

Decision-making model in digital commerce: electronic trust-based purchasing intention through online food delivery applications (OFDAs)

Muhammad Asif Zaheer

*University Institute of Management Sciences,
PMAS-Arid Agriculture University Rawalpindi, Rawalpindi, Pakistan and
Department of Management and Law, Faculty of Economics,
University of Rome Tor Vergata, Roma, Italy*

Tanveer Muhammad Anwar

*Institute of Preventive Veterinary Sciences and Department of Veterinary Medicine,
College of Animal Sciences, Zhejiang University, Ningbo, China*

Laszlo Barna Iantovics

*Research Center on Artificial Intelligence,
Data Science and Smart Engineering (ARTEMIS),
Electrical Engineering and Information Technology,
George Emil Palade University of Medicine Pharmacy Science and Technology of
Targu Mures, Marosvasarhely, Romania*

Maryam Manzoor

*University Institute of Management Sciences,
PMAS-Arid Agriculture University Rawalpindi, Rawalpindi, Pakistan*

Muhammad Ali Raza

*Department of Business Administration, Istanbul Aydin University,
Istanbul, Turkey, and*

Zoia Khan

*University Institute of Management Sciences,
PMAS-Arid Agriculture University Rawalpindi, Rawalpindi, Pakistan*

Abstract

Purpose – This research aimed to raise awareness about the need for safety measures and features of online food delivery applications (OFDAs) to build electronic trust (e-trust) with augmented purchase intention among customers. Moreover, this study explores the attributes of electronic commerce (e-commerce) and how e-trust influences the purchasing intention of consumers while ordering food through OFDAs including



fear of contagious diseases. Determinants of e-commerce in the digital era profoundly impact the performance of enterprises.

Design/methodology/approach – Data from 493 food consumers collected from Federal Capital Territory (FCT) Pakistan, who were regular users of OFDAs. To scrutinize the dataset, confirmatory factor analysis (CFA) was conducted to assess the construct validity in this research study. Structural equation modeling (SEM), which is facilitated by Smart-PLS, was employed to examine the direct, moderation and mediation effects of the proposed model.

Findings – Results revealed the positive and significant impact of the e-trust on the purchase intention. Additionally, e-trust acted as a mediating factor in the connection between electronic security (e-security), electronic privacy (e-privacy), usability, electronic payment (e-payment), electronic innovativeness (e-innovativeness) and the buyer's purchase intention. Furthermore, the fear of contagious viruses negatively moderated the e-trust and purchase intention that weakened buying behavior.

Originality/value – This research is primarily centered on enhancing the comprehension regarding safety orientation within the context of an evolving restaurant industry. The findings of this study hold substantial contributions for academics, web developers, application designers, OFDAs, restaurants and other businesses since they indicate the attractiveness of OFDAs in generating feelings of pleasure and boosting users' intentions to keep using the application.

Keywords E-commerce, OFDAs, E-trust, Digital disruption, Purchase intention, Fear of contagious viruses

Paper type Research paper

Introduction

The COVID-19 pandemic caused a severe worldwide public health emergency and swiftly disrupted many industries as well as their corresponding technologies; those that facilitated progress within the food industry during the crisis are a fraction of potential future developments but have nonetheless contributed to this situation (Din *et al.*, 2022; Pal *et al.*, 2021). Moreover, restaurants operating through online food delivery applications (OFDAs) have precautionary measures in place, particularly for challenging situations, e.g. fear of contagious viruses. It is important and necessary after COVID-19 for organizations to have an alternative plan to operate online to enhance sustainability, as many bars and restaurants (including fast food restaurants, food trucks and pop-up restaurants) around the world were compelled to shut down to avoid the virus from spreading further, which led to shifting their business onto OFDAs (Cho *et al.*, 2019; Ali *et al.*, 2021). These considerations highlight the crucial significance of modern customer comprehension about the utilization of OFDAs. In addition, fast-growing OFDAs are placing significant pressure on related stakeholder operations and consumers have more concerns regarding electronic privacy (e-privacy), electronic security (e-security), electronic payment (e-payment), usability, electronic innovativeness (e-innovativeness) and electronic trust (e-trust) while buying food through online applications. E-trust is the key attribute, which is dependent upon other attributes during purchasing and re-purchasing through the same applications by providing personal and financial credentials. Therefore, understanding the importance of elements that motivate customers to persist in utilizing OFDAs and pinpoint crucial areas requiring enhancement to streamline operations is vital. By identifying and resolving consumer needs and concerns, OFDAs may improve the entire customer experience and increase consumers' ongoing use by establishing e-trust.

According to the literature review, OFDA research is limited to purchase behavior regarding consumer e-trust with the enhancement of electronic commerce (e-commerce) attributes and purchase intention towards on-demand OFDAs (Su *et al.*, 2022a, b). Consumers have concerns about OFDAs while purchasing meals due to the above-mentioned attributes, and these concerns were the primary motivation for this investigation. The reputation of web applications matters, and customers are primarily focused on the attributes of mobile applications that aim to enhance e-trust and purchase intention throughout crises, i.e. during/post COVID-19 pandemic. Inadequate investigation has been carried out about application qualities. According to recent research, more than 80% of consumers belong to Generations Y

and Z. Generation Y prioritizes service quality and trust through transparent product details, timely deliveries and properly packaged meals, but Generation Z emphasizes fun, considers offering promotions and facilitates digital interactions for experience-sharing and social engagement (Nguyen and Nguyen, 2024).

The current study aims to examine the concepts of e-trust and purchase intention through OFDAs in consequences of during and/or post COVID-19 and fear of other contagious viruses, e.g. different kinds of flu. Therefore, this research specifically explores the attributes of e-commerce, i.e. e-privacy, e-security, e-payment, usability, e-innovativeness, e-trust and buying intention, by using OFDAs. Similarly, customers' tendency for online purchases through e-commerce applications depends on the qualities of the programs that promote e-trust and purchase intention. Nevertheless, numerous restaurants are currently dealing with the consequences of COVID-19 and its variants, so it is clear that there are challenges ahead for the food industry with technological innovation (Torres, 2021; Devezas and Miranda, 2022). Based upon the explanations provided above, this study intends to address the following research questions:

- RQ1. What is the impact of e-trust on purchase intention while using OFDAs and the moderation effect of contagious viruses fear, i.e. different kinds of flu, chickenpox, COVID-19, etc.?
- RQ2. What is the mediation effect of e-trust on the association of e-privacy, e-security, e-payment, usability and e-innovativeness with purchase intention while using OFDAs?

