**Empirical Paper**

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# Consumer choice determinants of online intermediary tourism platforms

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**Abstract:** The article investigates determinants of usage intention (IU) of online travel agencies' (OTAs) services by consumers and their propensity for word-of-mouth (WOM). The determinants represent two groups of factors: (1) items reflecting the perceived quality of OTAs' platforms (PQ) and (2) those corresponding to transaction quality (CST). The survey was conducted with the CAWI method on a representative net sample of 591 Polish OTA users. Statistical analysis involved building a covariance-based structural equation model to map out causal relationships between latent variables and test research hypotheses. The findings indicate that both groups of factors (PQ and CST) have a statistically significant positive effect on both IU and WOM. However, the impact of CST was found to be slightly weaker. Interestingly, there were no moderating effects from the respondents' age, income, and education. The only demographical characteristic of issue was sex, which revealed different regression patterns between men and women.

**Keywords:** online travel agencies, structural equation model, tourist behavior, usage intention, word-of-mouth intention
**JEL Classification:** M31, Z33

## 1 Introduction

Despite accompanying humanity on a large-scale only since the late 20th century, Internet technologies have certainly revolutionized most if not all areas of human activity. We use the Internet for professional and private purposes, to provide goods and services for other users but also in the process of consumption. The Internet has also entered the tourism sector. Today it is difficult to imagine the organization of a tourist trip offline. Travelers behave differently in the purchasing process than they formerly did and so do travel suppliers and intermediaries in sales channels.

The impact of the Internet on the operation of travel agencies was analyzed by Kim et al. [2007], Frías et al. [2008], Kim and Kim [2004a], and Card et al. [2003], who compared online and offline clients. In 2004, Gursoy and Terry Umbreit [2004] stated that as one of external sources of information, the Internet is used especially for organizing trips to less popular and unknown places. However, this has changed, and today almost any kind of trip to any destination may be organized online.

While analyzing online shopping, researchers focused mainly on airline ticket sales and hotel accommodation. Klein et al. [2005] concluded that there is relatively low acceptance for air ticket purchase online due to the perceived complexity of the product. According to the results of a survey conducted by these authors, the high dispersion of prices online causes confusion and makes it difficult for users to

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compare products and make decisions. However, it seems that these concerns have been overcome because many people today purchase airline tickets over the Internet. Research on booking accommodation services online was conducted, among others, by Kim et al. [2006] and Martin-Fuentes and Mellinas [2018].

Many studies discuss various aspects of online services related to online shopping. Their authors explore the quality of services [Park et al., 2007], the role of virtual communities in providing value to services [Kim et al., 2004], and ways of resolving problems related to online shopping and handling complaints [Black and Kelley, 2009].

The issue of trust and perceived risk in online shopping is also recognized by researchers. Hossan et al. [2006] develop a scale for measuring perceived risk in online shopping, while Bonsón Ponte et al. [2015] propose a model for linking willingness to shop with trust, perceived security, and privacy.

Although much research has scrutinized the use of the Internet in sales channels, there is still a lack of investigations on consumer tourists' online attitudes. In particular, the literature is missing representative and complex studies on determinants and antecedents of online purchasing behavior [Ye et al., 2019; Talwar et al., 2020a]. This article will fill in this gap by reporting a comprehensive analysis of factors that influence the use of online travel agencies' (OTAs) services and consumer propensity for word-of-mouth (WOM). These determinants are grouped into two sections: the factors that affect the quality of an OTA platform itself and those that affect the quality of transactions. The first group is particularly important during information search and offer selection, while the second group focuses on the purchase process and order fulfillment. Every effort has been made to ensure the robustness of the results by designing a measurement tool based on the research experience of previous authors, employing a large representative sample of Polish consumers, and performing rigorous statistical analysis with covariance-based structural equation modeling. The structural model obtained as a result of this research process illustrates the investigated phenomenon in a synthetic way, tests theory-driven hypotheses, and suggests meaningful practical recommendations.

The remainder of this article is structured as follows. Section 2 presents literature review and hypotheses development. Section 3 describes the research method. Section 4 outlines the research findings. The article closes with conclusions and discussion.

## 2 Literature review and hypotheses

The rising importance of Internet travel intermediaries has resulted in the ever-growing interest of researchers in this subject. Past research addressed the problem of cooperation between travel service providers and online travel intermediaries (OTAs). The analysis by Martin-Fuentes and Mellinas [2018] aimed to identify the factors that determine the use of the intermediary platform Booking.com's services by hotels worldwide. The authors conclude that the size of the facility, its chain belonging or not, and the category of the facility have an impact on the scale of usage of Booking.com's services.

Christodoulidou et al. [2010] also investigate cooperation between service providers, OTAs, and meta-search engines. They indicate that there may be a relationship between the size of the object and contract type. For example, large hotel chains tend to have more formal agreements with OTAs and meta-search engines than smaller hotels. However, large OTAs seem to have more bargaining power in creating and enforcing contracts. The authors also analyze service providers' costs and scale of cooperation, along with their prospects for securing additional services from OTAs and meta-search engines (e.g., training or consulting services).

Chang et al. [2019] study how OTAs and hotels simultaneously cooperate and compete in a multi-channel environment. According to their results, new and returning customers can be attracted by OTAs through the quality of service on websites, whereas hotels can generate returns through perceived value. On the other hand, high quality provided by OTAs' websites negatively impacts the intention to switch to bookings on hotels' websites. Consequently, these two channels compete against each other for prospective customer visits.

Stangl et al. [2016] analyze how many distribution channels are chosen by hotels from Austria, Germany, and Switzerland, as well as investigate the role of each channel. They show that a single hotel on average uses 8.06 offline and online channels. Traditional channels such as hotel walk-ins and telephone bookings continue to play an important role, but respondents declared that about one-fifth of their bookings is completed online. The hotels cooperate with 3.61 OTAs on average, with Swiss and German hotels doing so more frequently than those from Austria.

Based on in-depth interviews with representatives of hotel companies, Wąsowicz-Zaborek [2020] identifies factors that determine the choice of intermediary channels and OTAs. The main advantages of cooperation with OTAs include wide coverage, access to customer reviews, translation of content into different languages, improvements in brand creation and positioning, enhanced consumer perception of facility reliability and transaction security, comparison of many offers in one place, and possibility to monitor competitors. The disadvantages reported by the interviewed hotel employees are high commission costs, risk of reputation loss from negative opinions posted, complicated procedures, exposure to tracking by competitors, and price reductions imposed by OTAs.

