

Innovation resistance theory perspective on the use of food delivery applications

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Abstract

Purpose – The current study tries to better understand the resistance toward food delivery applications (FDAs). This study has adapted the existing criteria to measure different consumer barriers toward FDAs. It also examined the relationships between various consumer barriers, intention to use FDAs and word-of-mouth (WOM).

Design/methodology/approach – This study utilized the innovation resistance theory (IRT) and a mixed-method approach comprised of qualitative essays submitted by 125 respondents and primary surveys ($N = 366$) of FDA users.

Findings – Tradition barrier (trust) shared a negative association with use intention, while image barrier (poor customer service) shared a negative association with WOM. The intention to use was positively associated with WOM. Additionally, the study results reveal that image barrier (poor customer experience) and value barrier (poor quality control) were, in fact, positively related to WOM. This study also discusses the managerial and theoretical implications of these findings and the scope for further research on FDAs.

Originality/value – FDAs have revolutionized the food delivery industry and made it more comfortable and convenient for the consumers. However, FDA service providers are facing challenges from both customers and restaurants. Although scholars investigated customer behavior toward FDAs, no prior study has focused on consumer barriers toward FDA usage.

Keywords Consumer barriers, Consumer resistance, Food delivery application (FDA), Innovation resistance theory (IRT), Intention to use, Word of mouth (WOM)

Paper type Research paper

1. Introduction

Food delivery applications (FDAs) represent a niche segment of the online food delivery (OFD) service sector and refer to the process of ordering food using mobile-based applications (apps). The growing number of FDA consumers serves as an indicator for restaurants to pay attention to their mobile applications (Kung and Zhong, 2017). In addition, FDAs also attract business owners in business expansion investments (Pigatto *et al.*, 2017). According to Statista Reports (2018), the FDA reported a revenue of 95.41 million USD in 2018 alone. Despite these growing revenues, media reports and anecdotal discussions have indicated that FDAs are struggling to make profits. Previous scholars have also noted that the Food and Drug Administration service providers are facing challenges related to the trade-off between



expansion and losses, the problems associated with recruiting delivery staff and improving their working conditions (Bhattacharya, 2018). High expectations of users also pressure them in terms of the delivery staff, hygienic food packaging, quality of food, delivery charges, offers, variety of choices, free perks, ease-of-use and different payment options (Elvandari *et al.*, 2017; He *et al.*, 2018).

We feel that, in addition to business model challenges and user expectations, another possible reason behind the lack of profit could be that the use of FDAs has not propagated among consumers as much as anticipated. However, academic research in the area has remained confined to investigating the causes of adoption, thereby leaving the roots of non-adoption under-explored. For instance, factors facilitating adoption, such as ease-of-use (Yeo *et al.*, 2017), convenience (Roh and Park, 2018), usefulness (Yeo *et al.*, 2017), delivery experience (Ray *et al.*, 2019) and customer reviews (Lee *et al.*, 2017), have been explored. By comparison, the reasons for non-adoption have not been discussed much. Admittedly, there are some studies that have noted that not all consumers are comfortable ordering food through FDAs and there is a noticeable reticence in using FDAs on account of issues such as health concerns (Maimaiti *et al.*, 2018). However, research on the causes of non-adoption for FDAs is simultaneously limited. This represents a gap in the related research, since it is widely acknowledged in the consumer behavior literature that factors causing adoption of any innovation are not very useful to examine non-adoption by consumers (e.g. Claudy *et al.*, 2015; Seth *et al.*, 2020). Once such non-adoption, that is, consumer resistance, has been discussed in numerous contexts such as mobile payments (Kaur *et al.*, 2020a), online travel agencies (Talwar *et al.*, 2020a), retail investors (Seth *et al.*, 2020) and organic food (Kushwah *et al.*, 2019), to name a few, but it has not been empirically investigated for FDAs.

The current study proposes to address this gap by proposing an empirical examination of consumer resistance to FDAs by utilizing the theoretical lens of the innovation resistance theory (IRT; Ram and Sheth, 1989). We intend to address two research questions: (RQ1) Which IRT barriers are significant in explaining consumer resistance to usage intention toward FDAs? (RQ2) Is the intention to recommend, represented by word-of-mouth (WOM), both online and offline, also impacted by the barriers to adoption? Since this is the maiden quantitative attempt to investigate IRT in the context of FDAs, a mixed-method approach of qualitative essays and a quantitative online survey was utilized. First, a qualitative study was conducted to collect responses from 125 users, and then a survey was developed and conducted with 366 FDA users. This study diagnoses the association between identified consumer barriers, intention to use and WOM regarding FDAs.

2. Theoretical literature

2.1 Innovation resistance theory

IRT was introduced by Ram and Sheth (1989). IRT helps in understanding the resistance-oriented behavior among consumers or, in other words, the resistance toward user innovations. Innovation resistance is defined as the behavior toward the adoption and usage of any innovation that results in maintaining the status quo and resisting any deviances from the current beliefs (Ma and Lee, 2018; Seth *et al.*, 2020). Scholars observed that customer resistance is a vital variable that determines the success or failure of new technological innovations (Kaur *et al.*, 2020a; Talwar *et al.*, 2020a). According to IRT, customer resistance can be either active or passive (Yu and Chantatub, 2016). Active resistance results from the direct association with the characteristics of innovations, but passive resistance mainly comes from the conflict with users' existing beliefs that are caused by the innovation (Yu and Chantatub, 2016). Active resistance is studied via functional barriers, such as usage, value and risk barriers. In contrast, passive resistance is studied via psychological barriers, such as image and tradition barriers (Yu and Chantatub, 2016).

The reasons why IRT is suitable in the current context are as follows: (1) IRT barriers present an appropriate framework for examining users' resistive responses (Kaur *et al.*, 2020a; Talwar *et al.*, 2020a). The existing literature on consumer resistance and IRT offers crucial insights on the importance of understanding the barriers and resistance toward the adoption of newer innovations (Brahim, 2015), and OFD and FDAs, in general, represent a relatively new user innovation. (2) IRT has been preferred by prior scholars to examine innovation resistance in varied online and mobile contexts (Kaur *et al.*, 2020a; Talwar *et al.*, 2020a). This includes online purchases (Lian and Yen, 2013), online travel agencies (Talwar *et al.*, 2020a), mobile payment solutions (Kaur *et al.*, 2020a) and mobile social tourism (Hew *et al.*, 2017). (3) The use of IRT adds a new dimension to the existing literature. It provides the basis for discovering the barriers that may prevent users from using FDAs more frequently and recommending it to others (WOM). No past empirical study has utilized IRT in the context of FDAs or OFD in general.

