partial least squares structural equation modelling (PLS-SEM). PLS-SEM technique is utilised here given its predictive power in case of limited sample size and non-normal data (Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018). Constructs' reliability and validity were measured in the measurement model. In order to compute the path-coefficients, *t*-values, *p*-value, etc. of linkages between constructs in the structural model, the bootstrapping procedure was used with 5000 sub-samples (Hair, Ringle, & Sarstedt, 2011).

4.3 Measurement model

The constructs' assessments of reliability and validity were used to evaluate the measurement model. The composite reliability and Cronbach's α were employed to evaluate the constructs'

Demographic factor	Category	Number	Frequency	
				Percentage
Gender	Male	157		42.20%
	Female	215		57.79%
Age in years	<21	44		11.82%
	21–30	107		28.76%
	31–40	163		43.81%
	41–50	48		12.90%
	>50	10		2.68%
Education level	Undergraduate Degree	23		6.18%
	Graduate Degree	177		47.58%
	Postgraduate Degree	147		39.51%
	Above Postgraduate Degree	25		6.72%
Monthly income	Less than ₹25,000	55		14.78%
	₹25,000–₹50,000	98		26.34%
	₹50,000–₹75,000	122		32.79%
	₹75,000–₹1,00,000	59		15.86%
	More than ₹1,00,000	38		10.21%
Occupation	Full time Student	53		14.24%
	Employed	166		44.62%
	Self-employed	84		22.58%
	Retired	20		5.37%
	Housewife	49		13.17%
Marital status	Married	256		68.81%
	Unmarried	116		31.18%
	Divorced	0		0%
	Separated	0		0%
Residence	Urban	219		58.87%
	Suburban or Semiurban	95		25.53%
	Rural	58		15.59%

Source(s): The authors' own

Table 2.
Participants'
demographic
framework

Cronbach's α		Number of items
.935		28
KMO measure		0.901
	χ^2	8121.367
	df	378
	Sig	0.000

Source(s): The authors' own

Table 3.
Statistical measures of
reliability, sampling
adequacy and
Bartlett's test

reliability. As depicted in [Table 4](#), the Cronbach's α values are above 0.6, as suggested by [Robinson, Shaver, and Wrightsman \(1991\)](#), for each construct and the values of composite reliability (CR) is above 0.7 for all the constructs, as suggested by [DeVellis \(2016\)](#). To evaluate the constructs' discriminant validity, the Fornell–Larcker criteria was applied. In accordance with the Fornell–Larcker method, the square-root of the AVE of each construct should be more than the correlation between that construct and the other constructs under consideration ([Fornell & Larcker, 1981](#)). [Table 5](#) depicts that this rule holds true for every construct, implying the presence of discriminant validity.

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Constructs	Item code	Item loading	Cronbach's α	CR	AVE
UsageB	UsageB1	0.916	0.867	0.873	0.790
	UsageB2	0.863			
	UsageB3	0.887			
BI	BI1	0.842	0.806	0.808	0.721
	BI2	0.848			
	BI3	0.857			
SN	SN1	0.904	0.887	0.891	0.816
	SN2	0.925			
	SN3	0.881			
PBC	PBC1	0.881	0.812	0.816	0.729
	PBC2	0.891			
	PBC3	0.785			
PEU	PEU1	0.761	0.786	0.792	0.605
	PEU2	0.813			
	PEU3	0.786			
	PEU4	0.751			
VC	VC1	0.713	0.818	0.900	0.709
	VC2	0.881			
	VC3	0.918			
PU	PU1	0.831	0.864	0.875	0.710
	PU2	0.913			
	PU3	0.794			
	PU4	0.829			
ATT	ATT1	0.862	0.841	0.866	0.758
	ATT2	0.921			
	ATT3	0.825			

Table 4. Measurement model
Note(s): 2 Items of VC VC4 and VC5 were removed due to low item loadings
Source(s): The authors' own

