

How do strategic attributes of electronic commerce impel the perceived value and electronic loyalty of online food delivery applications (OFDAs)

Online food
delivery
applications

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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

Zhejiang University, Hangzhou, China

Zoia Khan

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

Muhammad Ali Raza

Istanbul Aydin University, Istanbul, Turkey, and

Hira Hafeez

COMSATS University Islamabad – Lahore Campus, Lahore, Pakistan

Abstract

Purpose – This study aims to investigate the different attributes of electronic commerce (e-commerce) that determine perceived value and electronic loyalty (e-loyalty) among consumers of online food delivery applications (OFDAs). In this globalized world and competitive environment, e-commerce demands have increased and organizations are giving special attention to web development, website design and functions to hold the current consumers with sustainable performance in the globalized and competitive environment. Almost every industry has been affected by the coronavirus disease 2019 (COVID-19) and changed the way of operational work in many industries. Similarly, the food industry is facing serious challenges and now restaurants started heavily depending on OFDAs.

Design/methodology/approach – The study was quantitative and data were collected from 509 consumers of the district of Rawalpindi, Punjab Pakistan by using a convenience sampling technique who were the users of OFDAs to evaluate the proposed research model. Confirmatory factor analysis was applied to evaluate the validity of the constructs, and structural equation modeling was employed to test the model through Smart-PLS.

Findings – Our findings revealed that perceived value has a substantial positive impact on electronic loyalty (e-loyalty). Moreover, results confirmed that perceived value mediates the relationship of electronic privacy (e-privacy), electronic security (e-security), electronic payment (e-payment), usability and electronic innovativeness (e-innovativeness) with e-loyalty.

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Research limitations/implications – This study added to the unified theory of acceptance and use of technology (UTAUT) and technology acceptance model (TAM) by exploring consumers' intentions for using OFDAs in the framework of e-commerce attributes, perceived value and e-loyalty. Similarly, the study enabled the author to learn more about how people would use the information system after successfully applying the UTAUT.

Practical implications – This study has significant implications for web developers, application designers, food delivery companies, restaurants and other businesses. Subsequently, it indicates the importance of the incredible attractiveness of OFDAs in boosting users' intentions to keep using the application.

Originality/value – This research contributes substantially to OFDAs efforts to continuously increase its meal service platform and improve client satisfaction which resulted in repurchase intent. In addition, the research facilitates OFDA firms to enhance the features of their applications according to clients.

Keywords E-commerce, Perceived value, E-loyalty, OFDAs, UTAUT, TAM

Paper type Research paper

1. Introduction

Food safety is now recognized as a public health priority, and consumers are becoming increasingly aware of this issue, which was significantly impacted by their peers while choosing among different applications. This reveals the need for delivery app sellers to proactively consider their word-of-mouth marketing efforts. (Lee *et al.*, 2019; Dsouza and Sharma, 2021). By emphasizing such occurrences, information communication technology (ICT) has created the way for a transition in the monetary paradigm of delivering services, and controlling presented information will be required to increase user performance expectations (Alkhwalidi *et al.*, 2022; Lee *et al.*, 2019). As a result, accessibility, affordability and the variety of various cuisines are easy to get with a single click. Besides this, the online food sector has expanded at a phenomenal rate across the globe, but metropolitan and urban hubs are considered the epicenters of growth as a result of the Internet's impact on business. Moreover, in the last five years, investment for this business has surged by 35% and changing trends such as increasing use of Internet services, increased buyer power, increasing order rate, extending accessibility across all locations and growing business connections in the online food market has provided a major boost to the industry and contributed to its expansion. Furthermore, the Internet food sector increased by 6%, between the year 2017 and 2019. It is expected that in the online food delivery sector by 2022, investments will rise by 25%, from \$4 billion to \$8 billion, as a result of a rising market with good market conditions in terms of raw material procurement (Boston Consulting Group, 2019).

To discourage users from transferring to a different delivery app service, an app's provider needs to offer a variety of incentives (Lee *et al.*, 2019). From the traditional perspective of restaurants, the greater importance is to keep previous ones instead of finding new customers, owing to their behavioral intentions to utilize financial technology services, which they were compelled to acquire after the coronavirus disease 2019 (COVID-19) epidemic; thus, customers will develop loyalty to financial technology (Alkhwalidi *et al.*, 2022; Lee *et al.*, 2019). From a governance perspective, food delivery firms must incorporate client retention initiatives, as the perceived risk of switching online food suppliers remains highly considerable (Burlea-Schiopoiu *et al.*, 2022). Rather, the safety rating, packaging material and raw materials, as well as the kitchen's satiety, should be made public to ensure that the highest quality product is supplied to the consumer (Dsouza and Sharma, 2021). Consumers who place orders more frequently during the pandemic are unquestionably the most important demographic for restaurant businesses to focus on and to meet the expectations of customers. As a result, restaurant owners may seek to improve the diversity among options and also provide them with a wide range of pricing (Wen *et al.*, 2022).