Iazzi et al. [2017] use a multiple case study method in 30 in-depth interviews with managers of three-, four-, and five-star hotels from Italy. The authors identify four different types of relations, based on the distribution of informational and bargaining power between the parties: competition, cooperation, conflict, and business relations.

Long and Shi [2017] consider the optimal pricing strategies of tour operators (TOs) and OTAs while working in an O2O (online-to-offline) model for online sales and cooperation in delivering offline services. In the process of developing their cooperation model, the authors probed diverse conditions of cooperation, pricing strategies, and revenues in Stackelberg and Bertrand's game [Lo and Yeung, 2020]. The results indicate that service level, unit sales commission, service cost ratio, and unit service compensation ratio each have different impacts on TOs' and OTAs' pricing decisions. The authors also present guidelines for drafting contracts between TOs and OTAs.

Ayazlar [2014] analyzes the functionality of dynamic packeting applications. The researcher investigates dynamic packets and applications of dynamic packeting developed by well-known OTAs. Based on these studies, dynamic packeting applications emerge as having the ability to deliver a variety of holiday packages to consumers in real-time. Factors like flexibility, customization, and security seem to be important both individually and in combination.

Mellinas et al. [2016] focus on rating systems offered by OTAs and compare proprietary mark procedures used on Booking.com and Priceline.com. The authors argue that a non-standard scale used by Booking.com may lead to different, overstated average grade results. According to the findings, there are strong biases especially in the case of hotels with low and medium scoring.

Among all identified studies, it is also possible to encounter those that identify factors determining the willingness to buy at OTAs. The study of Kim and Lee [2004] identifies basic dimensions of the quality of online services for OTAs and online travel service providers, and it explores how individual dimensions determine customer satisfaction for both types of companies. The study conducted on Korean market reveals that OTAs and online travel service providers have many similar characteristics in terms of information content, role of reputation and security, structure and ease of searching for information, and usability. The authors point that information content is the most important dimension of OTAs in explaining overall customer satisfaction, while structure and ease of use are considered the most important dimension of online travel service providers.

Austin et al. [2006] conducted the research on a sample of 135 Singaporean consumers. The findings suggest that six attributes of an OTA website are key to increasing consumer trust: order facilitation effort, website presentation and navigation, customer information exchange, customer control and collaboration, transactional security, and prior knowledge of vendor.

Kim et al. [2006] determined the factors influencing intentions of Chinese hotel customers to book online and assessed their satisfaction with online hotel reservations. The survey participants were hotel customers staying in 12 selected hotels in Beijing, in 2003. The key factors proved to be information recourses and security followed by hotel brand and price benefits.

In 2007, the online survey on the perception and criteria for selecting seven OTAs was conducted among students of seven American universities by Kim et al. [2007]. The most important determinants were price and safety, and functionality and user friendliness has proven to be of secondary importance in contrast.

Park et al. [2007] look into the impact of the perceived quality of websites on the willingness of consumers to use OTAs. Based on quantitative research conducted among 311 US residents, six main factors influencing behavioral intentions are identified and tested: ease of use, information/content, responsiveness, reliability, and security/privacy followed by visual appeal (VA).

The research of Ho and Lee [2007] concerning the Taiwanese market aimed to determine quality dimensions of e-travel services and to design a trustworthy and accurate measurement instrument. The authors identified five basic components of e-services quality: quality of information, security, website functionality, customer relations, and responsiveness/speed of reaction.

Ku and Fan [2009] conducted the survey on a sample of 131 respondents met at the Taipei International Airport and who purchased hotel services through online intermediary platforms. Taking into account the theory of customer value, the authors conclude that privacy, safety, and product quality are the most important factors that influence customers' purchases of hotel products online. Cost, time to receive product, convenience, time spent, shopping enjoyment, and environmental impact were a bit less important.

Chen and Kao [2010], conducting their research on a sample of 240 Taiwanese OTA customers, analyzed the quality of intermediaries' e-services in two dimensions – process quality (privacy, appearance, information accuracy, ease of use, and functionality) and outcome quality (so-called order conditions determining how free-of-defects the product is and what value is promised) – and examined the relationship between these dimensions, satisfaction, and behavioral intentions. The authors conclude that the quality of the process and the quality of outcomes have a strong positive impact on satisfaction. Moreover, there is a significant impact of satisfaction on behavioral intentions.

Tsang et al. [2010] consider the criteria used by customers to assess the quality of OTAs' e-services and the association of those criteria with customer satisfaction and repeat buying intentions. A mixed-methods approach was used to collect the data from Hong Kong market. The identified dimensions of the quality of e-services are website functionality, quality and content of an information, fulfillment and responsiveness, safety and security, appearance and presentation, and customer relationship. Additional features were less important.

In turn, Bernardo et al. [2012], based on a quantitative study on a sample of 1,201 clients of Spanish travel agencies, analyzed quality dimensions of e-services. Two dimensions – hedonistic and functional – were identified. The positive impact of both on perceived value and loyalty was observed.

On a sample from a Chinese Internet panel, Gao and Bai [2014] analyzed the determinants of Internet users' behavior while interacting with websites. The objective was to assess which one of them have the greatest impact on customer satisfaction and purchase intentions. The study used a Stimulus-Organism-Response framework (S-O-R framework) based on the theory of behavioral psychology. This allowed for the operationalization of the impact of consumer perceptions of specific elements of travel agencies' websites that influence customer traffic on the website by maximizing satisfaction. The authors stress the importance of proper website design for building customer experience and converting visitors into buyers. They identified that information content, efficiency, and entertainment are important factors.

Hao et al. [2015] used genetic algorithms to explain customer satisfaction and their psychometric motivations. This approach was verified by empirical research on Chinese market evaluating OTA websites. The authors show that various customer segments have different opinions on the importance of evaluation criteria. They also find that customers tend to evaluate OTA websites based on certain individual criteria attached to each factor and not on the average opinion concerning all factors. The most important factors were convenience of use, site design, financial security of transactions, and merchandising (quality and quantity of information).

Roger-Monzó et al. [2015] analyzed the relationship between perceived quality of e-services, perceived value, and consumer loyalty. The dimensions of quality were described, according to the E-S-QUAL e-services quality scale, as: effectiveness, availability, privacy, and reliability. The respondents came from Spain (74%), Portugal (22.8%), and the USA (3.3%). Efficiency (ease of finding trips and activities that

users wish to do in the full-purchase time frame) was the most important factor, followed by availability, fulfillment, and privacy.

