What Makes Users Recommend Their Mobile Travel App? Findings From an Innovation Diffusion and Social Exchange Theory Perspective

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Author Accepted Manuscript

To appear in: *International Journal of Travel Research*

Accepted Date: 14 September 2025

DOI: https://doi.org/10.1002/jtr.70117

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Abstract

This study explores the mechanisms enhancing users' intention to recommend their mobile travel app use. By drawing on innovation diffusion theory and social exchange theory, it offers a comprehensive framework for understanding how user perceptions and the trade-offs between positive and negative aspects of mobile travel app usage shape engagement and subsequent recommendation intentions. The study also sheds light on omnichannel strategies and highlights their relevance to tourism service research. A total of 387 valid responses from travel app users were analyzed through partial least squares structural equation modeling (PLS-SEM). The results indicate that innovation characteristics substantially affect perceived benefits, which in turn foster high-quality relationships and lead to recommendations. Moreover, practical insights are provided on how best to manage both positive and negative factors, thereby strengthening relationships with mobile travel app users and enhancing their willingness to recommend the app to others.

Keywords: Mobile Travel App, Innovation Diffusion Theory, Social Exchange Theory, Recommendation Intention, Consumer Behaviour, Offline Service Quality, Tourism

1. Introduction

Following the acceleration of technology adoption prompted by COVID-19 (Lu & Wang, 2023; Said et al., 2022; Wang et al., 2021), numerous in-person service interactions have transitioned to virtual formats, including mobile commerce. Tourism is no exception, as research indicates that many travelers depend on mobile travel applications to plan, book, and enhance their trips (Lim et al., 2022). Despite the wide availability and high download rates of these apps (Liu et al., 2023), retention remains a challenge: the 30-day retention rate averages 57%, and the annual rate is only 34% (Statista, 2023). This implies that while users download travel apps, they seldom remain engaged, often installing them for a single purpose and then uninstalling them shortly afterwards. To fully capitalize on the commercial potential of mobile travel apps, travel providers must pinpoint the factors that sustain user engagement and encourage recommendations. Such knowledge would enable the design of more effective relationship marketing strategies, ultimately raising user retention, fostering engaged loyalty, and driving word-of-mouth referrals.

Despite this necessity, the majority of existing studies focus primarily on the determinants of travel app adoption (Lim et al., 2022; Tam et al., 2020), rather than on users' intentions to recommend these apps to others. This gap is noteworthy because peer recommendations play a pivotal role in influencing mobile app usage (González-Rodríguez et al., 2022; Le & Ryu, 2023). In fact, a growing share of users finalize purchases based on recommendations (Ruiz-Equihua et al., 2020), with 90% stating they are more likely to trust and purchase items endorsed by their friends (AppSamurai, 2020). Such findings underscore the importance of recommendations as influential as direct purchasing decisions (Lacap et al., 2021; Loh et al., 2023; Prasad et al., 2019).

Additionally, researchers have largely overlooked issues linked to service integrity and quality, which may negatively affect travelers' willingness to use, engage with, and recommend mobile apps. Concerns regarding how travel companies utilize personal data collected through these apps can significantly curtail engagement, as evidenced by interaction rates as low as 24% (Doyle, 2022). Meanwhile, dissatisfaction often triggers negative word-of-mouth, with 96% of discontented users sharing unfavorable experiences. Given that it can take approximately 40 positive experiences to offset a single negative review (O'Neill, 2022), word-of-mouth and recommendations emerge as crucial factors influencing new user adoption and existing user loyalty (Cham et al., 2022; Rahman et al., 2022; Zhou et al., 2020). Consequently, research investigating the factors influencing the engagement and satisfaction of travel mobile app users is urgently critical, in turn, this can provide useful insights into how to enhance the users' intention to recommend the travel app to others as well.

Mobile app usage, although providing various functional and emotional benefits (e.g., convenience and prestige), is not without limitations and risks. An increasing number of travel app users are concerned about privacy, security, and potential unethical practices, yet research on business integrity matters in travel app usage remains scarce (Gao et al., 2023). In tourism, these concerns are especially salient because travelers often share a large amount of sensitive personal information (e.g., passport, health and visa certificates and records, credit card details) and rely on accurate, transparent information about destinations, accommodations, and schedules (Chen et al., 2022). Consequently, business integrity concerns — encompassing user doubts regarding a provider's ethical and transparent practices (Ahmad et al., 2021) — emerge as a critical yet underexamined barrier to trust, particularly in a high-involvement, intangible contexts such as tourism where hidden fees or misrepresentation can cause users lasting harm (Cheah et al., 2022; Yallop et al., 2023). In response to these challenges, a dual theoretical lens is employed. First, innovation diffusion theory (IDT) (Rogers, 2003) identifies and measures

the benefits of mobile apps by focusing on relative advantages, ease of use, and compatibility as key innovation characteristics (Kim et al., 2020; Lim et al., 2022). Second, social exchange theory (SET) (Blau, 1964; Emerson, 1976) explains how technology users weigh positives (i.e., perceived benefits) against negatives (i.e., potential exposure to unethical business practices). Integrating these perspectives clarifies how cognitive trade-offs between benefits and integrity concerns shape user engagement and, ultimately, recommendation intentions for travel apps.

Engagement has been widely acknowledged as essential to cultivating "valuable relationships," particularly when dealing with intangible offerings (Cham et al., 2023; Ali et al., 2021; Cheah et al., 2022; Oriade & Schofield, 2019). As noted by Grewal et al. (2017) and Itani et al. (2019), engagement represents the emotional connections between individuals and businesses that result from their conscious reflection on their experiences. Within the framework of SET, app users are thus expected to evaluate both positives and negatives before forming an emotionally grounded relationship, or user engagement, with a travel app. Once engaged, users exhibit higher retention and a greater likelihood of recommending the app (Rather, 2020), suggesting that user engagement functions as a mediating pathway linking initial perceptions to recommendation intentions.

Last, examining the moderating role of offline service experience on user behavior provides important insights into travel apps. As companies adopt omnichannel strategies to ensure seamless customer service, effective coordination between offline and online channels becomes essential, especially in the tourism domain, where travelers frequently switch between mobile apps, websites, and in-person services (Cheah et al., 2022; Zhang et al., 2024). In fact, offline service quality has been identified as a key predictor of satisfaction (El-Adly, 2019), trust (Brun et al., 2020), loyalty (Brun et al., 2017), and behavioral intention (Chang et al., 2019), reflecting the pivotal role of physical interactions for travelers seeking reassurance or problem resolution. Such synergy between digital and face-to-face encounters suggests that high-quality offline experiences can reinforce perceptions of both the functional benefits of mobile travel apps and the ethical conduct of travel companies, ultimately shaping users' engagement with the app. In recognition of these factors, the current study integrates IDT— to explore how innovation characteristics drive perceived benefits—and SET —to address negative considerations such as business integrity concerns—thus offering a more balanced perspective on how users form enduring relationships with travel app providers and ultimately recommend the app to others.

Overall, to summarize, the study identified the following research gaps and objectives to investigate and so, contribute to the literature:

i. *To explore the impact of perceived benefits (positives) and business integrity concerns (negatives) on user engagement.*
ii. *To examine the mediating role of user engagement on the relationship between the users' perceived benefits, business integrity concerns, and recommendation intentions.*
iii. *To investigate the moderating effect of offline service quality on the relationship between users' perceived benefit, business integrity concerns, and engagement.*

2. Theoretical background

Prior research on travel app adoption has primarily relied on the technology acceptance model (TAM) (Choi et al., 2021), the unified theory of acceptance and use of technology (UTAUT) (Ho et al., 2021), the expectation–confirmation model (ECM) (Coves-Martínez et al., 2022), and the stimulus–organism–response (S–O–R) framework (Gao et al., 2023). Although these approaches highlight positive predictors (e.g., perceived usefulness) of technology adoption, they tend to overlook how negative factors can undermine long-term user

engagement and advocacy. In contrast, despite its wide use in general literature, the innovation diffusion theory (IDT) (Rogers, 2003) remains underexplored within the travel apps context. This highlights a major research gap, as the IDT identifies various well-established innovation characteristics (Lim et al., 2022) that can enlighten a more holistic and comprehensive understanding of the various factors influencing user technology adoption in a positive and negative way. In addition, the social exchange theory (SET) (Blau, 1964; Emerson, 1976) advocates for a balanced theoretical lens that examines technology adoption as a trade-off decision-process assessing technology benefits (e.g., convenience) and risks (e.g., privacy concerns and unethical data use). This perspective is especially pertinent in tourism and hospitality, whereby the collection of personal data has become a daily business practice for providing personalizing services. Hence, by integrating IDT and SET, the study contributes to the literature and addresses a very topical tourism issue, whereby the collection and use of private data for personalized digital services underscore the need to understand how various factors influence users' adoption of travel apps either as positive motivators or potential deterrents.

2.1. The innovation diffusion theory (IDT)

The IDT (Rogers, 2003) has been widely used to understand the impact of features on users' acceptance of new technology. Specifically, there are five widely accepted innovation characteristics: relative advantages, compatibility, complexity, trialability and observability (Rogers, 2003). However, after being widely applied in various disciplines, it has been shown that these innovation characteristics are not universally applicable and must be selected based on context and situation (Kapoor et al., 2015). In tourism research, only relative advantages, compatibility, and complexity have been found to be significantly relevant. For instance, Kim et al. (2020) examined the impact of innovation characteristics on behavioral intentions in a tourism-related virtual reality context; while Lim et al. (2022) investigated travel app in-app repurchase intention based on IDT.

Since this theory emphasizes the evolution and improvement of products to better meet individuals' needs rather than attempting to change their minds (Wani & Ali, 2015), it aligns with the core concept of putting the consumer first in the tourism industry. To effectively leverage this theory, travel providers can strive to identify the key drivers of benefits for app users.

2.2. Social exchange theory (SET)

The SET assumes that two or more parties seek to participate in mutually beneficial transactions that may or may not be physical in form (Blau, 1964; Cropanzano et al., 2017; Emerson, 1976). This theory encompasses several fundamental rules, such as reciprocity, negotiated, and beyond reciprocity and negotiated, which suggest that individuals are more willing to participate in activities that benefit themselves and others. When one party benefits from another party's goodwill, it may feel obliged to reciprocate (Cropanzano et al., 2017). The SET has been widely used to clarify company-consumer relationships and has been applied to a variety of online domains including online shopping (Chou & Hsu, 2016), social networking (Kim et al., 2018), and gaming (Huang et al., 2018). Yet, there is a scarcity of studies in the context of travel apps that use the SET (refer to Gao et al., 2023). In this study, the two parties are travel providers and travel app users. Travel app users always want an effective and useful tool to meet their travel expectations, while travel providers aim to find ways in attracting and retaining users as well as providing excellent services to the tourism market.

