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# The Influence of the Characteristics of Online Itinerary on Purchasing Behavior

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**Abstract:** This study presents insights into the influence of the characteristics of tourism itineraries on tourist purchasing behavior. We adopted data between 1 August 2019 and 30 November 2019 from the Qunar, the biggest online tourism platform in China and 4366 samples on travel itineraries were obtained. The ordinary least square regression (OLS) method was used. Controlling for product-related and channel-related factors, we demonstrate that in terms of tourism destination choice, outbound tourism products attract an increased number of tourists; in terms of the types of travel, private travel has replaced group travel to become the majority of the tourism market; in terms of the length of travel, mid-term travel (4–6 days) is the first choice, outnumbering short-term and long-term ones; price promotions such as discount for early decision, multi-person price reduction and membership prices significantly lead to increased sales; online reviews also have great impact on tourist purchasing behavior. In sum, this study uses a unique data set to reveal the influence of online tourism product characteristics on sales and provide potential guidance of the marketing strategy in response to consumer behavior for the online tourism industry.

Keywords: online tourism; characteristics; tourism itineraries; purchasing behavior; tourists

### 1. Introduction

In 2018, China accounted for more than one-fifth of the four billion internet users worldwide and by the end of 2020, about 989 million people had access to internet in China. The development of information and communication technologies (ICTs) has a big impact on the tourism industry [1,2]. Many tourism companies now actively use Internet sites as a key marketing and sales vehicle for their products and services [3]. The authors of [4] realized that tourism and information technology would be well integrated and developed because tourism products and services are ideally characterized by online sales. Therefore, with the help of the Internet, the tourism market has received great vitality, and the traditional model and market competition means of the tourism industry have been significantly changed. The online tourism market has become an important direction for the development of the tourism industry. According to statistics of China's Online Travel Sector Data, the transaction scale of China's online tourism market reached CNY 602.6 billion in 2016, up by 34% year on year. The size of China's online travel market is expected to exceed CNY 1.5 trillion in 2022 [5]. Furthermore, the rapid growth of the online tourism industry in recent years also benefits both consumers and producers in many ways. The development of the online tourism market has completely changed consumers' buying habits. It is more convenient for consumers to search and compare relevant product information on the Internet, plan their trips and buy corresponding products [6]. Online tourism enables consumers to search for tourism products that meet their requirements with little cost. The implementation of new technologies in the tourism sector has benefited



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**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). from the power of the Internet to enable the instant checking of whether a service provider exists or the veracity and conditions of the service [7]. Apart from the convenience of shopping channels, consumers also prefer to shop online for lower perceived price and diversity of product types [8]. For producers, they can get insightful information about concerned key product features of consumers by analyzing a large volume of customer online data [9].

Given the importance of online travel, it is critical to understand what factors affect consumers' online purchases [10,11]. Although much research has begun to focus on the relationship between online tourism product characteristics and tourists' online purchasing behavior, there are still certain omissions. Firstly, the analysis objects of these studies mainly focus on the characteristics of websites [12–15]. However, with the development of online tourism, the major online tourism platforms are very similar in terms of website and web page style, the major differences begin to focus on the design and innovation of segmented tourism products, but there are few studies on this aspect. Secondly, while some studies have explored the influence of specific tourism product characteristics on consumers' purchasing behavior through the division of tourism complexity, there is still a lack of research on online tourism itineraries [16–18]. To approach these two research gaps, this study mainly concentrates on the influence of tangible and impalpable product characteristics and channel-related factors on consumers' purchasing behavior. We aim to reveal the trend of the most popular tourism products and help Qunar Website succeed in its online tourism marketplace product offerings.

The study is structured as follows. We begin by providing an overview of theories of consumer behavior followed by theories of online consumer behavior in Section 2. Section 3 is the research design, including data sources, detailed description of main variables and model setting. We then turn to the empirical results and analysis, including descriptive statistics, regression analysis and further analysis in Section 4. Finally, we provide a discussion of the significance and importance of our findings before concluding in Section 5.

### 2. Literature Review and Hypotheses Development

### 2.1. The Theories of Consumer Behavior

Since the 1960s, many scholars have studied tourist purchasing behavior based on the "Stimulus-Response" model. The Stimulus-Response theory is a theory of consumer behavior. John B. Watson, the founder of behavioral psychology, established the "Stimulus-Response" theory at the beginning of the 20th century, pointing out that complex human behavior can be broken down into two parts: stimulus, response, and human behavior as a response to a stimulus [19]. In 1969, based on the theory of John Watson, Howard cooperated with Sheth to put forward the Howard–Sheth model to study consumer purchasing behavior, with the influential factors including input factors, external factors, internal factors, and output factors [20]. In 1975, Fishbein and Ajzen proposed the Theory of Reasoned Action (TRA), which was mainly used to analyze how attitudes affected consumer behaviors [21]. Although TRA used to be one of the most fundamental and influential theories in behavioral science, with the development of behavioral research, it has been found that consumer behavior is not only affected by subjective attitude but also affected by a variety of other factors (external environment, etc.). Then in 1988, Ajzen proposed the Theory of Planned Behavior (TPB) based on TRA. This theory adds a new concept of Perceived Behavior Control, which emphasizes that consumer behavior is not voluntary but under control. Ajzen believes that consumer behavior could be reasonably inferred to some extent by his or her behavioral intentions, which in turn are determined by his or her attitude, subjective norms, and perceived behavioral control [22]. Attitude refers to a person's positive or negative feelings towards behaviors; subjective norms refer to the social pressure that individuals feel on whether or not to take a particular behavior; perceived behavioral control refers to the hindrance that reflects an individual's experience and expectation. When an individual thinks that the more resources and opportunities