The survey by Ha [2016] on a sample of 302 respondents from Korea who booked travel services online aimed to identify how brand personality affects trust and loyalty of consumers. The results show that the relationship between brand personality and trust in a brand becomes less and less important over time and leads to a re-assessment of brand personality dimensions. In addition, the relationship between the personality dimensions of a brand is much stronger and more stable than the effects of a brand personality on a loyalty.

Ye et al. [2016] conducted a survey on a sample of 289 Chinese respondents to identify the impact of various website attributes (customer relations, information security, and functionality) on customer satisfaction. The results of the research suggest that customer relations play a special role; however, the other two factors are also important.

Pratika and Sutikno [2017] analyzed the behavior of 326 respondents from the millennial generation in Indonesia toward OTA shopping and factors affecting loyalty attitudes. They show that the hedonistic element has a substantial impact on the development of shopping attitudes, while the utilitarian element influences trust. In addition, shopping experience has a significant impact on trust, while trust has a significant impact on affective and thoughtful engagement. Finally, this study confirmed that affective and thoughtful engagement has a significant impact on e-loyalty.

In 2018, Martinez-Costa et al. [2018] conducted a survey on a sample of 264 OTA customers in Spain. The authors used exploratory factor analysis (EFA) and structural equation modeling (SEM) to identify factors that determine customer satisfaction. They also applied cluster analysis to identify two customer segments (satisfied and dissatisfied) and determine the most important factors explaining the satisfaction of each of them. EFA results identified five satisfaction indicators (informational dimension, usability, third party influence, knowledge of the site, and perceived security level). The results of the SEM analysis showed that only the informational dimension (website effectiveness and quality of information) and usability of the platforms are important in determining satisfaction. There is also a relationship between satisfaction, loyalty, and WOM. The quality of the information provided on websites turned out to be the main factor determining customer satisfaction (in the group of satisfied customers). For the subgroup of dissatisfied customers, utility was the most important factor determining their level of satisfaction.

Another research along similar lines was done by Ye et al. [2019]. The survey was conducted online and offline on a sample of 431 Chinese respondents. The authors analyzed the relationship between social interactivity of websites, brand experience, brand selection, price, and purchase intent in the context of OTAs. They also investigated the moderating role of the age of the surveyed consumers to show that the inclusion of social functionality and increased interactivity of OTA websites influences customers' willingness to pay higher prices and return to the site in the future, but the strength of the relationship depends on the age of respondents.

The survey by Pinto and Castro [2019] was conducted on a sample of 397 respondents from Spain, France, and Brazil to identify the factors that have the greatest impact on decision-makers in OTA services. The authors analyzed how different factors are considered depending on economic status, sociodemographic characteristics, or travel behavior. They identified differences in the behavior of tourists of different ages, income levels, and countries of residence. Additionally, three tourist segments were identified based on the importance attached to price, online reviews, promotions, and photos.

Talwar et al. published two research papers in 2020. Their study was conducted on the Indian market. In one case [Talwar et al., 2020b] the authors used Innovation Resistance Theory (IRT) to investigate what kind of barriers exist to the willingness to buy on OTA websites. The results of the research suggest that the main inhibitor of purchase intent is benefit-related. However, privacy and security concerns and a barrier associated with potential threats demonstrate a positive relationship with purchase intentions. Site visibility and consumer age were found to be moderators influencing the intensity of the association between the benefit barrier and purchase intent. In their second study, Talwar et al. [2020a] present a framework for predicting purchase intentions by adapting consumer value theory to the OTA perspective. Data were collected from a sample of 809 users of OYO-OTA, leading on the Indian market. The research

showed that quality of benefits, financial value, social value, social status, preferences for purchasing conditions, and informational values determine the intent to purchase on the OTA website. The analysis also reveals that the strength of the relationship between these values and purchase intentions varies for different age groups and people with different privacy and security concerns, awareness and habits about hygiene and cleanliness, and the visibility and familiarity with OTA.

That above-listed research was conducted in the Chinese, Korean, Taiwanese, Spanish (additionally Brazilian, Portuguese), US, Indian, Indonesian, and Hong Kong markets, with near absolute absence of European countries except for Spain and Portugal. The authors used different measurement scales and obtained different results regarding the significance and effect sizes of various OTA use determinants. Despite the widespread sector use of the Internet in the sale of tourism products from OTAs, there still is a need for more research on motivations and attitudes related to the use of the Internet in the tourism market. New detailed research is essential to understand the particular needs and characteristics of individual national markets, and also broader groups of markets with an international perspective. The currently available research, as it was presented above, often refers to only a few markets with sometimes contradictory results, possibly due to differences in adopted research methods, involving non-comparable samples of respondents, non-equivalent measurement scales, and the omission of important moderating and mediating variables. The methodological issues present in existing studies suggest their exploratory rather than confirmatory character.

The authors indicate the information content as the leading or one of the most important factors that influence purchase intentions in most studies. On the other hand, the issues of security, privacy, and transaction security show different impacts on the attitudes of respondents in terms of significance. The obtained discrepancies and lack of unequivocal differences may stem from how research samples were selected – as I already mentioned – as many studies were unrepresentative for the studied populations. Moreover, this may be influenced by various measurement tools and scales used in the research.

Most authors consider theoretical assumptions about service quality, especially the model indicated by Parasuraman et al. [1991] for the SERVQUAL method and by Parasuraman et al. [2005] for the E-S-Qual method. The former is a tool for measuring service quality, while the latter refers to the quality of e-services. The dimensions of service quality in the SERVQUAL method [Parasuraman et al., 1991] are tangibles, reliability, assurance, reaction/responsiveness speed, and empathy. The E-S-QUAL method adopts the following dimensions for measuring the quality of e-service [Parasuraman et al., 2005]: efficiency, system availability, fulfillment, and privacy.

Furthermore, some authors of research on the factors that determine purchasing behavior on OTAs' websites use the customer value theory [Ku and Fan, 2009; Bernardo et al., 2012; Talwar et al., 2020b]. Several studies highlight the importance of hedonistic value [Bernardo et al., 2012; Pratika and Sutikno, 2017], understood as the pleasure and convenience of using OTAs.

