Barriers toward purchasing from online travel agencies

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A B S T R A C T

Online travel agencies (OTAs) are expanding their services to many segments of the travel and tourism industry. While they are beneficial to travelers, OTAs also face a great deal of consumer resistance. However, prior literature has largely focused on travelers' adoption intentions toward OTAs, scarcely exploring the causes of such resistance. Addressing the gap, this study extends the innovation resistance theory (IRT) to examine the barriers to positive purchase intentions toward OTAs. A mixed method research design with open-ended essays and cross-sectional survey is used to test the proposed model. Findings suggest that benefits barrier is the chief inhibitor of purchase intentions. In comparison, privacy and security concerns and the vulnerability barrier show positive association with intentions. As a moderator, visibility influences the strength of the association between benefits barrier and purchase intentions. Further, the strength of this association differs among young, middle-aged, and old users.

1. Introduction

Online travel bookings can be made directly on the website of a service provider (e.g., reserving a hotel room directly on Marriott.com) or through online travel agencies (OTAs), which aggregate the facilities provided by many travel and tourism-related companies. OTAs sell travel and tourism-related products such as hotel rooms, airline tickets, cabs, and holiday packages through websites and apps (Rezgo, 2019). Globally, the online booking segment of the travel and tourism industry is projected to reach a size of $1091 billion by 2022 (Allied Market Research, 2019). Within the travel industry, the hospitality sector is one of the fastest growing, especially the hotel industry, which provides accommodation to travelers (Global Hospitality Portal, 2019). The revenue generated from online booking of hotels (via the hotel website or OTA) is estimated to increase at an annual growth rate of 6.3%. Further, the market volume is expected to reach US$220,277 million by 2023 (Statista, 2019a).

Prior literature has examined various aspects related to the proliferation of OTAs. For example, studies on OTAs have investigated consumption values (Lei et al., 2019; Talwar et al., 2020), visibility of hotels on a booking site (van der Rest et al., 2016), competition and cooperation between hotels and OTAs (Chang et al., 2019), customer satisfaction (Lee et al., 2017), and information quality (Kustiwi, 2018).

Moreover, research has also investigated technical aspects of online booking such as multidimensional sequencing of hotel rooms (Rianthong et al., 2016) and the association between website interactivity and brand knowledge (Barreda et al., 2016).

Broadly, our extensive review of the extant literature has revealed various factors that have a positive effect on consumers' intentions to use OTAs and their satisfaction with them (e.g., Kustiwi, 2018; Lee et al., 2017). Interestingly, the factors preventing or inhibiting consumers from adopting OTAs have thus far remained under-investigated in literature.

A negative response or unwillingness to try a given product or service innovation is called consumer resistance (Tansuhaj et al., 1991). Consumer resistance is an essential dimension of consumer behavior as it can impede the adoption of any innovation, thereby affecting its success or failure (Heidenreich and Kraemer, 2016). Prior studies have examined resistance in contexts such as mobile banking (Laukkanen, 2015), food processing technology (Zheng et al., 2019), and online shopping (Nel and Boshoff, 2019) among others.

Notably, studies on this aspect of consumer behavior have emphasized that motivators of adoption behavior are not very useful in explaining non-adoption or resistance (Claudy et al., 2015). This claim further underscores the need to study consumer behavior in relation to OTAs, particularly from the resistance perspective. The objective of this

study is to advance the understanding of factors that prevent consumers from booking their travel through OTAs. We argue that a better understanding of consumer resistance can support the development of management practices and design features that support the adoption of OTAs. This is particularly important for the OTA service providers who have to compete with traditional or offline booking agencies that offer booking through offices in person or via telephone. Offline services can be very appealing to consumers seeking personal service and expert advice.

Against this backdrop, we draw on the innovation resistance theory IRT (Ram and Sheth, 1989) and contextualize it (Mäntymäki et al., 2014, 2020) to accommodate the characteristics pertinent to consumer resistance to OTAs. In particular, this study answers two research questions: **RQ1**. What are the main barriers to using OTAs and to what extent do they decrease consumers' intentions to purchase from OTAs? **RQ2**. Do age, visibility, and hygiene consciousness have a significant moderating influence on the relationship between barriers and purchase intention? In addressing RQ1, we go beyond the generic IRT barriers to identify those specific to resistance to OTAs. Similarly answering RQ2 enables us to identify moderators that offer more fine-grained insights on individual differences in barriers to using OTAs, thereby cementing the OTA context vis-à-vis IRT.

We employed a mixed method research methodology, comprising qualitative and quantitative research components, including open-ended essays (N = 40) and a cross-sectional survey (N = 626), with OTA users. A qualitative approach was essential as there is no study that has examined the resistance or barriers toward the use of OTAs. Qualitative essays resulted in the generation of an item pool of different barriers, which were later evaluated using cross-sectional data. The barriers identified in connection with OTAs were usage constraints, privacy and security concerns, vulnerability and benefits barriers. They correspond to the usage, risk, and value barriers theorized by IRT respectively. Usage constraints represent the limits imposed by apps while booking during peak seasons, holidays, and weekends. Privacy and security concerns represent barriers related to sharing financial and personal information while making a booking on OTAs as well as the concern for physical security at the travel site. Vulnerability barrier refers to the concern that users may have about being over-charged by the app or about using it too frequently. The benefits barrier represents customers' concern that the benefits or incentives offered to encourage booking on OTAs are not sufficient or are too superfluous.

Our results showed that the benefits barrier has a significant negative association with purchase intentions. However, privacy and security concerns and the vulnerability barrier share a significant positive association with purchase intentions. On the other hand, usage constraints have no effect on the intentions toward OTAs. With regard to moderating variables, visibility influences the strength of the negative association between benefits barriers and intentions such that the strength of the negative relationship increases if users perceive OTAs as having low-degree visibility. Furthermore, the strength of association between benefits barrier and purchase intention differs among young, middle-aged, and old users. The study makes a significant theoretical contribution by extending IRT to the field of tourism and hospitality. It also offers vital insights for OTAs to understand their customers better.

The rest of the paper is organized as follows. Section 2 presents the research background and theoretical framework, Section 3 discusses the research model and the proposed hypotheses, and Section 4 elaborates the data and methods. Section 5 reports the results of the data analysis, Section 6 discusses the findings, Section 7 presents the implications of the study, and Section 8 concludes the article by discussing the limitations and scope for future research.

2. Background literature

2.1. Innovation resistance theory (IRT)

The idea of resistance to innovation was formally conceptualized as IRT by Ram (1987) and later modified by Ram and Sheth (1989). IRT explains the resistance behavior of consumers toward innovations in product, service, or technology with the help of five barriers, divided into two categories: functional and psychological. Ram and Sheth (1989) defined consumer resistance as the rejection of innovations on account of the potential threat posed to the status quo and the consumer's own belief system. Resistance arises when consumers avoid the use of new technology to maintain the status quo. IRT, proposed in 1987, was the first attempt at explaining resistance to innovation in terms of innovation and user characteristics, making it a suitable proposition for understanding a user's resistance toward innovations (Ma and Lee, 2018).