2.2 Food delivery applications

Extant OFDs and FDAs studies were reviewed, and a total of 15 studies examining the different aspects of OFDs or FDAs were found (Table 1). Most studies focused on OFDs, while only two empirical studies addressed FDAs (see Table 1). These studies included varied geographical and cultural settings, for example, Indonesia, China, Malaysia, South Korea, India, Colombia, Jordan and Brazil.

To begin with, Elvandari *et al.* (2017) contended that conformity to order and civil behavior of delivery staff, cleanly packed food, quality of dishes and economical delivery charges influenced consumer response to OFDs. Their study also suggested that, along with the customer needs, skill-enhancement training of delivery personnel and an evaluation of the performance of the service team were essential to ensure effective delivery. Yeo *et al.* (2017) found that factors like pre- and post-usage experiences with the service and the ease-of-use affected the attitude and use intentions. Pigatto *et al.* (2017) suggested that social media helped publicize and create better customer engagement and increased business visibility in the case of 30 OFD companies in Brazil. They also found that content, functionality and usability played important roles while designing websites for OFD services.

See-Kwong *et al.* (2017) indicated three key factors, namely, more revenue, better reach and a wider base of users, that influence business owners in outsourcing service of food delivery. Maimaiti *et al.* (2018) suggested that OFDs should not only focus on strengths but also to try to limit weaknesses such as poor hygiene and compromised safety of delivery staff due to increased road accidents. He *et al.* (2018) indicated that customers' behaviors have a significant impact on food quality and policies set by OFD or FDA service providers.

Roh and Park (2018), in their study on South Korean consumers, found that consumers with high moral values were more reluctant to adopt FDAs. In addition to this, moral values could act as a barrier for OFD continuance. Yusra and Agus (2018) found that, while satisfaction mediates the quality of service and customer loyalty, personal innovativeness of customers influenced their faith and delight. Correa *et al.* (2018) suggested that transaction volumes and timely deliveries were not associated with traffic. Chai and Yat (2019), based on a study in Malaysia, found that convenience, time-saving and privacy-security had a strong association with behavioral intentions toward OFDs. More recently, Suhartanto *et al.* (2019) found that the quality of food influenced consumer loyalty. Ray *et al.* (2019) found that process gratification (customer experience, ease-of-use) and content gratification (search-of-restaurants) are the important gratifications that affect intention to use OFDs.

In contrast to the sizeable body of literature on OFDs, only three empirical studies are available in the context of FDAs. To begin, Lee *et al.* (2017) found that information drawn from various sources (users or firms) and quality (system or design) influenced the usefulness and ease-of-use. Cho *et al.* (2018) suggested that user trustworthiness played the most critical

Author (Year)	Theory	Country	Independent variables	Dependent variables	Demographic	Method
Elvandari <i>et al.</i> (2017)	–	Indonesia	Satisfaction, service quality, technical requirements, service delivery	Intention to use	89% female (12–55 years)	Interviews
Lee <i>et al.</i> (2017)	TPB	Korea	User and firm- generated information, system quality, design quality	Perceived usefulness, perceived ease of use, attitude	45.7% female (20–59 years)	SEM
Pigatto <i>et al.</i> (2017)	–	Brazil	Content functionality and usability of the website	Performance of OFD	–	Content analysis
See-Kwong <i>et al.</i> (2017)	–	Malaysia	Revenue increase, customer reach and base	Outsourcing intention	–	Interviews
Yeo <i>et al.</i> (2017)	TRA, TPB	Malaysia	Hedonic motivation, price and time-saving online purchase experience	Convenience, usefulness, attitude, intention	47.8% female (17–30 years)	SEM
He <i>et al.</i> (2018)	CAS	China	Average waiting time, food quality, food preparation time and accumulated order count	Service experience	–	Experiment
Maimaiti <i>et al.</i> (2018)	–	China	Intention to use	Food shopping habits, the prevalence of overweight and obesity, diet-related NCDs	–	Content analysis
Suhartanto <i>et al.</i> (2019) Roh and Park (2018)	ST, ET	Indonesia	e-service quality	Food quality, loyalty	71.4% female (17–40 years)	SEM
	IDT	South Korea	Convenience, subjective norm, moral obligation	Compatibility, ease of use, usefulness, intention to use	51.8% female (18–59 years)	SEM
Yusra and Agus (2018)	–	Malaysia	Contact, responsiveness, efficiency, privacy and fulfilment	Customer satisfaction and loyalty	–	Regression
Correa <i>et al.</i> (2018)	TRA	Spain	Traffic conditions	Indicators of OFD	–	Web mining techniques <i>(continued)</i>

Table 1.
Prior literature review
on OFDs and FDAs

Author (Year)	Theory	Country	Independent variables	Dependent variables	Demographic	Method
Cho et al. (2018)	–	China	Convenience, design, trustworthiness, price and food choices	Perceived value, attitude, continuance intention	47.27% female (21–60 years)	SEM
Chai and Yat (2019)	–	Malaysia	Ease of use, time- saving, convenience, privacy and security	Behavioural intention	57.62% female (17–50 years)	SEM
Ray et al. (2019)	U&G	India	Societal pressure, delivery experience, customer experience, ease- of-use, quality control, convenience, listing, search-of- restaurants	Intention	36.46% female (18–30 years)	SEM
Alalwan (2020)	UTAUT2	Jordan	Performance and effort expectancy; online tracking, rating and reviews; social influence, hedonic motivation, perceived value, facilitating condition	e-satisfaction, habit, continuance intention	39.8% female (18–60 years)	SEM

Note(s): Complex adaptive system = CAS, equity theory = ET, innovation diffusion theory = IDT, online food delivery = OFD, spillover theory = ST, structural equation modeling = SEM, theory of planned behavior = TPB, theory of reasoned action = TRA, unified theory of acceptance and use of technology = UTAUT, uses and gratification theory = U&G

Table 1.

role in influencing FDA usage. They also found that factors like food choices, prices, trustworthiness, design and convenience are the most important variables. [Alalwan \(2020\)](#) found online reviews, ratings and tracking played a role in affecting e-satisfaction and continued intention among Jordanian FDA users. Furthermore, expected performance, hedonic factors and monetary values also impact the e-satisfaction and intention to continue using FDAs.