According to many authors, one of the important factors that influence the choice of sales channel is time commitment [Seock and Bailey, 2008; Punj, 2011]. However, this aspect is practically ignored by other researchers who analyze the factors determining purchases on OTA websites. Other issues discussed in the literature that may determine the final decision to buy online are financial benefits [Kim et al., 2006, 2007] and financial transaction security [Liao and Cheung, 2001; Kim and Kim, 2004b].

The factors identified by the researchers can be grouped into two basic categories: those related to the quality of the OTA platform and those to the transaction process. However, the impact of these categories on the purchasing behavior of OTA users was never holistically analyzed. Therefore, the current study conducted an analysis to limit this research gap.

This study investigated the impact of these two groups of factors on *Usage Intention (IU) and Word-of-Mouth Intention (WOM)*. Usage Intention is defined as the intention to purchase services or look for the information via an OTA's platform in the future. WOM Intention is defined both as the intention to recommend the platform to potential other users and the willingness to make comments about the provided services on the platform.

## 2.1 Platform quality (PQ)

OTAs' PQ can be associated with the so-called process quality. Collier and Bienstock [2009] identify five main dimensions of process quality: privacy, design, information accuracy, ease of use, and functionality. In case of OTA's platforms it can be interpreted as all elements associated with the technical aspects of the platform, the content, and offers' presentation.

Information plays a special role in tourism industry. Trips are often connected with deepening one's knowledge. The very process of decision-making and trip planning enforces the acquisition of information, and therefore the Internet as its inexhaustible treasury is their natural search location. Nevertheless, users are increasingly overwhelmed by the excess of content published online. Therefore, the proper presentation, selection, and searchability of interesting and necessary data in a simple and fast way is very important. Many authors agree that the information contained on intermediary websites is an important factor that shapes the quality of service [Ho and Lee, 2007] and influences consumer satisfaction and intention to use OTA services [Park et al., 2007; Martinez-Costa et al., 2018].

Privacy is generally defined as the extent to which online shoppers believe that websites are secure and protect their data [Martinez-Costa et al., 2018]. Privacy and security are the issues that are often reported as main concerns of online shoppers [Udo, 2001]. Internet users are concerned about inadequate protection of their personal information and have trust issues about service providers.

Moreover, scholarship identifies privacy and security as one of the dimensions of OTA e-service quality [Austin et al., 2006; Ho and Lee, 2007; Hao et al., 2015; Ye et al., 2019] and indirectly as the predictor of purchase intention on OTA sites.

The functionality of an OTA website indicates how content is made available to customers, how they can access it, and how they can use it. Various types of content search engines and filtering tools, navigation elements, rankings, and prompts are used to enhance website functionality. According to studies on the determinants of OTA customer behavior, it is the functionality of the website that plays the key role in shaping customer satisfaction [Yoon 2002; Park et al., 2007; Tsang et al., 2010; Pinto and Castro, 2019].

The visual aspect of a website can be compared to the physical environment of a store and, therefore, we may assume that it plays a role in customer decision-making processes, including encouraging them to visit again. Specifically, website design and aesthetics influence this perceived attractiveness. What makes the website perceived as more appealing and user-friendly are the colors used, the type and size of fonts, multimedia elements (including sound effects), clarity, and readability of the published content. A major challenge for electronic intermediaries is to plan the aesthetics and optimize the website in a way that defines the process of user flow, adapts it to their behavior, and leads them to complete the purchase, thus maximizing the platform's benefits.

Visual elements in several studies proved to be a less important factor influencing customer behavior [Park et al., 2007], although some authors show that this element as nevertheless important [Tsang et al., 2010].

The quality of the platform is thus particularly important at the stage of searching for information about the offer and building an image of the presented service, as well as at the stage of evaluation and selection of the offer by the customer. PQ potentially simplifies the purchase decision. It affects the time and ease of acquiring information. A knowledge-equipped customer who trusts the site is more likely to share their knowledge with other potential customers both about the platform itself and the services presented on it. There is also a high probability that he is more likely to use the services of that platform which is more user-friendly for him and meets his needs in a more comprehensive way. Kwak and Min [2020] demonstrated in their study that convenience of use has, among the other OTA service quality factors which they examined, the most significant effect on the propensity for WoM. Ra Min et al. [2021] found that the quality of the information, especially its usefulness, timeliness, and accuracy, affects the intention to continue using OTA services. Hsieh [2019] also confirms that perceived service usability and ease of use, which indicate the quality of the platform, are determinants of behavioral intentions (understood as intention to recommend and intention to use).

Therefore, it is possible to hypothesize the following:

H1: PQ has an impact on IU.
H2: PQ has an impact on WOM Intention.

## 2.2 Transaction convenience and security (CST)

Another factor that seems to have a significant impact on customer behavioral intentions is the process of the transaction itself – the convenience and sense of security during the purchase and payment process.

The determinant of customer satisfaction and behavior is the ease of procedures involved in a transaction: how complicated it is to fill the necessary documents, and whether there is a flexible approach including the possibility of cancelling and changing a reservation.

Responsiveness is another part of CST. The willingness to help customers and provide services in the shortest possible time without unnecessary delays is a factor in evaluating service quality [Parasuraman et al., 1991]. An important element is the response time to an inquiry or order and to signals from customers both in an ordinary service procedure and in the case of a complaint. The importance of responsiveness in building satisfaction remains unclear. For example, Tsang et al. [2010] find no statistically significant relationship between responsiveness and purchase intention for OTA sites. In contrast, Park et al. [2007] find this factor to be significant.

Services offered on OTA sites usually belong to the category of more expensive products compared to other frequent online purchases such as books, music, or clothing. Therefore, these transactions may be perceived as very risky. For this reason, consumers might prefer more well-known, stable, and larger OTAs with a grounded position so as to minimize their risk of transacting.

According to Teo [2006], transaction security is a key issue in deciding whether or not to purchase online. Similarly, Yoon [2002] shows that transaction security is also the most important factor that supports the intention to buy online and influences trust and website satisfaction.

An important consideration is the security associated with payment and the protection of transaction data, including credit or debit card and payer data, whose use by unauthorized parties in the future could expose the payer to financial loss.

Therefore, I hypothesize the following:

H3: CST has an impact on IU.
H4: CST has an impact on WOM Intention.