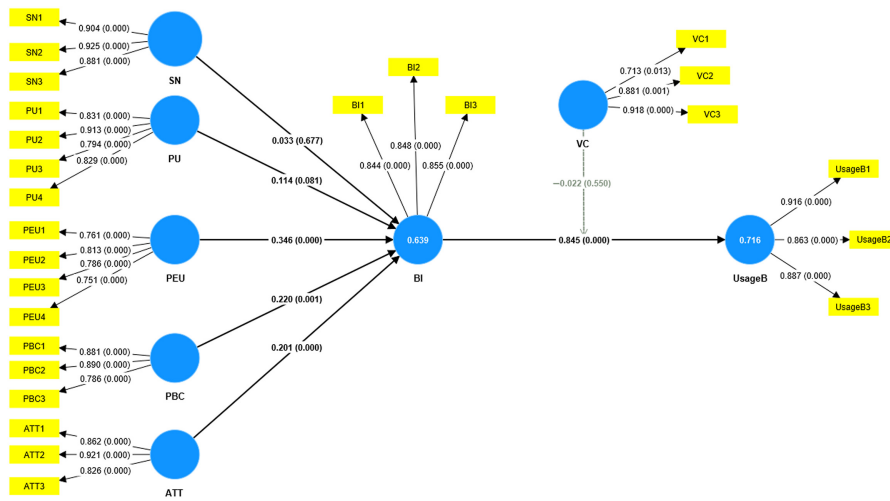
	ATT	BI	PBC	PEU	PU	SN	UsageB	VC
ATT	0.871							
BI	0.659	0.849						
PBC	0.657	0.712	0.854					
PEU	0.594	0.624	0.672	0.778				
PU	0.555	0.666	0.687	0.660	0.843			
SN	0.604	0.613	0.671	0.635	0.615	0.903		
UsageB	0.610	0.646	0.700	0.673	0.641	0.709	0.889	
VC	-0.097	-0.033	-0.042	-0.042	-0.046	-0.025	-0.041	0.842

Table 5. Discriminant validity
Source(s): The authors' own

4.4 Structural model

The structural model's assessment has been done through three steps as suggested by Hair, Hult, Ringle, and Sarstedt (2017). Figure 2 depicts the structural model (PLS-algorithm) of the study. In the first step, how the constructs in the suggested model are related to one another is assessed. In the next step, the R^2 i.e., the coefficient of determination with respect to the independent and dependent variables is estimated and lastly, the Q^2 which quantifies the model's predictive relevance is estimated.

Testing of hypotheses and assessing the structural link between the constructs has been done using the PLS-SEM technique, and bootstrapping method with 5000 sub-samples was



Source(s): The authors' own

Figure 2.
The structural model
(PLS-Algorithm)

applied to estimate the significance of the hypothesised association between the constructs. The results of hypotheses testing through PLS-SEM is as depicted in Table 6.

5. Results and discussion

The findings indicate that four hypotheses are supported whereas three stand rejected. The results support that PEU has a favourable and significant impact on BI ($\beta = 0.346, t = 4.946, p < 0.05$), ATT has a favourable and significant impact on BI ($\beta = 0.201, t = 4.814, p < 0.05$) and PBC has a favourable and significant impact on BI ($\beta = 0.220, t = 3.647, p < 0.05$). The results prove that BI has a favourable and significant impact on UB ($\beta = 0.845, t = 39.547, p < 0.05$) of the customers in the case of OFD services. However, the results failed to reject the null hypotheses regarding favourable and significant effect of PU and subjective norm on BI. Furthermore, the association between BI and UB is not significantly moderated by VC ($\beta = -0.022, t = 0.597, p > 0.05$).

As recommended by Henseler and Sarstedt (2013), the structural model's quality in PLS-SEM should be established by assessing the predictive power of the exogenous variables. To rate the effectiveness of the model, the R^2, Q^2, f^2 and standardised root mean square residual (SRMR) (coefficient of determination, predictive relevance and effect size and SRMR, respectively) values have been used. The R^2 for UB (UsageB) is 0.716, which reflects a substantially strong explanatory power of the model (Hair et al., 2011). The Q^2 which demonstrates the model's predictive relevance is 0.627, implying model's strong predictive power. As recommended by Cohen (1988), the values of f^2 at $\geq 0.02, \geq 0.15$ and ≥ 0.35 represent small, medium and large effect sizes, respectively. The values of f^2 as shown in Table 6 demonstrate small and large effect sizes. The SRMR value of 0.073 is below 0.08 and therefore demonstrates the model's good fit (Henseler, Hubona, & Ray, 2016).

5.1 The moderating effect of vaccine confidence

Using the chi-square test of association, each item of vaccination confidence was evaluated to determine whether there was a "vaccine confidence gap" amongst sample respondents based on age and gender. The test results indicate that there is no association between age and the

Table 6.
Hypotheses testing

Hypothesis	Relationship	Path coefficient	S.E.	t-Value	p-Value	Decision	f ²	R ²	Q ²	SRMR
H1	PU→BI	0.114	0.065	1.745	0.081	Rejected	0.010	0.639	0.627	0.073
H2	PEU→BI	0.346	0.070	4.946	0.000	Supported	0.121			
H3	ATT→BI	0.201	0.042	4.814	0.000	Supported	0.046			
H4	SN→BI	0.033	0.079	0.417	0.677	Rejected	0.008			
H5	PBC→BI	0.220	0.064	3.467	0.001	Supported	0.027			
H6	BI→UsageB	0.845	0.021	39.547	0.000	Supported	0.519	0.716	0.558	
H7	BI*VC→UsageB	-0.022	0.036	0.597	0.550	Rejected	0.002	0.716		