As presented in [Table 1](#), recent empirical studies have investigated the positive aspects of adoption behavior, such as satisfaction, service delivery, system quality, information, design, website functionality, hedonic motivation, time-saving, discounts, online reviews, food quality and payment options – as enablers that may positively influence consumer intentions towards FDAs. In comparison, none of these studies have discussed the barriers to adoption, also known as consumer resistance. Scholars argue that consumer resistance is recognized as an equally important manifestation of consumer behavior, and there are calls to investigate it further ([Mani and Chouk, 2018](#)). Therefore, we perceive the lack of study of consumer resistance toward FDAs as a gap that is imperative to be bridged in order to present a complete picture of consumer behavior in the area.

2.3 Online food delivery and the Indian market

The OFD market is garnering more than 40 million orders a month in India (TNN Report, 2019). The popular FDAs in India are Swiggy, Foodpanda and Zomato Order. The growing acceptance of FDAs has also led to the progress of many OFD start-ups in India (e.g. 48 East and Fresh Menu) (KenResearch, 2018). However, the path for the OFDs is not so easy in the Indian market. They suffer from various challenges such as quality of food, cost margins (Bhattacharya, 2018) and harsh conditions for delivery personnel (Verma, 2018). Two of the biggest FDA providers in India, namely, Swiggy and Zomato, are said to be losing 30 to 40 million USD per month, as they offer discounts to customers and incentives to delivery staff because of the intense competition they face from other players (TNN Report, 2019). Furthermore, the deep discounting led to cumulative losses worth 731 crore INR (~102 million USD) for the year ending in March 2018 against 640 crore INR (~89 million USD) in the previous fiscal year for the three big Indian FDA providers (Sharma, 2019). FDAs often face a backlash when they increase the delivery charge because customers tend to withdraw from using the services (Chengappa, 2018). Also, the recruiting and training of delivery staff costs companies every year (Bhattacharya, 2018). As companies look to expand, they face additional losses, and Swiggy faced the highest loss compared to their competitors (Sharma, 2019). To reduce the losses, companies are now trying to find more cost-effective measures to reduce consumer resistance toward using FDAs in their day-to-day lives.

2.4 Item pool development

A two-step process based on a mixed-method approach (McMillan and Hwang, 2002) was utilized for adapting existing criteria to the specific context of FDAs. Initially, open-ended essays were employed to examine consumer barriers toward the FDAs. Open-ended essays are well known for eliciting rich qualitative insights, and they have been utilized by media researchers (Dhir *et al.*, 2017) as well as psychologists (Bradding and Hortsman, 1999). In the qualitative essay, participants were asked about different FDA features or activities that were either disliked or considered a limitation. A total of 125 FDA users completed the essays in January 2019. The data were evaluated by a team of two researchers (Beyer and Holtzblatt, 2012). Both researchers independently read each observation/statement recorded by the participants to see commonalities using the grounded theory approach.

The grounded theory suggests that researchers should not impose any predetermined themes while analyzing data. Consistent with the grounded theory, neither the context (consumer resistance) nor framework (IRT) was considered while broader themes were developed from the qualitative data. After the themes representing different barriers were developed, researchers used IRT to reorganize those themes. Dhir *et al.* (2017) suggested that such an approach would enable scholars to discover varied views without imposing any predetermined choices to both participants and the researchers. The analysis resulted in themes representing five different consumer barriers. Saunders *et al.* (2009) suggested that a mixed-method process would enable researchers to generate the pool of items for a survey that was based on consumers' own words which were likely to showcase a shared meaning for the target population. The information obtained through open-ended essays was examined independently by three researchers, as recommended (Saunders *et al.*, 2009). It was then presented to two academic experts and piloted with 10 FDA users for content validity. Suitable adjustments using the feedback of the pilot survey were made to prepare the final questionnaire. The generated pool of items consisted of 21 items representing different size consumer barriers, and these were used for an online cross-sectional survey. Furthermore, of the 125 respondents, 90% fell within the age group of 21–35 years. Due to this, we identified FDA users between 21 and 35 years as our target group for the cross-sectional data collection.

3. Research model and hypotheses

The IRT-based model consists of five consumer barriers against FDAs. The model tests the relationship between various barriers and the intention to use FDAs and WOM (see Figure 1).

3.1 Usage barrier

Usage barrier addresses the resistance caused by probable changes presented by innovation (Ram and Sheth, 1989) and measures the resistance that comes from the effort needed for learning and using the innovation. The complexity of an FDA can pose challenges for users with low technical knowledge or limited experience of using an application. A usage barrier is essential in the context of the present study because usage-related complexity can jeopardize the chances of innovation becoming mainstream (Mahatanankoon and Vila-Ruiz, 2007). The usage barriers are mainly comprised of user-related obstacles. Our qualitative study suggests that usage barriers in the case of FDAs are due to the complicated interface, confusing contents, delay in processing and so forth.

Intentions to use and WOM are considered influential variables in the context of mobile services such as mobile payment solutions (Kaur et al., 2020b) and online travel agencies (Talwar et al., 2020b). Scholars have suggested a negative association between usage barrier and intention to use in different e-services, for example, online shopping (Lian and Yen, 2014). Studies have also examined the association between usage barriers and WOM communication that is mainly intended for the spread of a message (Ahmad and Laroche, 2017). With the proliferation of Internet facilities, written communication is also spread on online platforms and is referred to as electronic WOM. Studies suggest that, in an e-service context, while experiencing perceived usefulness, consumers tend to engage in positive WOM (Li et al., 2012). Furthermore, convenience and user satisfaction in online shopping result in positive WOM (Daurte et al., 2018). Similarly, upon experiencing usage barriers, customers