## 2.3 Demographic factors

The literature analysis indicates that demographic factors [Pinto and Castro, 2019] – particularly age [Ye et al., 2019] – may be important drivers that differentiate customer behavior. This study will examine the impact of age, sex, income, and education level. Therefore, I hypothesize the following:

H5: Demographic factors moderate the strength of association between PQ and IU.
- H.5.a Sex moderates the strength of association between PQ and IU.
- H.5.b Age moderates the strength of association between PQ and IU.
- H.5.c Income level moderates the strength of association between PQ and IU.
- H.5.d Education level moderates the strength of association between PQ and IU.

H6: Demographic factors moderate the strength of association between CST and IU.
- H.6.a Sex moderates the strength of association between CST and IU.
- H.6.b Age moderates the strength of association between CST and IU.
- H.6.c Income level moderates the strength of association between CST and IU.
- H.6.d Education level moderates the strength of association between CST and IU.

H7: Demographic factors moderate the strength of association between PQ and WOM.
- H.7.a Sex moderates the strength of association between PQ and WOM.
- H.7.b Age moderates the strength of association between PQ and WOM.
- H.7.c Income level moderates the strength of association between PQ and WOM.
- H.7.d Education level moderates the strength of association between PQ and WOM.

H8: Demographic factors moderate the strength of association between CST and WOM.
H.8.a Sex moderates the strength of association between CST and WOM.
H.8.b Age moderates the strength of association between CST and WOM.
H.8.c Income level moderates the strength of association between CST and WOM.
H.8.d Education level moderates the strength of association between CST and WOM.

The conceptual model of the research and relations between variables is presented in Figure 1.

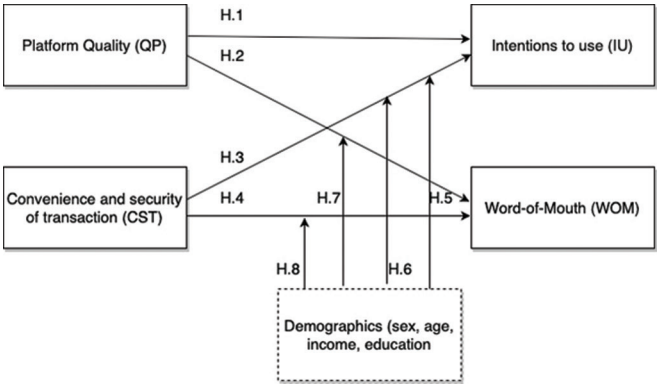



**Figure 1.** Conceptual model of the research.
*Source*: own elaboration.
CST, corresponding to transaction quality; IU, usage intention; PQ, platform quality; WOM, word-of-mouth.

# 3 Research method and the sample

The survey was conducted in September 2020 using the CAWI method on a sample of 600 Polish adults. The representativeness of the sample was ensured for criteria such as gender, age, town size, and inhabited province. The structure of Internet users was based on data from Statistics Poland. Based on the preliminary survey on a representative sample of 500 respondents from Poland, a profile was created for people who traveled for tourism purposes at least once between 2017 and 2020 and used online intermediary platforms to organize their trips. The main survey was implemented based on the created profile of the target group selected by stratified sampling method. After an initial analysis of the obtained data and the elimination of errors and non-responses, 591 observations were accepted for the final analysis. The distribution of characteristics in the sample is shown in Table 1.

**Table 1.** Sample structure

| | | Frequency | % |
|---|---|---|---|
| Gender | Female | 293 | 49.6 |
| | Male | 298 | 50.4 |
| Age | 18–24 | 106 | 17.9 |
| | 25–34 | 158 | 26.7 |
| | 35–44 | 165 | 27.9 |
| | 45–54 | 133 | 22.5 |
| | 55–65 | 29 | 4.9 |
| Place of living | Village | 171 | 28.9 |
| | City having up to 100,000 inhabitants | 200 | 33.8 |
| | City having more than 100,000 inhabitants | 220 | 37.2 |
| Education | Lower: primary and vocational | 31 | 5.2 |
| | Medium: completed high school | 289 | 48.9 |
| | Higher: bachelor, master, or higher | 271 | 45.9 |

*Source*: own elaboration.

Following the consensus of previous studies, variables were created describing the constructs under analysis as reflective constructs: platform quality, convenience and security of transaction, intention to use, and intention to recommend and comment. Therefore, they were measured with 7-point Likert scales, with values ranging from 1 (strongly disagree) to 7 (strongly agree). The operationalization of the questionnaire constructs was derived from the literature analysis and previous research (Table 2).

This study proposed and empirically tested a conceptual model of the relationship between factors that affect behavioral intentions: the intention to recommend and comment (WOM) on OTA platforms, and the intention to use OTA platforms to purchase services (IU). Multi-item scales were estimated using factor analysis with AMOS 26. I employed the same software to build a structural equation model for analyzing causal relationships between latent variables indicated in the hypotheses.

# 4 Research findings

The first step in interpreting a structural model is to assess the quality of the measurement model in terms of reliability and validity. In the case of reflective constructs, the assigned indicators (measurable variables) should be strongly correlated with latent variables so that the total amount of common variance explained by the latent variable in measurable variables is at least 50%. The level of correlation of the construct with each of the measurable variables is determined by factor loadings, whose values are interpreted identically to Pearson's linear correlation coefficients. Scholarship assumes that the minimum value of factor loadings should be around 0.55, which allows for about 30% of variance in the measured variable to be explained by the related latent variable [Hair et al., 2017]. Moreover, most measurable variables in each construct should have factor loadings of more than 0.7, which corresponds to the level of explained variance above 50%. Table 2 displays factor loadings for the estimated model and indicates that their level is high enough to conclude that latent variables are well represented by their assigned measurable variables.