The study's findings have made significant contributions both theoretically and practically in several ways. By applying the unified theory of acceptance and use of technology (UTAUT2) in describing the intention of consumers to continue using OFDAs, it emphasizes the need to use the proposed theoretical framework to examine customer behaviors regarding purchase intention about OFDAs. We suggest a comprehensive framework for OFDAs that is technically robust, by using innovative features of e-commerce to ensure sustained efficacy, particularly in emerging economies. The outcomes of this study have considerable contributions for researchers, application designers, web developers, OFDAs, restaurants and other enterprises. OFDAs are highly effective in eliciting pleasure and increasing users' motivation to continue using the application. Moreover, the details of theoretical and practical contributions are elaborated in the implications section, while the second section contains the literature review and formulation of hypotheses. The third section refers to the study's methodology, while the fourth part is dedicated to results and discussion. Finally, the last section discusses the conclusion, limitations and future recommendations.

Literature review and hypotheses development

Theoretical background

The UTAUT2 framework offers a solid foundation for understanding the relationship between various variables in the proposed model. Social influence and peer opinions play a crucial role in the adoption of technology or systems compared to the subjective standards outlined in the *theory of reasoned action* (TRA) (Venkatesh et al., 2012). An individual is more likely to adopt a new technology, system or service if his or her peers view its use as significant (Bagozzi and Lee, 2002), and it has been demonstrated that social influence significantly affects users' behavioral intentions about new technology, products and services (Venkatesh et al., 2003; Venkatesh et al., 2012). Encouraging situations refer to the individual confidence level toward using the system with the availability of organized technical support (San Martín and Herrero, 2012) and comprise the user's assumption that they would have access to direction, training and assistance when acquiring a technology

(Shao and Siponen, 2011). Moreover, the UTAUT has been used previously to determine how likely clients were to use OFDAs. To address these issues, a framework called UTAUT was designed to explain how individuals plan to utilize information systems and how they act when they do. UTAUT claims performance expectation, effort expectation, social influence and facilitation predict behavioral intention and usage (Venkatesh *et al.*, 2003). The UTAUT2 model assesses consumer behavior and is rarely utilized in food services, but the quality of information is an influencing factor in the UTAUT2 model that links with effort expectancy, performance expectancy, and continuous intention of use that affects food service consumers' acceptance of new information systems (Lee *et al.*, 2019). Although mobile phone usage is increasing and people are actively adopting new technologies and utilizing new applications and/or apps, there is still room for improvement. However, individuals experience greater anxiety while adopting new apps when purchasing a product or service and Davis (1989) explains this behavior in his *technology acceptance model* (TAM). Table 1 presents some recent articles with common theories related to OFDAs.

E-trust and purchase intention

Internet shopping is still viewed as riskier than in-store buying, even though various warranties are seen as a form of risk reduction (Lwin and Williams, 2006; Bezes, 2016). Male customers can directly create purchase intentions after gaining trust in Internet retailers; however, female consumers must first form attitudes, and this suggests that Internet retailers must engage with female clients more to better comprehend their expectations and demands (Dutta and Bhat, 2016). In diverse product types, brand purchase intention is certainly influenced by both brand prestige and brand credibility via perceived risk, information costs saved and perceived quality reflecting high and low levels of self-expression (Gilaninia *et al.*, 2012; Guo and Luo, 2023). The linkages between customers' initial online trust and their opinions of a website are moderated by various levels of trust propensity (Chen and Barnes, 2007). The perception of a website's quality appeared as a powerful predictor of its credibility and trust (Agag and El-Masry, 2017; Saoula *et al.*, 2023). Therefore, we developed the following hypothesis:

H1. E-trust has a significant positive effect on purchase intention.

The mediating role of e-trust between e-privacy and purchase intention

Perceived ease of use, information quality of online platforms, the guarantee of privacy and security and restaurant credibility have a strong, significant and constructive effect on the customer's intention to use (Lee *et al.*, 2018; Lin *et al.*, 2022). In e-commerce, business companies should ensure the privacy of customers is protected, which enhances customer trust in the company, i.e. how the information is presented to clients is an important factor of information quality (Alharbi *et al.*, 2013; Antoniou and Batten, 2011). The COVID-19 pandemic caused remarkable changes in purchaser buying behavior and consumer reaction toward privacy stress being driven to consistently online shopping (Gong *et al.*, 2022). Similarly, when customers use websites frequently, products match customer expectations and customer security and privacy are maintained to ensure online trust and loyalty (Hsu, 2008; Othman *et al.*, 2019). Thus, we developed the following hypothesis:

H2. E-trust mediates the relationship between e-privacy and purchase intention.

The mediating role of e-trust between e-security and purchase intention

While using food applications, consumers usually check the safety and security, delivery time, and availability of food and restaurants; however, perceived trust and perceived security have a positive and substantial impact on the e-payment system (Bare *et al.*, 2021;