Within the broad categories of functional (value, risk, and usage) and psychological (image and tradition) barriers, IRT refers to different types consumer resistance. Usage barrier refers to the usability of the innovation and the changes needed for the consumers to adapt to it, value barrier refers to the performance-to-price value of an innovation as against its substitutes, risk barrier represents consumers' perception of the risks associated with an innovation, tradition barrier represents resistance to innovation stemming from consumers' habits of doing things a particular way before the introduction of the innovation; and image barrier is resistance related to the perceived complexity of an innovation and how easy it is to use (Laukkanen et al., 2007). IRT has been used extensively in the extant literature to investigate resistance behavior. Nonetheless, consumer resistance has remained largely under-researched (Laukkanen and Kiviniemi, 2010). However, recently, interest in the study of resistance has grown, especially in the context of information systems (Nel and Boshoff, 2019; Chen and Kuo, 2017). Despite the growing interest, to the best of our knowledge, no prior study has examined consumer resistance toward OTAs.

2.2. Online travel agencies (OTAs)

OTAs have been the focus of research interest since they were founded, and this interest has sustained through the years with many scholars studying various aspects of OTAs in the recent past. Kustiwi (2018) revealed that the extent of OTA usage was dependent on three factors: system, information, and service quality. Lee et al. (2017) found that interface serviceability was an essential factor in customer satisfaction with OTAs. Similarly, some studies examined consumer behavior related to OTA and hotels. van der Rest et al. (2016) found that the facilities provided by a hotel affect its position on the booking site and the volume of the bookings. Chang et al. (2019) found that both, OTAs and hotels, compete for customer revisits. While OTAs can attract customers through service quality on their website, hotels can attract customer revisits through perceived value. Long and Shi (2017) suggested that commissions on unit sales, compensation, and service cost impact an OTA's pricing decisions.

3. Research model and hypotheses development

The current study draws on IRT to propose a comprehensive research model that examines the association between the barriers proposed by IRT and intentions to purchase (Fig. 1). Purchase intentions represent the psychological propensity to undertake a specific behavior (Ajzen, 1991), and it is considered an important antecedent of the actual consumer behavior while buying (Fishbein and Ajzen, 1975). Emergent themes in qualitative research have only identified functional barriers; hence, only functional barriers were considered in the research model. A possible reason for the absence of psychological barriers could be that consumers do not see the use of OTAs as a challenge to their
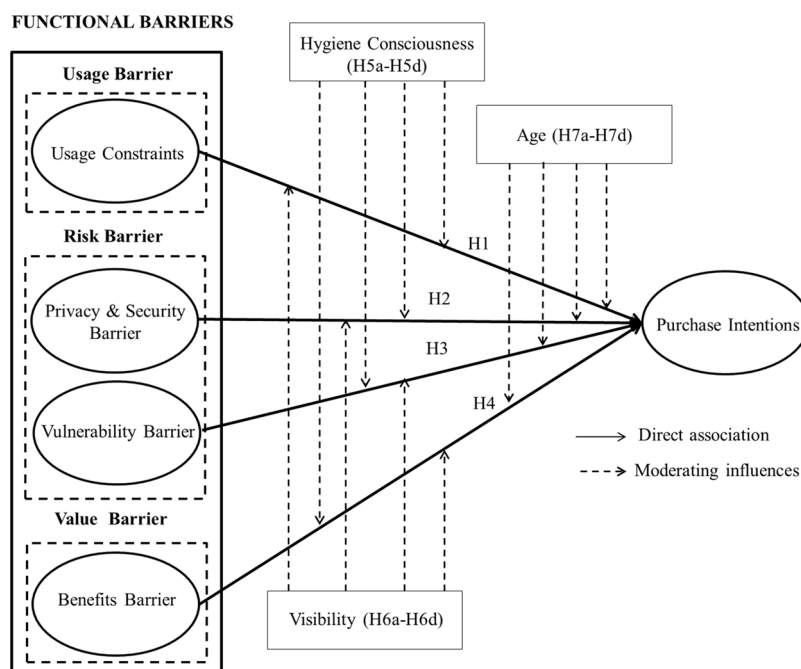
Fig. 1. Proposed research model.

habits of booking travel and thus have no issues with their image. The dependent variable was purchase intentions toward OTAs, and the independent variables were usage constraints, privacy and security concerns, vulnerability barrier, and benefits barrier. Further, the moderating influence of three variables—hygiene consciousness, age, and visibility—on the association between the barriers and purchase intention was examined.

3.1. Usage barrier

Usage barrier is one of the leading causes of resistance to new products and innovations, and it emerges when new offerings challenge consumers' status quo (Ram and Sheth, 1989). The usage barrier exists because innovations challenge the usage patterns of consumers (Kleijnen et al., 2009). For better adoption from customers, eliminating the usage barrier is vital (Chen and Kuo, 2017). In the context of mobile apps, usage barrier measures the resistance that comes from the effort required to learn the app and its features. In the context of online booking, extant literature has discussed the constraints imposed by service providers in terms of scarcity appeals, which do not always lead to higher purchase intentions (Huang et al., 2020). OTAs can impose booking constraints during peak seasons, weekends, and national holidays, such as reduced discounts during peak season, restrictions such as minimum/maximum stay requirements, and number of rooms booked. Our qualitative pre-study further revealed that these constraints considerably irritate the users. Hence, we contextualize the usage barrier of IRT as usage constraints, which is measured as the degree of negative emotions evoked by the constraints imposed by the OTA.

Prior research has shown a negative association between usage barrier and intention toward innovation in a variety of contexts, such as social media usage (Lin et al., 2012) and mobile commerce (Moorthy et al., 2017). Further, usage barriers have a positive association with resistance toward digitization (Yu and Chantatub, 2016). OTAs can be considered an example of e-commerce, or m-commerce, in the travel context. They represent a drastic shift from the way travel was planned and booked before the advent of the online mode. Huge amounts of information available at single click may confuse users and challenge their existing habits and patterns, thereby increasing their usage

barrier, as evidenced in the case of mobile banking, online shopping, and other digitally driven services. Similarly, in the case of OTAs, users do not like the constraints imposed by the OTA service provider, and it is likely to influence their purchase intentions negatively. Consequently, we hypothesize that constraints on usage are likely to have a negative impact on purchase intentions toward OTAs.

H1. Usage constraints have a negative impact on the purchase intentions toward OTAs.

3.2. Risk barrier

The extent of uncertainty and unpredictability associated with innovation is referred to as risk barrier (Chen and Kuo, 2017). Such risks may result in resistance to innovation (Kleijnen et al., 2009). In our qualitative study, two specific risk factors have been identified in the context of OTAs: vulnerability risk and privacy and security concerns. Vulnerability risk measures the fear among OTA users that they are being confined to a limited number of properties, spending too much on accommodation, and booking too frequently. On the other hand, privacy and security concerns measure the risk stemming from sharing financial details online while booking hotels, and other privacy and security provisions related to the booking of rooms. Existing findings have also discussed the impact of consumer vulnerability (Ng and Wakenshaw, 2017) and security and privacy risk in the context of mobile apps (Laukkanen, 2016; Guttentag and Smith, 2017).