**Table 2.** Factor loadings of measurable variables

| | | | Source | Factor loadings |
|---|---|---|---|---|
| PLATFORM QUALITY | Content | These websites provide accurate information about the tourist products I want to buy. | Bonsón et al. [2015], Park et al. [2007], Tsang et al. [2010], and Duman and Tanriesevdi [2011] | 0.827 |
| | | These websites provide enough information to make a transaction. | | 0.777 |
| | | OTAs are very good sources of information. | | 0.829 |
| | | OTAs always present content correctly. | | 0.854 |
| | | It is possible to book all travel services in one transaction. | | 0.802 |
| | | OTAs give me enough information so that I can identify what I'm looking for just as well as offline. | | 0.759 |
| | | Information available on OTAs is intuitively categorized. | | 0.834 |
| | | I am able to compare many offers in one place. | | 0.646 |
| | Privacy and security | I feel my privacy is protected by OTAs. | Park et al. [2007], Tsang et al. [2010], Bernardo et al. [2012], Martinez-Costa et al. [2018], and Bonsón Ponte et al. [2015] | 0.711 |
| | | I trust OTAs will not share my personal information with other sites without my consent. | | 0.683 |
| | | I trust OTAs will not misuse my personal information. | | 0.714 |
| | | OTAs have adequate security features. | | 0.752 |
| | | These platforms are well-known. | | 0.733 |
| | | I trust OTAs. | | 0.741 |
| | | These platforms have a good reputation. | | 0.794 |
| | | Comments published on OTAs' websites are reliable. | | 0.738 |

(*Continued*)

**Table 2.** Continued

| | | | Source | Factor loadings |
|---|---|---|---|---|
| | Utility and functionality | Search functions on OTAs' websites are helpful. | Park et al. [2007], Tsang et al. [2010], and Kim et al. [2007] | 0.822 |
| | | Thanks to OTAs I can match the right offer with my needs. | | 0.829 |
| | | Payment methods are convenient. | | 0.805 |
| | | OTAs send me recommendations adjusted to my needs and wants. | | 0.810 |
| | Visual aspect | OTAs' websites look attractive. | Park et al. [2007] and Tsang et al. [2010] | 0.839 |
| | | OTAs use multimedia features properly. | | 0.843 |
| | | OTAs' websites seem to be professionally designed. | | 0.812 |
| CST | Convenience | I can make reservations at any time, 7 days/week. | Park et al. [2007], Tsang et al. [2010], Duman and Tanriesevdi [2011], Kim et al. [2007], and Agag and El-Masry [2016] | 0.728 |
| | | I get from OTAs exactly what I booked. | | 0.803 |
| | | OTAs get bookings correctly. | | 0.802 |
| | | Booking on OTAs is easy | | 0.827 |
| | | Booking on OTAs is quick. | | 0.850 |
| | | Time spent filling in all necessary documents is short. | | 0.747 |
| | Responsiveness | When I have problems, OTAs show a sincere interest in solving them. | Park et al. [2007] and Tsang et al. [2010] | 0.710 |
| | | OTAs customer service personnel is always willing to help me. | | |
| | | Inquiries are answered promptly. | | 0.762 |
| | | It is easy to cancel or change the reservation. | | 0.719 |
| | | | | 0.721 |
| | Transaction Security | OTAs adequately protect the information on my credit card. | Tsang et al. [2010] and Bernardo et al. [2012] | 0.788 |
| | | OTAs protect the information about my purchase behavior. | | 0.763 |
| | | I feel safe about my transactions with OTAs. | | 0.758 |

Source: own elaboration.

CST, transaction convenience and security; OTAs, online travel agencies.

The AMOS 26.0 software was used to test the measurement model and assess its overall goodness-of-fit. Hu and Bentler [1999] and Kline [2016] recommend the following set of model fit measures and their acceptable thresholds: (1) relative chi square (CMIN/df) <1;3>; (2) square root mean residual (SRMR) <0.08; and (3) the root mean square error of approximation (RMSEA) >0.95. In the current analysis, goodness-of-fit measures showed that the measurement model exhibited an adequate level of compatibility with the collected data (CMIN/df = 2.982; CFI = 0.924; SRMR = 0.051; RMSEA = 0.058).

Additional information about the reliability and validity of construct estimates was provided by the Cronbach's alpha and average variance extracted (AVE). The Cronbach's alpha is a commonly used measure of the internal consistency of one-dimensional measurement scales, and it should be at least 0.6 [Malhotra, 2014]. Convergent validity describes the extent to which a construct explains the measurable variables assigned to it, which can be assessed with the metric of AVE. If the AVE for the sets of variables measuring each construct exceeds 50%, the convergent validity for the SEM model is considered adequate [Hair et al., 2017]. Both Cronbach's alphas (CA_PQ = 0.973; CA_CST = 0.949) and AVE calculated for the measurements used in the model were at acceptable levels (AVE_PQ = 0.612377; AVE_CST = 0.59083).

Discriminant validity occurs when each of the measurable variables correlates most strongly with the construct to which it is assigned and less strongly with all other constructs in the model. If there occur stronger correlations with other constructs, specification errors may lead to model instability. Table 3 shows the regression coefficients of all the indicators of the model with each of the latent variables. As we may see, all indicators are related most strongly to their own constructs, which suggests no problems with discriminant validity.

**Table 3.** Indicators of reliability and validity

| | PQ | | | | | | | | | | | | | | | | | | | CST | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CT.1 | CT.2 | CT.3 | CT.4 | CT.5 | CT.6 | CT.7 | CT.8 | U.2 | U.3 | U.4 | U.5 | P.1 | P.2 | P.3 | P.4 | P.5 | P.6 | P.7 | P.8 | VA.2 | VA.3 | VA.4 | CN.1 | CN.2 | CN.3 | CN.4 | CN.5 | CN.6 | R.1 | R.2 | R.3 | R.4 | TS.1 | TS.2 | TS.3 |
| PQ | **0.052** | **0.047** | **0.053** | **0.067** | **0.051** | **0.044** | **0.069** | **0.03** | **0.07** | **0.071** | **0.061** | **0.063** | **0.04** | **0.035** | **0.038** | **0.047** | **0.047** | **0.047** | **0.063** | **0.044** | **0.064** | **0.069** | **0.06** | 0.002 | 0.004 | 0.011 | 0.003 | 0.000 | 0.000 | -0.002 | -0.001 | -0.002 | -0.001 | -0.002 | 0.002 | 0.002 |
| CST | −0.011 | −0.002 | −0.011 | −0.008 | −0.006 | −0.001 | 0.001 | 0.004 | 0.006 | 0.004 | 0.004 | 0.004 | 0.006 | 0.006 | 0.003 | 0.004 | 0.009 | 0.007 | 0.009 | 0.005 | −0.005 | −0.002 | 0.001 | **0.076** | **0.119** | **0.144** | **0.133** | **0.137** | **0.078** | **0.062** | **0.08** | **0.064** | **0.066** | **0.088** | **0.088** | **0.087** |

*Source*: own elaboration.

CST, transaction convenience and security; PQ, platform quality; VA, visual appeal.

Once the goodness-of-fit of the model has been positively evaluated, we may proceed to the analysis of regression coefficients between the variables describing the different paths of the model (Table 4).