he has and the less hindrance he expects, the stronger his perceived behavioral control over his behavior would be. In 1989, Davis proposed the Technology Acceptance Model (TAM) based on theories from Ajzen et al., to analyze users' acceptance of the information system [23]. The technology acceptance model includes two main determinants: perceived usefulness reflects the extent to which a person believes that using a specific system would improve his performance at work; perceived ease of use reflects the degree to which a person finds it easy to use a particular system. Therefore, it can be seen from the related theories of behavioral science that consumers will have a series of activities in their mind when they are influenced by stimulus factors and external factors, and finally generate purchase behaviors [23]. Therefore, behavior is mainly influenced by stimulus factors, external factors, and internal factors. The stimulus factors include product stimulus and social stimulus. External factors include time, economy, culture, personality, etc. Internal factors include perceptual structure, learning structure, etc. [24].

#### 2.2. Online Tourist Consumer Behavior

With the rise of online tourism, a large number of studies have begun to focus on the factors affecting online tourist purchasing behavior, including personal factors [25–27], website [25,28,29] and product features [17,28,30,31], and community influences, such as tourism organizations, word of mouth, etc. [31,32].

Personal factors mainly involve demographic characteristics, cultural background, social and psychological factors, subjective norms, and attitudes. Wen and Sha (2011), Luo et al. (2019) believe that gender plays a significant regulating role between trust and online repurchase intentions of tourists [33,34]. Bogdanovych et al. (2006) find that deep computer users are more inclined to order high-complexity outbound tours through local travel agencies and order low-complexity domestic tours through online ordering [18]. Hagag et al. (2015) construct the framework of e-cultural adaptability theory to study the influence of cultural concepts on the online purchase of tourism products by Egyptian tourists [35]. Kim et al. (2007) study the relationship between the tourists' loyalty and their cognitive sense of security, website nature, and website navigation functionality in online purchases, and find that there is a strong correlation between them [36]. Moreover, some studies find that tourist satisfaction with travel websites leads to a higher willingness to buy online, with tourist satisfaction being affected by the site's navigation, security perception, transaction costs, interactivity, customization, and attractiveness [13,14,29,37–39]. Other studies looking at the impact of online product purchase experience on tourists'online purchase behavior have determined that only tourists with satisfactory consumption experience are more willing to buy online travel products. Kolsaker et al. (2010) find that the satisfaction of previous online product purchases would lead to a higher willingness to purchase online products based on the study on the satisfaction of consumers in purchasing online air tickets [40]. Kim et al. (2006) conduct an empirical study to find that previous online shopping satisfaction has become the main influencing factor for consumers to book a room online [41]. Law (2009) believes that tourists with rich experience are more willing to book travel products through online channels [42]. Jensen (2012) finds that perceived risk and consumers' online travel purchase intention are significantly negatively correlated [43]. In addition, risk perception is an important aspect that inhibits online travel purchases. Kolsaker et al. (2010) find that although Hong Kong has a good Internet infrastructure, consumers in Hong Kong are not willing to buy airline tickets online [40]. This is because although consumers are aware of the convenience of buying tickets online, the risks of buying tickets online outweigh the convenience.

In terms of website characteristics, some studies focus on the impact of the characteristics of travel websites on consumers' online product purchasing behavior. Good website design could significantly influence consumers' online purchase intention [15] and consumers' trust [12]. Law and Bai (2008) find that website quality measured from two dimensions of usability and functionality has an indirect impact on consumers' purchase intention through satisfaction [13]. Lin, Jones and Westwood (2009) find that the use of pictures on online travel websites and the appearance of contract information reduce the perceived risks of online travel products for Taiwanese consumers [44]. Wong and Law (2005) found that in the aspect of online reservation of hotel rooms, the importance of price was greater than that of the characteristics of the website [45].

Existing literature analyzing the effects of online itinerary product characteristics on the purchasing behavior is rich and well developed.