This study aims to examine the characteristics of electronic commerce (e-commerce) with perceived value and electronic loyalty (e-loyalty) in the context of online food delivery applications (OFDAs). The concerns associated with OFDAs seem significant interest to consumers, and investigating these concerns provides a strong source of motivation. Furthermore, the primary focus of this study is on the payment-related attributes that consumers prioritize while using mobile applications intended to establish perceived value and e-loyalty. In the past, less research was conducted regarding the neglecting attributes of the app's qualities in the realm of e-commerce. The clients' inclination to use applications for online product buying is contingent upon the e-commerce application attributes that establish perceived value and e-loyalty. However, we proposed an integrated model for OFDAs that aims to enhance technical robustness by introducing innovative features to the existing traits of e-commerce. This is intended to promote sustainable performance, with a special focus on developing nations. The proposed research model offers expressive contributions toward OFDAs enhancement and increases consumer satisfaction levels for repurchase intent by advancing app attributes. Moreover, enterprises must have up-to-date app features including electronic privacy (e-privacy), electronic security (e-security), electronic payment (e-payment), usability and electronic innovativeness (e-innovativeness) to increase perceived value and electronic loyalty (e-loyalty). Therefore, current research has significant implications for web designers and developers to provide authentic and more reliable app platforms to retain their consumers.

In the first section, the introduction is provided and the rest of the sections are structured as follows. The second section is devoted to the theoretical background with pertinent literature on OFDAs about e-privacy, e-security, e-payment, usability, e-innovativeness and perceived value along with e-loyalty, and development of hypotheses. The next part describes study methodologies, and then the fourth section analyzes the results and discussion. The final section covers the implications and conclusion with future recommendations.

2. Literature review and hypotheses development

2.1 Theoretical background

Performance expectation is a notion aligned with perceived usefulness under the technology acceptance model (TAM), and it describes the degree to which an individual thinks the use of a service and improvement of task performance. Moreover, an individual's view that technological innovation would enhance his or her career or life makes them more determined to use that innovation (Venkatesh *et al.*, 2003; Venkatesh *et al.*, 2012; Alalwan *et al.*, 2018). Previously, the unified theory of acceptance and use of technology (UTAUT) framework was utilized regarding the intention to adopt OFDAs in different scenarios. Moreover, to address the deficiencies in the app's attributes, an appropriate framework was offered with greater explanatory capacity on usage intention with the behavior of information system users in the context of e-commerce. The UTAUT combined different prior models and theories regarding technology adoption, such as the TAM. According to the UTAUT, determinants that are directly related to behavioral intention and usage include effort expectation, performance expectation, social influence, and facilitation factors (Venkatesh *et al.*, 2003). Expectation about performance is a significant predictor of user action intentions, and numerous studies on the elements that determine the acceptability and utilization of new technologies and products have confirmed its validity (San Martín and Herrero, 2012). Effort expectancy relates to the perceived convenience usage of a system, and a sturdier view of the technology's usability increases the intention to use it, which is consistent with the TAM model (Venkatesh *et al.*, 2003; Venkatesh *et al.*, 2012; 2016).

2.2 Perceived value and e-loyalty

In an e-commerce business, when perceived value, e-satisfaction, e-trust and e-service quality prevail among customers, they automatically exhibit the facet of e-loyalty (Arya and Srivastava, 2015). The satisfaction of online customers substantially affects their e-trust and repurchase intention, but reputation plays a crucial part in the development of e-trust and e-satisfaction, which in turn leads to e-loyalty (Al-Adwan and Al-Horani, 2019; Al-Adwan *et al.*, 2022). Quality of electronic service has impacted perceived value and this further impacted loyalty toward the website of a customer. Parallely, when customers experience good e-service quality along with the quality of perceived information, then a favorable impact on e-loyalty intention is generated (Pearson *et al.*, 2012; Ghosh, 2018). Moreover, perceived value and e-service quality mostly add up to the generation of e-loyalty (Arya and Srivastava, 2015). E-quality and e-loyalty have significant relationships with each other along with a partial mediating effect of perceived value (Alonso-Almeida *et al.*, 2014). The number of peers, perceived value and e-service quality associated with the company contribute significantly to e-loyalty, which resulted in the successful ongoing process of service website and social networking website, respectively, but when e-tail quality, e-tail image and e-tail perceived value are implemented positively and effectively, then they impose a significant impression on the creation of positive mood of the customer along with the creation of customer's e-loyalty (Arya and Srivastava, 2015; Hapsari, 2021). Hence, we developed the following hypothesis:

H1. Perceived value has a significant positive effect on e-loyalty.

2.3 Perceived value as a mediator between e-privacy and e-loyalty

Initial knowledge of the rules and regulations of sale/payment with the possibility of contacting firm perceived online risk, self-efficacy and platform trust demonstrated substantial influences on privacy anxiety (Vila and Kuster, 2011; Gong *et al.*, 2022). Initial data on security and privacy terms assist consumers along the process without saying that the system is overloaded or out of operation, and Internet sites might use useful strategies or informational content to motivate customers to feel kind and alleviate buyers' usage issues (Chen and Barnes, 2007; Vila and Kuster, 2011). E-vendors should create safe, with maintaining private, reliable and informative websites. However, perceived privacy risk and perceived performance risk considerably moderate the association between navigation perception, task-technology fit and buying intention. Nonetheless, brand trust still has a considerable influence on online buying intention (Chen and Barnes, 2007; Chen and Huang, 2017; Gong *et al.*, 2022). Hence, the following hypothesis is proposed:

H2. Perceived value mediates the relationship between e-privacy and e-loyalty.