Prior literature suggests a negative association between risk barriers and intentions to use and adopt new technologies, such as services related to mobile payment (Lu et al., 2011) and mobile commerce (Moorthy et al., 2017). Booking travel on OTA apps requires customers to share a lot of personal and financial information. This might make them feel insecure, as noted in earlier studies on mobile payment systems, and increase their privacy and security concerns while using OTA app. Similarly, OTA users may perceive a possible risk that they may be paying too much for services, which lead them to feel vulnerable and exposed to exploitation. Thus, we hypothesize that both of these risk barriers share a negative association with purchase intentions toward OTAs.

H2. Privacy and security concerns have a negative impact on the purchase intentions toward OTAs.

H3. Vulnerability barrier has a negative impact on the purchase intentions toward OTAs.

3.3. Value barrier

The value barrier is the perceived value offered by a new product as against others like it (Kushwah et al., 2019). Value barrier is linked to the performance and monetary value that a new product may offer over its alternative, and it is triggered when the newer product is low on any of the two parameters (Ram and Sheth, 1989). Research suggests that the value barrier has been widely studied for mobile services (Laukkanen, 2016) and organic food consumption (Kushwah et al., 2019). In the current study, our qualitative pre-study found that the value barrier is related to the benefits offered by the OTAs. Hence, we refer to it as the benefits barrier, and it is trigged when users perceive that the OTA service provider is not providing enough benefits and that those provided are not of much use. Our choice is consistent with a recent study on the Internet of things (IoT), in which the value barrier has been linked to low benefits from an economic or informational perspective (Touzani et al., 2018).

Value barrier is negatively linked to use intentions as revealed in the case of mobile services (Laukkanen, 2016) and IoT devices and services (Balta-Ozkan et al., 2013). However, it has never been studied in the context of OTAs. Travelers use OTAs since the apps allow them to compare multiple options and select the best deal, which offers the maximum monetary benefit. However, if the users perceive that the benefits offered by the OTAs are not useful enough, it may create a barrier in terms of value and might negatively influence their purchase intentions. Consequently, we hypothesize the following:

H4. Benefits barrier has a negative impact on the purchase intentions toward OTAs.

3.4. The moderating role of hygiene consciousness, visibility, and age

Moderators capture the impact of individual differences on the associations related to consumer behavior (Meyers-Levy and Loken, 2015; Zhou et al., 2014). Past studies on OTAs have primarily focused on exploring direct associations between the determinants, purchase intentions, and user behavior. The moderating influence of different important variables has not been researched often. Some of the moderating variables discussed in the online travel booking context are age and digital status (Voorveld et al., 2013), where age is reported to influence the strength of the relationship for consumers in different age groups (Ye et al., 2019). Agag and El-Masry (2016) attempted to contextualize the association between intention to book hotel online and its antecedents by employing habit as moderator. Researchers investigating consumer resistance have also noted the dearth of findings related to moderating influences and emphasized the need for such studies (Claudy et al., 2015; Mani and Chouk, 2018).

The present study bridges this gap in OTA literature and examines the moderating role of three essential variables: hygiene consciousness, visibility, and age. The proposed examination of moderators in an IRT-based framework helps in further developing and contextualizing the theory. As there is no a priori model for the study of consumer resistance in relation to OTAs, we have drawn these moderating variables from three factors influencing consumer behavior in the domain of travel and hospitality and in the domain of mobile apps: a) hotel attributes, where hygiene consciousness represents a concern for a clean room (Barreda and Bilgihan, 2013; Pizam & Tasci, 2019; Vos et al., 2018); b) visibility, which measures the effect of advertisement and usage by others on the association between barriers and purchase intentions (Sawang et al., 2014; Shaikh and Karjaluoto, 2014); and c)

demographics, where age is used to measure the differences in barriers for young and mature OTA users (DiPietro and Wang, 2010; Ye et al., 2019).

3.4.1. Hygiene consciousness

Hygiene consciousness represents the concern for proper hygiene, which also manifests in a concern for cleanliness, a key attribute that consumers seek when they book a hotel room (Barreda and Bilgihan, 2013; Turner, 2019). Satisfaction from services in hospitality services is primarily driven by cleanliness (Pizam and Tasci, 2019; Vos et al., 2018). In the present study, we have conceptualized hygiene consciousness as a habit of maintaining hygiene standards, which also translates into concern for cleanliness in tangible travel-related products and services. As discussed above, previous literature has employed habit as a moderating variable influencing the association between purchase intention and its antecedents (Agag and El-Masry, 2016; Hsu et al., 2015). Overall, there is a shortage of literature on the influence of hygiene consciousness as a moderating variable in consumer resistance studies. We believe that hygiene consciousness, expressed in the form of concern for cleanliness, is an important attribute that users consider while booking rooms in a hotel. When booking via an OTA, the consumer must rely on the information available online about the hygiene standards of the hotel. Thus, it is plausible to assume that the effect of different barriers. Therefore, we put forward the following hypotheses:

H5a–d. The relationship of purchase intentions with usage constraints, privacy and security concerns, vulnerability barrier, and benefits barrier respectively is moderated by hygiene consciousness such that the negative association is stronger among consumers with a high degree of hygiene consciousness.

3.4.2. Visibility

Visibility refers to the impact on an individual who sees an innovation being used by others (Shaikh and Karjaluoto, 2014). The present study has measured visibility using advertisements and by the popularity of the OTA. Prior literature on e-commerce and mobile services suggests that visibility shares a significant positive association with adoption, intentions, and actual user behavior (Sawang et al., 2014; Shaikh and Karjaluoto, 2014). For example, visibility has been positively linked to intentions to use e-commerce type of innovations (van Slyke et al., 2010) and mobile internet adoption (Hsu et al., 2007). A recent study has also confirmed the positive influence of visibility in the context of mobile payments and intentions (Johnson et al., 2018).

This study links visibility to advertisements and the popularity of OTA apps among other users. Though there is no specific a priori model, OTAs can be considered a form of e-commerce, and we anticipate that visibility of the apps will positively impact intentions, or conversely, reduce the barriers that impede purchase intentions. Intuitively, it follows that consumers who are concerned about visibility will show more resistance to using OTA apps whose visibility is poor. In other words, concern for visibility is likely to moderate the association between barriers and intentions. Consequently, we expect that low visibility of the OTA apps is likely to increase the negative association between the proposed barriers and purchase intentions, whereas high visibility of the apps is likely to reduce the strength of negative associations for consumers. Hence, we hypothesize the following:

H6a–d. The relationship of purchase intentions with usage constraints, privacy and security concerns, vulnerability barrier, and benefits barrier respectively is moderated by visibility such that the negative association is stronger for consumers who perceive OTAs as having a low degree of visibility.