**Table 4.** Standardized regression coefficients and significance levels for regression paths

| Regression paths | |
|---|---|
| IU ⇐ PQ | $\beta = 0.794$; $p < 0.001$ |
| WOM ⇐ PQ | $\beta = 0.629$; $p < 0.001$ |
| WOM ⇐ CST | $\beta = 0.180$; $p < 0.001$ |
| IU ⇐ CST | $\beta = 0.111$; $p < 0.001$ |

*Source*: own elaboration.

CST, transaction convenience and security; IU, Usage intention; PQ, platform quality; WOM, word-of-mouth.

The regression paths correspond to the research hypotheses, and thus the regression coefficients are used to verify the hypotheses. Based on significance tests, it may be concluded that the statistical analysis provides strong evidence for the truth of hypotheses H1, H2, H3, and H4. Both analyzed factors, PQ and CST, demonstrate positive effects on usage intentions (IU) and WOM intentions. However, PQ has a slightly stronger effect on the dependent variables than CST. The obtained model is shown in the Figure 2.

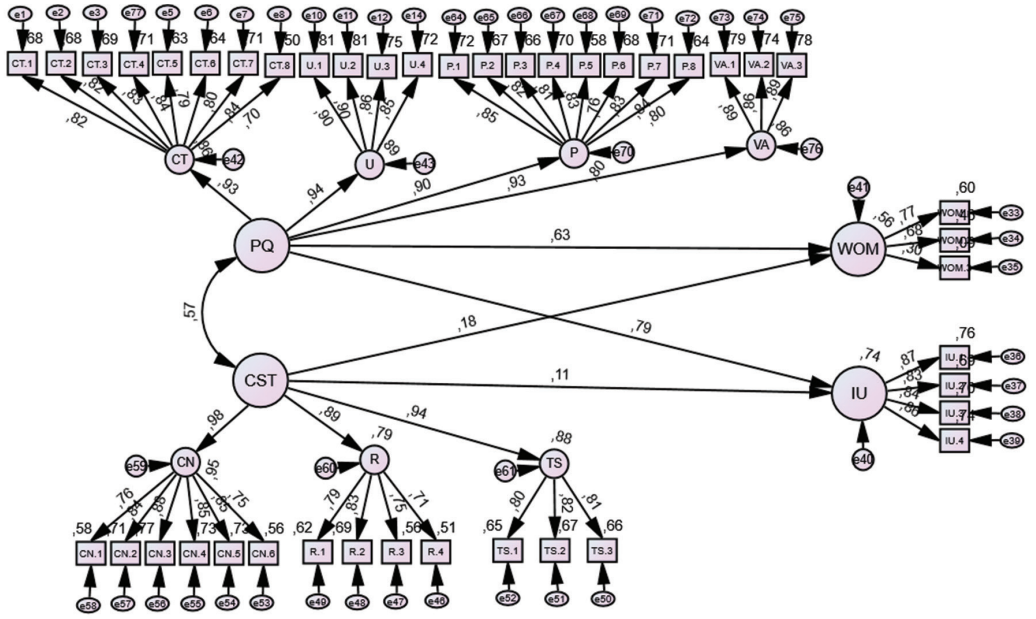



**Figure 2.** Structural equation model of factors that affect Usage and WOM Intentions on OTAs.
*Source*: own elaboration. OTAs, online travel agencies; WOM, word-of-mouth.

To verify hypotheses H5, H6, H7, and H8, a multigroup analysis has been performed with variables of gender, age, education, and income level used to identify comparison groups. All performed tests showed no statistically significant differences between the subgroups. Groups consisting of individuals with higher and lower education levels, the income above and below the national average, and age above and below 35 years showed similar behaviors in terms of effects of PQ and CST on IU and WOM. Moreover, local tests for individual variables as moderators showed no statistically significant differences, and differences in regression weights were not substantial. In AMOS, the so-called local tests compare individual regression paths between subgroups with likelihood ratio tests. Although no statistically significant difference was observed between men's and women's behavior in the overall model level, a dissimilarity appeared in a local test. The effect of CST on IU appeared statistically significant only for men.

Furthermore, the effect of CST on WOM for men was significant at the $p < 0.10$ level, while for women at the $p < 0.05$ level. No such differences were observed in relation to the effect of PQ on IU and WOM.

Based on the above findings, hypotheses H5–H8 should be deeply analyzed, since the demographic variables of age, education, and income level do not meaningfully differentiate the investigated individuals. On the other hand, in relation to sex, we may partially support hypotheses H6 and H8 but reject H5 and H7. Table 5 tabulates the research hypotheses' acceptance.

**Table 5.** The research hypotheses acceptance table

| Hypothesis | Result |
|---|---|
| H.1 PQ has an impact on IU. | Supported |
| H.2 PQ has an impact on WOM Intention. | Supported |
| H.3 CST has an impact on IU. | Supported |
| H.4 CST has an impact on WOM Intention. | Supported |
| H.5 Demographic factors moderate the strength of association between PQ and IU. | Not supported |
| H.5a Sex moderates the strength of association between PQ and IU. | Not supported |
| H.5.b Age moderates the strength of association between PQ and IU. | Not supported |
| H.5.c Income level moderates the strength of association between PQ and IU. | Not supported |
| H.5.d Education level moderates the strength of association between PQ and IU. | Not supported |
| H.6 Demographic factors moderate the strength of association between CST and IU. | Partially supported |
| H.6a Sex moderates the strength of association between CST and IU. | Partially supported |
| H.6.b Age moderates the strength of association between CST and IU. | Not supported |
| H.6.c Income level moderates the strength of association between CST and IU. | Not supported |
| H.6.d Education level moderates the strength of association between CST and IU. | Not supported |
| H.7 Demographic factors moderate the strength of association between PQ and WOM. | Not supported |
| H.7a Sex moderates the strength of association between PQ and WOM. | Not supported |
| H.7.b Age moderates the strength of association between PQ and WOM. | Not supported |
| H.7.c Income level moderates the strength of association between PQ and WOM. | Not supported |
| H.7.d Education level moderates the strength of association between PQ and WOM. | Not supported |
| H.8 Demographic factors moderate the strength of association between CST and WOM. | Partially supported |
| H.8a Sex moderates the strength of association between CST and WOM. | Supported |
| H.8.b Age moderates the strength of association between CST and WOM. | Not supported |
| H.8.c Income level moderates the strength of association between CST and WOM. | Not supported |
| H.8.d Education level moderates the strength of association between CST and WOM. | Not supported |

*Source*: own elaboration.