Relevant studies	Theoretical foundation	Analytical approach	Key antecedents of OFDAs towards purchase intention
Winarno and Roostika (2024)	UTAUT	SEM	Social influence, effort expectancy, performance expectancy, trust and online purchase intention
Foroughi <i>et al.</i> (2024)	Technology continuance theory and task-technology fit model	SEM	perceived ease of use, attitude, perceived usefulness, continuance intention and perceived food safety
Munday and Humbani (2024)	UTAUT2 and task-technology fit (TTF)	SEM	performance expectancy, habit, hedonic motivation, perceived TTF, continuance intention and user experience
Teng <i>et al.</i> (2023)	UTAUT	SEM	performance expectancy, satisfaction, habit, continuance intention and trust
Sharma <i>et al.</i> (2023)	Protection motivation theory	SEM	restaurant credibility, food quality, e-service quality, price, OFDAs, consumer e-satisfaction, e-loyalty and consumer perceived COVID-19 risk
Nguyen and Nguyen (2024)	Expectation-confirmation model and information system success model	SEM	system quality, information quality, perceived usefulness, perceived enjoyment, satisfaction and continuance usage intention
Poon and Tung (2022)	TPB	SEM	attitude, subjective norm, positive and negative anticipated emotion, perceived behavioral control, users' intention, performance risk, privacy risk, financial risk, physical risk and COVID-19 risk
Francioni <i>et al.</i> (2022)	Not mentioned	SEM	perceived healthiness, quarantine procedures, perceived hygiene, perceived ease of app use, attitude, fear of COVID-19, perceived risk, attitude and continuance intention
Hong <i>et al.</i> (2021)	TAM	SEM	Perceived usefulness, perceived ease of use, trust, price-saving benefits, time-saving benefits, food safety risk perception, perceived severity, perceived vulnerability and customer intention to use online food delivery
Bouarar <i>et al.</i> (2021)	TPB	multiple regression analysis	Attitudes, subjective norms, perceived behavior control, trust and fear of COVID-19
Zanetta <i>et al.</i> (2021)	UTAUT2	SEM	performance expectancy, social influence, hedonic motivation, price value, habit, frequency of using food delivery apps, solidarity, continuance intention and risk perception
Kumar and Shah (2021)	Pleasure arousal dominance (PAD)	SEM	app aesthetics generate pleasure, arousal, dominance emotions and continued usage intentions
Ali <i>et al.</i> (2021)	Theory of technology readiness (TTR)	SEM	optimism, innovativeness, insecurity, discomfort, situational influences, consumer adoption intentions and service usage behavior

Table 1.
Some recent studies on OFDAs towards purchase intention

Source(s): Authors' own creation/work

Kim *et al.*, 2010a, b). Moreover, OFDAs are quick, functional and easy-to-use websites, and their security is ensured by the company; thus, customers' trust, pleasure and perceived risk are strongly affected (Jaroenwanit *et al.*, 2022). Meanwhile, if safety, efficacy, reactivity, affordability, problem handling and compensation are provided effectively to the customers, then the perceived value of electronic banking is increased (Kumbhar, 2011). Simultaneously, if behavioral and security issues prevail in an e-commerce businesses the trust of the customer is affected, which inevitably impacts the growth, and companies should strive and develop strategies to overcome all related issues (Abyad, 2017). Therefore, we developed the following hypothesis:

H3. E-trust mediates the relationship between e-security and purchase intention.

The mediating role of e-trust between e-payment and purchase intention

Better service and information quality, online payment systems and advanced web design have a substantial positive influence on client satisfaction, and customers feel fully secure about a website with established trust and where an encouraging impression of the e-payment system has been imposed (Barkhordari *et al.*, 2017; Wang, 2019; Ayinaddis *et al.*, 2023). When the trust of the consumer has been well established and various online payment options are available, then awareness and perception regarding e-commerce are enhanced, particularly in developing countries such as Pakistan (Hassan and Lee, 2021). The influence of pleasure and arousal on product quality and online transaction risk was negative, whereas they had a favorable effect on purchase intent, and a similar level of perceived information was positively associated with purchasing intent (Kim and Lennon, 2010). Hence, we developed the following hypothesis:

H4. E-trust mediates the relationship between e-payment and purchase intention.

The mediating role of e-trust between usability and purchase intention

Food safety risk, price value and perceived ease of use have positive and noteworthy relations with customer intention to use online food delivery service; however, when a high level of electronic service quality is provided by the company, then a constructive influence on buying behavior is observed (Marimon *et al.*, 2010; Norris *et al.*, 2021). When companies offer user-friendly sites, on and offline customer support, electronic ticketing and electronic tailing, then online offerings are reinforced; when the satisfaction of customers is kept in consideration along with perceived value, then customer loyalty can be achieved (Kolsaker *et al.*, 2004). To provide value to the customers by providing goods and services, companies should devise means to create an environment of trust among customers so that the infrastructure of electronic business can grow in the most efficient manner (Velmurugan, 2009). The prominence of interaction and user involvement on the web has led to the widespread implementation of reputational schemes on e-commerce Internet sites that transform into important aspects of customers' purchasing decisions (Malak *et al.*, 2021). Thus, we developed the following hypothesis:

H5. E-trust mediates the relationship between usability and purchase intention.

The mediating role of e-trust between e-innovativeness and purchase intention

Information and communication technology (ICT) has developed many innovative ways for people and organizations to explore, obtain and utilize data. However, social influence, system design and task technology have positive and significant relations with the loyalty of food delivery applications (Limsarun *et al.*, 2021). E-trust and risk perception have direct consequences on buying intent. For example, if electronic retailers participating in the

South African market execute proper risk-mitigation measures, focusing notably on the technologically equipped customer sector, it is possible that digital shopping will expand steadily in the future (Pentz *et al.*, 2020). Digitalization and digital transformation were accelerated during the COVID-19 pandemic, but the technical quality of mobile food delivery services already had a constructive and substantial association with the perceived value and substantial effect on electronic loyalty (Gavrila and de Lucas Ancillo, 2021; Su *et al.*, 2022a; Zaheer *et al.*, 2024a) including ease of use and perceived usefulness, which have constructive and noteworthy relationships with client satisfaction and intention to use OFDAs (Varianto *et al.*, 2022). Therefore, we developed the following hypothesis:

H6. E-trust mediates the relationship between e-innovativeness and purchase intention.

Fear of contagious viruses (different kinds of flu, chickenpox, COVID-19, etc.) as a moderator between e-trust and purchase intention

On-demand food delivery services were significantly accelerated during the COVID-19 pandemic, which made customers' lives easier while online shopping reduced frenzied shopping (Alaimo *et al.*, 2021). The pandemic caused various financial, economic and behavioral changes in the purchasing environment, with online food purchasing particularly emphasized (Alaimo *et al.*, 2021). Perceived COVID-19 risk, support available from the government and conditions with available facilitation all impact the intention to use online apps, but cross-border e-commerce revealed that the perception of risk is a significant element that decreases individuals' propensity to acquire unknown international products (Wiyata *et al.*, 2022). The necessity of lowering perceived risks throughout the pandemic was emphasized by the importance of safety and accessibility as priorities for both consumers and organizations, despite both having a detrimental effect on their intention to utilize OFDAs (Burlea-Schiopoiu *et al.*, 2022; Poon and Tung, 2022). Therefore, we developed the following hypotheses:

H7. Contagious viruses moderate the relationship of e-trust with purchase intention.