2.4 Perceived value as a mediator between e-security and e-loyalty

Perceived security protection has impacted trust, and the perception of privacy protection influences the perception of risk, but the perceived risk has no impact on buyer intention and perceived privacy protection is an unnecessary element for buying intention (Mardjo, 2019). The quality of a website is determined by its usability, quantity and quality of informational content, client service throughout the transaction and Internet security; hence, the website would be capable of offering higher levels of buying, trustworthiness, pleasure and attitudes with a reduced amount of potential risk, but they should endeavor to increase awareness regarding the secure online transaction and highlight their accomplishments in guaranteeing digital security (Vila and Kuster, 2011; Dutta and Bhat, 2016). Security, usability and responsibility have a statistically substantial influence on client satisfaction, despite technological advancements in the field of information and transaction security; yet,

customers are skeptical because security is their initial worry; further, it demonstrated that it is essential to promote usability more actively (Gašević *et al.*, 2016). Hence, the following hypothesis is developed:

H3. Perceived value mediates the relationship between e-security and e-loyalty.

2.5 Perceived value as a mediator between e-payment and e-loyalty

A consideration is to make sure of the determination of appropriate pricing once an order has been placed, assist with any transactional issues and support many payment options including electronic/digital, credit cards, debit cards, cheques, cash, etc. (Vila and Kuster, 2011). Following promotional offers, buying motivation, personal characteristics, presumed comfort and time savings, the perceived benefits of online shopping, such as a broad selection, customer reviews, rating scale and a range of payment options, are the most influential factors encouraging young people to buy online. However, security certification, network infrastructure, payment mechanisms and logistical distribution have always substantially influenced the growth of e-commerce (Sachdeva, 2016; Dong, 2021). There was no difference between Korean and American customers regarding the degree of the influence of perceived risk on buyer intention. However, perceived risk affects customer intentions to buy online, a powerful website reputation, satisfying transactions, supplying data about client rights and also money-back guarantees, as well as utilizing security approval symbols (Kim *et al.*, 2013; Agag and El-Masry, 2017). Thus, we developed the following hypothesis:

H4. Perceived value mediates the relationship between e-payment and e-loyalty.

2.6 Perceived value as a mediator between usability and e-loyalty

A language known by the company's users is used, in which they can process the information online. This reduces the negative impression of perceived risk toward perceived usability. However, the impact of usability on client service has not yet been established (Alcántara-Pilar *et al.*, 2018; Esmaeili *et al.*, 2021). Regarding the moderating effect of product innovativeness, the outcome implies that usability data are of particular value when a highly innovative product is introduced (Talke and O'Connor, 2011). Website usability boosts several beneficial results that are crucial to attracting and retaining consumers, whereas the type of content and ease of use are required just to survive in the e-commerce business, while trust assurance, responsiveness and emotion make the site's usability differentiated (Downing and Liu, 2011; Green and Pearson, 2011). Besides this, perceived risk had a detrimental effect on customer loyalty but website usability affects satisfaction in a positive manner that in turn affects customer intention to use it (Belanche *et al.*, 2012; Esmaeili *et al.*, 2021). Therefore, the following hypothesis is developed:

H5. Perceived value mediates the relationship between usability and e-loyalty.

2.7 Perceived value as a mediator between e-innovativeness and e-loyalty

When optimism and innovativeness prevail in an environment of technological advancement, then adoption intention toward online food delivery is positive. Compared to that, insecurity and discomfort have negatively influenced the intention to adopt online food delivery (Ali *et al.*, 2021). In an e-commerce business, when customers are fully satisfied with all the operations held online, they exhibit much more loyalty to the e-business, thereby creating a valuable advantage. However, customer's perception toward perceived value, along with e-service quality, have a dominant and positive impact on customer's e-loyalty (Fuentes-Blasco *et al.*, 2010; Ahmed *et al.*, 2021). Perceived value, trust and innovativeness are factors that influence online purchasing intentions. When channels are integrated, the intention of

usage is impacted through enjoyment, perceived usefulness and price along with the moderating effect of personal innovativeness (Escobar-Rodríguez and Bonsón-Fernández, 2017; Yen, 2022). Therefore, we developed the following hypothesis:

H6. Perceived value mediates the relationship between e-innovativeness and e-loyalty. The relationship of various variables is shown in Figure 1.

3. Material and methods

3.1 Sample and procedure

After the COVID-19 outbreak, people were more inclined to order meals online, also some restaurants were forced to offer online delivery services to survive (Tan et al., 2021). It was a quantitative study and a deductive research approach was used to test the proposed model. This industry has thrived in recent years and a self-administered questionnaire was utilized to collect data from OFDA consumers in the district of Rawalpindi, Punjab Pakistan. A total of 509 consumers participated in data collection through the convenience sampling technique, which entails selecting persons who are commonly and easily accessible and are less expensive and more convenient than other sample methodologies (Ackoff, 1953). Table 1 presents the demographics of our sample, in which 37.1 % of the consumers were women and 62.9% were men, respectively. Similarly, qualifications demonstrate that 43% of our participants were graduates, 36.1% were undergraduates, 13.6% had finished college, and 7.3% had finished high school. Moreover, 26.3% of consumers were between 18 and 25 years of age, 47.2% were between 26 and 35 years of age, 18.9% were between 36 and 45 years of age, 2.2% were under the age of 18, and 5.5% were over the age of 45. Furthermore, the income of 34.4% of consumers was between 30,000 and 60,000 Rupees, 18.1% were between 60,000 and 100,000 Rupees, 26.1% had less than 30,000 Rupees, and 21.4% had more than 100,000 Rupees.