As for tangible product characteristics, price is an influencing factor of customers' perceptions and decisions [46]. First, on the one hand, price directly influences consumers' intention to buy products according to the law of demand. On the other hand, price is also correlated with how customers perceive various dimensions of service quality [46] and risk [47]. Higher product costs could mean greater levels of economic risk, social risk, performance risk, personal risk and privacy risk which are negatively associated with consumers' intention to shop [47]. Therefore, we should control the price. Second, as far as a travel destination is concerned, Anckar and Walden (2001) define domestic tourism products as low-complexity products, while outbound tourism products were defined as high-complexity products [48]. The study finds that with the development of online tourism, high-complexity tourism products attract more and more attention. However, some researchers come to contradictory conclusions. To test whether inbound destinations are less popular, we include the travel destination in our study. Third, consumers' preferences over travel types which change over time may also affect the sales. As Chinese holidays trigger the augmentation and even popularity of independent travel and self-driving, the demand for online travel bookings is expected to increase [49]. Thus, we control for four different travel types in our study. Fourth, Qunar provides consumers products with three levels of product quality varying from luxury to budget. Specialist travel agents in luxury tourism are driven by powerful regard for the high expectations of wealthy clients [50]. Additionally, heterogeneous products are designed for different groups of consumers. Following Mirehie et al. (2018), preferences for three types of product quality (budget, mid-range, luxury) are examined for differences in our study [51]. Fifth, from the perspective of accommodation cost, the reduction in it allows travelers to consider and select destinations, trips, and tourism activities that are otherwise cost-prohibitive [52]. In addition, with the emergence of peer-to-peer accommodation, consumer preferences are more widely distributed. For instance, peer-to-peer accommodation appeals to consumers who are driven by experiential and social motivations [53]. Hence, the quality and relative cost of hotels may indirectly influence the sales of the online itineraries, which we will include in our regression. Sixth, the resulting high perception of risk and fear of opportunism make trust a crucial element of electronic commerce, and association and similarity with a known brand are factors that promote customers' trust and behavioral intentions [54]. Thus, we will include a dummy variable indicating the popularity of travel agencies to control for the brand effect. Last but not the least, we also control for the duration of the tour which previous studies pay sparse attention to.

As for impalpable product characteristics, existing studies primarily focus on two factors. First, as far as preferential activities are concerned, online price promotion is commonly used by merchants to increase sales [55]. Park and Jang (2018) find that most potential travelers purchase tourism products from online travel agents that provide price promotions [56]. However, previous research mainly focuses on the discount rate where consumers' purchase intention is greater when the price discount is higher [57]. Additionally, little is known about how consumers assess different kinds of special offers. This study aims to fill this gap by taking four types of promotions provided by the Qunar platform into account. Second, Heide (1994) argues that formal contracts make it easier to fulfill a partner's expectations and to be sure that the partners' activities are in line with the agreement [58]. In addition, consumers think a Website should provide a formal guarantee of service, offer a refund of the price paid and welcome feedback and comments, to increase trust, relationship and ultimately online purchases [59]. Following their study, Amaro and Duarte (2016) suggest that trust induced by formal warranties has the second

strongest total effect on the intention to purchase travel online, indirectly through its impact on perceived risk and attitude [60]. In the context of the tourism industry in China, it is common for travel agencies to make commitments such as no shopping and refunding at any time etc., which will be included in our study.

Based on the aforementioned arguments, the following hypotheses are posited:

**Hypothesis 1 (H1).** *Ceteris paribus, the tangible product features (e.g., price, destination choice, travel type, product quality, duration of travel, type of accommodation, and the popularity of travel agencies) are significantly associated with sales.* 

**Hypothesis 2 (H2).** *Ceteris paribus, the impalpable product features (e.g., preferential activities and service commitments) have a positive influence on sales.* 

In addition, previous research also has attempted to identify the relationship between channel-related factors and sales. First, recent surveys have shown that consumers trust and rely on online reviews more than they do on website recommendations and expert opinions [61]. Additionally, online reviews provide decision-making opinions and weight information for tourists who have never been to alternative travel destinations [62]. The quantity, quality and valence of online views may have an impact on the sales of different online travel products [61,63-65]. Online reviews have become an important resource for consumers to search for valuable travel information, which is a sharing of past consumption experiences by consumers [66,67]. A large number of studies had analyzed the impact of online reviews on consumer buying behavior [68]. According to the survey by Vlachos (2012), 87% of international tourists had arranged their travel through the online tourism product platform, and 43% of international tourists had read the travel comments shared by others [69]. Although a large number of online reviews of travel could make information more accessible to tourists, it also made it more difficult for consumers to judge useful information. On the one hand, tourism information obtained through online social media could reduce tourists' search costs, but many individuals were limited in their ability to deal with a large amount of information, which leads to information overload [70]. In other words, relevant tourism product review information reduced the product search cost but increased the identification cost [71]. Many studies had analyzed the impact of consumers' online comments on their purchase decisions [72], search costs [73], and product sales [74]. Hence, we should control for the impact of online reviews on commercial performance. The forms of online reviews on Qunar platform are diversified, including numerical ratings, text reviews, and images. However, we do not focus on natural language processing or image datasets in this study and the only control for the numerical rating, or rather, the user evaluations and satisfaction. Moreover, due to the limitation of the data, we cannot have access to the information of helpfulness of the reviews which measures the quality of online reviews. Second, as for the effects of reputation on sales, reputation significantly affects the consumer's perception of trust [75] and thereby enhances a firm's performance [76]. Francisco et al. (2019) suggest that a destination's online reputation plays a key role in promoting its competitiveness [77]. In this study, we use the credit rating of merchants as a proxy for a merchant's reputation.