The relationship of various variables is shown in Figure 1.

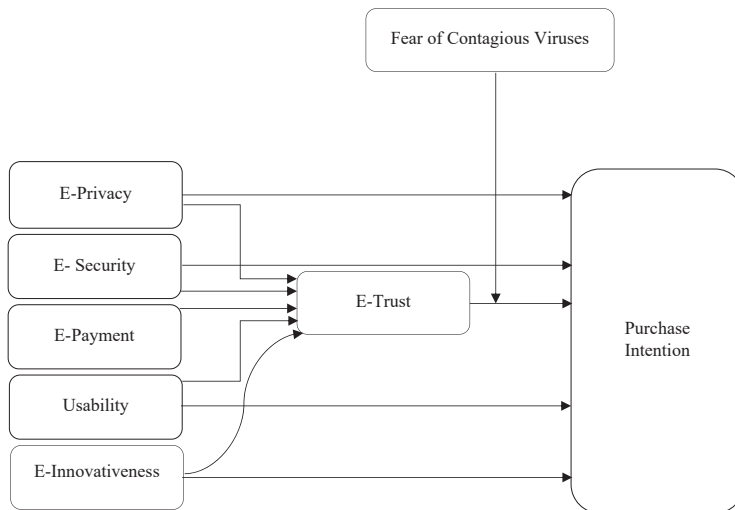


Figure 1.
Research model

Source(s): Authors' own creation/work

Research methodology

This is a quantitative study, and a deductive research approach was used to test the proposed model. A self-administered survey was provided to OFDA consumers in the Federal Capital Territory (FCT), Islamabad, Pakistan. Data were collected through convenience sampling techniques, and the final sample of 493 OFDA consumers was used for data analysis. An online survey was used to gather the data from OFDA consumers after the pandemic, and structural equation modeling (SEM) was employed through Smart-PLS to test the proposed model. Partial least squares structural equation modeling (PLS-SEM) offers several benefits to researchers who are using structural equation models. The unique methodological characteristics of PLS-SEM make it a highly beneficial and potentially more suitable alternative to the widely used covariance-based structural equation modeling (CB-SEM) techniques in practical applications (Hair *et al.*, 2014). Moreover, the detail of the demographic characteristics of our sample is presented in Table 2.

Measurement of scales

Several scales developed by different researchers were utilized to quantify the results. Four items of e-privacy items were modified from one study (Ranganathan and Ganapathy, 2002), and four items of e-security items were modified from two studies (Ranganathan and Ganapathy, 2002; O’Cass and Fenech, 2003). Similarly, three items of e-payment were modified by one study (Teoh *et al.*, 2013), and seven items of usability were modified by three studies (Flavián *et al.*, 2006; Kirakowski *et al.*, 1998; Roy *et al.*, 2001). Moreover, three items of e-innovativeness were modified from three studies (Herrero Crespo and Rodríguez del Bosque, 2008; Kim *et al.*, 2010a, b; Yang *et al.*, 2012), four items of e-trust items were modified from three studies (Gefen, 2000; Jarvenpaa Tractinsky and Vitale, 2000; Parasuraman *et al.*, 1988), three purchase intention items were modified from two studies (Gefen, 2000; Jarvenpaa Tractinsky and Vitale, 2000) and fear of contagious viruses was adapted from Ahorsue’s

Characteristics	Frequency	(%)
<i>Gender</i>		
Female	213	43.2
Male	280	56.8
<i>Age Group</i>		
Less than 18	53	10.8
18–25 years	311	63.1
26–35 years	41	8.3
36–45 years	20	4.0
More than 45 years	68	13.8
<i>Qualification</i>		
Primary school/middle school/high school	102	20.7
College/diploma/technical	142	28.8
Undergraduate	162	32.9
Graduate/postgraduate	87	17.6
<i>Monthly income</i>		
Less than (\$215) 60,000 Rupees	217	44.0
(\$215) 60,000 to (\$360) 100,000 Rupees	97	19.7
(\$360) 100,000 to (\$1080) 300,000 Rupees	18	3.7
More than (\$1080) 300,000 Rupees	161	32.6

Source(s): Authors’ own creation/work

Table 2.
Demographic characteristics

seven items (Ahorsu *et al.*, 2020). We used a seven-point Likert scale for all variables and details of items are shown in Appendix.

Results

Measurement model

Convergent validity. Confirmatory factor analysis (CFA) was conducted to assess the validity by using Smart-PLS, and Ringle provided the threshold criterion. For the scale to have enough convergent validity, the average variance extracted (AVE) should be equal to 0.5 or greater. Similarly, item factor loadings (must be higher than 0.7), composite reliability and Cronbach alpha (must be higher than 0.7) were used to assess indicator reliability and internal consistency reliability (Ringle *et al.*, 2023). All factor loadings meet or exceed the minimum requirement of 0.7 except USB5 and USB7. These items were eliminated from further analysis due to their low factor loading, and further details are shown in Table 3.

Constructs	Items	Loadings	Cronbach's alpha (C α)	Composite reliability (CR)	Average variance extracted (AVE)
E_INV	E_INV1	0.816	0.767	0.865	0.682
	E_INV2	0.856			
	E_INV3	0.804			
E_PAY	E_PAY1	0.837	0.793	0.879	0.708
	E_PAY2	0.810			
	E_PAY3	0.875			
E_PRV	E_PRV1	0.749	0.737	0.834	0.556
	E_PRV2	0.743			
	E_PRV3	0.742			
	E_PRV4	0.749			
E_SEC	E_SEC1	0.762	0.753	0.843	0.574
	E_SEC2	0.748			
	E_SEC3	0.772			
	E_SEC4	0.748			
E_TST	E_TST1	0.835	0.856	0.903	0.699
	E_TST2	0.789			
	E_TST3	0.880			
	E_TST4	0.838			
FCV	FCV1	0.852	0.918	0.935	0.672
	FCV2	0.730			
	FCV3	0.832			
	FCV4	0.733			
	FCV5	0.827			
	FCV6	0.748			
	FCV7	0.810			
PI	PI1	0.888	0.839	0.903	0.755
	PI2	0.882			
	PI3	0.837			
USB	USB1	0.771	0.840	0.886	0.608
	USB2	0.738			
	USB3	0.818			
	USB4	0.765			
	USB6	0.803			

Note(s): Abbreviations: E_PRV = electronic privacy, E_SEC = electronic security, E_PAY = electronic payment, USB = usability, E_INV = electronic innovativeness, E_TST = electronic trust, PI = purchase intention and FCV = fear of contagious viruses

Source(s): Authors' own creation/work

Table 3.
Measurement model
(estimates)

Discriminant validity requires that each independent variable should be different from other independent variables. The analysis utilized both the heterotrait monotrait (HTMT) ratio and Fornell and Lacker’s criterion proposed by Henseler *et al.* (2015). All diagonal values are larger than non-diagonal values as shown in Table 4, lending credence to the discriminant validity of the research variables.