3.4.3. Age

Demographic variables such as age, income, and gender are

important in determining behavioral intentions (Lee and Hwang, 2011). Prior research has revealed that age may influence consumer behavior (Southworth and Kim, 2015). Further, age has been recognized in the existing tourism and hospitality literature as a key demographic variable that influences the use of online services. DiPietro and Wang (2010) argued that age can play a significant role, and young people can be expected to use online tourism services more than their older counterparts. Ye et al. (2019) revealed that age moderate the association between buying intentions and its determinants in the context of OTAs. Similarly, Tan and Ooi (2018) found that age moderated consumers' decision to buy tourism products on their mobile. In consonance with the available findings, we anticipate that consumer resistance toward OTA apps will also vary according to age-based differences in the ability to evaluate, make choices, and use. The associations could be strengthened or weakened depending on the age of the individual consumers. Therefore, we hypothesize:

H7a–d. The relationship of purchase intentions with usage constraints, privacy and security concerns, vulnerability barrier, and benefits barrier respectively is moderated by age such that the strength of negative association is different among travelers in the young, middle, and older age groups

4. Data and methods

4.1. Item pool development for measuring consumer resistance

No prior validated scales were available to measure different barriers or resistances toward OTAs. We, therefore, adapted the IRT scales used by prior scholars to the OTA context by referring to the psychometric process of scale development (Furr, 2011). Thus, a multi-method approach, as recommended by (McMillan and Hwang, 2002), was employed, which included literature review, open-ended essays, expert opinion, pilot study, and cross-sectional survey. A qualitative examination was necessary as the present study is the first empirical investigation into consumer resistance toward the use of OTAs.

Forty dormant OTA users (defined in our study as all smartphone users who had downloaded OTA apps but used them only few times in past six months, switching to the traditional way of actually booking room when required) were recruited to participated in open-ended essays in January 2019. Open-ended essay is a popular technique for collecting rich qualitative insights where participants are provided with stimuli in the form of open-ended questions (Dhir et al., 2017; Bradding and Horstman, 1999). The essay questions were developed on the basis of inputs from the comprehensive review of literature on consumer resistance (e.g., Laukkanen and Kiviniemi, 2010; Laukkanen et al., 2007). The open essay questions were as follows: Do you consider OTAs really useful? What do you dislike about OTA mobile apps? Do you think that OTA apps impose too many usage-related conditions, which hamper their convenient use? Do you feel anxious due to privacy and security issues associated with booking travel through aggregators? Do you think that there is not much difference in the benefits offered by a booking travel app compared to the traditional mode of booking? Do you worry about the change you will have to bring in your habits while booking travel through OTA as compared to the traditional method of booking?

The mall intercept method was employed to select respondents for the open-ended essay. We used two screening criteria: a) The respondent should have downloaded the OTA app on his/her phone and tried to use it for booking travel at least once during the past six months, and b) the respondent should have booked travel through the traditional mode after trying to book it through the OTA mode. Thus, our population comprised all smartphone users who had downloaded OTA apps but used them only a few times in the past six months, switching to the traditional way of actually booking a room when required. Responses were sought in malls across Delhi and Mumbai—two

highly populated metros in India. No demographic limits were set, and the first 40 consenting respondents meeting the screening criteria were requested to participate in the essay. We did not set any demographic limit as we wanted to capture the behavior of a broad spectrum of mobile app users. However, demographic details of the respondents were collected.

The gathered qualitative data were analyzed using an affinity diagramming technique, which is also a grounded theory-based approach (Holtzblatt and Beyer, 1998). This resulted in the generation of four different themes, which represented different barriers. Thereafter, IRT was utilized as a theoretical lens to examine and map these four themes with various barriers proposed by IRT. Interestingly, the emergent themes were related to functional barriers only, indicating that OTA users may not face any psychological barriers (tradition and image) related to the use of OTAs. As mentioned earlier, the tradition barrier is associated with the habits of consumers, and the image barrier is related to the complexity of an innovation and how easy it is to use.

It is possible that psychological barriers, comprising image and tradition barriers, did not emerge as one of the barriers in the context of OTAs because the use of mobile phones and apps has increased tremendously during the past few years and become a part of the daily life. For instance, four in ten Indians were found to use 6–10 apps daily, accounting for 88 percent of a smartphone user's time on mobile (Statista, 2019b). Due to this, it is plausible to contend that mobile apps as an interface have good acceptance, thereby consumers may not have image barrier toward OTAs. Similarly, it is arguable that consumers do not worry about the change they will have to bring in their habits while booking travel through OTAs as compared to the traditional method of booking, thereby they do not have tradition barrier toward OTAs. Another potential reason for this finding could be that the consumers do not feel that app-based bookings are against their traditions or their existing habits. This is also in consonance with some recent studies that have confirmed the absence of tradition barrier in the case of other mobile-based services such as mobile banking and mobile payment systems (e.g., Laukkanen, 2016; Kaur et al., 2020)

Inputs from the qualitative study were used to adapt the language of the existing IRT scales to the OTA context, thereby generating an item pool. The generated pool of items representing four different measures, depicting three types of functional barriers, was reviewed by an expert panel. The panel, consisting of two professors, two researchers, and one industry consultant from the hospitality area, was consulted to adjust the mapping of the themes to the different barriers. Finally, three barriers, all belonging to the functional category, were identified from the analysis. Specifically, we identified usage constraints as the usage barrier, privacy and security concerns and vulnerability barrier as risk barriers, and the benefits barrier as a value barrier. Analysis of the participants' demographics revealed that 65% of the respondents were males, 90% were between 20 to 35 years of age, and different economic backgrounds were represented.

4.2. Data collection

The target population was defined as follows: 20 to 35 years old, dormant male or female OTA users who had booked their latest travel through the traditional channels. We selected the age group of 20 to 35 years on the basis of the demographic profile of the voluntary respondents in our qualitative study. Further, survey data released by Statista (2019c) revealed that in 2016, about 35% of the Indian online consumers belonged to the age group of 25 to 34 years. The developed pool of items was pre-tested with 20 dormant OTA users representing our target population. Minor alterations were made to improve the clarity and coverage of the item pool. The final questionnaire was then crafted for collecting empirical data. Multiple survey sessions were conducted in shopping malls in Mumbai and New Delhi during post-office hours and weekends in February and March 2019. A total of 626 respondents (mostly working people) aged from 20 to 35 years

participated in the study (71.6% male). Their educational background of the respondents was as follows: pursuing/completed higher secondary level (10.2%), pursuing/completed graduate level (43.6%), pursuing/completed masters level (40%), and pursuing/completed doctorate (PhD or equivalent) (6.2%). OYO was the target OTA app, which is primarily a company, with a global presence and US$5 billion valuation, that provides budget hotel rooms to its customers (Paul, 2018).