Hence, we propose the hypothesis as follows:

**Hypothesis 3 (H3).** *Ceteris paribus, an increase in online reviews (e.g., online ratings, credit ratings) results in incremented sales.* 

To summarize, the research on the online product purchasing behavior of tourism consumers mainly focuses on behavioral intention, classification of online tourism products, website characteristics, online reviews, etc., while research on the core tourism product of tourism itineraries is lacking. This paper makes up for the lack of research in this aspect by studying the product characteristics of Qunar's tourist itineraries. Aw et al. (2021) study the impact of channel-related, consumer-related, and product-related factors on webrooming intention [78]. Due to the lack of consumer-related information, similarly, we divide the

influencing factors of the tourist itineraries into two aspects, namely product-related factors and channel-related factors. Moreover, to tell tangible product features from impalpable product features, we categorize the product-related factors into two subclasses. As for the characteristics of tourism products, tourism enterprises should offer their customers both tangible and intangible products which usually complement each other and are perceived as integral parts of a whole travel experience [79]. This study also provides an insight into the differential effects of tangible and intangible features of hotel products on customer satisfaction [79]. In a nutshell, three categories of indicators were studied: the tangible product features including price, destination choice, travel type, product quality, length of travel, type of hotels, and the popularity of travel agencies; the impalpable product features including preferential activities and service commitments; and the channel-related factor including tourist feedback in our study.

### 3. Research Method and Data Description

The data for this survey is from Qunar (https://www.qunar.com/, accessed on 31 March 2020), one of the largest online travel websites in China. On 31 March 2020, Qunar could search about 9000 travel agent websites, covering more than 280,000 domestic and international airlines, about 1.03 million hotels, 850,000 vacation routes, nearly 10,000 tourist attractions worldwide, and offering more than 200,000 travel group purchase products every day. The information presented on this website is very representative. In this paper, data collection was undertaken mainly through the web crawler octopus collector to obtain data between 1 August 2019 and 30 November 2019. The web crawler octopus collector is the most extensively used web scraping and data extraction tool helping us extract relevant data from the website URL. After data sorting, 4366 pieces of product information were obtained, and these products cover all kinds of travel itineraries on Qunar.

Figure 1 shows the classification of tourism destinations chosen by tourists. Among the 4366 tourism products, more than half of them are domestic tourism, accounting for 61.09% of the total. Then, the tourism products from East Asia and Southeast Asia account for 18.23% of the total. Finally, the products from Europe and America are very similar, with 10.93% from Europe and 9.76% from America.

## PRODUCT DISTRIBUTION IN DIFFERENT DESTINATIONS



Figure 1. Product distribution in different destinations.

As far as the research topic is concerned, the two most interesting variables in this paper are the characteristics of online tourism products and consumers' purchasing behaviors. For the measurement of online tourism product characteristics, the variables to be

measured include destination choice, price level, travel type, product quality, length of travel, type of hotels, and popularity of travel agencies on Qunar.

First, as for destination choices, Qunar covers almost all the tourist destinations in the world. In terms of their distances from China, this paper divides the tourist destinations into three categories: domestic Chinese tourism destinations, Southeast Asia and East Asia tourism destinations, and other overseas tourism destinations. Second, the price level is an important indicator in influencing consumer purchasing behavior. Absolute price is a determinant of perceived service quality [46] and risk [47], and thus it has both direct and indirect impacts on the demand. The price on the website will be adjusted according to the variation of date. This paper takes the lowest price of tourism expeditions in this period as the measurement standard. According to the price statistics on the website, most of the starting prices are also the actual prices paid by consumers. Any rise in some prices is due to the golden week and other factors. Third, the rise of online tourism has made the mode of tourism change from the traditional group and ground receiving services to more personalized and humanized self-order services. The travel type can be divided into four categories: group travel, independent travel, semi-self-help travel, and private travel. Fourth, with the increase in economic development and the improvement of consumers' living standards, consumers are pursuing higher-quality tourism products and can do so since different levels of tourism products meet the differentiated needs of consumers. In the earlier stage of tourism e-commerce, the Chinese online customers were very pricesensitive, but now Chinese customers also tend to express concern about service quality, the trustworthiness of retailers and transaction security [49]. Therefore, we also control for the product quality. In this paper, the product quality is divided into ordinary, light luxury, and luxury according to the Qunar platform. Fifth, as far as the travel length is concerned, travelers' desires for more meaningful social interactions with locals and unique experiences drive them to stay longer and participate in more activities [53]. In this study, the travel length is divided into three categories: short-term trips of 3 days or less, mid-term trips of 4–6 days, and long-term trips of 7 days or more. Sixth, the relative price of the accommodation may affect the consumers' selection of travel destinations [52], and with the prevalence of peer-to-peer accommodation, customers' purchasing behavior is changing in the context of sharing commerce [80]. Therefore, we should control the type of accommodation. In this study, hotel types are divided into three types: economy, comfort, and luxury. Lastly, the popularity of travel agencies can be divided into three types: niche, common, and well-known.