All variables in Table 5 have HTMT ratios that are less than 0.85, as required for assessing discriminant validity using this method.

Correlation analysis. Correlation analysis was performed and details of correlation coefficients between all variables are shown in Table 6.

Structural model

Using the Smart-PLS-supported assessment outer model, we analyzed direct and specific indirect channels to evaluate the overall research model (Hair *et al.*, 2014). Figure 2 presents the algorithmic analysis, including β values and R^2 .

Figure 3 illustrates the findings of the route analysis using bootstrapping ($n = 5,000$) to test the structural model. Figure 3 depicts the p -values and bootstrapping test outcomes used to evaluate statistical significance.

Discussion

The indirect effects through e-trust that exist between the independent electronics commerce factors and purchase intention were calculated and presented in Table 7 as part of a mediation

Variables	E_INV	E_PAY	E_PRV	E_SEC	E_TST	FCV	PI	USB
E_INV	0.826							
E_PAY	0.584	0.841						
E_PRV	0.382	0.489	0.746					
E_SEC	0.354	0.506	0.409	0.758				
E_TST	0.622	0.661	0.567	0.514	0.836			
FCV	0.209	0.219	0.004	0.051	0.291	0.820		
PI	0.494	0.338	0.144	0.189	0.382	0.288	0.869	
USB	0.437	0.523	0.445	0.413	0.622	0.139	0.220	0.780

Note(s): Abbreviations: E_PRV = electronic privacy, E_SEC = electronic security, E_PAY = electronic payment, USB = usability, E_INV = electronic innovativeness, E_TST = electronic trust, PI=purchase intention and FCV = fear of contagious viruses

Source(s): Authors’ own creation/work

Table 4. Fornell and Lacker’s criterion

Variables	E_INV	E_PAY	E_PRV	E_SEC	E_TST	FCV	PI	USB
E_INV								
E_PAY	0.753							
E_PRV	0.494	0.633						
E_SEC	0.464	0.651	0.547					
E_TST	0.764	0.799	0.698	0.634				
FCV	0.247	0.256	0.055	0.067	0.326			
PI	0.612	0.414	0.181	0.234	0.448	0.324		
USB	0.526	0.628	0.556	0.517	0.717	0.15	0.255	

Note(s): Abbreviations: E_PRV = electronic privacy, E_SEC = electronic security, E_PAY = electronic payment, USB =usability, E_INV = electronic innovativeness, E_TST = electronic trust, PI = purchase intention and FCV= fear of contagious viruses

Source(s): Authors’ own creation/work

Table 5. HTMT ratio

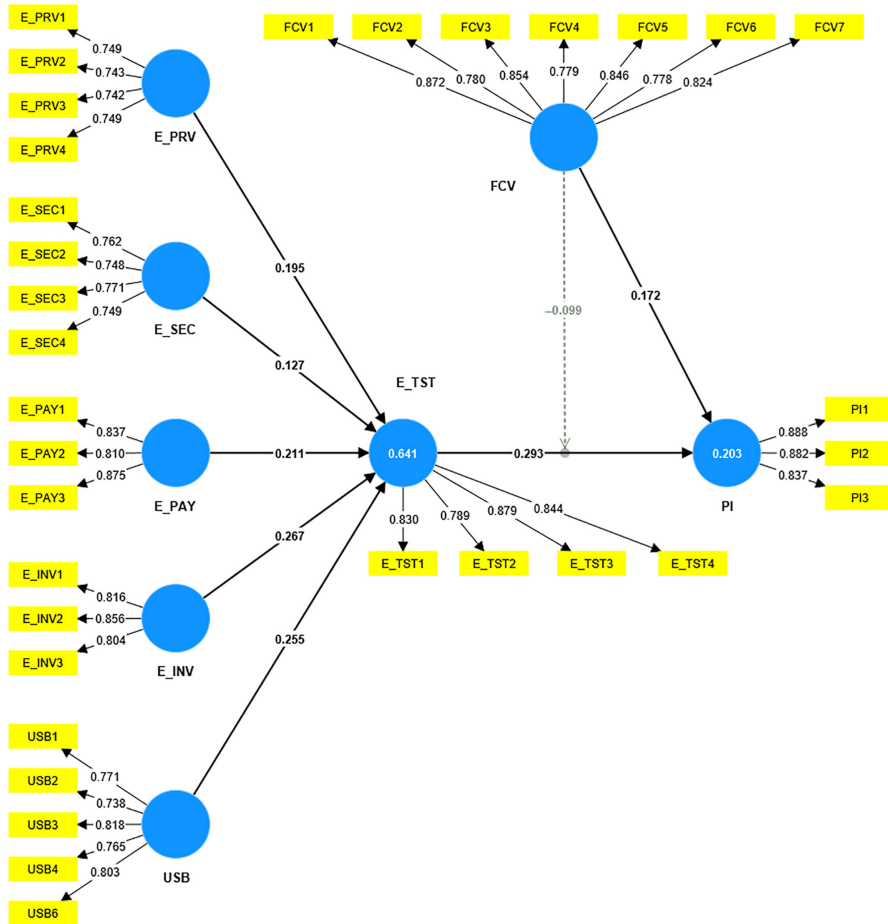
Variables	E_INV	E_PAY	E_PRV	E_SEC	E_TST	FCV	PI	USB
E_INV	1							
E_PAY	0.585**	1						
E_PRV	0.373**	0.485**	1					
E_SEC	0.349**	0.503**	0.407**	1				
E_TST	0.62**	0.66**	0.558**	0.511**	1			
FCV	0.206**	0.218**	0.005	0.047	0.289**	1		
PI	0.491**	0.337**	0.141**	0.186**	0.38**	0.284**	1	
USB	0.418**	0.509**	0.439**	0.409**	0.605**	0.129**	0.213**	1