4.3. Data analysis

We employed covariance-based structural equation modelling (SEM) (Anderson and Gerbing, 1988) with AMOS v.23 software package. SPSS 23 with Process macro was used to conduct the moderation analysis. First, we tested for common method bias and then performed a confirmatory factor analysis (CFA) to assess the goodness of fit indices and validity and reliability measures. Thereafter, to test the research hypotheses, we analyzed the structural model and the moderating effects.

Suitability of data for SEM is an important consideration. The estimation method of maximum likelihood used for SEM assumes multivariate normality of the observed data. Confirmation of normality implies that the estimates are unbiased and efficient. Therefore, normality tests were performed beforehand to test skewness (< 3), Kurtosis (-2 and 2) (George and Mallery, 2003), and Mardia multivariate kurtosis coefficient (< 3) (Mardia, 1970). Z-scores (< 3.29) were used to check for outliers (Tabachnick and Fidell, 2012). Only fully complete responses were selected to eliminate the issue of missing data.

5. Results

5.1. Multivariate normality and common method bias

The cross-sectional dataset was confirmed to be normally distributed with values of skewness, kurtosis, and Mardia's criterion conforming to the cut-off values. The data were also free from outliers. To test for common method bias, Harman's one-factor test was used. The variance explained by the common method factor was 30.60%, clearly below the threshold value of 50%. This confirmed that common method bias was not a major concern.

5.2. Measurement model

Factor loading of each item was highly significant ($p < 0.001$), and the values of loadings varied between 0.7 and 0.94 (Table 1). Further, model fit indices returned by the measurement model were as follows: $\chi2/degrees\ of\ freedom$ = 3.41; GFI = 0.95, $AGFI$ = 0.92, TLI = 0.96, CFI = 0.97, NFI = 0.96, and $RMSEA$ = 0.06. These values indicated acceptable measurement model fit (Tabachnick and Fidell, 2007; Kline, 2016).

The reliability of each item was confirmed by factor loadings, which were above 0.70 for all items (Hair et al., 2010). Next, scale reliability was assessed using composite reliability (CR), which is reported in Table 2. We preferred CR over Cronbach's alpha, as it is more reliable (Henseler et al., 2009). As can be observed in Table 2, CR was above the recommended level of 0.70 (Nunnally, 1978). Thereafter, the validity of the instrument was tested using both convergent and discriminant validity. We used average variance extracted (AVE) as a criterion for convergent validity with cutoff of 0.5, in line with the recommendations of Fornell and Larcker (1981). As shown in Table 2, the criterion was met. According to the recommendations of Fornell and Larcker (1981) for discriminant validity, the AVE square root should be higher than the inter-construct correlations. In Table 2, all diagonal values in bold, representing the square root of AVE, are higher than the correlations among the latent variables represented by the off-diagonal values.

5.3. Structural model

Given that the measurement model was satisfactory, we tested the structural model. The outcome of the path analysis was determined from model fit indices and significance of regression coefficients. Model fit indices reported by the study were as follows: $\chi2/degrees\ of\ freedom$ = 3.41; GFI = 0.95, $AGFI$ = 0.92, TLI = 0.96, CFI = 0.97, NFI = 0.96, and $RMSEA$ = 0.06. These valued indicated acceptable model fit (Tabachnick and Fidell, 2007; Kline, 2016).

After testing the measured model, we tested the hypotheses with the structural model. As shown in Fig. 2, usage constraints had a positive but insignificant effect on the purchase intentions toward OTAs (β = 0.01, *n.s.*). Thus, H1 was not supported. Contrary to H2 and H3, privacy and security concerns (β = 0.51, $p < 0.001$) and vulnerability barrier (β = 0.56, $p < 0.001$) had significant but positive effect on purchase intentions. Thus, H2 and H3 were not supported. Benefits barrier had a negative and significant effect on purchase intentions (β = -0.59, $p < 0.001$), thus H4 was supported. In all, the model explained 36.2% of the variance in the intention to purchase from OTAs.

5.4. Moderation analysis

To examine the moderating influence of hygiene consciousness, visibility, and age on the associations of different barriers and purchase intentions, we used SPSS process macro, model 1. The analysis was conducted by bootstrapping the effect 5000 times for testing the moderation. The output of the moderation analysis is presented in Fig. 3a)–f). The results showed that hygiene consciousness moderated only the relation between usage constraints and purchase intentions ($PE_{interaction}$ = -0.13, 95% CI [$-.2007$, $-.0676$]). In terms of moderation effects, users with low levels of hygiene consciousness (PE_{low} = 0.17, 95% CI [.0801, .2692]) differed statistically from users with medium and high levels of hygiene consciousness (PE_{medium} = 0.04, 95% CI [-0.0192, 0.1004], PE_{high} = -0.07, 95% CI [-0.1420, 0.0085]).

Visibility moderated the majority of associations among different barriers and purchase intentions: usage constraints: $PE_{interaction}$ = -0.05, 95% CI [-0.0964, 0.0007]; vulnerability barrier: $PE_{interaction}$ = 0.07, 95% CI [0.0195, 0.1219]; and benefits barrier: $PE_{interaction}$ = 0.07, 95% CI [0.0239, 0.1192]). Specifically for the association between usage constraints and purchase intentions, the users with medium (PE_{medium} = -0.09, 95% CI [-0.1418, -0.0362]) and high levels (PE_{high} = -0.12, 95% CI [-0.1948, -0.0550]) of visibility were statistically different from each other. Additionally, for vulnerability barrier, the users with high visibility perceptions differed statistically from others (PE_{low} = -0.07, 95% CI [-0.1545, 0.0093], PE_{medium} = 0.01, 95% CI [-0.0417, 0.0620], PE_{high} = 0.06, 95% CI [0.0008, 0.1255]). Users with low (PE_{low} = -0.20, 95% CI [-0.2749, -0.1273]), medium (PE_{medium} = -0.12, 95% CI $-$[0.1668, -0.0679]), and high (PE_{high} = -0.06, 95% CI [-0.1252, -0.0022]) visibility perceptions were statistically divergent from one another only in the case of association between benefits barrier and purchase intentions.

Age was also found the influence the relationship between purchase intentions and vulnerability barrier ($PE_{interaction}$ = -0.01, 95% CI [-0.0213, -0.0058]) and benefits barrier ($PE_{interaction}$ = -0.01, 95% CI [-0.0191, -0.0037]). Particularly, users in young (PE_{low} = 0.17, 95% CI [.0836, .2538]) and middle (PE_{medium} = .09, 95% CI [0.0201, 0.1543]) age group statistically differ from each other in the case of the vulnerability barrier. On the contrary, in the case of benefits barrier, users with middle (PE_{medium} = -0.09, 95% CI [-0.1599, -0.0282]) and older (PE_{high} = -0.22, 95% CI [-0.3228, -0.1163]) age group statistically differed from one another.

Table 1
Factor loadings.