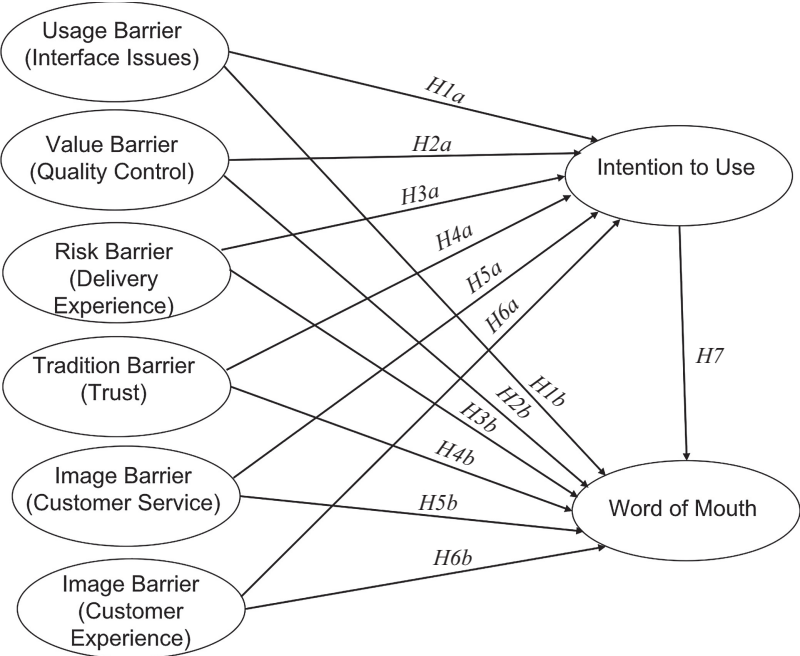


Figure 1.
Our conceptual
research model

may spread negative WOM, such as in the case of mobile banking (Mahadin and Akroush, 2019). This suggests that users are likely to spread negative WOM after experiencing a usage barrier, that is, the service was not convenient, and it was complex to use. Therefore, in the context of FDAs, this study hypothesizes:

H1a. Usage barriers (interface issues) are negatively associated with the intention to use FDAs.

H1b. Usage barriers (interface issues) are negatively associated with WOM.

3.2 Value barrier

A value barrier represents the resistance that results from a deviation of innovation from the existing value system (Morar, 2013). In the case of FDAs, consumers want FDA service providers to offer more value compared to the effort required from them to learning and using the apps. Prior studies suggest that value barriers have a negative association with use intentions in contexts such as online shopping (Lian and Yen, 2014) and mobile banking and service innovations (Laukkanen, 2016). Furthermore, customers are likely to resist the use of mobile banking apps upon experiencing value barriers (Yu and Chantatub, 2016).

The qualitative study suggests that, in the case of FDAs, customers expect that food should be fresh, hot and of good quality; containers should be properly sealed; food should be safe for consumption; and that service providers offer the food in the same quantity as shown during the ordering process (see Table 3). If these expected quality-related aspects are not met, then it results in a value barrier. Prior literature on OFD suggests a positive association between food quality and intentions to adopt and use. For example, He *et al.* (2018) suggest that customers' behaviors share a positive association with the food quality decisions undertaken by restaurants. Suhartanto *et al.* (2019) revealed that food quality had a significant positive association with loyalty in the context of OFDs. Moreover, customer satisfaction and perceived value partially mediate both e-service and food quality in influencing consumer loyalty.

Relatively recent studies have suggested a possible negative association between value barriers and WOM. Potential customers can easily turn away from the service provider after

	Characteristic	Frequency	Percentage (%)
Gender	Male	240	65.57
	Female	126	34.43
Age	21–25	143	39.07
	25–29	170	46.45
	30–35	53	14.48
Highest level of education	Pursuing/completed higher secondary level	9	2.46
	Pursuing/completed graduate level	144	39.34
	Pursuing/completed masters level	202	55.19
	Pursuing/completed doctorate	11	3.01
FDA usage frequency	Not even once a month	30	8.20
	Once a month	117	31.97
	Few times a month	60	16.39
	Once a week	75	20.49
	Few times a week	84	22.95
FDA usage duration	Less than a month	14	3.83
	Less than three months	16	4.37
	Less than six months	48	13.11
	Less than a year	59	16.12
	More than a year	229	62.57

Table 2.
Demographic profile of
the study participants

Study measures (references)	Measurement items	CFA		SEM	
		Beta	R ²	Beta	R ²
Interface issues* (usage barrier)	II1: FDAs are complicated to use	0.76	0.57	0.76	0.57
	II2: FDAs confuse me with irrelevant contents	0.82	0.67	0.82	0.67
	II3: The search bars on FDAs often fail to function properly	0.83	0.68	0.83	0.68
Quality control* (value barrier)	II4: The interfaces of FDAs often lag or freeze	0.78	0.61	0.78	0.61
	QC1: I often receive food via FDAs which is neither hot nor fresh	0.81	0.66	0.81	0.66
	QC2: Food containers are often not appropriately sealed, raising doubt as to whether the food ordered via the FDA is safe to be consumed	0.83	0.69	0.83	0.69
	QC3: Restaurants often send a smaller quantity of food when ordered via FDAs	0.81	0.65	0.81	0.65
	QC4: Restaurants often send lower quality food when ordered via FDAs	0.84	0.70	0.84	0.70
	DE1: Explaining my delivery address to the delivery person is often a big hassle	0.83	0.69	0.83	0.69
	DE2: Inappropriate or unprofessional behavior from a delivery person is common	0.84	0.71	0.84	0.71
Delivery experience* (risk barrier)	CS1: FDA customer service often refuses to take responsibility for an incorrect or delayed delivery	0.82	0.67	0.82	0.67
	CS2: FDA customer service often refuses to take responsibility for the poor quality of food	0.89	0.80	0.89	0.80
	CS3: It is difficult to make the FDA customer service executive understand my problem	0.88	0.77	0.88	0.77
	CS4: FDA customer service executives have little coordination with the restaurants	0.89	0.80	0.89	0.80
	CS5: Customer feedbacks are not taken seriously by FDAs	0.88	0.77	0.88	0.77
	CS6: FDA customer service executives often close a complaint without resolving it	0.88	0.78	0.88	0.78
Customer experience * (image barrier)	CE1: I receive too many notifications and messages from FDAs	0.88	0.77	0.88	0.77
	CE2: Too many advertisements on FDAs irritate me	0.83	0.69	0.83	0.69
Trust issues* (tradition barrier)	Trust1: I do not trust FDAs	0.86	0.75	0.86	0.75
	Trust2: I feel insecure in ordering food through FDAs	0.90	0.80	0.90	0.80
	Trust3: The information provided by FDAs is not reliable	0.85	0.73	0.85	0.73
Word-of-mouth (Mehrad and Mohammadi, 2016)	WOM1: I recommend an FDA that I like to my friends	0.85	0.71	0.85	0.71
	WOM2: I suggest my friends explore the special features of an FDA	0.88	0.77	0.88	0.77
	WOM3: I inform my friends about special offers available on an FDA	0.90	0.80	0.90	0.80
Intention to use (Johnson et al., 2018)	IU1: I intend to use FDAs in near future	0.88	0.78	0.88	0.78
	IU2: I will prefer ordering food through FDAs in future	0.89	0.79	0.89	0.79
	IU3: I desire to use FDAs when I purchase food	0.88	0.77	0.88	0.77
	IU4: I may use FDAs more frequently in future	0.90	0.80	0.90	0.80
	IU5: If I have an opportunity, I will order food through FDAs	0.91	0.83	0.91	0.83
	IU6: I intend to keep ordering food through the FDAs	0.89	0.79	0.89	0.79