Note(s): ** Correlation is significant at the 0.01 level (2-tailed). Abbreviations: E_PRV = electronic privacy, E_SEC = electronic security, E_PAY = electronic payment, USB = usability, E_INV = electronic innovativeness, E_TST = electronic trust, PI=purchase intention and FCV = fear of contagious viruses

Source(s): Authors' own creation/work

Table 6.
The correlation
coefficient of variables

study. Familiarity with electronic transactions is significantly associated with e-commerce purchasing intent, and a recommendation from a friend increases the credibility of popular platforms. The contingent influence of platform popularity on the association between platform trust, and brand trust was insignificant (Chen and Barnes, 2007; Wiyata et al., 2022). When purchasing prepared food items through OFDAs, perceived value influences the buying intention with respect to information quality, reputation, time-saving, familiarity and usability (Zaheer et al., 2024b). E-trust has noteworthy constructive effects on purchase intention ($\beta = 0.293, p < 0.001$), hence supporting Hypothesis 1 acceptance. Initial online customer trust and familiarity with buying online are strongly associated with e-commerce buying intention (Chen and Teng, 2013; Chen and Barnes, 2007). E-privacy appears to have an indirect influence on purchase intention ($\beta = 0.057, p < 0.005$) via e-trust since it supports Hypothesis 2 acceptance. In addition, it has been discovered that Hypothesis 3 is supported, which states that e-security has an indirect influence on purchase intention via e-trust ($\beta = 0.037, p < 0.005$). Consequently, Hypothesis 3 is accepted. Fees related to food delivery services and payment security have a substantial and positive influence on purchasers' intention to use OFDAs (Jaroenwanit et al., 2022). Table 6 revealed the noteworthy indirect effect of e-payment on purchase intention via e-trust ($\beta = 0.062, p < 0.005$); therefore, Hypothesis 4 has been supported and accepted. Similarly, usability had a noteworthy indirect influence on purchase intention ($\beta = 0.075, p < 0.001$) via e-trust. As a result, it has been determined that Hypothesis 5 is supported and accepted. Perceived usefulness, perceived ease of use, price saving and trust had significant relations with delivery services, with a moderating impact of COVID-19 when a company provided the support of online reviews and a good price value, which also influenced electronic satisfaction and use of intention (Alalwan, 2020; Hong et al., 2021). Similarly, e-innovativeness has a strong indirect effect on purchase intention ($\beta = 0.078, p < 0.001$) via e-trust, so Hypothesis 6 is accepted. As a result, food manufacturers and retailers are increasingly adopting technological innovators or innovation to thrive in this perpetually changing environment (Chen et al., 2021; Galanakis et al., 2021; Savastano et al., 2019). Moreover, in collaboration with human-based service components, full technological service ultimately worked to increase purchase intent positively, and the implementation of social networking sites reduced the perceived risk and enhanced customer trust, which influenced customer purchase intention (Heinze and Matt, 2018). Finally, the interactive effect of contagious virus fears toward purchasing behavior through OFDAs in the context of e-trust on purchasing intention ($\beta = -0.099, p < 0.01$); therefore, verifying the moderation as indicated in Table 6, which supported Hypothesis 7, demonstrates that it is accepted. The coronavirus was detected in seafood from a seafood market in Wuhan and in Ecuadorian prawns, and despite evidence that the virus was not transmitted by the aquatic items



Note(s): Abbreviations: E_PRV = Electronic Privacy, E_SEC = Electronic Security, E_PAY = Electronic Payment, USB = Usability, E_INV = Electronic Innovativeness, E_TST = Electronic Trust, PI=Purchase Intention, FCV = Fear of Contagious Viruses
Source(s): Authors' own creation/work

Figure 2. Structural model (Algorithmic analysis)

themselves but surrounding surfaces like chopping boards, packaging and boxes, the intention to buy was disrupted and adversely affected the industry (Chen and Wang, 2022). Perceived risk has an adverse influence on purchasers' willingness to utilize OFDAs, but the COVID-19 pandemic altered customers' perceptions of danger as well as their frequency of purchases (Chen and Wang, 2022; Poon and Tung, 2022).

We plotted the interaction terms, and Figure 4 displays the results of the moderation graph. This graph indicates that fear of contagious viruses weakens the association of e-trust with purchase intention and presents negative moderation. Food delivery applications had direct consequences on the consumer decision-making process during COVID-19, and this strengthened the prominence of the risk assessment component in comparison to the period preceding the pandemic (Burlea-Schiopoiu et al., 2022). Worldwide, COVID-19 affected