In general, the reciprocal social exchange process has three stages: antecedents (i.e., the trade-off between positive and negative perceptions), process (i.e., building a high-quality social exchange relationship), and outcome (i.e., tangible or intangible results). During travel app usage, the trade-off stage contains both positive (benefits) and negative (sacrifice) dimensions. Travel app users are more likely to build a high-quality relationship (i.e., user engagement) with the app provider if perceived benefits outweigh sacrifices (Kim et al., 2018; Rather & Hollebeek, 2019). According to the SET, app users will feel obliged to reciprocate the app provider with tangible or intangible appreciative responses if such high-quality relationships are established. As a result, the objective of this research is to investigate how social exchange-based drivers (i.e., perceived benefits and business integrity concerns) influence recommendation intention via high-quality relationships (i.e., user engagement).

3. Hypotheses development

3.1. Travel app characteristics and perceived benefits

Relative advantages pertain to the level of superiority perceived by users of a travel app compared to other similar apps (Fang et al., 2017). It includes the app's capacity to enhance the effectiveness and efficiency of users in searching and comparing information on destinations (Jeong & Shin, 2020), as well as ordering tourism products or services in a single platform (Ho et al., 2021). The provision of evident utility is critical in shaping user perceptions regarding the worthiness of using a travel app (Ali et al., 2021). To put it another way, relative advantages highlight both tangible and intangible benefits of using a travel app (Lim et al., 2022). As a result, when users foresee the advantages of using the app, they are more likely to appreciate the benefits derived from its use. Thus, this research suggested:

H1a: Relative advantages are positively associated with perceived benefits.

Ease of use pertains to the degree of simplicity when using an app (Fang et al., 2017). This attribute can alleviate users' mental stress and, in turn, enhance the likelihood of positive perceptions resulting from using the app (Sakshi et al., 2020). This sense of relaxation is crucial in determining users' intention to adopt the travel app (Ozturk et al., 2016). In addition, ease of use can minimize the learning costs associated with the app, resulting in a higher sense of control and confidence for users to navigate the app (Bravo et al., 2021; Stocchi et al., 2019). With adequate attention and care, an easy-to-use travel app can enhance users' experiences and their perceived benefits (Assaker et al., 2020). Therefore, this study proposed that:

H1b: Ease of use is positively associated with perceived benefits.

Compatibility refers to the fit between the functionalities of an app and the needs of users (Fang et al., 2017) that can enhance both practical and pleasurable benefits for technology users. A better match between technical attributes and users' preferences can provide enjoyable experiences to users, and create a sense of familiarity and involvement (Jimenez et al., 2019). Conversely, conflicting usage and consumption experiences with personal preferences and past patterns can be detrimental to perceptions of benefits (Hazée et al., 2020). In the context of travel apps, greater benefits are expected to be perceived by users when the app aligns with user expectations (Wang, 2019). Based on this, the following hypothesis is developed:

H1c: Compatibility is positively associated with perceived benefits.

3.2. Perceived benefits and user engagement

Perceived benefits were defined as positive outcomes expected to receive from using travel apps (Fang et al., 2017; Kim et al., 2021). In practice, travel apps can be generally

categorized into two segments, namely functional-oriented (e.g., information, booking, and navigation) and non-functional-oriented (e.g., travel community) (Gao et al., 2024; Kennedy-Eden & Gretzel, 2012). The functional-oriented apps examined in this study are primarily used for searching, comparing, and purchasing travel products, with utilitarian and hedonic perspectives being the primary angles to consider benefits. Utilitarian benefits pertain to task convenience and savings in time, effort, and finances, while hedonic benefits relate to enjoyment, such as the sense of relaxation and fulfillment during task execution. Users who perceive evident benefits from using technology are more likely to be satisfied and develop closer relationships with service providers (Grewal et al., 2017). User engagement reflects high levels of positive experience and enhanced relationships with businesses (Lemon & Verhoef, 2016). Therefore, perceptions of benefits are likely to drive satisfaction, and then the engaged states of users (Bravo et al., 2020; Cheung et al., 2022). Previous studies (Itani et al., 2019; Pansari & Kumar, 2017) had empirically linked perceived benefits with engagement. Therefore, the hypothesis was formulated as:

H2a: Perceived benefits are positively associated with user engagement.

3.3. Business integrity concerns and user engagement

Perceived concerns represent crucial constraint factors in user decision-making, as they may restrict individuals from engaging in specific actions (Ayaburi & Treku, 2020; Kim, 2020). However, the impact of concerns on decision-making has exhibited inconsistency in previous studies, highlighting the need for further investigation (e.g., Chang et al., 2017; Chopdar & Sivakumar, 2019; Sharma et al., 2020; Ventre & Kolbe, 2020).

Business integrity concerns refer to the skepticism and apprehension regarding the reliability and trustworthiness of service providers in protecting the well-being and security of their users (Ahmad et al., 2021; Zhang et al., 2018; Yallop et al., 2023). While privacy and security worries are often subsumed under risk perception in technology adoption models (Chang et al., 2017; Chopdar & Sivakumar, 2019; Sharma et al., 2020; Ventre & Kolbe, 2020), business integrity concerns represent a broader notion that includes apprehensions about data handling, truthful marketing, and fair dealing with users—especially pertinent to travel apps that handle personal data such as passport details, credit card information, and travel itineraries.

In essence, these concerns reflect a type of distrust towards businesses, which can arise from observed or anticipated service failures, poor product quality, or negative user feedback (Berg et al., 2020; Lu et al., 2020). Such distrust has been shown to negatively impact sales, brand image, and user satisfaction (Pan et al., 2020; Riquelme & Román, 2014). Moreover, business integrity concerns should not be viewed merely as the lack of trust, but rather as the proactive expectation that a provider may violate ethical responsibilities (Ahmad et al., 2021; McKnight et al., 2017). This distinction is particularly relevant in the tourism and hospitality industry, given its intangible nature of service delivery (Cheah et al., 2022; Odusanya et al., 2020; Tan et al., 2019). Travelers often cannot "experience" their holiday accommodations or tours in advance, and thus, heavily rely on organizations providing transparent and truthful representations of their services (Chen et al., 2022).

Against this backdrop, business integrity concerns can significantly weaken users' willingness to engage with a travel app. According to SET (Blau, 1964), engagement depends on a careful weighing of costs and benefits (Rather & Hollebeek, 2019). The anticipation of unethical behavior or misrepresentations heightens perceived risk, effectively increasing the "cost" side of the equation. Consequently, business integrity concerns can reduce positive

affective states (i.e., user engagement) and undermine desirable user behaviors such as recommendations (Shin et al., 2021). As a result, the hypothesis was formed:

H2b: Business integrity concerns are negatively associated with user engagement.

3.4. User engagement and recommendation intentions

Engagement can be understood as the manifestation of favorable experiences and the outcome of a high-quality relationship between individuals and companies (Lemon & Verhoef, 2016). In the current context, user engagement is contextualized as a second-order construct including three dimensions: conscious attention, enthused participation, and social connection (Vivek et al., 2014). In particular, conscious attention refers to the level of interest a user has in the app, enthusiastic participation pertains to the zealous reactions or feelings to activities offered by the app, and social connection emphasizes reciprocal interactions with others, such as comments and likes on user-generated content. Through these dimensions, engaged app users significantly contribute to the growth of companies, and vice versa (Itani et al., 2019), by being more likely to purchase products and spreading positive word-of-mouth to others (Li et al., 2021; Pansari & Kumar, 2017). Thus, this study predicted that:

H3: User engagement is positively associated with recommendation intention.

3.5. The mediating role of user engagement

The SET (Blau, 1964) involves three processes in social exchange: assessing the trade-off between benefits and sacrifices, forming high-quality relationships, and achieving tangible or intangible outcomes. Initially, individuals weigh the benefits against the sacrifices. If the perceived benefits outweigh the costs, individuals are more likely to consider developing closer relationships with businesses before pursuing any outcomes. Engagement also serves as a reliable indicator of people's positive perceptions resulting from the trade-off and the establishment of high-quality relationships (Grewal et al., 2017; Kumar et al., 2019; Lemon & Verhoef, 2016). Drawing on the SET and previous research (Dabbous & Barakat, 2020; Zhang et al., 2017), this research postulated that if travel app users have more favorable perceptions based on positive experiences than on concerns about business integrity, they are likely to engage with travel providers through the app and generate greater intentions to recommend it to others. Consequently, the following hypotheses were formulated:

H4a: User engagement mediates the relationship between perceived benefits and recommendation intention.

H4b: User engagement mediates the relationship between business integrity concerns and recommendation intention.

3.6. The moderating role of offline service quality

Offline service quality refers to the degree of satisfaction experienced by app users, stemming from the services and interactions they receive from providers in a brick-and-mortar setting (Seck & Philippe, 2013). By offering decent in-store service to app users, it becomes easier to stimulate positive perceptions and relationships with travel apps under the same brand (Dabbous & Barakat, 2020).

Several reasons support the idea that offline service quality moderates the formation of high-quality relationships (i.e., user engagement). First, contemporary travel app users rely on a variety of touchpoints spanning both online and offline channels (Lemon & Verhoef, 2016; Rajaobelina, 2018). Although the moderating role of offline service quality in tourism has received limited attention, its complementary role alongside online platforms is increasingly

recognized, particularly for complex, high-end travel offerings (Brun et al., 2017; Chang et al., 2019). Second, physical stores can deliver immersive sensory experiences and nurture a sense of involvement through knowledgeable staff and enjoyable face-to-face encounters (Savastano et al., 2019). These offline interactions indirectly influence app usage and user perceptions because the subjective feelings derived from different channels intersect and should not be evaluated separately (Chang et al., 2019; Dabbous & Barakat, 2020).

Considering the scarcity of research on the moderating role of offline service quality within the context of travel apps, further exploration is warranted. Physical service outlets can offer tangible stimuli distinct from virtual touchpoints, leaving lasting impressions that shape the travel app experience. As a result, this research hypothesized that offline service quality would moderate the formation of high-quality relationships (i.e., user engagement) towards travel apps, as reflected by the following hypotheses:

H5a: Offline service quality moderates the relationship between perceived benefits and user engagement, wherein high offline service quality will strengthen the relationship.

H5b: Offline service quality moderates the relationship between business integrity concerns and user engagement, wherein high offline service quality will weaken the relationship.

Finally, prior research has indicated that certain demographics such as gender, age, education level, and income may impact individuals' travel decisions. For example, it has been observed that males may be more cautious when making travel-related transactional decisions than females (Allan et al., 2022). Additionally, there is a negative relationship between age and travel-related happiness (Wei et al., 2019). Furthermore, those with higher education levels prefer to travel more frequently (Hutchinson et al., 2014). Lastly, a better job or employment, as well as a higher income, is related to a greater likelihood of choosing long-distance trips (Zeljković, 2022). To address any potential co-founding variables concerns, this study included control variables such as gender, age, employment, monthly income, and education level (Figure 1).