Source: The authors' own

three VC items (**VC1**: $\chi^2 = 8.39$; $df = 12$; $p > 0.05$. **VC2**: $\chi^2 = 11.72$; $df = 12$; $p > 0.05$. **VC3**: $\chi^2 = 13.11$; $df = 12$; $p > 0.05$). Gender categories and the three vaccination confidence measures do not significantly associate with one another (**VC1**: $\chi^2 = 0.213$; $df = 4$; $p > 0.05$. **VC2**: $\chi^2 = 0.699$; $df = 4$; $p > 0.05$. **VC3**: $\chi^2 = 3.35$; $df = 4$; $p > 0.05$). Inferring that the sample respondents do not exhibit a “vaccine confidence gap”. By examining the interplay between BI and VC, it was possible to determine how vaccination confidence affected the link between the intention to buy food online and the actual use of an OFD service. The results depict that VC does not significantly moderate ($\beta = -0.022$, $t = 0.597$, $p > 0.05$) the relationship between BI to utilise OFD services and UB of customers. The R^2 (0.716) for the model does not change after inclusion of the moderating variable, which shows that the model’s explanatory power is unaffected by the addition of the moderating variable. The results of this study demonstrate that after the incidence of the COVID-19 outbreak, approximately 25% of the respondents had not ordered food using OFD services even once. This shows that a significant impact from COVID-19 on the behaviour of the OFD users has been witnessed, even after the massive vaccination drive in the country and the precautionary measures and safety assurance provided by restaurants and delivery personnel. Regarding the factors that are estimated to be the determining factors of BI of the consumers (as derived from TAM and TPB model), PEU, ATT and PBC have a significant and favourable influence on BI. The findings of [Nyugen, Le, Bui, Dang, and Ngo \(2022\)](#) and [Hong et al. \(2021\)](#) are consistent with PEU having a strong and favourable effect on intention. The finding implies that if the operation of the OFD platforms in terms of ordering menu, tracing the order, cancellation or updation of order, payments options and methods, etc. was easy, as perceived by the customers, then the customers would intend to use the OFD platforms frequently for ordering food. Similarly, the finding that a customer’s ATT has a favourable and significant impact on BI is consistent with those of [Yeo et al. \(2017\)](#) and [Troise et al. \(2021\)](#). The positive path coefficient ($\beta = 0.201$, $t = 4.814$, $p < 0.05$) depicts that a positive ATT of customers about OFD services would result in a higher and positive intention of customers towards frequent use of OFD services. The findings of [Troise et al. \(2021\)](#) and [Kim, Kim, and Hwang \(2021\)](#) reinforce the notion that PBC has a favourable and significant influence on BI. The significant effect of PBC combined with an insignificant effect of PU reflects that as OFD services are still a new service amongst Indians. The likelihood that someone will use OFD services is greatly impacted by their capacity to do so, as opposed to how useful the service will be to them ([Troise et al., 2021](#)). However, the findings suggest that PU does not significantly influence the BI of OFD users. This finding corroborates with the findings of [Troise et al. \(2021\)](#) and [Hooi, Leong, and Yee \(2021\)](#) and differs from the findings of [Sin, Goh, Goh, Kumaresan, and Goh \(2022\)](#) and [Waris et al. \(2022\)](#) which consider PU as the second most important predictor of intention after enjoyment. This could be explained with the fact that there exists difference in food quality which is served hot and fresh in a restaurant as compared to the quality of food that is delivered through OFD due to factors like time differences, handling efficiency, timely delivery, etc. Customers would therefore prefer personal visits to restaurants and would not find OFD services much useful. The conclusion that SN have no discernible impact on intention is consistent with those reached by [Yazdanpanah and Forouzani \(2015\)](#) and [Sabakti, Anindita, and Isaskar \(2022\)](#). According to several studies, subjective norm is the least reliable predictor of BI ([Van den Putte, 1991](#)). Subjective norm not being a strong predictor of intention could be explained with the fact that in India OFD services are relatively new and people are not substantially familiar with it, especially people in the age group of 40 to 60. As a result, lack of knowledge and familiarity results in a lack of support and normative beliefs surrounding OFD services and has little bearing on affecting the intentions of OFD users. This finding is opposite to the findings of [Candra, Ayudina, and Arashi \(2021\)](#) and [Troise et al. \(2021\)](#), who state that SN are one of the strongest predictors of intention, stronger than personal ATT. The finding of a direct, positive and highly significant influence of

intention to use OFD on actual UB of the customers corroborates with the findings of Venkatesh, Thong, and Xu (2012) and Christino, Cardozo, Petrin, and Pinto (2021). The finding is in accordance with the TAM and TPB model, which states that if an individual has an intention to use a particular technology and has sufficient capacity to use it, it is highly likely that it would lead to the individual actually using the technology.