Table 3.
Study measures and factor loadings for the measurement and structural model

Note(s): CFA = factor loadings measurement model, SEM = factor loadings structural model, *measures are developed based on qualitative investigation

receiving negative WOM (Wilson *et al.*, 2012). Um and Lau (2018) observed that customer dissatisfaction was directly proportional to negative WOM within healthcare services. Similarly, with restaurants, Andaleeb and Conway (2006) suggested that dissatisfied consumers mainly spread negative WOM. Based on the extended literature, we hypothesize the following:

H2a. Value barriers (quality control) are negatively associated with the intention to use FDAs.

H2b. Value barriers (quality control) are negatively associated with WOM.

3.3 Risk barrier

Risk barrier is related to the resistance that results from uncertainties related to any innovation. The acceptance of any innovation becomes lower if it involves high uncertainty. Prior literature has emphasized that risk barriers have a negative association in various contexts, such as online shopping (Lian and Yen, 2014) and e-commerce (Moorthy *et al.*, 2017).

Our qualitative study suggests that the primary risk barrier, in the context of FDAs, is related to the delivery experiences of the customers. This includes (1) explaining the intended address to the delivery person is often a big hassle; Google Street View for most Indian cities is not yet available and, unlike developed nations, the manual finding of home addresses is often challenging. The other barrier is (2) unprofessional and inappropriate conduct of the delivery person. Elvandari *et al.* (2017) also emphasized that FDAs' current struggles with delivery-related issues are mainly related to the behaviors of delivery staff.

Recent studies have offered some insight on the possible associations between risk barriers and WOM. Scholars have found a negative association between risk and WOM in the tourism industry (Uslu and Karabulut, 2018). These studies suggest that uncertainties and perceived risks result in negative WOM. Similarly, the service delivery literature suggests that customer mistreatment results in negative WOM against the restaurant (Garcia *et al.*, 2018). Thus, we propose:

H3a. Risk barriers (delivery experience) are negatively associated with the intention to use FDAs.

H3b. Risk barriers (delivery experience) are negatively associated with WOM.

3.4 Tradition barrier

The tradition barrier influences one's intention to use since any possible conflict results in a strong backlash (Laukkanen, 2016). Scholars have noted a negative association between tradition barriers and intention in various contexts, for example, mobile commerce (Moorthy *et al.*, 2017). The current qualitative study's results suggest that the tradition barrier, in the context of FDAs, is due to trust issues, for example, they do not trust FDAs, feel insecure in ordering food via these apps and think FDA service providers do not offer reliable information. Prior literature on technology acceptance suggests that trust is an important factor that significantly affects the intention to use (Chemingui and Lallouna, 2013).

Prior literature suggests a positive association between trust and WOM (Bulut and Karabulut, 2018). Trust in the food sector plays a critical role because a consumer is entirely dependent on the restaurants and the third-party app providers for the food. A customer can trust an FDA if it provides reliable information and the food is hygienic. When a customer loses trust for the FDA, then they will refrain from using the app and also employ negative WOM, for example, it was found that a customer will engage in negative WOM if they were dissatisfied with the provided service in a hospitality context (Kandampully *et al.*, 2015). Hence, this study proposes:

H4a. Tradition barriers (trust issues) are negatively associated with the intention to use FDAs.

H4b. Tradition barriers (trust issues) are negatively associated with WOM.

3.5 Image barrier

An image barrier represents the negative impression of the innovation that forms in the mind of the customers due to the image or nature of the change (Lian and Yen, 2013). For example, if FDAs' food quality, customer service and customer engagement are considered unworthy by the customer, then it contributes to building a negative image of the service provider. Excellent customer service leads to satisfied customers, good experience and positive purchase intentions.

The image barriers in the context of FDAs are studied in the form of problematic customer service and customer experiences (inputs from the qualitative study). Customer service refers to the various ways in which a service provider looks into consumers' issues and how those issues are handled. In the current study, the following types of customer services result in image barriers, for example, a service provider refuses to accept the responsibility for an incorrect or delayed delivery and poor quality. Customer services do not understand customer problems; they do not act on customer feedback or fail to resolve customer complaints. In comparison, customer experience refers to the skills of a customer that are exposed over a period of time, and these experiences also affect their decision-making process. In the present study, customer experience (negative) is studied in terms of receiving too many notifications, messages and advertisements on the FDAs which may result in a poor customer experience.

The experience of a customer can influence the intention to use, for example, service quality has a positive association with intentions to use mobile financial services (Chemingui and Lallouna, 2013). Roy *et al.* (2018) found that service quality and convenience shared a positive association with the engagement behavior of customers, resulting in continued intentions. Yeo *et al.* (2017) found that the previous purchase experience through online medium and the usefulness derived after usage positively affected customers' behavioral intentions. Similarly, in the FDA context, Elvandari *et al.* (2017) found that customer service and experience, for example, politeness and friendliness of delivery staff, packaging quality, food quality and affordable delivery costs, affected customers' intentions to use FDAs.

Relatively recent literature has examined the association between customer service and customer experience and WOM. Yusra and Agus (2018) found that the quality of service was positively associated with consumer loyalty and WOM. Similarly, Suhartanto *et al.* (2019) also suggested a positive relationship between food quality and loyalty toward OFD. On customer satisfaction, scholars suggest significant positive links between customer satisfaction and loyalty toward OFDs (Yusra and Agus, 2018). A satisfied consumer will be keen to give positive WOM, while a dissatisfied consumer will uninstall the app and move to another competitor (Daurte *et al.*, 2018). Hence, this study proposes:

H5a. Image barrier (customer service) is negatively associated with the intention to use FDAs.

H5b. Image barrier (customer service) is negatively associated with WOM.