[Insert Figure 1 here]

4. Methodology

4.1. Data collection and sampling

The research employed purposive sampling for collecting data from Chinese nationals residing in Beijing who have experienced the services of a travel app and its offline shops. The study focused on Ctrip customers due to the very high market share of its travel app and its broadly found offline travel shop presence (Guo et al., 2021; Wang, 2019). Beijing, the capital city, was selected for identifying the study sample, because of the varied demographic distribution of population that the city provides. In particular, Beijing attracts individuals from a wide range of provinces, ethnicities, and socio-economic statuses (Zhang & Yan, 2022). Moreover, individuals from Beijing are known for their technological prowess and enthusiasm for travel, allowing for a more comprehensive picture of opinions and experiences related to the use of travel apps. The study's sample was gathered between April 2023 and July 2023 using *Wenjuanxing* (often likened to Qualtrics in China), with an IP restriction allowing only respondents from Beijing to proceed. Subsequently, participants were required to answer a screening question — "Have you used the Ctrip travel app in the past six months and also visited its offline shops?" — before completing the questionnaire. Out of the 401 responses collected, 387 were deemed valid for data analysis.

[Insert Table 1 here]

4.2. Measures

The study utilized previously developed measures that were adjusted to suit the research context. The measurement scale comprises two higher-order constructs (HOCs): perceived benefits (utilitarian benefits and hedonic benefits) based on Jahn and Kunz's (2012) and user engagement (social connection, enthused participation, and conscious attention) based on Vivek et al.'s (2014). Fang et al.'s (2017) scale was used to measure relative advantages, ease of use, and compatibility, while the scale of recommendation intention was adapted from Lee et al. (2019) (Appendix A). Among these variables, recommendation intention was measured using a 7-point Likert scale, while all other variables were assessed using a 5-point Likert scale. Employing differing scale formats can help mitigate potential common method bias (Podsakoff et al., 2012).

A pre-test of the questionnaire was conducted by collecting feedback from ten experts to ensure the accuracy and appropriateness of the scale measurements. Minor modifications were made to the item statements. A pilot test was also conducted with 50 Ctrip travel app users before the actual survey.

4.3. Data analysis

The PLS-SEM technique was utilized for data analysis due to its predictive nature and ability to maximize explained variance, thereby providing valuable insights for tourism and hospitality (Gao et al., 2023; Lim et al., 2022). The technique's strength in handling complex models, including higher-order constructs, mediation, and moderation, was advantageous in obtaining reliable analysis outcomes (Becker et al., 2023; Sarstedt et al., 2019; Sarstedt, Hair, et al., 2020; Sharma et al., 2024). SmartPLS 4 was used to perform the assessments of the measurement and structural models (Cheah et al., 2024; Ringle et al., 2022).

5. Results

5.1. Profile of respondents

The majority of respondents were female (55.7%), aged between 31 to 35 (45.2%), held a bachelor's degree (76.5%), worked in the private sector (60.7%), and had a monthly income between 11,001 and 13,000 yuan (20.2%) (Table 1).

5.2. Common method bias (CMB)

Before data collection, efforts were made to minimize CMB by providing clear instructions and utilizing five-point and seven-point Likert scales to measure exogenous and endogenous variables, respectively (Podsakoff et al., 2012). After data collection, both the full collinearity approach (Kock & Lynn, 2012) and Harman's single-factor technique were used to confirm the absence of CMB in the study. Results from the full collinearity approach indicated that the variance inflation factors (VIFs) for all constructs were less than 3 (ranging from 1.105 to 2.087) (Table 2) (Kock & Lynn, 2012), while Harman's single-factor technique results showed that only 38.482% (<40%) of the variance was explained by the first factor (Aguirre-Urreta & Hu, 2019). These measures confirmed the absence of CMB in the study.

5.3. Reflective measurement model

According to the results presented in Table 2, the constructs' reliability was determined to be satisfactory with a composite reliability (CR) score higher than the threshold value of 0.70 (Hair & Sarstedt, 2019). Convergent validity was also established through outer loadings greater than 0.60 and average variance extracted (AVE) exceeding 0.50 (Bagozzi et al., 1991; Bagozzi & Yi, 1988; Fornell & Larcker, 1981). The discriminant validity was verified using

the Heterotrait-Monotrait (HTMT) ratio, with all values below the recommended threshold of 0.85 (Table 3) (Hair et al., 2022; Henseler et al., 2015).

[Insert Tables 1, 2, and 3 here]

5.4. Higher-order constructs (HOCs)

The two HOCs were evaluated using a disjoint two-stage method that assessed perceived benefits with two sub-dimensions, utilitarian and hedonic benefits; and user engagement with three sub-dimensions, including conscious attention, enthusiastic participation, and social connection. The path coefficients of the perceived benefits ($\beta = 0.775$) and user engagement ($\beta = 0.812$) demonstrated satisfactory convergent validity (Cheah et al., 2018). The outer weights of the sub-dimensions were all robust (> 0.30) and significant ($p < 0.01$), suggesting their importance in forming the HOCs. Furthermore, the HOCs did not display any multicollinearity problems, as evidenced by the VIF values being below 3 (Hair et al., 2022) (Table 4).

[Insert Table 4 here]

5.5. Heterogeneity

Control variables

Control variables were utilized to assess the observed heterogeneity. The study examined the effects of five demographic variables, namely gender, age, education, employment, and monthly income, on recommendation intention using bootstrapping. As shown in Table 6, all control variables indicated insignificant outcomes ($p > 0.05$), suggesting that there was negligible observed heterogeneity in this study.

Finite Mixture Partial Least Squares (FIMIX-PLS)

To ensure robustness in the structural model findings, the Finite Mixture Partial Least Squares (FIMIX-PLS) technique was utilized to address any unobserved heterogeneity issues (Sarstedt, Ringle, et al., 2020). Initially, the G*Power 3.1 software was used to determine the minimum sample size, which turned out to be 74 ($f^2 = 0.15$, power = 0.95, and the number of predictors = 5), and dividing the actual sample size of 387 by the minimum size resulted in a theoretical upper limit of 5.23 = 5. The FIMIX-PLS was run five times to obtain the fit indices for one- to five-segment, as shown in Table 5, with the smallest modified Akaike information criterion with factor 3 (AIC_3) and the consistent Akaike information criterion (CAIC) not belonging to the same row (segment). Similarly, AIC_3 and the Bayesian information criterion (BIC), as well as the modified Akaike information criterion with factor 4 (AIC_4) and the BIC, were not in the same row. Based on the guidelines of Sarstedt, Ringle et al. (2020), the outcomes suggest that the heterogeneity issue in this dataset is not significant.

[Insert Table 5 here]

5.6. Structural Model

The issue of multicollinearity was not a concern in the research model, as indicated by the inner VIFs that ranged from 1.040 to 1.795 (Hair et al., 2022). The bootstrapping technique with 10,000 sub-samples was used to evaluate the proposed hypotheses (Becker et al., 2023), as presented in Table 6. Specifically, relative advantages ($\beta = 0.317$; $p < 0.001$) (H1a), ease of use ($\beta = 0.286$; $p < 0.001$) (H1b), and compatibility ($\beta = 0.366$; $p < 0.001$) (H1c) showed positive effects on perceived benefits. Additionally, perceived benefits ($\beta = 0.676$; $p < 0.001$) (H2a) had a positive relationship with user engagement, while a negative relationship was

found for business integrity concerns (β = -0.125; p = 0.001) (H2b). Furthermore, user engagement (β = 0.735; p < 0.001) had a significant relationship with recommendation intentions (H3). For the mediation effect, user engagement significantly mediated the impacts of perceived benefits (β = 0.497; p < 0.001) (H4a) and business integrity concerns (β = -0.092; p = 0.002) (H4b) on recommendation intentions.

The moderation analysis illustrated that only the interaction effect of offline service quality × perceived benefits (β = 0.088; p = 0.005) (H5a) significantly impacted user engagement (Table 6). A stronger link between perceived benefits and user engagement was observed with higher levels of offline service quality (Figure 2). On the other hand, the interaction effect of offline service quality × business integrity concerns (H5b) did not show any significant results.

The variables of relative advantages, ease of use, and compatibility accounted for 69.4% of the variance in perceived benefits, while perceived benefits and business integrity concerns explained 55.0% of the variance in user engagement. In addition, user engagement accounted for 54.6% of the variance in recommendation intention. The Q^2_predict values for perceived benefits (0.640), user engagement (0.427), and recommendation intention (0.369) were greater than zero, indicating the predictive relevance of the model (Chin et al., 2020; Shmueli et al., 2019).

[Insert Table 6 and Figure 2 here]

6. Discussion and implications

6.1. Discussion of results

By combining IDT (Rogers, 2003) with SET (Blau, 1964), this study developed a robust theoretical foundation for interpreting the trade-offs between perceived benefits and concerns, and how these shape users' recommendations for travel apps, with user engagement serving as a mediator. The results demonstrate that the three innovation characteristics (i.e., relative advantages, ease of use, and compatibility) have positive effects on perceived benefits (H1a, H1b, and H1c were supported). As explained by IDT, users often perceive relative advantages in practical terms, such as time savings, convenience, and cost-effectiveness, which strengthens their favorable view of the app (Camilleri et al., 2023; Fang et al., 2017; Lim et al., 2022). In other words, users are more likely to feel certain and decrease concerns that may result in negative perceptions when they perceive a higher number of relative advantages associated with travel apps (Ahmad et al., 2021; Ventre & Kolbe, 2020). Additionally, ease of use, as the opposite of complexity, has a significant impact on users' attitudes and engagement with the app (O'Brien et al., 2020). An app that is easy to navigate and use is more likely to attract a wider range of users who may have limited capabilities or be reluctant to engage in complex tasks (Huang & Mou, 2021). As evidenced by Gao et al. (2023), simple-to-use yet effective travel apps make users feel worthwhile enough to invest time and energy in the app, resulting in a sense of benefits. In addition, compatibility was found to be the most important (β = 0.366) and impactful (f^2 = 0.243) innovation characteristic in predicting perceived benefits. In line with Lim et al. (2022), compatibility reflects travel providers' active care for their users as users do not have to alter their travel styles and preferences extensively when the travel app features align with their needs.

As suggested by the SET (Blau, 1964), perceived benefits and business integrity concerns represent positive and negative dimensions within the broader trade-off that leads to high-quality consumer–provider relationships (i.e., user engagement) and subsequent recommendations (H2a, H2b, and H3 were supported). The data show that users instinctively

seek stronger connections only when benefits exceed risks (e.g., Akroush et al., 2019; Jozani et al., 2020). Specifically, the magnitude of perceived benefits ($\beta = 0.676$, $f^2 = 0.802$) contrasts starkly with that of business integrity concerns ($\beta = -0.125$, $f^2 = 0.028$). Nevertheless, the significant business integrity concerns necessitate that travel providers remain vigilant, as these concerns can adversely affect user trust and behavioral intentions (Ayaburi & Treku, 2020; Kim, 2020). Engaged users are more inclined to recommend apps they trust, reflecting earlier findings that link engagement to positive word-of-mouth (Gao et al., 2023). Unlike conventional acceptance models focusing predominantly on positive drivers (e.g., perceived usefulness), these findings highlight how the users' concerns about the business integrity (i.e., distrust of a firm's ethical standards) represent a critical factor undermining the user engagement with the travel app. This insight establishes business integrity as a factor of equal importance, operating alongside other elements that shape users' behavior. Consequently, this finding offers an important and necessary expansion of the theoretical understanding of technology adoption, which has largely been guided by TAM/UTAUT frameworks that primarily stress factors positively influencing adoption.