CST, Transaction convenience and security; IU, usage intentions; PQ, platform quality; WOM, word-of-mouth.

## 5 Discussion and conclusions

The literature review demonstrated deep inconsistencies in the works of other authors concerning factors affecting behavioral intentions to use, recommend, and comment on OTA platforms. Nevertheless, desk research by the author of this article identified two main groups of pertinent factors: those representing the quality of the OTA platform (which is particularly important during the process of searching for travel information and making a purchase decision) and those associated with the convenience and security of transactions made via OTAs. This study investigated the effects of both groups of factors on IU and WOM intentions regarding OTAs.

A somewhat similar approach was adopted by Chen and Kao [2010], who looked into the effects of process and outcome quality on satisfaction and behavioral intentions. However, the authors used a very narrow, one-item scale to describe outcome quality, which differs considerably from the scale used in this study to measure CST. Moreover, Chen and Kao [2010] focus on the moderating role of satisfaction and recommend that both potential buying behavior and propensity can be combined into one construct, which would preclude the observation of differences in the effects of determinants and antecedents in the model on those dependent variables

The results obtained in this study support most initial hypotheses regarding determinants of IU and WOM for online intermediary platforms. Therefore, it follows that both PQ and CST have a positive impact on IU and WOW. Similarly, Chen and Kao [2010] confirmed that both process and outcome quality are positively associated with user satisfaction and behavioral intentions.

A comparison of regression weights in the current study shows a stronger impact of PQ than CST on both dependent variables (Table 5). Kim and Lee [2004], as well as Gao and Bai [2014], similarly stress the importance of PQ with a particular emphasis on its content and usability. In broad accord with these results, Martinez-Costa et al. [2018] indicate that only the information dimension (representing the effectiveness of information retrieval and information quality) and the utility of OTA platforms are meaningful drivers of satisfaction. In turn, Park et al. [2007] conclude that what is most important for consumers is the ease of use, closely followed by content, which partly confirms the findings of this study. Responsiveness, reliability, and security combined with privacy followed in the ranking of importance. On the other hand, those authors explained that VA, which in the current study is treated as part of the PQ construct, is not significantly correlated with IU. However, the correlation coefficient in this study's measurement model—which corresponds to the extent to which PQ, a second order reflective construct, is explained by VA, a first order reflective construct—is lower than other reflective dimensions of PQ (Figure 2). This may suggest that VA is less important than other antecedents of PQ, lending some support to the finding of Park et al. [2007].

Pinto and Castro [2019], using an international sample from Spain, France, and Brazil, identify differences in OTA users' behavior among respondents of different ages, income levels, and countries of residence, thus offering a significant contrast to the present study, which failed to show significant moderating effects in the cases of most of the considered demographic variables. The multigroup analysis using different demographic criteria (age, education, income level) found no group differences in attitudes regarding the impact of PQ. However, there were gender differences in the effect of CST on the dependent variables (IU and WOM). Since CST emerged as a statistically significant driver of IU in the male subgroup, CST-related factors should be given more prominence when managing OTAs. In contrast, since the relationship between CST and WOM was found to be significant at the $p = 0.05$ level for women, it should be assumed that women with higher levels of satisfaction with CST are more likely to recommend OTAs and contribute comments on the platform.

The reason for the discrepancy between the conclusions of Pinto and Castro [2019] and those drawn in the present study probably lies in the sample size and the sampling method, but more importantly, it can also be due to the different lists of examined constructs (e.g., cost savings, site comments, visual elements). It should be emphasized that the research sample in this study was selected from a panel of Polish Internet users, who are actively using the Internet on a daily basis. According to the new approach to the so-called Generation C concept ("digital natives" or people who integrate technology into every aspect of their daily routine), this group, being a psychographic rather than a demographic construct, comprises individuals

who cannot be attached exclusively to the millennial generation [Solis, 2013]. It seems that people from different age groups could show similar behavior when it comes to using online technologies.

Since the survey for this study was conducted in September 2020, when the COVID-19 pandemic was already in full force, the respondents' answers reflected their current attitudes and behavioral patterns accounting for the influence of lockdowns, higher anxiety, and other pandemic-related impacts. However, since partial restrictions on movement and tourist travel were already in force for about 5 months at the time of the survey, we may assume that the pandemic situation did not affect the obtained data. The respondents in the survey were tourists who had used OTAs in the past, before the pandemic. Moreover, the preliminary research aiming to define the accurate distribution of a representative sample was conducted just before the main survey, and therefore under the same circumstances. The main disturbance that can be reasonably expected in the future as the consequence of the pandemic is a general increase in the use of online technologies for booking and purchasing of various goods, including the further intensification of online purchases of travel services. Thus, the pandemic contributed to the rapid development of electronic sales channels by limiting direct contact with vendors to minimize the possibility of disease transmission.

A major contribution of the study to the theory of tourism marketing and management are its measurement scales and the list of constructs in the conceptual model. In no previous research known to the author have the factors connected with platform quality, transaction security, and convenience been analyzed together. Past research signaled many inconsistencies concerning construct operationalizations, and thus further research verifying measurement scales proposed in this study could provide meaningful methodological benefits; this is true especially with regard to research conducted in various national contexts to account for different cultural influences. Also, the identified moderating effects seem inconclusive and invite further validation through more in-depth research, perhaps of qualitative nature, to discover the true nature of the underlying causal mechanisms.

In addition to its theoretical contribution, the current study holds important practical implications, both for the institutions that conduct intermediary activities on the Internet in the tourism sector and for the service providers that already cooperate with intermediaries or are planning to expand their own sales channels. The conclusions of this study suggest that OTAs should emphasize perfecting the platform quality, including information content, usability, privacy, and visual elements. Although convenience and security of transactions in combination with responsiveness were identified as less important factors, their role in shaping consumer behavior should not be discounted, as reducing perceived quality in this regard would adversely affect consumer attitudes and their behavioral intentions.

Considering that no statistically significant differences were established for most of the studied consumer demographic attributes, one might assume that OTAs have no need to match content, usability, security, and visual elements to their users' demographic characteristics, as these characteristics probably do not differentiate their preferences. Instead, they should consider carrying out some modifications in the communication of elements of convenience and security of transaction targeted at men and women.

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## Author Biography

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