3.2 Measurement of scales

Scales developed by other researchers were used to measure the different effects. For instance, four items of e-privacy were adapted from Ranganathan and Ganapathy (2002), and the reliability of Cronbach's alpha scale was 0.751. Four e-security items were adapted from Ranganathan and Ganapathy (2002) and O'Cass and Fenech (2003), and the reliability of Cronbach's alpha scale was 0.801. Three items of e-payment were adapted from Teoh et al. (2013), and the reliability of Cronbach's alpha scale was 0.806. Seven items of usability were

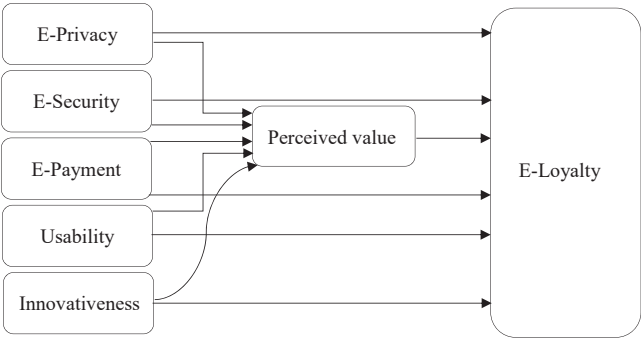


Figure 1. Research model

Source(s): Authors' own creation/work

Characteristics	Frequency	(%)	Online food delivery applications
<i>Gender</i>			
Female	274	54.7	
Male	227	45.3	
<i>Age Group</i>			
<18	29	5.8	
18–25 years	230	45.9	
26–35 years	108	21.6	
36–45 years	97	19.4	
>45 years	37	7.4	
<i>Qualification</i>			
Primary school/Middle school/High school	37	7.4	
College/Diploma/Technical	63	12.6	
Undergraduate	275	54.9	
Graduate/Postgraduate	126	25.1	
<i>Monthly Income</i>			
< 30,000 Rupees	196	39.1	
30,000–60,000 Rupees	107	21.4	
60,000–100,000 Rupees	25	5.0	
>100,000 Rupees	173	34.5	
Source(s): Authors' own creation/work			Table 1. Demographic characteristics

adapted from [Flavián *et al.* \(2006\)](#), [Kirakowski \(1998\)](#), [Lin *et al.* \(1997\)](#) and [Roy *et al.* \(2001\)](#), and the reliability of Cronbach's alpha scale was 0.841. Three items of e-innovativeness were adapted from [Herrero Crespo and Rodríguez del Bosque \(2008\)](#), [Kim *et al.* \(2010\)](#) and [Yang *et al.* \(2012\)](#), and the reliability of Cronbach's alpha scale was 0.788. Three items of perceived value were adapted from [Kim *et al.* \(2012\)](#), [Parra-López *et al.* \(2011\)](#), and [San Martín and Herrero \(2012\)](#), and the reliability of Cronbach's alpha scale was 0.803. Four items of e-loyalty were adapted from [Srinivasan *et al.* \(2002\)](#), and the Cronbach's alpha reliability of the scale was 0.834. Furthermore, the details of all items are given in the Appendix, and a 7-point Likert scale was used for each item to measure each variable.

3.3 Measurement model

3.3.1 Convergent validity. A confirmatory factor analysis (CFA) was executed using Smart-PLS to check the validity of the scales. Intended for good convergent validity of the scale, factor item loadings of at least 0.5, average variance extracted (AVE) of 0.50, composite reliability (CR) of >0.60, construct reliability of >0.70 and Cronbach's alpha of >0.60 are necessary ([Fornell and Larcker, 1981](#)). Except for USB5, all factor loadings meet or surpass the minimal criterion of 0.70. Due to their low factor loading, this item was excluded from further analyses. [Table 2](#) displays acceptable AVE, CR, construct reliability and Cronbach's alpha values.

3.3.2 Discriminant validity. Using discriminant validity guarantees that each variable is distinct from all others. It was determined by employing both Fornell and Lacker's criterion and the Heterotrait-Monotrait (HTMT) ratio. Diagonal values of all variables were greater than non-diagonal values in [Table 3](#), which supported the discriminant validity of all variables according to Fornell and Lacker's criterion.

[Table 4](#) reveals that all variable values are <0.85, the least threshold value demonstrating an acceptable standard of HTMT ratio as a metric for evaluating discriminant validity.