Taking it a step further, SET suggests that a high-quality connection (i.e., user engagement) acts as a go-between for trade-offs and behavioral outcomes. In accordance with this, the current study revealed that user engagement plays a mediating role in the links between perceived benefits, business integrity concerns, and recommendation intention (H4a and H4b were supported), which is comparable to the results of Dabbous and Barakat (2020). This insight moves beyond simpler "attitude–intention" models by highlighting engagement as a bridging mechanism through which positive and negative perceptions shape user advocacy behavior.

In an omnichannel context, offline service quality emerges as a key moderating factor that strengthens the positive link between perceived benefits and user engagement (H5a was supported), as verified by empirical evidence. Notably, high-quality face-to-face interactions significantly amplify the advantageous effects of mobile app usage, ultimately fostering greater trust (Brun et al., 2020). Nonetheless, offline service quality fails to counteract the detrimental impact of business integrity concerns (H5b was not supported). This unexpected result underscores the profound influence of ethical considerations and security issues, which remain largely resistant to compensation through robust offline services alone (Riquelme and Román, 2014). Consequently, business integrity concerns function as the antithesis of trust, representing a proactive anticipation of potential ethical violations (Ahmad et al., 2021; McKnight et al., 2017) that overshadows any benefits offered by high-quality in-person encounters.

6.2. Theoretical implications

This research combined the SET with the IDT to develop a more holistic theoretical lens to investigate the factors and processes influencing the users of travel apps to recommend the app use to others.

Past research examining travel app adoption and purchase has mainly used traditional theories (such as TAM, UTAUT, and S-O-R framework), that heavily focus on positive motivators while neglecting the factors inhibiting adoption (Gao et al., 2023). By integrating SET (Blau, 1964; Emerson, 1976) with IDT (Rogers, 2003), the present research broadens the scope of technology acceptance studies. Specifically, it validates the situational nature of the three core innovation attributes — relative advantages, ease of use, and compatibility of the IDT (Kim et al., 2020; Lim et al., 2022) — while simultaneously it expands technology adoption frameworks by incorporating and testing the influence of business integrity concerns

as a critical factor negatively shaping the user attitudes and behaviors towards travel apps. By incorporating both positive and negative dimensions, this study offers a more balanced understanding of how users adopt, engage with, and ultimately recommend travel apps, that expands the explanatory power provided by studying adopting conventional acceptance models.

This study also contributes to the literature by expanding the knowledge regarding the mediating role of user engagement in affecting users' intentions to recommend travel apps to others. Although user engagement has been examined in prior technology research, it is often treated as a mediator between positive antecedents and outcomes (Itani et al., 2019; Rather, 2020; Tak & Gupta, 2021). In contrast, the current findings highlight how engagement also mediates the impact of negative elements—namely, business integrity concerns—on recommendation intentions. This dual mediating role positions engagement as a key relational driver that can enhance favorable perceptions yet also amplify or buffer unfavorable ones. Thus, the analysis clarifies how engagement extends beyond a mere outcome of satisfaction, functioning instead as a pivotal mechanism that channels both beneficial and detrimental factors into users' decision-making processes. The latter is an aspect that has been rarely explored in previous research.

Furthermore, the research underscores the moderating role of offline service quality in an omnichannel environment, aligning with studies that emphasize the importance of seamless interaction between online and face-to-face channels (Cheah et al., 2022; Cui et al., 2022; Natarajan & Veera Raghavan, 2025). High-quality offline experiences magnify the positive influence of perceived benefits on user engagement but do not offset the adverse effects of integrity concerns. This indicates that while in-person interactions can reinforce trust and perceived value, mitigating ethical risks requires direct intervention rather than relying on positive offline encounters alone. These insights enrich the omnichannel literature by demonstrating that, in tourism contexts, offline and online channels must be strategically integrated to optimize user engagement—particularly when both beneficial attributes and ethical risks coexist.

6.3. Practical implications

The findings indicate that perceived benefits serve as a primary motivator for travel app users to recommend the app to others. Consequently, it is essential to enhance features related to relative advantages, ease of use, and compatibility. For instance, the app interface should facilitate convenient access to user requirements, present organized and intuitive menus, and incorporate flexible search and filter options. High-quality travel tips, tutorials, and possibly an advanced chatbot offering customized and compatible voice assistance can further improve user trust. Taken together, these measures can boost efficiency, reduce costs, and provide a wider range of booking and scheduling options, thereby reinforcing users' perceptions of utility.

Meanwhile, business integrity concerns remain a prominent factor that can produce negative behavioral outcomes (e.g., adverse reviews). To mitigate such concerns and strengthen recommendation intentions, establishing transparency and dependability is vital. Travel providers are advised to disclose all pricing and fees clearly, forbid deceptive practices, and maintain prompt and reliable customer support (including refunds, cancellations, and complaint handling). Vigilant selection and oversight of partner services is also crucial; when partners fail to meet ethical standards, users may attribute the negative encounter to the travel app itself.

The study further illustrates that user engagement strongly predicts recommendation intentions, underscoring the importance of relationship management. Collaborations with social networking platforms can promote social integration, foster emotional ties, and

differentiate a travel app from its competitors. For example, exclusive icons or distinct status identifiers can be co-developed for loyal users, while features like leaderboards, badges, and rewards may encourage participation, benefiting both the app and the social platform. Such elements not only reinforce bonds with current users but can also attract new users from social media.

Lastly, offline service quality emerges as a pivotal influence on user experiences and engagement. Providing knowledgeable and supportive in-store staff helps generate reliability and familiarity, which can be particularly valuable during emergencies or unexpected disruptions to travel plans. Moreover, physical travel shops can provide specialized services that are not easily replicable online, including furnishing valuable local knowledge and recommendations, offering tailored travel itineraries and insurance based on the app users' requirements, and becoming a local attraction for travel activities. However, this study suggests that even exemplary offline service cannot fully overcome concerns about business integrity, indicating the need for consistent ethical marketing practices, transparent pricing, truthful advertising, and the safeguarding of user privacy.

7. Conclusion and future research directions

In today's competitive landscape, it is becoming increasingly important for travel providers to effectively leverage travel apps by deepening their comprehension of travel app users' needs, preferences, and concerns. By integrating IDT and SET, the present study offers a comprehensive model of travel app usage—encompassing app features, user perceptions, relational dynamics, and behavioral intentions—thereby expanding the applicable scope of both theories. For the perceptions of the benefits, the three key innovation characteristics, namely relative advantages, ease of use, and compatibility, were specifically recommended; the social exchange processes begin with trade-offs between perceived benefits and business integrity concerns, leading to the formation of high-quality relationships (i.e., user engagement), and ultimately resulting in recommendation intentions. Additionally, the study discovered that the quality of offline services has a contingency effect on enhancing positive experiences in establishing user engagement with travel apps.

Despite that, this study has some limitations that call for further explorations. First, a cross-sectional design was employed, yet the comprehensive framework suggests potential causal links among different stages that warrant examination through longitudinal or experimental studies. Second, although offline service quality and its impact on travel apps were recognized, the main focus remained on the apps themselves; future inquiries could therefore explore how channel integration influences user perceptions (Brun et al., 2017; Rajaobelina, 2018). Third, the study overlooked usage frequency and duration, both of which are critical for gaining deeper insights into user behavior and capturing variations between heavier and lighter users. Future studies should explore how these factors could further refine the relationships examined in the framework. Lastly, although the findings partially revealed adverse effects stemming from perceived concerns, considering only one type of concern is insufficient for capturing this multifaceted issue (Ayaburi & Treku, 2020). As a result, it will be interesting to explore a range of additional potential concerns raised by travel app users to enhance our understanding of constraint factors and their negative impacts.

Disclosure statement

No potential conflict of interest was reported by the authors.

Acknowledgement

This research was financially supported by the Scientific Research Fund of the Yunnan Provincial Department of Education (2024J0657), the Talent Project of Yunnan University of Finance and Economics Scientific Research Fund (2024D50), and the Youth Project of Yunnan University of Finance and Economics Scientific Research Fund (2023B11).

References

Aguirre-Urreta, M. I., & Hu, J. (2019). Detecting common method bias: Performance of the Harman's single-factor test. *Data Base for Advances in Information Systems*, *50*(2), 45–70. https://doi.org/10.1145/3330472.3330477

Ahmad, W., Kim, W. G., Choi, H. M., & Haq, J. U. (2021). Modeling behavioral intention to use travel reservation apps: A cross-cultural examination between US and China. *Journal of Retailing and Consumer Services*, *63*(April), 102689. https://doi.org/10.1016/j.jretconser.2021.102689

Akroush, M. N., Zuriekat, M. I., Al Jabali, H. I., & Asfour, N. A. (2019). Determinants of purchasing intentions of energy-efficient products: The roles of energy awareness and perceived benefits. *International Journal of Energy Sector Management*, *13*(1), 128–148. https://doi.org/10.1108/IJESM-05-2018-0009

Ali, F., Terrah, A., Wu, C., Ali, L., & Wu, H. (2021). Antecedents and consequences of user engagement in smartphone travel apps. *Journal of Hospitality and Tourism Technology*, *12*(2), 355–371. https://doi.org/10.1108/JHTT-09-2020-0221

Allan, M. S., Ashour, M. L., Ali, N. N., & Al Warasneh, A. N. (2022). Factors affecting female online purchase decision. *Journal of Governance and Regulation*, *11*(1 Special Issue), 351–360. https://doi.org/10.22495/jgrv11i1siart14

AppSamurai. (2020). *Word of Mouth Marketing for Apps and Mobile*. https://appsamurai.com/blog/21093-2/

Assaker, G., Hallak, R., & El-Haddad, R. (2020). Consumer usage of online travel reviews: Expanding the unified theory of acceptance and use of technology 2 model. *Journal of Vacation Marketing*, *26*(2), 149–165. https://doi.org/10.1177/1356766719867386

Ayaburi, E. W., & Treku, D. N. (2020). Effect of penitence on social media trust and privacy concerns: The case of Facebook. *International Journal of Information Management*, *50*(May 2019), 171–181. https://doi.org/10.1016/j.ijinfomgt.2019.05.014

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74–94. https://doi.org/10.1007/BF02723327

Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, *36*(3), 421–458.