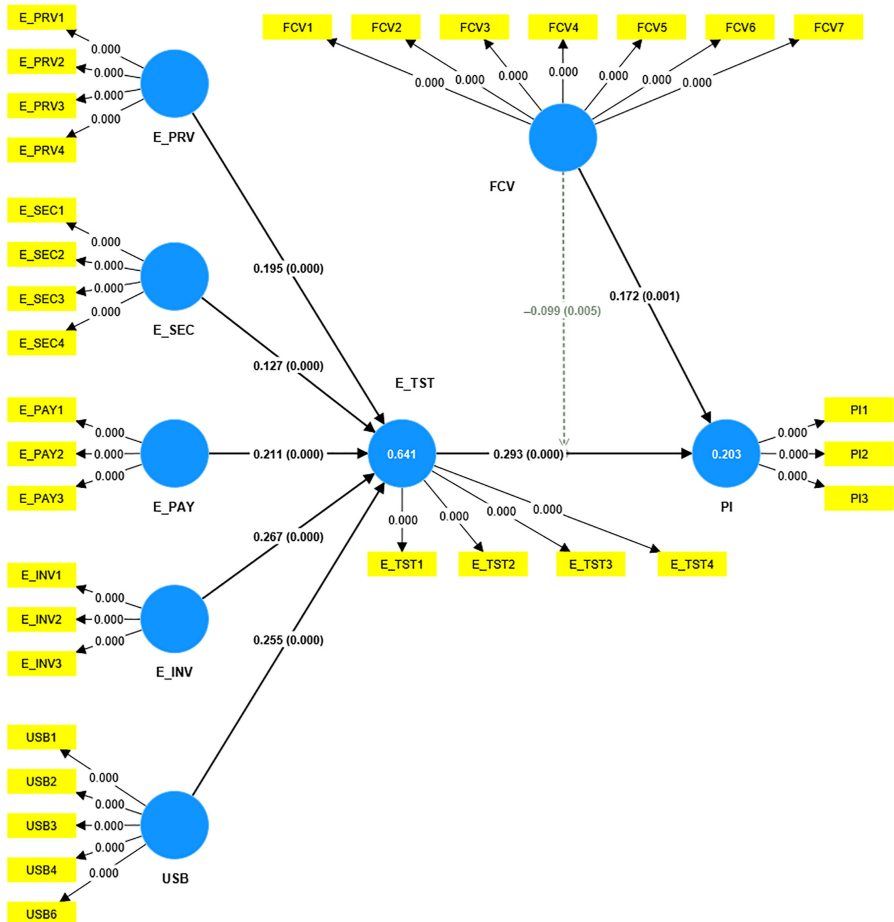


Figure 3.
Structural model
(Bootstrapping)

Note(s): Abbreviations: E_PRV = Electronic Privacy, E_SEC = Electronic Security, E_PAY = Electronic Payment, USB = Usability, E_INV = Electronic Innovativeness, E_TST = Electronic Trust, PI = Purchase Intention, FCV = Fear of Contagious Viruses
Source(s): Authors' own creation/work

customer intention of purchasing, while food consumption was affected from a sustainability point of view (Li *et al.*, 2022). Online retailers with strong reputations can benefit from warranties in terms of perceived risk, perceived product quality and purchase intention (Lwin and Williams, 2006).

Implications

Theoretical implication

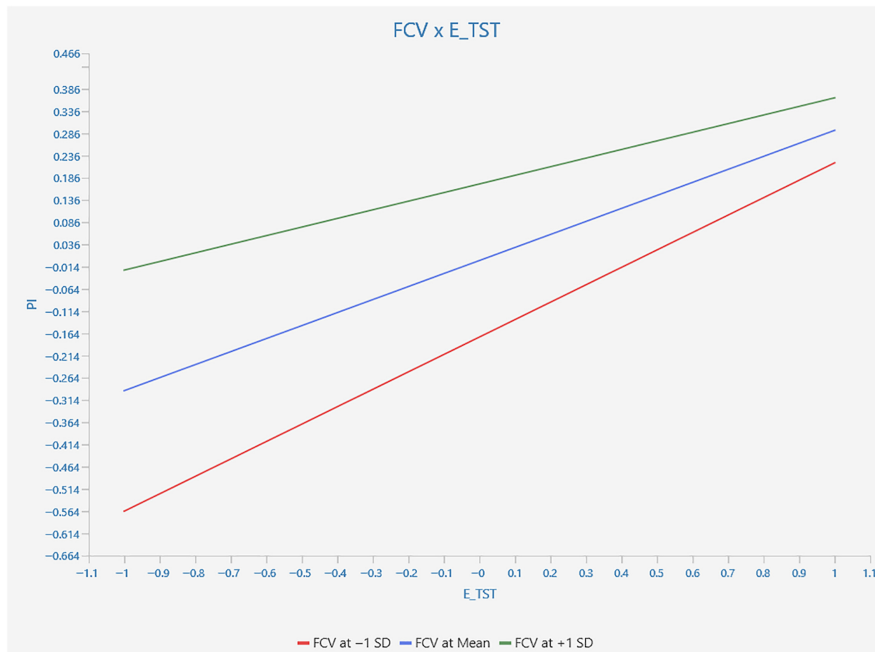
The outcomes of this research make a substantial contribution to the theoretical foundations of e-commerce, specifically concerning OFDAs from the perspective of contagious viruses like COVID-19. The theoretical perspective of digital commerce during health crises gains a nuanced layer with the inclusion of contagious virus fear as a moderator. The negative

Hypotheses	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (O/STDEV)	p-values	Supported
H1	E_TST → PI	0.293	0.291	0.063	4.658	0.000	Yes
H2	E_PRV → E_ TST → PI	0.057	0.057	0.019	3.091	0.002	Yes
H3	E_SEC → E_ TST → PI	0.037	0.037	0.013	2.888	0.004	Yes
H4	E_PAY → E_ TST → PI	0.062	0.061	0.019	3.287	0.001	Yes
H5	USB → E_ TST → PI	0.075	0.074	0.017	4.356	0.000	Yes
H6	E_INV → E_ TST → PI	0.078	0.078	0.022	3.554	0.000	Yes
H7	FCV x E_ TST → PI	-0.099	-0.101	0.035	2.839	0.005	Yes

Note(s): Abbreviations: E_PRV = electronic privacy, E_SEC = electronic security, E_PAY = electronic payment, USB = usability, E_INV = electronic innovativeness, E_TST = electronic trust, PI = purchase intention and FCV = fear of contagious viruses

Source(s): Authors' own creation/work

Table 7. Direct, mediation, and moderation effects



Note(s): E_TST = Electronic Trust, FC = Fear of Contagious Viruses, PI = Purchase Intention

Source(s): Authors' own creation/work

Figure 4. Moderation graph

moderation effect implies that the pandemic's increased anxiety and uncertainty decrease the positive impact of e-trust on purchase intention and weaken the relationship. This highlights how important it is to recognize external contextual variables, such as the fear of infectious diseases, that can have significant effects on buying habits (Rai *et al.*, 2017).

Second, UTAUT2 provides a strong basis for comprehending the association of different variables in the proposed model. Various studies employed theory of planned behavior (TBP), TRA and TAM individually, while some studies utilized the combined approach of TRA and TBP. Nevertheless, UTAUT2 incorporates various models of user acceptance theory, making it the most extensive model currently available (Miao *et al.*, 2022). The UTAUT2 model not only emphasizes the primary factors that predict adoption but also enables researchers to examine the circumstances in which moderators can enhance or limit the impact of these core factors (Arenas-Gaitán *et al.*, 2015).