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Constructs	Items	Loadings	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)			
E_INV	E_INV1	0.828	0.788	0.876	0.702			
	E_INV2	0.866						
	E_INV3	0.819						
E_LOYT	E_LOYT1	0.841	0.834	0.889	0.667			
	E_LOYT2	0.788						
	E_LOYT3	0.842						
	E_LOYT4	0.795						
	E_PAY1	0.844				0.806	0.885	0.72
	E_PAY2	0.825						
	E_PAY3	0.877						
E_PRV	E_PRV1	0.791	0.751	0.84	0.568			
	E_PRV2	0.734						
	E_PRV3	0.782						
	E_PRV4	0.704						
E_SEC	E_SEC1	0.807	0.801	0.87	0.626			
	E_SEC2	0.777						
	E_SEC3	0.813						
	E_SEC4	0.766						
PV	PV1	0.875	0.803	0.885	0.72			
	PV2	0.773						
	PV3	0.892						
USB	USB1	0.773	0.841	0.887	0.61			
	USB2	0.747						
	USB3	0.816						
	USB4	0.764						
	USB5	0.804						
	USB6	0.804						

Note(s): Abbreviations: E_INV = Electronic Innovativeness, E_LOYT = Electronic Loyalty, E_PAY = Electronic Payment, E_PRV = Electronic Privacy, E_SEC = Electronic Security, PV = Perceived Value, USB = Usability

Source(s): Authors' own creation/work

Table 2. Measurement model (estimates)

Table 2.
Measurement model
(estimates)

Variable	1	2	3	4	5	6	7
E_INV	0.838						
E_LOYT	0.517	0.817					
E_PAY	0.471	0.652	0.849				
E_PRV	0.381	0.395	0.413	0.754			
E_SEC	0.409	0.336	0.396	0.441	0.791		
PV	0.682	0.695	0.611	0.584	0.555	0.848	
USB	0.488	0.488	0.52	0.551	0.479	0.651	0.781
Note(s): Abbreviations: E_INV = Electronic Innovativeness, E_LOYT = Electronic Loyalty, E_PAY = Electronic Payment, E_PRV = Electronic Privacy, E_SEC = Electronic Security, PV=Perceived Value USB=Usability							
Source(s): Authors' own creation/work							

Table 3.
Fornell and Lacker's
criterion

Variable	1	2	3	4	5	6	7
E_INV							
E_LOYT	0.634						
E_PAY	0.593	0.791					
E_PRV	0.479	0.486	0.52				
E_SEC	0.513	0.405	0.49	0.561			
PV	0.856	0.847	0.756	0.728	0.685		
USB	0.586	0.566	0.621	0.683	0.58	0.776	

Note(s): Abbreviations: E_INV = Electronic Innovativeness, E_LOYT = Electronic Loyalty, E_PAY = Electronic Payment, E_PRV = Electronic Privacy, E_SEC = Electronic Security, PV=Perceived Value USB=Usability

Source(s): Authors' own creation/work

Table 4.
HTMT ratio

4. Results and discussion

4.1 Correlation analysis

The correlation coefficients of all variables are shown in Table 5. There are positive associations between a consumer's perception of OFDAs electronic innovativeness with perceived value ($r = 0.682, p < 0.01$) and with electronic loyalty ($r = 0.515, p < 0.01$). Usability has a significant and positive relationship with perceived value ($r = 0.634, p < 0.01$) and electronic loyalty ($r = 0.469, p < 0.01$). Likewise, electronic payment correlates favorably with perceived value ($r = 0.610, p < 0.01$) and electronic loyalty ($r = 0.648, p < 0.01$). Electronic privacy correlates favorably with perceived value ($r = 0.565, p < 0.01$) and electronic loyalty ($r = 0.383, p < 0.01$). Lastly, electronic security shows a positive relationship with perceived value ($r = 0.551, p < 0.01$) and electronic loyalty ($r = 0.330, p < 0.01$). Moreover, to identify multicollinearity, the correlation coefficients between the variables under consideration are examined. The Variation Inflation Factor (VIF) values for all variables were between 1.476 and 3.137, which exhibited that there is no multicollinearity issue. In addition to this, variable values less than ten are suitable for regression analysis (Chatterjee *et al.*, 2000; Kleinbaum *et al.*, 1988).

4.2 Structural model

The analysis of the outer model was constructed to assess the complete research model by examining direct and specific indirect channels by using Smart-PLS (Hair Jr *et al.*, 2014). Figure 2 demonstrates algorithmic analysis by displaying an R square.

Variable	1	2	3	4	5	6	7
E_INV	1						
E_LOYT	0.515**	1					
E_PAY	0.471**	0.648**	1				
E_PRV	0.367**	0.383**	0.403**	1			
E_SEC	0.407**	0.330**	0.395**	0.434**	1		
PV	0.682**	0.692**	0.610**	0.565**	0.551**	1	
USB	0.473**	0.469**	0.508**	0.541**	0.475**	0.634**	1

Note(s): **Correlation is significant at the 0.01 level (two-tailed)

Abbreviations: E_INV = Electronic Innovativeness, E_LOYT = Electronic Loyalty, E_PAY = Electronic Payment, E_PRV = Electronic Privacy, E_SEC = Electronic Security, PV=Perceived Value, USB = Usability