H6a. Image barrier (customer experience) is negatively associated with the intention to use FDAs.

H6b. Image barrier (customer experience) is negatively associated with WOM.

3.6 Word-of-mouth

Prior literature suggests that e-WOM is positively associated with purchase intentions in social commerce context (Yusuf *et al.*, 2018). Choi *et al.* (2014) found a positive impact of purchase intention on WOM in the case of customers using transportation-terminal-cards. Intentions to recommend, as expressed by WOM, are relevant in both offline and online environments. Since FDAs have the provision of online reviews, we have considered both as a mode of recommendation. Therefore, this study proposes:

H7. Intention to use FDAs is positively associated with WOM.

4. Method

4.1 Data collection and participants

Our target population is FDA users in India between the age of 21 and 35 years; the sampling frame and population size at the time of study were not available. Thus, we utilized a non-probability judgmental sampling technique to select respondents. We deliberately selected consumers with FDA use experience to capture their usage intentions as well as recommendation (WOM) intentions. Questionnaires were distributed online between January and February 2019. The target population was recruited from social-media platforms and online communities. Of the 470 responses, 366 complete responses were taken forward for analysis. The mean age of the cross-sectional survey participants was 26.25 years (21–35 years old, 34.43% females) (Table 2). The different measures were assessed on a five-point Likert scale. The sample had a higher percentage of male participants (65.57%) (Table 2).

4.2 Data analysis

The mixed-method approach was utilized since the current study is aiming to extend the theory to a new context. The qualitative data were examined using NVivo and the grounded theory approach. The cross-sectional data were analyzed using structural equation modeling (SEM) in IBM SPSS and AMOS. We selected SEM as our statistical approach since our model is comprised of latent variables and multiple outcome variables. Within SEM, we opted for the maximum likelihood method that minimizes the differences between estimated and observed covariance matrices. This was done in agreement with Henseler *et al.*'s (2009) recommendation that the statistical approach should depend on data characteristics and the aim of the study. As argued by Hew *et al.* (2019), if the study intends to test hypotheses and has a strong theoretical base, SEM should be used, provided the data fulfills the multivariate requirements. Our data are normally distributed, as per the Jarque-Bera statistics test (Jarque and Bera, 1987) that has no multicollinearity (O'Brien, 2007), and our model is grounded in IRT. Hence, it is justifiable to use SEM. Furthermore, we confirmed the absence of common method bias that may plague self-report data by using Harman's single factor test (Podsakoff *et al.*, 2003).

5. Results

The qualitative study contributed to the item pool development (Table 3), which was used to prepare the final questionnaire to collect data to test the proposed model. The results of the SEM-based analysis of cross-sectional data are presented here.

5.1 Measurement model

Previous researchers have indicated different threshold values for the fit indices: $\chi^2/df < 3.0$, CFI ≥ 0.92 , RMSEA ≤ 0.08 and TLI ≥ 0.92 (Hair *et al.*, 2013). In this study, the measurement model proved to be a good fit, indicating suitability for further modeling: $\chi^2/df = 2.35$,

CFI = 0.95, TLI = 0.94, RMSEA = 0.06. GFI and AGFI were noted to be 0.87 and 0.83, respectively (Table 3).

5.2 Validity and reliability

The model also demonstrated a good discriminant validity because the square root value of the average variable explained (AVE) was more than the inter-construct correlations (Fornell and Larcker, 1981) (Table 4). The study items also confirmed the presence of good convergent validity because the AVEs were above 0.50 (Hair *et al.*, 2013) (Table 4). The construct reliability (CR) scores were found to be above 0.70 which confirms a good internal reliability (Hair *et al.*, 2013) (Table 4). All these parameters show the reliability and validity of the constructs.

5.3 Structural model

The structural model yielded good model values: $X^2/df = 2.35$, CFI = 0.95, TLI = 0.94, RMSEA = 0.06. The GFI and AGFI values are 0.86 and 0.83, respectively. This study utilized the different standardized regression coefficients (or beta values) and significant levels (p -value) estimated by the structural model to check the validity of the different hypotheses (Table 5). The value barrier, namely, quality control ($\beta = 0.26$, $p < 0.1$), and image barrier, namely, customer experience ($\beta = 0.30$, $p < 0.001$), shared a significant positive association with WOM. In comparison, image barrier, namely, customer service ($\beta = -0.28$, $p < 0.01$), had a significant negative association with WOM. Additionally, intention to use ($\beta = 0.80$, $p < 0.001$) had a significant (positive) association with WOM, but the tradition barrier, namely, trust ($\beta = -0.60$, $p < 0.001$), was negatively associated with intention to use. It was also found that the usage barrier, namely, interface issues ($\beta = 0.23$, $p < 0.1$), was significantly positively associated with intention to use. These results confirm that hypotheses H4a, H5b and H7 are supported (Figure 2).

6. Discussion

H1a and H1b explored the negative impact of usage barriers (interface issues) on the intention to use and WOM. The study results did not support these hypotheses. Surprisingly, the study findings suggest a positive association between usage barrier (or interface issues) and intention to use. Thus, the study results are inconsistent with existing literature in the context of intention to use (Lian and Yen, 2014) and WOM (Mahadin and Akroush, 2018). The mean value of interface issues was 2.20 (SD = 1.1), which suggests that the majority of the FDAs users did not experience significant usage barriers (or interface issues). Therefore, a possible reason for these inconsistent results could be that the study population was already familiar with and accustomed to using FDAs. Thus, they did not experience any significant usage barriers. Our finding is in line with the findings from relatively recent studies that suggest the non-significant association of usage barriers and dependent variables (Lian and Yen, 2013).