In this study, the measurement of consumer purchasing behavior is mainly based on the actual purchase quantity of consumers of different tourism products. Quar has provided volume of such for the last three months for different travel products.

Figure 2 shows the distribution of the volume of tourism products, with the horizontal coordinate indicating product volume which refers to the number of transactions done in the three months, and the ordinate representing the number of tourism products corresponding to the volume. It presents that tourism products in volumes of 20 and 30 accounted for the absolute majority. The volume of products under 30 accounted for 86.01 percent of the total number of products. The distribution of product volume shows an extremely skewed distribution and a right-skewed distribution.

### TOURISM PRODUCT VOLUME DISTRIBUTION MAP



Figure 2. Tourism product volume distribution map.

Tourists' purchasing behavior of online tourism products is not only affected by the tangible characteristics of tourism products. Impalpable product features [79] such as the guarantee of products and promotion methods [60], as well as channel-related factors like online reviews [61,62] and the credit rating of merchants [77] also count. These indicators are controlled in this paper. In terms of user evaluation, two indicators are used, one is the overall rating of products by consumers in the past and the other is the satisfaction of consumers on products. Following Fang et al. (2016), we include the mean of reviewers' historical ratings [81] of both indicators to measure the influence of the perceived value of online tourism reviews. The credit rating of a merchant is an indicator of the overall reputation of a merchant, which integrates the qualification, operation ability, user evaluation, stability of a merchant, and especially the compliance operation status. Product and service commitment can reflect the product's confidence well. On the Qunar website, the service commitment indicator mainly includes a refund at any time, a truthful description, no more self-pay, a travel guarantee, a promise that a group formed, and no shopping. Merchants also launched a variety of promotional methods for products, including discounts for early decisions, multi-person reduction measures, membership prices, and gift cards.

Table 1 provides descriptive statistical results and variable descriptions of the main variables. As can be seen from the product price, the price of different tourism items varies greatly. The average price is 7222.53, but the standard deviation of the price reaches 18,991.82. The lowest price of the project is CNY 7, while the highest price reaches CNY 252,803. This price difference is significantly correlated with destination choice, product quality, and length of travel.

Variables	Measured Value	Mean/Frequency	Standard Deviation/Percentage	Variable Description
Sales volume	4366	29.56	28.91	The minimum value is 0 and the maximum value is 946
Price	4366	7223	18,992	The minimum value is 7 and the maximum value is 252,803
Destination choice	4366			Classified variable
Chinese domestic tourism		2667	61.09%	
East Asia and Southeast Asia		796	18.23%	
Europe and America, other overseas tourism destinations		903	20.68%	
Travel type	4366			Classified variable
Group travel		584	13.38%	
Independent travel		2871	65.76%	
Semi-self-help travel		9	0.21%	
Private travel		902	20.65%	
Product quality	4366			Classified variable
Ordinary		2845	65.16%	
Light luxury		639	14.64%	
Luxury		882	20.20%	
Length of travel	4366			Classified variable
Short-term		1511	34.61%	
Mid-term		1508	34.54%	
Long-term		1347	30.85%	
Type of hotels	4366	2	0.740	Classified variable
Economy		1996	45.72%	
Comfort		1189	27.23%	
Luxury		1181	27.05%	
The popularity of travel agencies	4366			Classified variable
Common		2187	50.09%	
Niche		1152	26.39%	
Well-known		1027	23.52%	
Preferential activities				
Discounts for early decision	4366	0	0.0600	0 = No; 1 = Yes
Multi-person reduction measures	4366	0.0100	0.0700	0 = No; 1 = Yes
Membership prices	4366	0	0.0700	0 = No; 1 = Yes
Gift cards	4366	0.0500	0.210	0 = No; 1 = Yes
Service commitments:				
Refund at any time	4366	0.680	0.470	0 = No; 1 = Yes
Truthful description	4366	0.940	0.240	0 = No; 1 = Yes
No more self-pay	4366	0.230	0.420	0 = No; 1 = Yes

### Table 1. Descriptive statistics of variables.

Variables	Measured Value	Mean/Frequency	Standard Deviation/Percentage	Variable Description
Travel guarantee	4366	0.110	0.310	0 = No; 1 = Yes
Promise that a group formed	4366	0.470	0.500	0 = No; 1 = Yes
No shopping	4366	0.300	0.460	0 = No; 1 = Yes
Tourist feedback				
User evaluation	4366	4.990	0.0300	The higher the number, the better the evaluation
Satisfaction	4366	99.83	0.460	The higher the number, the better the evaluation
Credit rating	4366	2.100	1.960	The higher the number, the better the evaluation

Table 1. Cont.