Results regarding moderation effect of VC on the relationship between BI and actual UB shows that VC does not significantly and favourably moderate the relationship between the two variables. This implies that higher confidence of an individual on the COVID-19 vaccines administered in India does not regulate the conversion of the intention of an individual to use OFD services to him/her actually using the service, through and post the pandemic. In the Indian context, the BI to use OFD services is determined by ease of use of the service, behavioural control of the individual and the individual's ATT towards the service. If the intention to use is high, there is a significantly higher chance that the intention will convert to actual usage, irrespective of whether the individual has high or low confidence in the COVID-19 vaccinations administered. This could be explained with the results of a recent survey conducted by YouGov on approximately 26,000 individuals from 24 countries, which states that 30% of the surveyed Indian respondents (urban) believe that COVID-19 is only a myth that has been created by the people in powerful positions and that the virus does not exist. India was placed first amongst the surveyed countries who believed in the conspiracy theory (Armstrong, 2022). In addition, a recent study by Doshi, Karunakar, Sukhabogi, Prasanna, and Mahajan (2021) on the Indian populace found that the majority of respondents (54.80%) showed little concern about COVID-19. The low fear of COVID-19 amongst Indian citizens may be the cause of the lack of association between their intention to use OFD and their actual usage of the same, despite their level of confidence in COVID-19 vaccine. As they have low fear of COVID-19, they are indifferent towards the level of COVID-19 precautions being followed by OFD service providers and whether the delivery personnel has been vaccinated or not.

6. Implications of the study

Based on what the researcher is aware, the present study is the initial in making a literary contribution through analysis of the moderating effect of VC on the relationship between BI and actual UB. Moreover, the study throws light on the influencing factors of BI of Indian users of OFD, which would help OFD service providers, restaurants and marketers to redesign their strategies. As the Indian OFD users focus on ease of use of a system, the OFD service providers should design the application or the website such that it provides a more convenient layout, ease of navigation, detailed information, etc. The website or the application page must provide easy contact facilities, sectional division on the basis of type of food or restaurants. The payment procedure must be straight-forward and payment options should be increased. As per a survey in December 2019, majority of the smartphone users in India fall in the 16–24 age group, followed by the 24–35 age group, which are regarded as the tech-savy age group (Sun, 2022). People belonging to the higher age groups show reduced use of smart phone services, the reason being the difficulties faced in comprehending of the complexity of the system. Therefore, reduction in the complexity of use of OFD platforms is needed to enhance behavioural control of the people. Moreover, in order to make it easier for the higher age groups to enjoy the benefits of OFD services, expansion in the OFD services platforms, namely digital ordering, ordering through SMS, etc. could be done. As VC does not have a substantial role in affecting the conversion of intention to usage, the OFD service providers must focus on the more perpetual determining factors of intention. They must inform the users about their efforts in complying to the preventive measures (vaccination of the delivery personnel, use of mask and gloves by them, etc.); however, the quantity or regularity of the users' orders cannot be expected to increase as a result of such efforts.

6.1 Conclusion

The present study sought to identify the elements that affect the customer's BI towards OFD services in the post-pandemic period and mass immunisation against the infection. It extends further to study the moderating function of 'vaccine confidence' in affecting the relationship between BI and actual UB of the customers towards OFD services. The results of path analysis depict that in the case of Indian OFD users, a favourable and strong influence on BI is exerted by PEU, ATT and PBC. However, contrary to suppositions of TAM and TPB models, PU and SN do not have a significant impact on BI of the sample Indian OFD users. Moreover, VC of the users does not act as a moderating factor towards the relationship between BI and actual UB of the OFD users. The present study is subject to following limitations, which can be addressed in future researches. The study uses a sample of OFD users in the state of Uttar Pradesh, however, an increase in sample size through inclusion of OFD users in different states of India may make the study more robust and may reveal different results. The present study applies quantitative techniques to study the relationship between variables, however, more comprehensive results could be achieved with the use of mixed-methods technique. To improve the model's capacity for explanation, further factors like service quality, trust, habit, etc. might be added.

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