H2a and H2b analyzed the negative relationship between value barriers (quality control), intention to use and WOM. The study results suggest an insignificant association between value barriers and intention to use, contradicting the majority of the past literature (see Lian and Yen, 2014; Ma and Lee, 2018). Furthermore, unlike previous studies on value barriers (quality control) and WOM explaining a negative association (Wilson *et al.*, 2012), the study results suggest a positive association between value barrier and WOM. A possible explanation for these inconsistent findings could be that the quality control measure is a restaurant-dependent phenomenon and not dependent on the FDA service provider. For example, if a placed order has poor quality control, then the consumer is likely to choose

Measures	Mean (SD)	CR	AVE	MSV	IU	II	QC	CS	DE	CE	Trust	WOM
IU	3.51 (1.11)	0.96	0.79	0.61	0.89							
II (UB)	2.20 (1.10)	0.87	0.63	0.44	-0.13	0.80						
QC (VB)	2.73 (1.23)	0.89	0.68	0.63	-0.21	0.62	0.82					
CS (IB)	3.00 (1.29)	0.95	0.76	0.69	-0.07	0.45	0.76	0.87				
DE (RB)	2.83 (1.32)	0.82	0.70	0.63	-0.11	0.42	0.79	0.77	0.84			
CE (IB)	3.12 (1.27)	0.84	0.73	0.69	-0.07	0.47	0.73	0.83	0.68	0.86		
Trust (TB)	2.42 (1.13)	0.90	0.76	0.60	-0.34	0.67	0.78	0.62	0.63	0.65	0.87	
WOM	3.44 (1.16)	0.91	0.77	0.61	0.78	-0.03	-0.06	-0.05	-0.08	0.06	-0.21	0.88
Note(s): Composite reliability = CR, average variance extracted = AVE, maximum shared variance = MSV. The diagonal elements in italics are the square root of the average variance extracted of each construct												

Table 4.
Mean, standard
deviation convergent
and discriminant
validity

Table 5.
Confirmation of
hypotheses

Hypotheses	Path	<i>B</i>	<i>p</i> -value	Supported
H1a	II (UB) → IU	0.23*	<0.05	No
H1b	II (UB) → WOM	0.02	n.s.	No
H2a	QC (VB) → IU	-0.15	n.s.	No
H2b	QC (VB) → WOM	0.26*	<0.05	No
H3a	DE (RB) → IU	0.09	n.s.	No
H3b	DE (RB) → WOM	-0.11	n.s.	No
H4a	Trust (TB) → IU	-0.60***	<0.001	Yes
H4b	Trust (TB) → WOM	-0.07	n.s.	No
H5a	CS (IB) → IU	0.08	n.s.	No
H5b	CS (IB) → WOM	-0.28**	<0.01	Yes
H6a	CE (IB) → IU	0.17	n.s.	No
H6b	CE (IB) → WOM	0.30***	<0.001	No
H7	IU → WOM	0.80***	<0.001	Yes

Note(s): n.s. = not significant. Italics means standardised beta coefficients

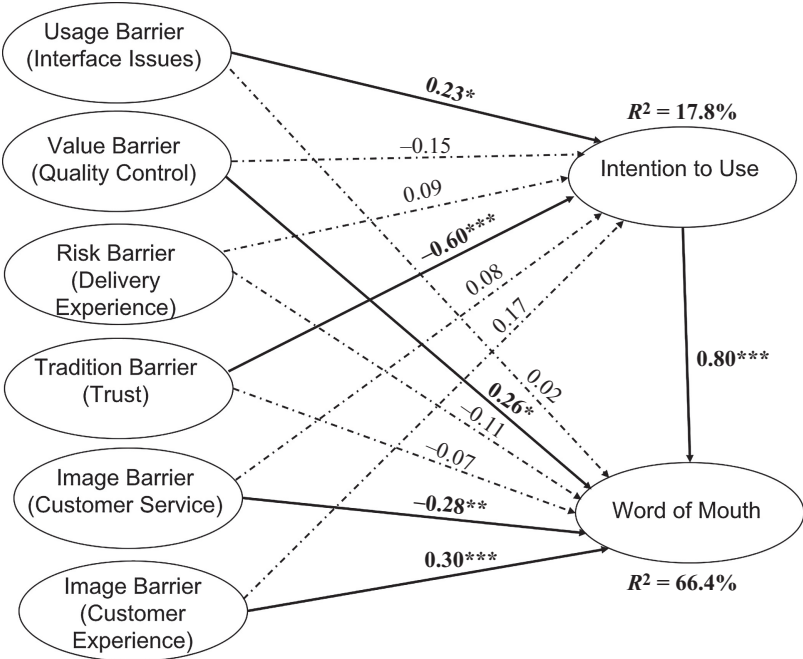


Figure 2.
Results of the
structural model

another restaurant for ordering the food. However, it will still use the same FDA service provider. The positive association between poor quality control and WOM can also be explained on similar grounds. Future studies should possibly examine the impact of poor quality control on the brand value as well as trust toward the FDA service providers.

H3a and H3b examined the negative relationship between risk barriers (delivery experience), intention to use and WOM. The study findings suggest the absence of any significant association between these variables. These findings are in contrast to previous literature that had suggested a negative association between risk barriers and intention to

use in varying contexts, such as online shopping (Lian and Yen, 2014) and e-commerce (Moorthy *et al.*, 2017). The findings on the association between risk barriers and WOM are also in contradiction to past literature (Uslu and Karabulut, 2018). A possible reason could be that this study's participants were recruited from major metro cities that often experience huge traffic problems. Due to this, the delivery-related issues are common across all FDA service providers, and glitches in delivery experience did not result in negative intentions and WOM.

H4a and H4b examined the negative relationship between tradition barriers (trust issues) and intention to use and WOM. Only H4a found support in the current study results as H4b was not supported. The negative association between the tradition barrier and the intention to use is consistent with the earlier studies (Ma and Lee, 2018; Moorthy *et al.*, 2017). The study finding suggests that trust issues have a significant negative impact on the intention to use FDAs. Consequently, FDA service providers should formulate strategies to improve customer trust in FDAs. The insignificant association between tradition barrier and WOM suggests tradition barriers have no association with WOM tendencies. A possible reason could be that customers are likely to switch to a different service provider after experiencing a tradition barrier instead of engaging in WOM.

H5a, H5b, H6a and H6b examined the negative association between image barriers (customer service and customer experience), intention and WOM. Customer service and customer experience did not share any association with intention to use, which is inconsistent with the prior literature (e.g. Chemingui and Lallouna, 2013; Elvandari *et al.*, 2017; Suhartanto *et al.*, 2019). Possible reasons for the insignificant association could be: (1) the use of FDAs is a utility-driven activity, and customers are habituated to the use of FDAs due to various inherent affordances; (2) the Indian FDA market is nowhere close to a saturation point, and, currently, there are three to four main FDA service providers. Consequently, the switching cost between service providers is very high because of the limited available options. These two possible reasons explain the insignificant associations between customer service, customer experience and intention to use.