In terms of the characteristics of tourism products, there exist great differences in the purchase amount of different characteristic products. For the choice of the tourist destination, 61.09% of the buyers choose domestic tourism. On the aspect of the type of travel, traditional group travel accounts for only 13.38%, while independent travel account for 65.76%, indicating that independent travel has become the preferred form by tourists. As for the quality of tourism products, the majority of consumers choose cheap and ordinary ones, accounting for 65.16%. For the length of travel, short-term, mid-term, and long-term travel account for a similar proportion, almost all around 30%. For hotel types, nearly half of the consumers (45.72%) choose economy hotels. As for the travel product providers, consumers do not pay special attention to the products provided by well-known travel agencies and more than half of the consumers (50.09%) choose ordinary travel agencies.

### 4. Model Estimation and Results

To test the impact of the characteristics of online tourism products on tourist purchasing behavior, this paper uses the ordinary least square (OLS) method to estimate relevant parameters. Since the turnover of each tourism product has a seriously skewed distribution, this paper conducts logarithmic treatment on it to reduce the influence of extreme values. The basic model is:

$$\ln(amount_i) = \beta_0 + \beta_1 \cdot X_i + \beta_2 \cdot Z_i + u_i \tag{1}$$

In the model,  $\ln(amount_i)$  represents sales volume,  $X_i$  represents variables of online tourism products, including destination choice, type of travel, price, quality of products, length of travel, type of hotels, and popularity of travel agencies.  $Z_i$  represents other variables to influence tourists' purchasing behaviors, including preferential activities, service commitment, user evaluation, satisfaction, and credit rating. First, a table of all variables presented is shown in Tables 2–4. Most of the correlation coefficients of various variables in Tables 2–4 are below 0.3. Based on the conclusion by Tabachnick and Fidell (2012) [82], only when the correlation coefficient of variables is 0.9 or above can the problem of multicollinearity between variables be considered. Therefore, the estimation errors caused by the multicollinearity of variables can be excluded in this paper. In this paper, the AIC criterion is used to screen variables by stepwise regression, and the final regression results are presented in Tables 2–4.

Variables	Coefficient	Standard Deviation	t	Р	Confidence Interval	
Destination choice (benchmark group: domestic)						
East Asia and Southeast Asia	0.125 ***	0.02157	5.78	0.000	0.08239	0.16696
Europe and America, other overseas tourism destinations	0.117 ***	0.01686	6.94	0.000	0.08395	0.15006
Logarithm of price	-0.031 ***	0.00700	-4.50	0.000	-0.04523	-0.01778
Travel type (benchmark: group travel)						
Independent travel	0.024	0.01560	1.57	0.117	-0.00610	-0.05520
Semi-self-help travel	-0.043	0.10303	-0.42	0.674	-0.24539	0.15858
Private travel	0.072 ***	0.02466	2.90	0.004	0.02323	0.11991
Product quality (benchmark: ordinary)						
Light luxury	0.007	0.01296	0.57	0.571	-0.01799	0.03262
Luxury	-0.026	0.01680	-1.58	0.113	-0.05958	0.00632
Length of travel (benchmark: short-term)						
Mid-term	0.044 **	0.02175	2.03	0.042	0.00159	0.08688
Long-term	0.001	0.01442	0.09	0.928	-0.02697	0.02958
Type of hotels (benchmark: economy)						
Comfort	-0.036 ***	0.01382	-2.62	0.009	-0.06327	-0.00909
Luxury	-0.028 **	0.01368	-2.01	0.045	-0.05427	-0.00063
The popularity of travel agencies (benchmark: common)						
Niche	-0.027 **	0.01177	-2.31	0.021	-0.05023	-0.00408
Well-known	-0.026	0.01567	-1.64	0.100	-0.05647	0.00495
Constant term	28.32 ***	1.26878	22.32	0.000	25.83490	30.80981
Number of samples	4357					
adj. R-sq	0.195					
F	34.99 ***					

Table 2. The results of regression: the impact of tangible product characteristics of online itineraries on purchasing behavior.

Note: \*\*\*: *p* < 0.01, \*\*: *p* < 0.05.

It can be seen from Table 2 that the characteristics of tangible products have an impact on tourists' purchasing behavior. In terms of destination choice, although the total number of outbound tourism products is not as large as that of domestic tourism, the average sales volume is more than 11% higher than that of domestic tourism. East and Southeast Asia on average sell 12.5% more than domestic tours, while other regions such as Europe and America sell 11.7% more than domestic tours. This shows that online overseas travel products have become more and more popular among tourists.

Concerning the type of travel, tourists have shifted away from the mainstream travel mode of group travel and new forms of travel such as independent travel and private travel have become more and more popular among tourists. From the regression, it can be seen that private travel has become the most popular form of tourism, followed by independent travel. The average sales volume of online independent travel is 2.4% higher than that of group travel, and the *p*-value of the regression coefficient is 0.117, indicating a significant level of 11.7%. The sales of private travel are 7.2% more than group travel. This shows that in recent years, with the improvement of people's living standards, consumers tend to

prefer tours with more flexible arrangements and traveling with intimate people. Among all the travel types, private travel is the most popular one, followed by independent travel.

Table 3. The results of regression: the impact of expected product characteristics of online itineraries on purchasing behavior.