Study measures	Measurement items	CFA*	SEM*
Usage Constraints (CUB) (adapted from Chemingui and Iallouna, 2013; Lian and Yen, 2013; Rammile and Nel, 2012)[#]	CUB1: I dislike the constraints put by OTA** during peak seasons	.94	.94
	CUB2: I dislike the constraints put by OTA during weekends and national holidays	.88	.88
Privacy and security barrier (PSB) (adapted from Chemingui and Iallouna, 2013; Lian and Yen, 2013; Rammile and Nel, 2012)[#]	PSB1: Sharing financial details online while booking hotels concerns me	.70	.70
	PSB2: I'm very particular about the privacy and security provisions of the hotel which I intend to book	.93	.93
	PSB3: I'm very particular about the privacy and security provisions of an OTA	.88	.88
Vulnerability barrier (VB) (adapted from Chemingui and Iallouna, 2013; Lian and Yen, 2013; Rammile and Nel, 2012)[#]	VB1: I fear that OTA would lock me into their chain of properties	.86	.86
	VB2: I fear that I may spend too much on accommodation per booking if I use OTA	.87	.87
	VB4: I fear that I may book rooms too frequently if I use OTA	.79	.79
Benefits barrier (BB) (adapted from Chemingui and Iallouna, 2013; Lian and Yen, 2013; Rammile and Nel, 2012)[#]	BB1: OTA doesn't provide enough benefits to me	.87	.87
	BB2: The benefits provided by OTA are useless to me	.83	.83
Purchase Intentions (PI) (Johnson et al., 2018; Zeithaml et al., 1996)[#]	PI1: I shall be happy to book rooms via OTA	.85	.85
	PI2: I plan to book rooms via OTA in future	.90	.90
	PI3: I intend to book rooms via OTA for my next trip	.88	.88
	PI4: I would like to use OTA again	.84	.84

* Significant at $p < .001$.
** OYO rooms used as sample OTA.
\# Scales adapted to the OTA context on the basis of qualitative study.

Table 2
Validity and reliability analysis.

	CR	AVE	MSV	ASV	PSC	CUB	VB	PI	BB
PSC	.88	.71	.23	.07	**.84**				
CUB	.91	.83	.22	.11	.19**	**.91**			
VB	.88	.71	.63	.20	−.01	.40**	**.84**		
PI	.92	.75	.23	.06	.48**	.05	.09*	**.87**	
BB	.84	.72	.63	.22	.05	.47**	.79**	−.12**	**.85**

Note: **Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed), values in diagonal (and bold) are the square roots of AVE and the off-diagonal values are correlations. CR = Composite reliability, AVE = Average variance extracted, MSV = Maximum shared variance, ASV = Average shared variance, CUB = Usage constraints, PSC = Privacy and security concerns, VB = Vulnerability barrier, BB = Benefits barrier, PI = Purchase intentions.

6. Discussion

As seen from the results presented in Section 5.3 and Fig. 2, H1, which proposed a negative association between constraints in usage barrier and purchase intentions toward OTAs, was not supported by the study results. This finding contradicts that of many prior studies (e.g., Gupta and Arora, 2017; Joachim et al., 2018; Moorthy et al., 2017; Park and Kim, 2016). It implies that customers are not dissuaded from using OTA apps because of the challenges they pose to their existing usage patterns. A probable reason could be that the participants were existing OTA users and were comfortable using them, despite the constraints posed. They may have found a way to plan their bookings to avoid the constraints posed during peak seasons and holidays.

The study results also did not support the negative association hypothesized in H2 and H3. Interestingly, each of the risk barriers was found to have a statistically positive association with purchase intentions. The coexistence of privacy concerns and intentions to use has been termed as the "privacy paradox" in extant literature (Taddicken, 2014). This is line with pioneering contributions to the concept of innovation resistance that have argued that resistance can coexist with adoption (Laukkanen and Kiviniemi, 2010; Ram, 1987). Consequently, the present study findings on risk barriers are reliable, and they suggest that: a) though OTA users have certain privacy and security concerns and vulnerability barriers, these risk factors do not restrict them from using OTA apps, and b) OTA users trust these platforms. In their study, Ponte et al. (2015) also revealed the importance of trust in purchase

intention toward travel-related services online.

H4, which hypothesized a negative association between benefits barrier and purchase intentions toward OTAs, was the only hypothesis supported by the findings. Benefits barrier is users' perception of inadequate benefits for booking rooms through OTAs and limited usefulness of the benefits provided. Both dimensions had strong loadings on the constructs. This finding implies that benefits provided by the OTAs are very important to the customers, and lack of useful benefits decreases their purchase intentions. Though there are no studies of resistance in the OTA context, this finding is in line with those of other studies related to innovations in various areas (e.g., technological innovations in services (Laukkanen, 2016), IoT devices, and services (Balta-Ozkan et al., 2013). Thus, benefits barrier is the only driver of barriers to purchase intentions toward OTAs. Furthermore, of the three moderating variables—hygiene consciousness, visibility, and age—inducted to test the effect of individual differences on the strength of negative relationship between benefits barrier and intentions to book rooms through OTAs, only visibility and age moderated the relationship. In the case of visibility, the barrier was lower for users who perceived OTAs to have high degree of visibility. Furthermore, the magnitude of the negative relationship between benefits barriers and purchase intentions was different for customers in different age groups (20–25, 26–30, and 31–35 years).

7. Implications for research and practice

7.1. Implications for research

This study makes six main contributions to the literature. First, it is the foremost study to empirically extend IRT to the OTA context, as is illustrated by the review of literature on consumer resistance. This is a crucial contribution because consumer resistance is an essential aspect of consumer behavior, which can have a significant influence on potential adoption of a new product or service (Claudy et al., 2015).

Second, it has extended the original IRT framework by identifying barriers that are relevant to the OTA context. Using a mixed method approach, this research has shown that the usage barrier in the OTA context is mainly focused on constraints posed on usage, and therefore, it has been named as usage constraints. Similarly, the emergent themes in the qualitative study and subsequent quantitative analysis confirmed that the original risk barrier translates into two types of risk barriers in the OTA context: privacy and security concerns and vulnerability
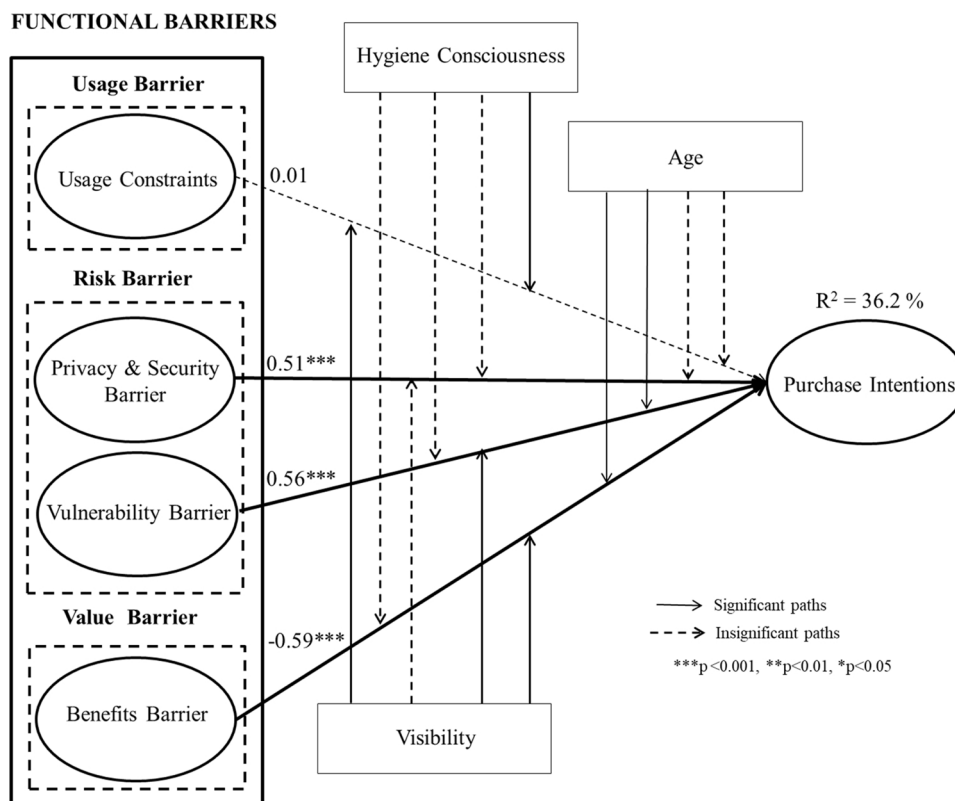
Fig. 2. Results of hypothesis testing.