Source(s): Authors' own creation/work

Table 5.
Correlations
coefficients of
variables

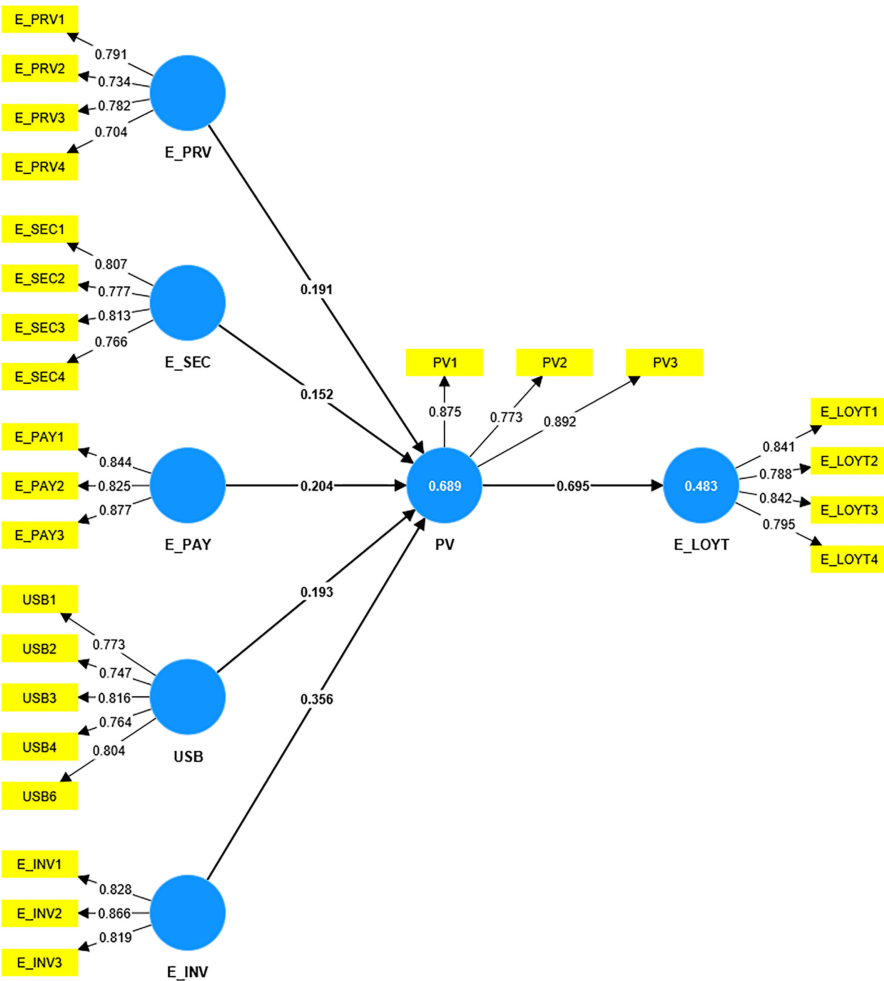
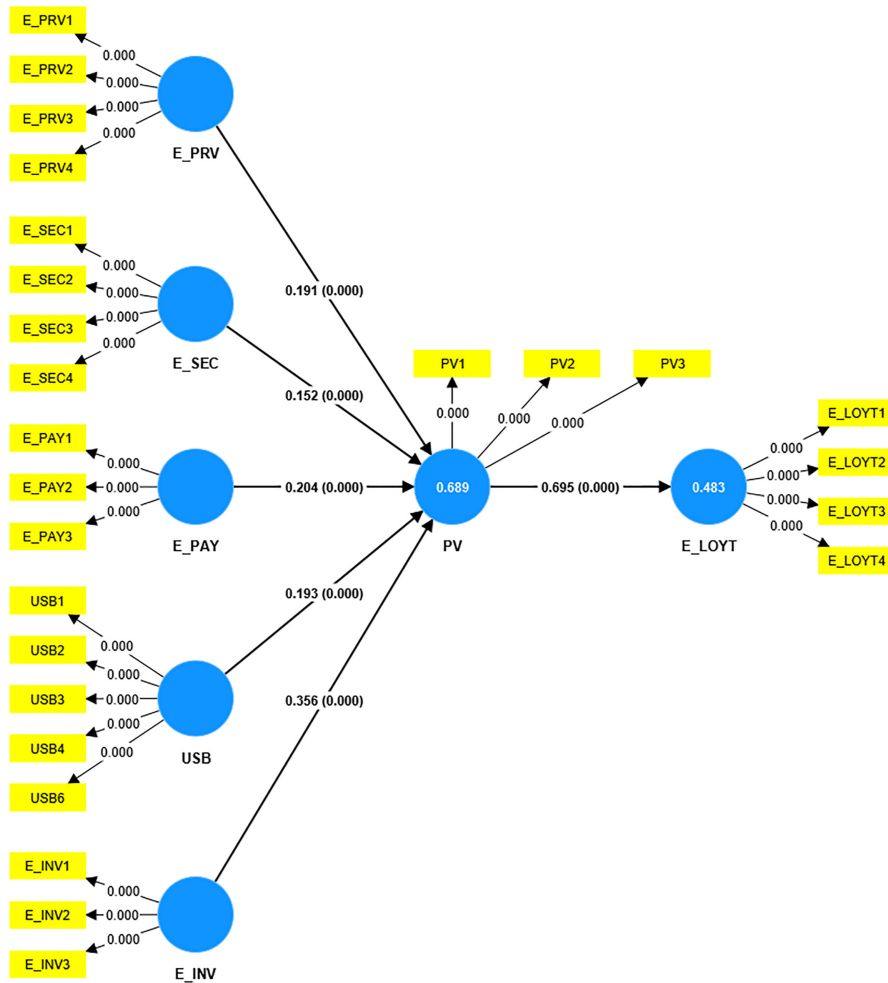


Figure 2.
Structural model
(Algorithmic analysis)

Source(s): Authors' own creation/work

Path analysis was performed using bootstrapping (5,000) to examine the structural model, and [Figure 3](#) exhibits bootstrapping that illustrates the structural model's outcomes, i.e., *p* values and outcomes of the bootstrapping test utilized to establish statistical significance.