Third, an inspection of e-trust as a facilitator illustrates how crucial a mediating role it plays in determining different attributes of e-commerce and purchase intention interaction, offering an in-depth comprehension of the complex dynamics present in the OFDAs context. Shoaib Imtiaz *et al.* (2020) identified trust as a potential concern in Pakistan. The decision of consumers to buy online is significantly impacted by the level of trust in e-commerce businesses (Kim, 2018; Lee *et al.*, 2019) because online transactions do not involve the customer interacting with the vendor in person, and trust is an essential component of e-commerce. To determine whether customers engage in e-commerce activities or not, it is critical to examine trust (Palak and Dubey, 2016).

Practical implication

In practical terms, our research findings offer useful information to all parties involved in the e-commerce environment, particularly those operating in the OFDAs. In light of the increased awareness of e-privacy, e-security, usability, e-innovativeness and e-payment during and post COVID-19 with fear of other contagious viruses, companies should deliberately concentrate on enhancing e-trust to increase customers' propensity to make purchases.

Second, online business marketers need to emphasize interpersonal relationships in their strategies because these associations are what lead to the development of trust-building mechanisms among people. Furthermore, education, training, social influence and developing close personal ties with prospective clients are all effective ways to foster trust among collectivists (Faqih, 2022). Consequently, this might mimic their behavioral intentions, increase their perceived trustworthiness toward online businesses and lessen resistance to implementing the technology.

Third, natural disasters affect consumer purchasing behavior, which has a profound effect on marketers (Rai *et al.*, 2017). Because Internet purchasing and transactional processes are impersonal and unpredictable, these implications may offer valuable insights for the development of techniques, managerial and business concepts and strategies to reduce uncertainty. Moreover, managers need to establish official rules, regulations, instructions and procedures to mitigate the risks that come with unclear situations (Faqih, 2022).

Finally, the degree of uncertainty and ambiguity surrounding online shopping technology can be significantly decreased by making web systems more user-friendly and including sufficient mechanisms in the transaction procedure to foster a sufficient level of system trust. Finally, if these tactics, procedures and mechanisms are positively reinforced in the online purchasing processes then dealing and interacting with the online environment leads customers to feel more at ease and less stressed. The causes and effects of security and privacy matters were described, confirming their dominance between respondents (Jain *et al.*, 2022) which supports previous research (Chellappa and Sin, 2005). Thus, vendors should ensure safe and secure online shopping while protecting customers' data.

Conclusion and future recommendations

In the current period, the chances of spreading contagious diseases or variants of COVID-19 are increasing. Therefore, the trust element for consumers enhances the buying intention in the framework of OFDAs. The mediation influence of e-trust is found between e-privacy, e-security, e-payment, usability and e-innovativeness with purchase intention. Similarly, fear of contagious viruses negatively moderates and weakens the association of e-trust with purchase intention. Customers of FCT Islamabad depend on e-trust and are concerned about e-privacy, e-security, usability, e-innovativeness and e-payment of food through electronic applications that influence buying intention in perspective of increasing contagious diseases such as COVID-19. In the current era, e-innovativeness brings advanced features that can assist in securing personal information as well as maintaining the privacy that is directed toward the usage of applications that reinforce e-trust, which subsequently generates buying intention. OFDAs and delivery services might take precautionary measures for food safety in light of communicable diseases as well as an electronic platform to ensure consumer satisfaction. This investigation was limited to FCT Islamabad, Pakistan, and recorded a high rate of contagious viruses similar to corona in recent years. Future research might concentrate on a different region with other territories locally or internationally, such as urban centers, which are highly populated and where the time component is crucial.

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Appendix

Electronic privacy (E_PRV)

- E_PRV1 I think this website shows concern for the privacy of its users.
- E_PRV2 I feel safe when I send personal information to this website.
- E_PRV3 I think this website abides by personal data protection laws.
- E_PRV4 I think that this website will not provide my personal information to other companies without my consent.

Electronic security (E_SEC)

- E_SEC1 I think this website has mechanisms to ensure the safe transmission of its users' information will not be intercepted by hackers.
- E_SEC2 I think this website shows great concern for the security of any transactions.
- E_SEC3 I think this website has sufficient technical capacity to ensure that no other organization will supplant its identity on the Internet.
- E_SEC4 When I send data to this website, I am sure that they will not be intercepted by unauthorized third parties.

Electronic innovativeness (E_INV)

- E_INV1 If I hear of newly available technology, I try to find a way to try it.
- E_INV2 Among my peers, I am usually the first one to explore new information technologies.
- E_INV3 I like to experience new information technologies.

Usability (USB)

- USB1 On this website everything is easy to understand.
- USB2 This website is simple to use, even when using it for the first time.
- USB3 It is easy to find the information I need on this website.
- USB4 The structure and contents of this website are easy to understand.
- USB5 It is easy to move within this website.
- USB6 The organization of the contents of this site makes it easy for me to know where I am when navigating it.
- USB7 When I am navigating this site, I feel that I am in control of what I can do.

Electronic payment (E_PAY)

- E_PAY1 E-payment system is much more efficient than traditional payment channels.
- E_PAY2 I will choose the trusted e-payment to make the transaction.
- E_PAY3 I feel that a user-friendly e-payment will influence me to adopt the system.

Electronic trust (E_TST)

E_TST1: In general, I believe online shopping is a secure activity.

E_TST2: In general, e-commerce sites are trustworthy.

E_TST3: In general, e-commerce companies give the impression that they will keep commitments.

E_TST4: How would you rate your overall trust level in e-commerce.

Purchase intention (PI)

PI1 I am likely to purchase the products on this site.

PI2 I am likely to recommend this site to my friends

PI3 I am likely to make another purchase from this site if I need the products that I will buy.

Fear of contagious viruses (FCV) like different kinds of flu, chickenpox, COVID-19, etc.

FCV1 I am most afraid of contagious viruses like different kinds of flu, chickenpox, COVID-19, etc.

FCV2 It makes me uncomfortable to think about contagious viruses.

FCV3 My hands become clammy when I think about contagious viruses.

FCV4 I am afraid of losing my life because of contagious viruses.

FCV5 When watching news and stories about contagious viruses on social media, I become nervous or anxious.

FCV6 I cannot sleep because I'm worrying about getting contagious viruses.

FCV7 My heart races or palpitates when I think about getting contagious viruses.

Corresponding author

Muhammad Asif Zaheer can be contacted at: dr.asif@uaar.edu.pk