Becker, J. M., Cheah, J. H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. *International Journal of Contemporary Hospitality Management*, *35*(1), 321–346. https://doi.org/10.1108/IJCHM-04-2022-0474

Berg, L., Slettemeås, D., Kjørstad, I., & Rosenberg, T. G. (2020). Trust and the don't-want-to-complain bias in peer-to-peer platform markets. *International Journal of Consumer Studies*, *44*(3), 220–231. https://doi.org/10.1111/ijcs.12561

Blau, P. M. (1964). Justice in Social Exchange. *Sociological Inquiry*, *34*(2), 193–206. https://doi.org/10.1111/J.1475-682X.1964.TB00583.X

Bravo, R., Catalán, S., & Pina, J. M. (2020). Intergenerational differences in customer engagement behaviours: An analysis of social tourism websites. *International Journal of Tourism Research*, *22*(2), 182–191. https://doi.org/10.1002/jtr.2327

Bravo, R., Catalán, S., & Pina, J. M. (2021). Understanding how customers engage with social tourism websites. *Journal of Hospitality and Tourism Technology*, *12*(1), 141–154. https://doi.org/10.1108/JHTT-02-2019-0040

Brun, I., Rajaobelina, L., Ricard, L., & Amiot, T. (2020). Examining the influence of the social dimension of customer experience on trust towards travel agencies: The role of experiential predisposition in a multichannel context. *Tourism Management Perspectives*, *34*(March), 100668. https://doi.org/10.1016/j.tmp.2020.100668

Brun, I., Rajaobelina, L., Ricard, L., & Berthiaume, B. (2017). Impact of customer experience on loyalty: a multichannel examination. *Service Industries Journal*, *37*(5–6), 317–340. https://doi.org/10.1080/02642069.2017.1322959

Camilleri, M. A., Troise, C., & Kozak, M. (2023). Functionality and usability features of ubiquitous mobile technologies: the acceptance of interactive travel apps. *Journal of Hospitality and Tourism Technology*, *14*(2), 188–207. https://doi.org/10.1108/JHTT-12-2021-0345

Cham, T.H., Cheng, B.L., Lee, Y.H., & Cheah, J.H. (2023). Should I buy or not? Revisiting the concept and measurement of panic buying. *Current Psychology*, *42*, 19116–19136.

Cham, T. H., Lim, Y. M., & Sigala, M. (2022). Marketing and social influences, hospital branding, and medical tourists' behavioural intention: Before- and after-service consumption perspective. *International Journal of Tourism Research*, *24*(1), 140–157. https://doi.org/10.1002/jtr.2489

Chang, S. E., Liu, A. Y., & Shen, W. C. (2017). User trust in social networking services: A comparison of Facebook and LinkedIn. *Computers in Human Behavior*, *69*, 207–217. https://doi.org/10.1016/j.chb.2016.12.013

Chang, Y. W., Hsu, P. Y., & Lan, Y. C. (2019). Cooperation and competition between online travel agencies and hotels. *Tourism Management*, *71*(August 2017), 187–196. https://doi.org/10.1016/j.tourman.2018.08.026

Cheah, J. H., Lim, X. J., Ting, H., Liu, Y., & Quach, S. (2022). Are privacy concerns still relevant? Revisiting consumer behaviour in omnichannel retailing. *Journal of Retailing and Consumer Services*, *65*(January), 102242. https://doi.org/10.1016/j.jretconser.2020.102242

Cheah, J. H., Magno, F., & Cassia, F. (2024). Reviewing the SmartPLS 4 software: the latest features and enhancements. *Journal of Marketing Analytics*, 12, 97-107. https://doi.org/10.1057/s41270-023-00266-y

Cheah, J. H., Sarstedt, M., Ringle, C. M., Ramayah, T., & Ting, H. (2018). Convergent validity assessment of formatively measured constructs in PLS-SEM: On using single-item versus multi-item measures in redundancy analyses. *International Journal of Contemporary Hospitality Management*, *30*(11), 3192–3210. https://doi.org/10.1108/IJCHM-10-2017-0649

Chen, X., Hyun, S. S., & Lee, T. J. (2022). The effects of parasocial interaction, authenticity, and self-congruity on the formation of consumer trust in online travel agencies. *International Journal of Tourism Research*, *24*(4), 563–576. https://doi.org/10.1002/jtr.2522

Cheung, M. L., Leung, W. K. S., Cheah, J. H., & Ting, H. (2022). Exploring the effectiveness of emotional and rational user-generated contents in digital tourism platforms. *Journal of Vacation Marketing*, *28*(2), 152–170. https://doi.org/10.1177/13567667211030675

Chin, W., Cheah, J. H., Liu, Y., Ting, H., Lim, X. J., & Cham, T. H. (2020). Demystifying the role of causal-predictive modeling using partial least squares structural equation modeling in information systems

research. *Industrial Management and Data Systems*, *120*(12), 2161–2209. https://doi.org/10.1108/IMDS-10-2019-0529

Choi, K., Wang, Y., Sparks, B. A., & Choi, S. M. (2021). Privacy or security: Does it matter for continued use intention of travel applications? *Cornell Hospitality Quarterly*. https://doi.org/10.1177/19389655211066834

Chopdar, P. K., & Sivakumar, V. J. (2019). Understanding continuance usage of mobile shopping applications in India: The role of espoused cultural values and perceived risk. *Behaviour and Information Technology*, *38*(1), 42–64. https://doi.org/10.1080/0144929X.2018.1513563

Chou, S. W., & Hsu, C. S. (2016). Understanding online repurchase intention: social exchange theory and shopping habit. *Information Systems and E-Business Management*, *14*(1), 19–45. https://doi.org/10.1007/s10257-015-0272-9

Coves-Martínez, Á. L., Sabiote-Ortiz, C. M., & Frías-Jamilena, D. M. (2022). Cultural intelligence as an antecedent of satisfaction with the travel app and with the tourism experience. *Computers in Human Behavior*, *127*. https://doi.org/10.1016/j.chb.2021.107049

Cropanzano, R., Anthony, E. L., Daniels, S. R., & Hall, A. v. (2017). Social exchange theory: A critical review with theoretical remedies. *Academy of Management Annals*, *11*(1), 479–516. https://doi.org/10.5465/annals.2015.0099

Cui, X., Xie, Q., Zhu, J., Shareef, M. A., Goraya, M. A. S., & Akram, M. S. (2022). Understanding the omnichannel customer journey: The effect of online and offline channel interactivity on consumer value co-creation behavior. *Journal of Retailing and Consumer Services*, *65*(December 2021), 102869. https://doi.org/10.1016/j.jretconser.2021.102869

Dabbous, A., & Barakat, K. A. (2020). Bridging the online offline gap: Assessing the impact of brands' social network content quality on brand awareness and purchase intention. *Journal of Retailing and Consumer Services*, *53*(November 2018). https://doi.org/10.1016/j.jretconser.2019.101966

Doyle, M. (2022). *Travel Apps: 2022 Mobile Customer Engagement Benchmarks*. https://www.apptentive.com/blog/travel-apps-2022-mobile-customer-engagement-benchmarks/

El-Adly, M. I. (2019). Modelling the relationship between hotel perceived value, customer satisfaction, and customer loyalty. *Journal of Retailing and Consumer Services*, *50*(July 2018), 322–332. https://doi.org/10.1016/j.jretconser.2018.07.007

Emerson, R. M. (1976). Social Exchange Theory. *Annual Review of Sociology*, *2*, 335–362. https://doi.org/10.4324/9781315204321-25

Fang, J., Zhao, Z., Wen, C., & Wang, R. (2017). Design and performance attributes driving mobile travel application engagement. *International Journal of Information Management*, *37*(4), 269–283. https://doi.org/10.1016/j.ijinfomgt.2017.03.003

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, *18*(3), 382. https://doi.org/10.2307/3150980

Gao, Z., Cheah, J. H., Lim, X. J., Ng, S. I., Cham, T. H., & Yee, C. L. (2023). Can travel apps improve tourists' intentions? Investigating the drivers of Chinese gen Y users' experience. *Journal of Vacation Marketing*. https://doi.org/10.1177/13567667231152938

Gao, Z., Cheah, J.H., Lim, X.J., Liu, Y. and Morrison, A.M. (2024). Reinvestigating repurchase intentions for travel apps: a comparison of China's various tiers of cities. *Asia Pacific Journal of Tourism Research*, *29*(9), 1033–1062. https://doi: 10.1080/10941665.2024.2358340.

González-Rodríguez, M. R., Díaz-Fernández, M. C., Bilgihan, A., Okumus, F., & Shi, F. (2022). The impact of eWOM source credibility on destination visit intention and online involvement: a case of Chinese tourists. *Journal of Hospitality and Tourism Technology*, *13*(5), 855–874. https://doi.org/10.1108/JHTT-11-2021-0321

Grewal, D., Roggeveen, A. L., Sisodia, R., & Nordfält, J. (2017). Enhancing customer engagement through consciousness. *Journal of Retailing*, *93*(1), 55–64. https://doi.org/10.1016/j.jretai.2016.12.001

Guo, X., Pesonen, J., & Komppula, R. (2021). Comparing online travel review platforms as destination image information agents. *Information Technology and Tourism*, *23*(2), 159–187. https://doi.org/10.1007/s40558-021-00201-w

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). Sage Publications. https://doi.org/10.1007/978-3-030-80519-7

Hair, J. F., & Sarstedt, M. (2019). Factors versus composites: Guidelines for choosing the right structural equation modeling method. *Project Management Journal*, *50*(6), 619–624. https://doi.org/10.1177/8756972819882132

Hazée, S., Zwienenberg, T. J., Van Vaerenbergh, Y., Faseur, T., Vandenberghe, A., & Keutgens, O. (2020). Why customers and peer service providers do not participate in collaborative consumption. *Journal of Service Management*. https://doi.org/10.1108/JOSM-11-2018-0357

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Ho, R. C., Amin, M., Ryu, K., & Ali, F. (2021). Integrative model for the adoption of tour itineraries from smart travel apps. *Journal of Hospitality and Tourism Technology*, *12*(2), 372–388. https://doi.org/10.1108/JHTT-09-2019-0112

Huang, H. C., Cheng, T. C. E., Huang, W. F., & Teng, C. I. (2018). Impact of online gamers' personality traits on interdependence, network convergence, and continuance intention: Perspective of social exchange theory. *International Journal of Information Management*, *38*(1), 232–242. https://doi.org/10.1016/j.ijinfomgt.2017.08.009

Huang, Z., & Mou, J. (2021). Gender differences in user perception of usability and performance of online travel agency websites. *Technology in Society*, *66*(May), 101671. https://doi.org/10.1016/j.techsoc.2021.101671

Hutchinson, J., White, P. C. L., & Graham, H. (2014). Differences in the social patterning of active travel between urban and rural populations: findings from a large UK household survey. *International Journal of Public Health*, *59*(6), 993–998. https://doi.org/10.1007/s00038-014-0578-2

Itani, O. S., Kassar, A. N., & Loureiro, S. M. C. (2019). Value get, value give: The relationships among perceived value, relationship quality, customer engagement, and value consciousness. *International Journal of Hospitality Management*, *80*(March 2018), 78–90. https://doi.org/10.1016/j.ijhm.2019.01.014

Jahn, B., & Kunz, W. (2012). How to transform consumers into fans of your brand. *Journal of Service Management*, *23*(3), 344–361. https://doi.org/10.1108/09564231211248444

Jeong, M., & Shin, H. H. (2020). Tourists' Experiences with Smart Tourism Technology at Smart Destinations and Their Behavior Intentions. *Journal of Travel Research*, *59*(8), 1464–1477. https://doi.org/10.1177/0047287519883034

Jimenez, N., San-Martin, S., & Puente, N. (2019). The path to mobile shopping compatibility. *Journal of High Technology Management Research*, *30*(1), 15–26. https://doi.org/10.1016/j.hitech.2018.12.006

Jozani, M., Ayaburi, E., Ko, M., & Choo, K. K. R. (2020). Privacy concerns and benefits of engagement with social media-enabled apps: A privacy calculus perspective. *Computers in Human Behavior*, *107*(August 2019), 106260. https://doi.org/10.1016/j.chb.2020.106260

Kapoor, K. K., Dwivedi, Y. K., & Williams, M. D. (2015). Examining the role of three sets of innovation attributes for determining adoption of the interbank mobile payment service. *Information Systems Frontiers*, *17*(5), 1039–1056. https://doi.org/10.1007/s10796-014-9484-7

Kennedy-Eden, H., & Gretzel, U. (2012). A taxonomy of mobile applications in tourism. E-review of Tourism Research. *E-Review of Tourism Research*, *10*(2), 47–50.