Variables	Coefficient	Standard Deviation	t	р	Confidence Interval	
Preferential activities						
Discount for early decision	0.345 ***	0.08255	4.18	0.000	0.18305	0.50671
Multi-person reduction measures	0.358 ***	0.06556	5.46	0.000	0.22961	0.48665
Membership prices	0.621 ***	0.06829	9.10	0.000	0.48741	0.75521
Gift cards	-0.022	0.02657	-0.84	0.398	-0.07452	0.02965
Service commitments						
Refund at any time	0.004	0.01159	0.34	0.737	-0.01883	0.02659
Truthful description	0.058 **	0.02309	2.52	0.012	0.01288	0.10345
No more self-pay	-0.005	0.01295	-0.36	0.717	-0.03009	0.02070
Travel guarantee	-0.021	0.02282	-0.94	0.348	-0.06614	0.02333
Promise that a group formed	0.034 **	0.01419	2.39	0.017	0.00615	0.06177
No shopping	0.013	0.01312	0.97	0.334	-0.01313	0.03860
Constant term	28.32 ***	1.26878	22.32	0.000	25.83490	30.80981
Number of samples	4357					
adj. R-sq	0.195					
F	34.99 ***					

Note: \*\*\*: *p* < 0.01, \*\*: *p* < 0.05.

**Table 4.** The results of regression: the impact of extended product characteristics of online itineraries on purchasing behavior.

Variables	Coefficient	Standard Deviation	t	р	Confidence Interval	
Tourist feedback						
User evaluation	-0.461 **	0.18891	-2.44	0.015	-0.83101	-0.09028
Satisfaction	-0.226 ***	0.01103	-20.50	0.000	-0.24779	-0.20454
Credit rating (benchmark: 1 diamond)						
2 diamonds	0.092 ***	0.02317	3.96	0.000	0.04635	0.13721
3 diamonds	0.062 ***	0.01674	3.91	0.000	0.03267	0.09832
4 diamonds	0.048 ***	0.01653	2.93	0.003	0.01596	0.08078
5 diamonds	0.057 ***	0.01404	4.07	0.000	0.02965	0.08472
Crown	0.079 ***	0.01495	5.26	0.000	0.04939	0.10801
Constant term	28.32 ***	1.26878	22.32	0.000	25.83490	30.80981
Number of samples	4357					
adj. R-sq	0.195					
F	34.99 ***					

Note: \*\*\* *p* < 0.01, \*\* *p* < 0.05.

As for the quality of products, light luxury travel has become the most popular travel item, replacing regular travel in popularity. However, luxury travel still sells less than regular travel on average. The sales of light luxury travel are 0.47 percent more than the

average, while the sales of luxury travel are 2.9 percent less than the average but remain statistically insignificant.

For the length of travel, medium-term travel is more popular, with sales 4.4% higher than short-term ones, at a significant level of 5%. We believe that consumers are constrained by both relative transportation costs and time, and thus significantly choose medium-length travel more. For the type of hotels, economy hotels are the dominant choice, outselling comfort hotels by 3.6% and luxury hotels by 2.8%. Consumers pay less attention to the quality of hotels than to the quality of travel products as a whole. This offers strong evidence in support of the finding that reduction in accommodation costs allows travelers to consider and select destinations, trips, and tourism activities that are otherwise cost-prohibitive [52]. As for the popularity of travel agencies, ordinary travel agencies have always been the mainstream choice of tourists, followed by niche travel agencies. The sales volume of niche travel agencies is 2.7% lower than that of ordinary travel agencies, which is significant at the level of 5%.

According to Table 3, the characteristics of expected products, including preferential activities and service commitments, would have impacts on sales volume. In terms of preferential activities, a discount for early decisions can significantly increase the average sales volume of products. The sales volume of tourism products with a discount for early decisions can increase by 34.5% on average compared with those without such preferential activities. While the multi-person reduction measures can increase the sales volume by 35.8%, the membership price is the most effective, increasing the sales volume by 62.1%. Except for gift cards, all other three methods of price promotion can play a significant role in increasing sales and thus travel agencies can adopt it as a useful marketing strategy. On the aspect of service commitments, a truthful description and promise that a group is formed attract more of the tourists' attention. Tourism products with truthful descriptions have an average sales volume of 5.8%, higher than those without such commitments, while tourism products with the promise that a group is formed help increase the sales volume by 3.4%. Although other service commitments have an impact on tourist purchasing behaviors, they are not statistically significant.

Table 4 shows that the purchasing behavior of online travel itineraries is affected by the feedback results of previous tourists, which is mainly manifested in three aspects: user evaluation, satisfaction, and credit rating. However, tourism itineraries with higher user evaluations and satisfaction may not have higher sales volume. This may be because user evaluation and satisfaction scores are affected by sales volume. Itineraries with a high sales volume likely have more user evaluations, among which, the number of negative evaluations is more than that of itineraries with a low sales volume. The credit rating of merchants has a significant impact on sales volume. Compared with merchants with the credit rating of one diamond, the average sales volume is significantly greater for merchants who have higher levels of credit rating. Additionally, for merchants who have more than three diamonds, with the continuous improvement of credit rating, the sales volume is constantly increasing.