After the pandemic COVID-19, which introduced a surge of cross-border commerce as customers purchase more things online, social commerce has experienced exponential growth. Organizations utilize social media to increase their market reach, gain access to prospective worldwide buyers, enhance their target markets and boost brand recognition ([Wiyata et al., 2022](#)). For mediation analysis, the particular indirect effects via perceived value between independent variables and e-loyalty have been estimated as shown in [Table 6](#). The perceived risk of switching online food suppliers is considerable, organizations that supply food should develop client loyalty initiatives, but both online initial trust and familiarity with online shopping influence purchase intent positively ([Burlea-Schiopoiu et al., 2022](#);



Source(s): Authors' own creation/work

Figure 3.
Structural model
(Bootstrapping)

Chen and Barnes, 2007). The data reveal a direct effect of perceived value on e-loyalty ($\beta = 0.695, p < 0.001$), thus supporting H1; therefore, H1 is accepted and an indirect influence of e-privacy on e-loyalty via perceived value ($\beta = 0.133, p < 0.001$); therefore, H2 is accepted. Consumer experience, contentment and loyalty are all significantly correlated with financial performance. E-loyalty also significantly and favorably affects word-of-mouth (Salehnia *et al.*, 2014; Mbama and Ezepue, 2018). The trustworthiness of a transaction and the likelihood of purchasing while using an online food mobile app are impacted by factors including the app's presentation, the availability of its products and the simplicity of its interface (Verma, 2020). Perceived value, e-service quality and the number of peers associated with the company contribute significantly to e-loyalty, which results in the successful ongoing process of social networking website and service website, respectively (Arya and Srivastava, 2015). Also, support has been established for H3 as an indirect effect of e-security on e-loyalty via perceived

Hypotheses	Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T Statistics (O/STDEV)	p Values
H1	PV → E_LOYT	0.695	0.693	0.035	19.838	0
H2	E_PRV → PV → E_LOYT	0.133	0.133	0.029	4.603	0
H3	E_SEC → PV → E_LOYT	0.105	0.105	0.022	4.882	0
H4	E_PAY → PV → E_LOYT	0.142	0.141	0.025	5.744	0
H5	USB → PV → E_LOYT	0.134	0.134	0.027	4.909	0
H6	E_INV → PV → E_LOYT	0.248	0.246	0.027	9.158	0

Table 6.
Direct and mediation effects

Note(s): Abbreviations: E_INV = Electronic Innovativeness, E_LOYT = Electronic Loyalty, E_PAY = Electronic Payment, E_PRV = Electronic Privacy, E_SEC = Electronic Security, PV = Perceived Value, USB = Usability
Source(s): Authors' own creation/work

value ($\beta = 0.105, p < 0.001$); hence, H3 is accepted. Notably, e-security is a crucial factor in e-banking services, as customers are susceptible to potential threats or risks when engaging in this virtual environment. This is primarily because of concerns about how their private and sensitive financial information may be used (Kusyanti and Prastanti, 2017). Consumers are acutely sensitive to risks associated with vendors, particularly about privacy concerns involved in the payment process (Elbeltagi and Agag, 2016). Based on the significant indirect effect of e-payment on e-loyalty through perceived value ($\beta = 0.142, p < 0.001$) as indicated in Table 6, H4 is accepted. When customers have full online initial trust and are familiar with the process of online purchasing, then their intention to do online purchasing is enhanced. Moreover, electronic service quality influences e-loyalty constructively, and similarly, e-loyalty has a significant impact on electronic satisfaction in online e-commerce shops (Chen and Barnes, 2007; Purwanto, 2022). Similarly, usability had a substantial indirect effect on e-loyalty via perceived risk ($\beta = 0.134, p < 0.001$); hence, H5 has been determined to be supported. Therefore, H5 is accepted. The link between perceived usefulness and initial online trust in e-commerce is favorable, but when employees feel the online food-delivering service is useful and easy to use, and customers enjoy availing of the service, then customer intention to use the online food-delivering service is impacted positively and significantly (Chen and Barnes, 2007; Idris et al., 2021). It is advised that service providers carry on to improve the user-friendliness, and integrity of the system and navigation as well as provide value-added activities within the mobile payment application. Moreover, it is also critical for the organization to provide users with clear and easy-to-follow instructions. Simultaneously, the marketer should establish marketing techniques to support the utility and ease of use of the applications (Oentoro, 2020). Similarly, e-innovativeness has a substantial indirect effect on perceived value via perceived risk ($\beta = 0.248, p < 0.001$), hence supporting H6. Therefore, H6 is accepted. Since its inception, electronic commerce has seen fast expansion, and Internet shopping has become immensely popular among online customers (Chen and Huang, 2017). The principal location to which agri-food SMEs export veggies was a reservoir of perception of risk. Thus, it was discovered that agri-food SMEs whose primary export markets are Middle East regions, approximately 46%, reported considerably larger COVID-19 risks than agri-food SMEs that export primarily to the EU, which is 33% or to other regions (Abu Hatab et al., 2021). COVID-19 is influencing “business-to-business” marketing and sales techniques, and the importance of digital links with prospective clients has increased. Business reference content (BRC) is the most widely disseminated, narrative-based content provided to prospective buyers via digital media. Moreover, lowering perceived purchasing risk has been identified as the principal advantage of utilizing BRC, and the type of BRC had a substantial influence on the extent of narrative

transportation among recipients (Jung, 2021). When websites possess the attributes of complete privacy, safety, trust, usability and customer support along with attributes of customers which include perceived risk, perceived control, perceived skill and ease-to-use prevailing effectively, then their relationship with customer experience is positive and significant (Agrawal *et al.*, 2021).