Kim, H. W., Kankanhalli, A., & Lee, S. H. (2018). Examining gifting through social network services: A social exchange theory perspective. *Information Systems Research*, *29*(4), 805–828. https://doi.org/10.1287/ISRE.2017.0737

Kim, J. J., Chua, B. L., & Han, H. (2021). Mobile hotel reservations and customer behavior: Channel familiarity and channel type. *Journal of Vacation Marketing*, *27*(1), 82–102. https://doi.org/10.1177/1356766720952122

Kim, M. J., Lee, C. K., & Preis, M. W. (2020). The impact of innovation and gratification on authentic experience, subjective well-being, and behavioral intention in tourism virtual reality: The moderating role of technology readiness. *Telematics and Informatics*, *49*(May 2019), 101349. https://doi.org/10.1016/j.tele.2020.101349

Kim, S. S. (2020). Purchase intention in the online open market: Do concerns for E-commerce really matter? *Sustainability (Switzerland)*, *12*(3). https://doi.org/10.3390/su12030773

Kock, N., & Lynn, G. S. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *Journal of the Association for Information Systems*, *13*(7), 546–580. https://doi.org/10.17705/1jais.00302

Kumar, V., Rajan, B., Gupta, S., & Pozza, I. D. (2019). Customer engagement in service. *Journal of the Academy of Marketing Science*, *47*(1), 138–160. https://doi.org/10.1007/s11747-017-0565-2

Lacap, J.P.G., Cham, T.H., & Lim, X.J. (2021). The Influence of Corporate Social Responsibility on Brand Loyalty and The Mediating Effects of Brand Satisfaction and Perceived Quality. *International Journal of Economics & Management*, *15*(1), 69-87.

Le, H. T. P. M., & Ryu, S. (2023). The eWOM adoption model in the hospitality industry: the moderating effect of the vlogger's review. *Journal of Hospitality and Tourism Technology*, *14*(2), 225–244. https://doi.org/10.1108/JHTT-08-2021-0233

Lee, Z. W. Y., Chan, T. K. H., Chong, A. Y. L., & Thadani, D. R. (2019). Customer engagement through omnichannel retailing: The effects of channel integration quality. *Industrial Marketing Management*, *77*(September 2017), 90–101. https://doi.org/10.1016/j.indmarman.2018.12.004

Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, *80*(6), 69–96. https://doi.org/10.1509/jm.15.0420

Li, R., Luo, Z., Bilgihan, A., & Okumus, F. (2021). Marketing China to U.S. travelers through electronic word-of-mouth and destination image: Taking Beijing as an example. *Journal of Vacation Marketing*. https://doi.org/10.1177/1356766720987869

Lim, X. J., Cheah, J. H., Morrison, A. M., Ng, S. I., & Wang, S. (2022). Travel app shopping on smartphones: understanding the success factors influencing in-app travel purchase intentions. *Tourism Review*. https://doi.org/10.1108/tr-11-2021-0497

Liu, Y., Li, Q., Edu, T., & Negricea, I. C. (2023). Exploring the continuance usage intention of travel applications in the case of Chinese tourists. *Journal of Hospitality and Tourism Research*, *47*(1), 6–32. https://doi.org/10.1177/1096348020962553

Loh, X.M., Lee, V.H., Leong, L.Y., Aw, E.C.X., Cham, T.H., Tang, Y.C., & Hew, J.J. (2023). Understanding consumers' resistance to pay with cryptocurrency in the sharing economy: A hybrid SEM-fsQCA approach. *Journal of Business Research*, *159*, 113726.

Lu, H. P., & Wang, J. C. (2023). Exploring the effects of sudden institutional coercive pressure on digital transformation in colleges from teachers' perspective. *Education and Information Technologies*, *0123456789*. https://doi.org/10.1007/s10639-023-11781-x

Lu, L., Cai, R., & King, C. (2020). Building trust through a personal touch: Consumer response to service failure and recovery of home-sharing. *Journal of Business Research*, *117*(May), 99–111. https://doi.org/10.1016/j.jbusres.2020.05.049

McKnight, D. H., Lankton, N. K., Nicolaou, A., & Price, J. (2017). Distinguishing the effects of B2B information quality, system quality, and service outcome quality on trust and distrust. *Journal of Strategic Information Systems*, *26*(2), 118–141. https://doi.org/10.1016/j.jsis.2017.01.001

Natarajan, T., & Veera Raghavan, D. R. (2025). Does integrated store service quality explain omnichannel shoppers' online brand advocacy behaviors? Role of memorable shopping experiences, store attachment, and relationship strength. *The TQM Journal, 37*(1), 73-105. https://doi.org/10.1108/TQM-05-2023-0147

O'Brien, H. L., Arguello, J., & Capra, R. (2020). An empirical study of interest, task complexity, and search behaviour on user engagement. *Information Processing and Management*, *57*(3), 102226. https://doi.org/10.1016/j.ipm.2020.102226

Odusanya, K., Aluko, O., & Lal, B. (2020). Building consumers' trust in electronic retail platforms in the Sub-Saharan context: An exploratory study on drivers and impact on continuance intention. *Information Systems Frontiers*, *2016*. https://doi.org/10.1007/s10796-020-10043-2

O'Neill, S. (2022). *Word of Mouth Marketing: Stats and Trends for 2023*. https://www.lxahub.com/stories/word-of-mouth-marketing-stats-and-trends-for-2023

Oriade, A., & Schofield, P. (2019). An examination of the role of service quality and perceived value in visitor attraction experience. *Journal of Destination Marketing and Management*, *11*(May 2018), 1–9. https://doi.org/10.1016/j.jdmm.2018.10.002

Ozturk, A. B., Bilgihan, A., Nusair, K., & Okumus, F. (2016). What keeps the mobile hotel booking users loyal? Investigating the roles of self-efficacy, compatibility, perceived ease of use, and perceived convenience. *International Journal of Information Management*, *36*(6), 1350–1359. https://doi.org/10.1016/j.ijinfomgt.2016.04.005

Pan, H., Ha, H. Y., & Lee, J. W. (2020). Perceived risks and restaurant visit intentions in China: Do online customer reviews matter? *Journal of Hospitality and Tourism Management*, *43*(February), 179–189. https://doi.org/10.1016/j.jhtm.2020.04.005

Pansari, A., & Kumar, V. (2017). Customer engagement: the construct, antecedents, and consequences. *Journal of the Academy of Marketing Science*, *45*(3), 294–311. https://doi.org/10.1007/s11747-016-0485-6

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Prasad, S., Garg, A., & Prasad, S. (2019). Purchase decision of generation Y in an online environment. *Marketing Intelligence and Planning*, *37*(4), 372–385. https://doi.org/10.1108/MIP-02-2018-0070

Rahman, T., Noh, M., Kim, Y. S., & Lee, C. K. (2022). Effect of word of mouth on m-payment service adoption: A developing country case study. *Information Development*, *38*(2), 268–285. https://doi.org/10.1177/0266666921999702

Rajaobelina, L. (2018). The impact of customer experience on relationship quality with travel agencies in a multichannel environment. *Journal of Travel Research*, *57*(2), 206–217. https://doi.org/10.1177/0047287516688565

Rather, R. A. (2020). Customer experience and engagement in tourism destinations: the experiential marketing perspective. *Journal of Travel and Tourism Marketing*, *37*(1), 15–32. https://doi.org/10.1080/10548408.2019.1686101

Rather, R. A., & Hollebeek, L. D. (2019). Exploring and validating social identification and social exchange-based drivers of hospitality customer loyalty. *International Journal of Contemporary Hospitality Management*, *31*(3), 1432–1451. https://doi.org/10.1108/IJCHM-10-2017-0627

Ringle, C. M., Wende, S., & Becker, J.-M. (2023). *SmartPLS 4. Boenningstedt: SmartPLS.* https://www.smartpls.com

Riquelme, I. P., & Román, S. (2014). The relationships among consumers' ethical ideology, risk aversion and ethically-based distrust of online retailers and the moderating role of consumers' need for personal interaction. *Ethics and Information Technology*, *16*(2), 135–155. https://doi.org/10.1007/s10676-014-9341-x

Rogers, E. M. (2003). Diffusion of Innovations. Free Press, New York. In *Rogers, E.M.* (5th ed.). Free Press.