Due to the ignorance of the specific pricing strategy adopted by Qunar platform, we observed and recorded the price fluctuations of a few products provided on the platform. We found that the price of a tourism product is set four months before the product is consumed. There are few fluctuations of prices of products once they are set, and products specially intended for holidays when significant changes in demand occur are also priced in advance. In sum, the platform does not adopt a dynamic pricing scheme for real-time changes in supply and demand. Besides, some studies have an insight into the pricing strategy of e-commerce platforms. Several empirical studies support the notion that higher rating scores, along with other reputational signals translate into price markups [83]. In line with previous studies, Gutt and Herrmann (2015) also conclude that pricing is subject to the visual presence of reputational capital, for instance, expressed through the star rating [84]. Magnani (2020) suggests that nearly all of the reviewed studies have shown a positive relationship between the valence of reviews and prices [61]. However, we already control

for the characteristics of online reviews, and thus the endogenous problem of price is ruled out in this study because of the particularity of the pricing mechanism of Qunar.

It is important to note that we add variables step by step and do the hierarchical regression analysis to prove the validity of our control variables and that our results are unbiased. Hierarchical regression models are widely used in different fields. One of the most popular and powerful modeling techniques currently in use by ecologists is "hierarchical models" proposed by Gelman et al. (2013) [85] for modeling between-group variability in regression relationships [86,87]. Chege and Wang (2020) adopt hierarchical regression models to investigate the influence of technology innovation on SME performance [88]. Additionally, Serrao et al. (2021) estimate a hierarchical regression model for each burnout dimension to explore the mediating role of resilience in the relationship between depression and burnout during the COVID-19 pandemic [89]. Generally, hierarchical models are used to estimate linear relationships between predictor variables and response but impose a structure where predictors are organized into groups [86]. In this study, factors influencing sales are grouped into three categories, and thus it is suitable for us to use the hierarchical model. By computing differences in sum of squares at each step, we find corresponding F-statistics and *p*-values for the differences are significant. To be specific, after adding variables of intangible product features and channel-related factors, the model's ability to interpret the variation of the dependent variable increases by 6.3% (p < 0.1) and 5.7%(p < 0.1). This supports the conclusion that our model is efficient.

### 5. Conclusions

Our analysis documents the change of consumers' preferences for the characteristics of tourism products. We began our analysis by developing hierarchical regression models to test the hypothesis concerning the impact of product-related and channel-related factors on tourists' purchasing behaviors. We tested several predictions proposed in theories regarding the online consumer behavior. Data from the Qunar Website over the period from 1 August 2019 to 30 November 2019 were chosen because Qunar is one of China's largest e-commerce platforms for tourism and the impact of COVID-19 pandemic on tourism is ruled out.

First, as for the tangible product features, we found that compared with domestic destinations, overseas tourism destinations are becoming increasingly popular. Private travel, which has flexible arrangements, is prevailing, suggesting that tourists are pursuing a more comfortable travel experience with their intimate ones. Surprisingly, in terms of the types of hotels, consumers prefer economic ones to comfortable and luxury ones significantly. This is in line with the conclusion shown by Tussyadiah and Pesonen (2016) that reduction in accommodation costs allows travelers to consider destinations and trips that are otherwise cost-prohibitive [52]. A substitution effect exists between the quality of accommodation and the other characteristics of travel products. In accordance with our expectation, there is a significant negative correlation between price and sales. As for the length of travel, mid-term travel (4–6 days) is the most popular. Additionally, as for the selection of travel agencies, the mainstream choice is still ordinary travel agencies rather than niche or well-known ones. The change in preferences symbolizes the improvement of living standards of consumers, but the results also show that tourists pay less attention to qualities of accommodation and travel agencies than other product qualities such as tourism activities.

Second, as far as impalpable product features are concerned, all kinds of preferential activities encourage online purchasing behavior significantly. Consistent with the predictions of theories, service commitments which can reduce information asymmetry effectively convince consumers that sellers offer a product of high quality. Hence, our findings highlight the importance of marketing strategies such as launching preferential activities and offering guarantees for truthful description and a formed group.

Third, as for channel-related factors, we find that in the context of online tourism, online reviews play a significant role in turning prospective tourists into customers of the

products. In other words, it is important for the platform to ensure the authenticity of the reviews and encourage more customers to give unbiased feedback.

In addition to improving our understanding of the relationship between productrelated features, channel-related features, and online shopping behavior of tourism products, our findings illustrate the heterogeneity in the degree of importance which consumers attach to the quality of different product characteristics. When designing and evaluating online products, travel agencies can refer to this study and design more targeted products to cater to preferences of consumers. It is not enough to study changes in sales without subdividing products into product-related and channel-related characteristics. All factors should be considered, even those not obviously related to the outcomes of interest because consumers' preferences over products are sometimes not intuitively reflected in sales. This analysis also enables producers to respond to changes in consumer preferences over time.

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