Customer service shares a negative association with WOM, which is inconsistent with past studies in marketing contexts (Daurte *et al.*, 2018; Garcia *et al.*, 2018). This suggests that poor customer service results in negative WOM, and delays in solving customer issues lead to dissatisfied customers and the spread of negative WOM. In comparison, customer experience shared a positive relationship with WOM. Customer experience was measured using two items, namely, receiving too many notifications/messages and advertisements from FDAs. The study's finding suggests that receiving too many notifications and advertisements irritates FDA users, but these motivate users to circulate positive WOM about their FDA service provider.

H7 examined the positive association between the intention to use and WOM. The study results supported this hypothesis. This finding is in line with previous extended literature (Choi *et al.*, 2014). The results suggest that a positive intention to use translates into a positive WOM. This means that consumers who have a strong willingness to use OFDs will also spread positive WOM.

Overall, the findings suggest that the intentions to use FDAs in India are negatively impacted by the tradition barrier in the form of a lack of trust that users have in FDAs which makes them feel insecure. They feel that the information provided by FDAs is not reliable. This is corroborated by recent media reports of food parcels being tampered with by FDA delivery boys in India. At the same time, the findings indicate that interface and usage complexities do not lead to any usage barriers and do not dissuade users from ordering food through FDAs. Furthermore, users are also not concerned about the quality control practices of the restaurants the food is ordered from, indicating they do not face value barriers impeding their intention to use FDA. Value barrier has a positive association with WOM,

implying that the users look at restaurants and FDAs as two separate entities, and issues with restaurants do not stop them from spreading positive WOM about FDAs. Additionally, the findings confirm that users do not perceive any risk barriers in terms of delivery experiences and interactions with the delivery staff. Finally, customer service and experience issues, both representing image barriers, also do not erode the intentions of users to order food. However, customer service barriers lead to negative WOM. In comparison, though users find notifications irritating, such promotional messages increase their positive WOM intent. Finally, the findings confirm that a higher intention to use FDAs will translate into recommendation intentions.

6.1 Theoretical implications

The study has three main theoretical implications. First, the current investigation is the first empirical study that has explored the various consumer barriers toward the use of FDAs. Furthermore, the current study has utilized a never-before-applied yet important theoretical framework of IRT in the context of FDAs. In this way, the current investigation will open new avenues of research on FDAs because the extant literature has predominately focused on acceptance-related issues, whereas resistance-related perspectives were ignored.

Second, the present study adds to the emerging literature on FDAs in which the association between different consumer barriers and intention to use FDAs and WOM were examined.

Third, the current study investigated the important issues related to FDAs in the context of a rarely studied cultural group of Indian FDA users. India is currently experiencing a digital transformation, and it is anticipated that its FDA market will also flourish. The generated body of knowledge from this study will set the stage for further development of various theory-driven frameworks for exploring the strategic insights of FDAs and other related services.

6.2 Managerial implications

There are three implications for this study. First, the study findings will help service providers of FDA and restaurant owners to understand the different consumer barriers and their association with intention to use and WOM. The service providers can improve their services by addressing the service gaps present in the FDAs, for example, they can focus on reducing value, image and tradition barriers as these have significant associations with intentions as well as WOM. For example, (1) FDA service providers can take relevant actions against the restaurants that do not provide the desired quality standards; (2) service providers can offer better training to their delivery staff to give a better experience to customers; (3) service providers can utilize the study findings to develop and improve their marketing strategies to target their end-users better.

Second, the introduction of the new market players in the already-competitive FDA market space has further contributed to the competition. Due to this, service providers are facing stiff consumer resistance toward achieving necessary market penetration. The service providers, as well as investors, can immensely benefit from the current findings as they can better understand factors that contribute toward resistance. In addition to this, a better understanding of resistance and barriers can enable service providers to uniquely position themselves in the competitive FDA market.

Third, as the current study findings highlighted the factors that translate into positive WOM (e.g. intention to use), the service providers can take advantage of the study results and implement strategies to empower their loyal customers so that they can spread positive WOM.

6.3 Limitations and future work

There are two main limitations for this present study. First, this study is based on Indian FDA users. The results of this study may not be generalizable to other markets or other geographical contexts. Second, the study utilized self-reporting methods, namely, open-ended essays and cross-sectional surveys. These methods are prone to different methodological biases, for example, both methods are prone to response bias and cross-sectional surveys are single-shot studies that only provide insight on the studied relationship at a single point of time. We encourage researchers to address these issues in future studies on FDAs. Additionally, we recommend that future research should focus on recruiting FDA users from diverse cultural and geographical settings, for example, users from multiple countries, on making this study more generalizable. Future investigations must involve diverse research designs, such as experiments, sentence completion and longitudinal surveys with the target users. In addition to this, we encourage scholars to consider newer theoretical frameworks such as the behavioral reasoning theory (Sahu *et al.*, 2020) to expand the limited literature on FDAs.

7. Conclusion

Prior literature examining various issues concerning OFDs and FDAs was in the nascent stage of research, but today, scholars from around the world are increasingly showing interest in better understanding the use of FDAs. The present study addressed two research questions: Which IRT barriers are significant in explaining consumer resistance to usage intention toward FDAs? Is the intention to recommend, represented by WOM, both online and offline, also impacted by the barriers to adoption? To answer RQ1, we conducted a qualitative study through open-ended essays with 125 respondents. A content analysis of their responses helped us identify interface issues, quality control, delivery experience, trust, customer service and customer experience as the key sources of usage, value, risk, tradition and image barriers representing IRT. Thus, we were successful in identifying FDA-specific barriers, thereby contextualizing IRT to the specific context of FDAs. IRT was utilized to evaluate the association between consumer barriers, intention to use and WOM toward FDAs. In comparison, no past study has examined consumer resistance toward FDAs. Due to this, there is no *a priori* to compare the results with. Therefore, the present study significantly contributes to emerging FDA literature, which is still limited. By investigating the different consumer barriers toward the use of FDAs, it adds a new dimension to the accumulated learnings on FDAs, which have remained focused on understanding the adoption intentions toward OFD (Correa *et al.*, 2018; Roh and Park, 2018; Yeo *et al.*, 2017; Ray *et al.*, 2019). To answer RQ2, we analyzed cross-sectional data collected from 366 FDA users in India and tested the association between the different consumer barriers, intention to use and WOM. The study findings suggest a significant negative association between tradition barriers and intention to use. Also, a significant association between value and image barriers and WOM were found. The study findings have substantial implications for different stakeholders of the marketplace.

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