Ruiz-Equihua, D., Romero, J., & Casaló, L. V. (2020). Better the devil you know? The moderating role of brand familiarity and indulgence vs. restraint cultural dimension on eWOM influence in the hospitality industry. *Journal of Hospitality Marketing and Management*, *29*(3), 310–328. https://doi.org/10.1080/19368623.2019.1630698

Said, M., Zajdela, E. R., & Stathopoulos, A. (2022). Accelerating Adoption of Disruptive Technologies: Impact of COVID-19 on Intentions to Use On-Demand Autonomous Vehicle Mobility Services. *Transportation Research Record: Journal of the Transportation Research Board*, 036119812210992. https://doi.org/10.1177/03611981221099276

Sakshi, Tandon, U., Ertz, M., & Bansal, H. (2020). Social vacation: Proposition of a model to understand tourists' usage of social media for travel planning. *Technology in Society*, *63*(August), 101438. https://doi.org/10.1016/j.techsoc.2020.101438

Sarstedt, M., Hair, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal*, *27*(3), 197–211. https://doi.org/10.1016/j.ausmj.2019.05.003

Sarstedt, M., Hair, J. F., Nitzl, C., Ringle, C. M., & Howard, M. C. (2020). Beyond a tandem analysis of SEM and PROCESS: Use of PLS-SEM for mediation analyses! *International Journal of Market Research*, *62*(3), 288–299. https://doi.org/10.1177/1470785320915686

Sarstedt, M., Ringle, C. M., Cheah, J. H., Ting, H., Moisescu, O. I., & Radomir, L. (2020). Structural model robustness checks in PLS-SEM. *Tourism Economics*, *26*(4), 531–554. https://doi.org/10.1177/1354816618823921

Savastano, M., Bellini, F., D'Ascenzo, F., & De Marco, M. (2019). Technology adoption for the integration of online–offline purchasing: Omnichannel strategies in the retail environment. *International Journal of Retail and Distribution Management*, *47*(5), 474–492. https://doi.org/10.1108/IJRDM-12-2018-0270

Seck, A. M., & Philippe, J. (2013). Service encounter in multi-channel distribution context: virtual and face-to-face interactions and consumer satisfaction. *Service Industries Journal*, *33*(6), 565–579. https://doi.org/10.1080/02642069.2011.622370

Sharma, P. N., Sarstedt, M., Ringle, C. M., Cheah, J. H., Herfurth, A., & Hair, J. F. (2024). A framework for enhancing the replicability of behavioral MIS research using prediction oriented techniques. *International Journal of Information Management*, *78*, 102805. https://doi.org/10.1016/j.ijinfomgt.2024.102805

Sharma, T. G., Tak, P., & Kesharwani, A. (2020). Understanding continuance intention to play online games: The roles of hedonic value, utilitarian value and perceived risk. *Journal of Internet Commerce*, *19*(3), 346–372. https://doi.org/10.1080/15332861.2020.1756189

Shin, H. H., Jeong, M., & Cho, M. H. (2021). The impact of smart tourism technology and domestic travelers' technology readiness on their satisfaction and behavioral intention: A cross-country comparison. *International Journal of Tourism Research*, *23*(5), 726–742. https://doi.org/10.1002/jtr.2437

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J. H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European Journal of Marketing*, *53*(11), 2322-2347. https://doi.org/10.1108/EJM-02-2019-0189

Statista. (2023). *Average retention rate of travel, tourism, and hospitality apps worldwide in 2022*. https://www.statista.com/statistics/1230130/retention-rate-travel-apps-globally/

Stocchi, L., Michaelidou, N., & Micevski, M. (2019). Drivers and outcomes of branded mobile app usage intention. *Journal of Product and Brand Management*, *28*(1), 28–49. https://doi.org/10.1108/JPBM-02-2017-1436

Tak, P., & Gupta, M. (2021). Examining travel mobile app attributes and its impact on consumer engagement: An application of S-O-R framework. *Journal of Internet Commerce*, *20*(3), 293–318. https://doi.org/10.1080/15332861.2021.1891517

Tam, C., Santos, D., & Oliveira, T. (2020). Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model. *Information Systems Frontiers*, *22*(1), 243–257. https://doi.org/10.1007/s10796-018-9864-5

Tan, J.X., Cham, T.H., Zawawi, D., & Aziz, Y.A. (2019). Antecedents of Organizational Citizenship Behavior and the Mediating Effect of Organization Commitment in the Hotel Industry. *Asian Journal of Business Research*, *9*(2), 121-139.

Ventre, I., & Kolbe, D. (2020). The impact of perceived usefulness of online reviews, trust and perceived risk on online purchase intention in emerging markets: A Mexican perspective. *Journal of International Consumer Marketing*, *32*(4), 287–299. https://doi.org/10.1080/08961530.2020.1712293

Vivek, S. D., Beatty, S. E., Dalela, V., & Morgan, R. M. (2014). A generalized multidimensional scale for measuring customer engagement. *Journal of Marketing Theory and Practice*, *22*(4), 401–420. https://doi.org/10.2753/MTP1069-6679220404

Wang, W. (2019). The influence of perceived technological congruence of smartphone application and air travel experience on consumers' attitudes toward price change and adoption. *Journal of Hospitality and Tourism Technology*, *10*(2), 122–135. https://doi.org/10.1108/JHTT-01-2018-0004

Wang, X., Wong, Y. D., Liu, F., & Yuen, K. F. (2021). A push–pull–mooring view on technology-dependent shopping under social distancing: When technology needs meet health concerns. *Technological Forecasting and Social Change*, *173*(April), 121109. https://doi.org/10.1016/j.techfore.2021.121109

Wani, T. A., & Ali, S. W. (2015). Innovation diffusion theory review & scope in the study of adoption of smartphones in India. *Journal of General Management Research*, *3*(August), 101–118.

Wei, X., Ma, E., Jiang, K., & We, L. (2019). Pre-travel anticipation as a catalyst of happiness—do demographics matter? *Journal of Hospitality and Tourism Management*, *40*(June), 21–30. https://doi.org/10.1016/j.jhtm.2019.05.003

Yallop, A. C., Gică, O. A., Moisescu, O. I., Coroș, M. M., & Séraphin, H. (2023). The digital traveller: implications for data ethics and data governance in tourism and hospitality. *Journal of Consumer Marketing, 40*(2), 155-170. https://doi.org/10.1108/JCM-12-2020-4278

Zeljković, M. (2022). Urban-rural disparities in travel during the COVID-19 pandemic: The case study of Serbia. *Erdkunde*, *76*(2), 111–125. https://doi.org/10.3112/erdkunde.2022.02.04

Zhang, H., Gordon, S., Buhalis, D., & Ding, X. (2018). Experience value cocreation on destination online platforms. *Journal of Travel Research*, *57*(8), 1093–1107. https://doi.org/10.1177/0047287517733557

Zhang, M., Hu, M., Guo, L., & Liu, W. (2017). Understanding relationships among customer experience, engagement, and word-of-mouth intention on online brand communities: The perspective of service ecosystem. *Internet Research*, *27*(4), 839–857. https://doi.org/10.1108/IntR-06-2016-0148

Zhang, M., & Yan, X. (2022). Does informal homeownership reshape skilled migrants' settlement intention? Evidence from Beijing and Shenzhen. *Habitat International*, *119*. https://doi.org/10.1016/j.habitatint.2021.102495

Zhang, X., Park, Y., & Park, J. (2024). The effect of personal innovativeness on customer journey experience and reuse intention in omni-channel context. *Asia Pacific Journal of Marketing and Logistics, 36*(2), 480-495. https://doi.org/10.1108/APJML-12-2022-1013

Zhou, S., Yan, Q., Yan, M., & Shen, C. (2020). Tourists' emotional changes and eWOM behavior on social media and integrated tourism websites. *International Journal of Tourism Research*, *22*(3), 336–350. https://doi.org/10.1002/jtr.2339

Figures

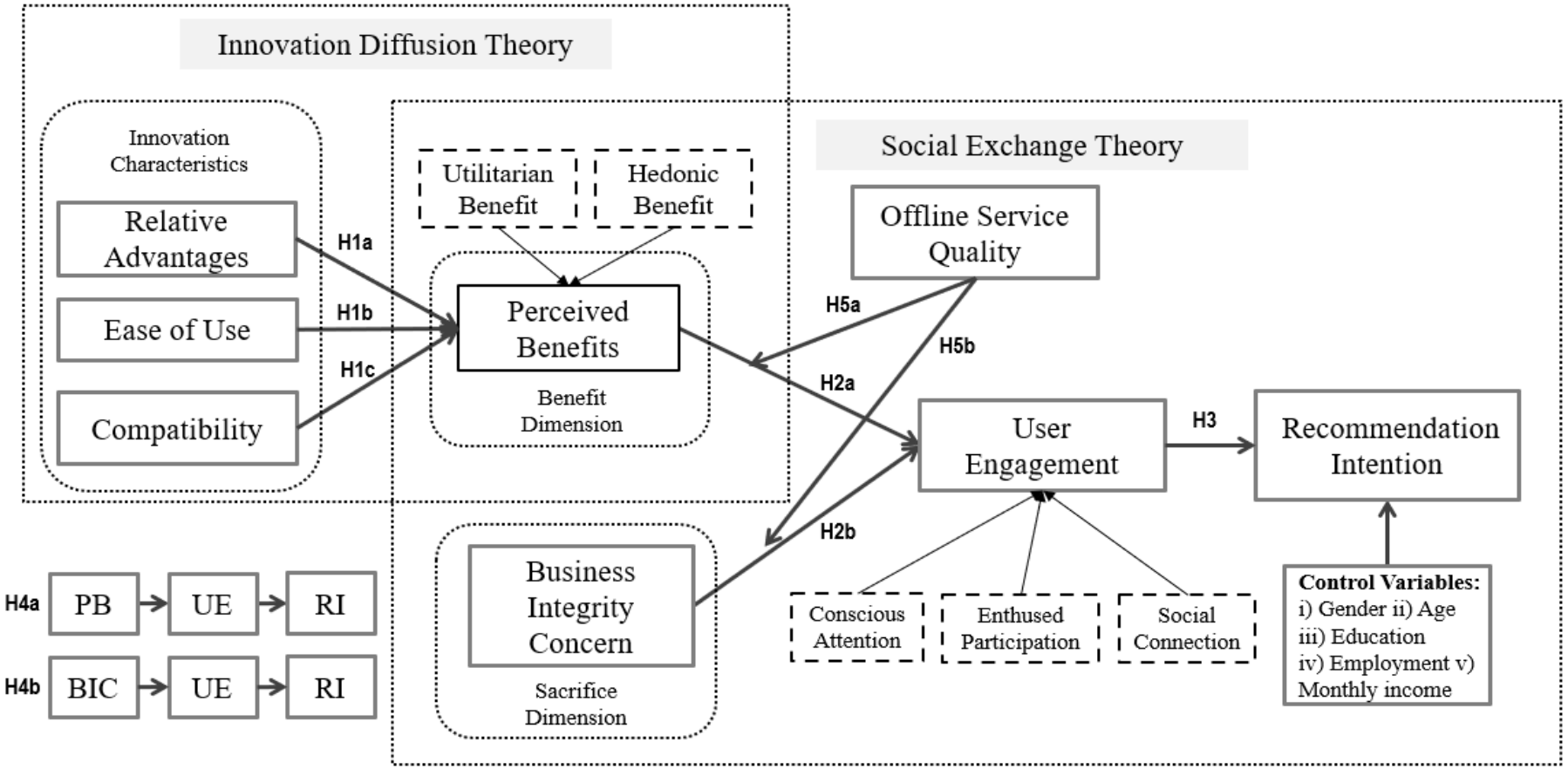

Figure 1: Research model

Note: dashed line box represents sub-dimensions of the HOC. PB (Perceived Benefits); BIC (Business Integrity Concerns); UE (User Engagement); RI (Recommendation Intention).