barrier. Finally, the value barrier was found to be mainly related to the benefits offered. Hence, the value barrier in the OTA context has been renamed as benefits barrier in this study. Future studies can further test this barrier and validate the findings of our research. Prior studies have also adapted the IRT to the type of product. For instance, Mani and Chouk (2018) included three new categories of barriers (technological vulnerability, ideological, and individual) to adapt the IRT (Ram and Sheth, 1989) model to the context of digital technologies. Their proposed model tested resistance to smart services, and the findings supported the hypothesized associations.

Third, the study suggests that psychological barriers, namely tradition and image, do not play any role in consumer resistance toward OTAs. This implies that consumers do not have a negative image of OTAs in their minds and they do not think that OTAs are against their traditions or existing habits. This may further imply that unlike the past decade when mobile-based innovations were diffusing and encountering resistance stemming from adherence to old patterns, current innovations like OTAs have become more entrenched and acceptable at a psychological level. This finding not only has implications for OTAs, it also warrants a re-examination of other seminal resistance theories. The study also suggests that scholars should focus on functional rather than psychological barriers to user innovations. Further, prior studies have not utilized all barriers in their studies. For instance, many studies have used only some of the barriers as measures of resistance (Heidenreich and Spieth, 2013; Laukkanen and Kiviniemi, 2010).

Fourth, the study has highlighted the role of moderators like hygiene consciousness and visibility in influencing the studied associations. This is a significant contribution since studies on OTAs are still in their embryonic stage, and the advancement of both theory and practice requires expansion of both theoretical and empirical setups. Highlighting the role of moderators is a key contribution as past studies have argued that moderators capture the influence of individual differences on the proposed relationships in consumer behavior (Meyers-Levy and Loken, 2015; Zhou et al., 2014). In fact, age is one of the most

commonly used moderating variables in literature (Ye et al., 2019).

Fifth, the study adds to the limited literature on the contemporary phenomenon of privacy paradox, characterized by obsessive mobile phone usage. By confirming a positive association of risk-related barriers with intentions, it also reinforces the concept of coexistence of resistance and intentions, as argued in the seminal literature. Privacy paradox and the coexistence of resistance and intentions to use have been considered as an important aspect of resistance-oriented behavior in the extant literature (Laukkanen and Kiviniemi, 2010).

Lastly, the study contextualizes the generic barriers of IRT to better accommodate the OTA context. By doing so, we have laid basis for future research on mobile app specific IRT in varied contexts. For instance, IRT can be extended to examine why businesses prefer to book flight tickets for their executives through traditional agencies and not directly through airline apps. Given the proliferation of m-commerce, this contribution to theory is likely to open new research avenues, both in terms of testing our OTA model in different geographic and demographic settings as well as in terms of extending IRT to other online contexts.

7.2. Implications for managerial practice

The findings of this research will enable OTA service providers to better understand factors that can increase or decrease the barriers or resistances toward purchase intentions. Thus, service providers can focus on areas that can improve their customers' purchase intentions. Some contextual examples are as follows. First, service providers can continue to adhere to their current policies for imposing usage constraints during special occasions (e.g., weekend, holidays) as they seem to have no bearing on customers' purchase intentions. The imposition of constraints during peak seasons and holidays helps OTAs manage their services better, so this finding is helpful to them.

Second, the results suggest that privacy and security concerns have a positive association with purchase intentions, which indicates that
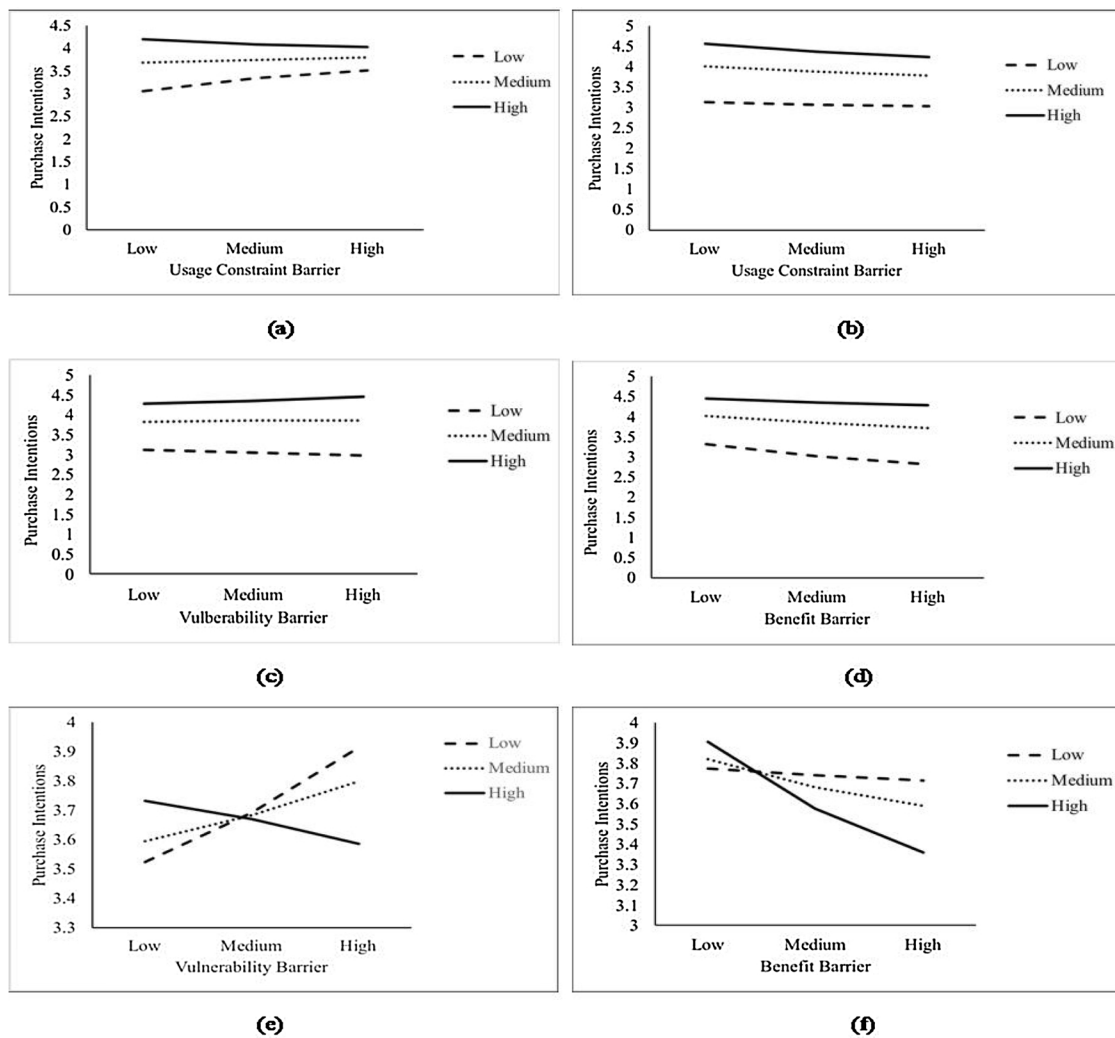
Fig. 3. a) Moderating effect of hygiene consciousness (CUB → PI). b) Moderating effect of visibility (CUB → PI). c) Moderating effect of visibility (VB → PI). d) Moderating effect of visibility (BB → PI). e) Moderating effect of age (VB → PI). f) Moderating effect of age (BB → PI).