5. Implications

5.1 Theoretical implications

With the TAM and UTAUT, the current study investigated several scenarios and the findings contribute significantly to the recent literature on OFDAs by investigating the influence of digital attributes, perceived value and e-loyalty on attitudes toward intention to use applications. The research adds to the theoretical framework by combining multiple factors including perceived value, usability, e-privacy, e-security, e-payment and e-innovativeness. This comprehensive viewpoint improves the understanding of how these variables impact e-loyalty. It emphasizes how crucial it is to take into account perceived value as a key mediator in the interaction between these parameters and e-loyalty, which influence the purchasing behavior of consumers. Meanwhile, individuals who perceive appropriate supporting characteristics are less hesitant to try new services, thereby strengthening their intention to use them (Venkatesh *et al.*, 2012).

Second, previous research has been carried out in the different contexts of mobile technology with consumer acceptance by using models that have been extensively discussed the TAM and UTAUT, but consumer opinions are affected by app qualities (Shah *et al.*, 2021). This research provides the proposed model for app quality enhancement in the current era of information technology, the popularity of OFDAs is increasing rapidly to order meals, and the attitudes of individuals are influenced by electronic attributes of applications, perceived value and e-loyalty with the information provided by restaurants about products and services to make decisions.

Third, the knowledge of technology adoption and application in the electronic world is strengthened by this validation. This supports the view that customer use and acceptance of technology are significantly influenced by perceived value. So, users' intentions to continue using OFDAs are impacted by the application's perceived attractiveness. This confirms the prominence of perceived value as a factor in human behavior when it comes to the acceptance of technology.

5.2 Practical implications

Based on this study's findings, restaurant proprietors ought to comprehend that the essential effectiveness of OFDAs is driven by social influence, digital attributes, perceived value and e-loyalty. The current study adds skill sets and knowledge of the shared-economy industry, online meal delivery service providers and restaurant owners to improve the quality of consumer life for a variety of reasons.

Second, this study is beneficial for organizations to gain a better grasp of the idea with various goals of using OFDAs and food delivery services. The outcomes highlight how crucial it is to offer customers perceived value in the electronic realm. Strengthening perceived value is mostly dependent on strengthening e-privacy, e-security, e-payment, usability and e-innovativeness. The proposition for the value of an organization's electronic goods or services should be successfully communicated to clients, and the characteristics that improve electronic attributes of applications should be highlighted.

Third, the creation of a user-friendly interface should be a top priority for website developers and application designers to raise the perceived value of OFDAs. Easy-to-use

features, clear menus and intuitive navigation all contribute to a favorable user experience, which raises the platform's perceived value. Meal delivery applications that need less consumer effort to operate have a noteworthy influence on perceived value (Cho *et al.*, 2019).

Finally, the companies that deliver food should concentrate on providing high-quality services that match client expectations. The perceived value of OFDAs is influenced by timely and accurate delivery, food quality maintenance and helpful customer service. Delivering excellent customer support regularly makes the application more appealing and motivates consumers to keep using it.

6. Conclusion and future recommendations

Nowadays people's dependencies have increased on OFDAs. Perceived value leads toward sustainable e-loyalty because authentic applications enhance the trustworthiness of online platforms. Electronic service quality not only promotes perceived value but also enhances food quality and consumer pleasure, leading to online loyalty (Suhartanto *et al.*, 2019). Moreover, the perceived value matters while ordering food items through OFDAs and influences the associations of e-privacy, e-security, e-payment, usability and e-innovativeness with e-loyalty because reliable web applications increase the usage of consumers, especially where money matters, personal information including credit/master card information, etc., are involved. However, identity, delay in download, assurance of trust, responsiveness and emotion can differentiate the usability of websites. On the other hand, ease of use and content are not presently distinguishing the websites in terms of usability that are expected and necessary for survival in electronic commerce (Downing and Liu, 2011). 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 perceived value which subsequently creates e-loyalty.

OFDAs and delivery services might take precautions for food safety in light of communicable diseases as well as an electronic platform in the shape of OFDAs to ensure preventive measures and consumer satisfaction. This investigation was restricted to Rawalpindi, district of Punjab, Pakistan. Future research may focus on a different region with other territories locally or internationally, such as urban centers of the cities, which are highly populated regions in which the time component is crucial to the completion of office work.

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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 Loyalty (E-LOYT)

- E-LOYT1 I seldom consider switching to another website and I like using this website
E-LOYT2 As long as the present service continues, I doubt that I would switch websites
E-LOYT3 I try to use the website whenever I need to make a purchase
E-LOYT4 When I need to make a purchase, this website is my first choice

Perceived Value (PV)

PV1 Online shopping makes it easier to get complete information about products

PV2 Using online shopping platforms enhances the possibility of finding products suitable to my needs

PV3 Benefits of online shopping justify the efforts made

Corresponding author

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