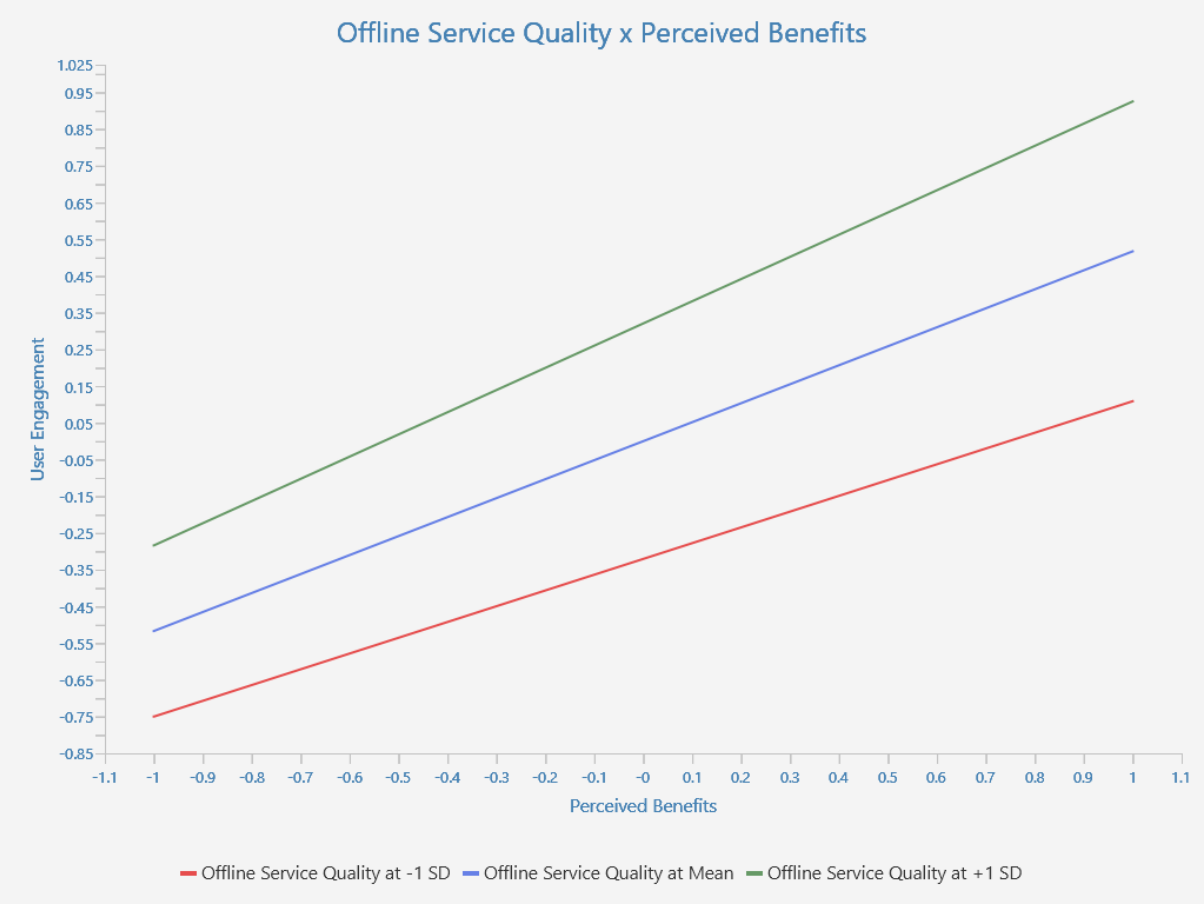

Figure 2: Offline service quality*perceived benefits on user engagement

Tables

Table 1: Respondent profile

Characteristic	Item	Frequency (n = 387)	Percent (%)
Gender	Male	171	44.2
	Female	216	55.8
Age	20 years old and below	9	2.3
	21-25 years old	32	8.3
	26-30 years old	119	30.7
	31-35 years old	175	45.2
	36-40 years old	52	13.4
Education	Bachelor degree or equivalent	296	76.5
	Master degree or equivalent	74	19.1
	Doctoral degree or equivalent	17	4.4
Employment	Public sector	114	29.5
	Private sector	235	60.7
	Self-employed	21	5.4
	Student	16	4.1
	Unemployed	1	0.3
Monthly Income	Below RMB 3,000	7	1.8
	RMB 3,001-5,000	16	4.1
	RMB 5,001-7,000	36	9.3
	RMB 7,001-9,000	63	16.3
	RMB 9,001-11,000	65	16.8
	RMB 11,001-13,000	78	20.2
	RMB 13,001-15,000	69	17.8
	RMB 15,001 and above	53	13.7

Table 2: Results of reliability, convergent validity, and full collinearity

Construct	Indicator	Outer Loading	CR	AVE
Relative Advantages (FC = 1.802)	RA1	0.734	0.837	0.563
	RA2	0.782		
	RA3	0.710		
	RA4	0.773		
Ease of Use (FC = 1.105)	EU1	0.821	0.844	0.644
	EU2	0.818		
	EU3	0.767		
Compatibility (FC = 1.470)	CP1	0.812	0.868	0.688
	CP2	0.825		
	CP3	0.850		
Utilitarian Benefits (FC = 1.358)	UB1	0.833	0.866	0.617
	UB2	0.773		
	UB3	0.734		
	UB4	0.799		
Hedonic Benefits (FC = 2.087)	HB1	0.841	0.907	0.710
	HB2	0.831		
	HB3	0.845		
	HB4	0.854		
Business Integrity Concern (FC = 1.145)	BIC1	0.859	0.929	0.765
	BIC2	0.861		
	BIC3	0.888		
	BIC4	0.891		
Consciou Attention (FC = 1.203)	CA1	0.859	0.872	0.695
	CA2	0.793		
	CA3	0.848		
Enthused Participation (FC = 2.056)	EP1	0.796	0.860	0.606
	EP2	0.814		
	EP3	0.824		
	EP4	0.671		
Social Connection (FC = 2.029)	SC1	0.871	0.875	0.700
	SC2	0.830		
	SC3	0.808		
Recommendation Intention (FC = 1.976)	RI1	0.859	0.936	0.785
	RI2	0.903		
	RI3	0.883		
	RI4	0.899		

Note: FC = Full Collinearity; CR = Composite Reliability; AVE = Average Variance Extracted.

Table 3: Discriminant validity result using the Heterotrait-Monotrait (HTMT) ratio of correlations

No	Construct	1	2	3	4	5	6	7	8	9	10
1	Business Integrity Concern										
2	Conscious Attention	0.316									
3	Compatibility	0.420	0.468								
4	Enthused Participartion	0.438	0.775	0.616							
5	Ease of Use	0.460	0.452	0.617	0.543						
6	Heodnic Benefits	0.421	0.684	0.714	0.749	0.636					
7	Recommendation Intention	0.526	0.618	0.642	0.743	0.567	0.679				
8	Relative Advantages	0.484	0.581	0.754	0.581	0.764	0.749	0.647			
9	Social Connection	0.523	0.727	0.695	0.821	0.638	0.727	0.850	0.684		
10	Utilitarian Benefits	0.523	0.460	0.795	0.646	0.814	0.685	0.752	0.804	0.805	

Table 4: Assessment of Higher-Order Constructs

Higher Order Construct	Lower Order Construct	Convergent Validity	Outer VIF	Outer Weights	t-value	p-value	Confidence Interval
Perceived Benefits	Utilitarian Benefits	0.775	1.472	0.550	13.719**	0.000	(0.486,0.618)
	Hedonic Benefits		1.472	0.580	13.381**	0.000	(0.503,0.646)
Tourist Engagement	Conscious Attention	0.812	1.718	0.324	23.739**	0.000	(0.300,0.345)
	Enthused Participation		1.986	0.397	30.757**	0.000	(0.376,0.419)
	Social Connection		1.873	0.441	28.636**	0.000	(0.419,0.469)

Note: **p < 0.01, VIF = Variance Inflation Factor.

Table 5: Fit indices for a one- to five-segment solution

Criteria	S1	S2	S3	S4	S5
LnL (LogLikelihood)	-1138.549	-1091.859	-1066.560	-1052.484	-1033.959
AIC (Akaike's information criterion)	2295.097	2221.718	2191.121	2182.968	**2165.919**
AIC3 (modified AIC with Factor 3)	2304.097	2240.718	2220.121	2221.968	**2214.919**
AIC4 (modified AIC with Factor 4)	2313.097	2259.718	**2249.121**	2260.968	2263.919
BIC (Bayesian information criterion)	2330.723	**2296.928**	2305.915	2337.347	2359.881
CAIC (consistent AIC)	2339.723	**2315.928**	2334.915	2376.347	2408.881
MDL5 (minimum description length with factor 5)	**2545.226**	2749.769	2997.093	3266.861	3527.733
EN (normed entropy statistic)	0.000	0.483	**0.504**	**0.510**	**0.688**

Note: S = Segment.

Table 6: Results of structural model

Path Relationship	Std. Beta	Std. Error	t-value	p-value	95% Confidence Interval	VIF	f^2	R^2	Q^2_predict
H1a: Relative Advantages -> PB	0.317	0.041	7.757	0.000**	(0.248,0.383)	1.795	0.159(M)	0.649	0.640
H1b: Ease of Use -> PB	0.286	0.044	6.490	0.000**	(0.214,0.358)	1.533	0.152(M)		
H1c: Compatibility -> PB	0.366	0.046	8.011	0.000**	(0.294,0.443)	1.564	0.243(M)		
H2a: PB -> UE	0.676	0.035	19.308	0.000**	(0.618,0.732)	1.266	0.802(L)	0.550	0.427
H2b: BIC -> UE	-0.125	0.042	2.982	0.001*	(-0.194,-0.057)	1.266	0.028(S)		
H3: UE -> RI	0.735	0.031	24.097	0.000**	(0.679,0.781)	1.040	1.144(L)	0.546	0.369
H4a: PB -> UE -> RI	0.497	0.037	13.427	0.000**	(0.435,0.557)				
H4b: BIC -> UE -> RI	-0.092	0.031	2.930	0.002*	(-0.144,-0.041)				
H5a: Offline Service Quality x PB -> UE	0.088	0.034	2.591	0.005*	(0.032,0.142)				
H5b: Offline Service Quality x BIC -> UE	0.063	0.047	1.340	0.090	(-0.014,0.141)				
Control variables									
Gender -> RI	-0.105	0.072	1.463	0.072	(-0.224,0.011)				
Age -> RI	-0.003	0.040	0.086	0.466	(-0.070,0.060)				
Education -> RI	0.011	0.036	0.316	0.376	(-0.047,0.073)				
Employment -> RI	0.007	0.036	0.200	0.421	(-0.054,0.067)				
Monthly Income -> RI	-0.009	0.043	0.213	0.416	(-0.080,0.061)				

Note: *p < 0.05; **p < 0.01; PB = perceived benefits; BIC = business integrity concern; UE = user engagement; RI = recommendation intention; CI = confidence interval; effect size: S = small; M = medium; L = large.