OTA users trust the service providers and still intend to use OTAs. To reinforce this, service providers should design advertisements and other promotional plans that make customers feel secure and comfortable about using their apps.

Third, with respect to value barriers, service providers should devise specific strategies to overcome the perception that OTAs do not offer valuable benefits. For example, service providers can provide consumers with tangible benefits like reduction in convenience fee during happy hours, reduced rates for frequent bookings, free meals or spa sessions for bookings exceeding a specific value, free cancellations, quick refunds, and an exclusive preview of upcoming offers for select customers. Further, to overcome the perception that the benefits provided by OTAs are of little value, service providers can experiment with providing intangible benefits such offering more personalized services and expert advice to travelers booking online. For instance, a chat service or a chatbot can be made available to discuss various factors related to the booking, or there can be a "write for expert advice while planning travel" kind of e-mail service that offers quick response. This will not only lower consumer resistance but also help service providers compete with offline travel agencies that usually thrive on personalized services.

Fourth, findings about the moderating role of age and visibility on the association between the benefits barrier and purchase intentions suggest that service providers should design specific promotions and offers. Example, OTAs should focus on providing age-specific promotions like young users can be offered adventure sports as a freebie whereas older users can be offered a spa session as a freebie. Similarly, OTAs should focus on visibility, mainly new media channels (e.g., social media, email marketing) instead of mass media like TV and newspaper.

Lastly, the identified barriers—usage constraints, benefits barrier, and the two sub-barriers privacy and security and vulnerability barrier—actually represent the factors that differentiate online travel booking (e.g., through OTAs) from the offline or traditional mode (described as travel booking through offices of travel agencies in person or by telephone). For example, privacy and security barriers refer to the risk arising from sharing of financial details online while booking hotels. These issues are obviously less pertinent when booking travel via traditional offline channels. Similarly, usage constraints imposed by the apps while booking during peak seasons, holidays, and weekends are typical to OTAs that are used simultaneously by large number of users, unlike offline travel agencies which cater to a limited number of travelers. Awareness of such differences can enable OTA service providers as well as traditional agencies that are trying to switch to a more modern interface with their customers develop more effective strategies to overcome consumer resistance. Notably, the current study found that consumers do not harbor tradition barrier against OTAs. This implies that they do not perceive OTA-based booking as a challenge to their existing travel booking habits (e.g., offline booking). Rather, they think of both, the OTAs and the traditional modes, as alternative ways of achieving the same goal, as far as habit is concerned.

8. Conclusions and limitations

Consumer resistance can impede the purchase intentions of OTA users. Prior literature suggests that consumer resistance is a leading cause of the lack of success of technological innovations. However, it has not yet been studied in the context of OTAs. This research represents the first attempt to address the gap in developing an IRT-based theoretical model and empirically testing it among OTA users. The paper has examined a) the relationship between consumer barriers and intentions to purchase from OTAs and b) the moderating effects of hygiene consciousness, visibility, and age on the relationship between consumer barriers and purchase intentions from OTAs.

The findings present four main takeaways. First, the study examined functional barriers in relation to OTAs, which has not been done before. Second, the study confirms the existence of privacy paradox in consumer resistance to technological innovations. This is in line with the results of some earlier studies that have also found that a risk barrier can coexist with purchase intention. Third, the study extends IRT to the digitization context by adapting generic barriers to the OTA context. Finally, the study highlights the importance of considering individual differences such as age while trying to understand the strength of the relationship of these barriers with intentions to buy from OTAs. Highlighting the importance of the benefits offered and the influence of different moderating variables on the studied associations are valuable for guiding future research.

As is the case with any piece of empirical research, the results of this study are subject to a number of limitations. First, the study has measured intentions instead of actual behavior using a cross-sectional design. Second, the research has focused on a single OTA from one country. Therefore, one should be cautious about generalizing the findings to other OTAs. Third, sample diversity in terms of type of travelers, online and offline booking experience, and the characteristics of destination have not been taken into consideration in this study.

Given these limitations, we recommend future researchers to employ a longitudinal research design, in order to include actual usage as the dependent variable and extend the contextual coverage toward other OTAs and other geographical regions. They can also extend our proposed model by adding more constructs the way past researchers investigating resistance have done. For example, (Spreer and Rauschnabel, 2016) "incongruence," "relationship deterioration," and "operational imperfection" may be added to the generic IRT model to investigate resistance to technology. Further, scholars can also test more complex models by identifying and testing the indirect effect of mediating variables and investigating moderated-mediation. The practical takeaways of the study can be enriched by using a more granularly defined sample and a more diverse respondent group. In this regard, our article can be used as reference point and be improved upon. Additionally, we suggest that future researchers should conduct mixed method studies in different countries/geographies to examine the existence of tradition barrier toward OTAs. Findings of such studies will help determine whether non-existence of tradition barrier toward OTAs, as found by the current study, is a cultural phenomenon or it is valid for consumers from different countries/geographies.

In conclusion, this study contributes significantly to theory and practice by drawing attention to the reasons for the non-adoption of OTAs. It offers actionable inputs to service providers to garner positive intentions by lowering barriers.

Acknowledgement

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