Original Research

How Do Information Sources Influence the Purchases of Tourism, Culture, and Entertainment? An Analysis of China Family Panel Studies Data

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Abstract

Information sources affect people's tourism, culture, and entertainment buying. It is therefore important to study the apportionment effects by information source type and comprehensively analyze how information sources positively or negatively impact the consumption of tourism, culture, and entertainment. This research analyzed the influence of four information sources on such buying based on data from the China Family Panel Studies (CFPS) from 2014 to 2018. Regression analysis was used to examine the relationships among variables. The findings were that: (1) information sources (Internet, broadcast, print, and word of mouth) had a significant positive impact on tourism, culture, and entertainment buying; (2) the effects of information were significantly different based on age, education level, and place of residence (urban vs. rural); and (3) information source digitalization increased the share of TCE consumption in overall household consumption through improving social interactions and convenience of transactions. The findings contribute to alleviating the information asymmetry in tourism consumption, helping tourism enterprises develop targeted marketing measures, and promoting the improvement of residents' tourism consumption.

Plain Language Summary

How do information sources influence the purchases of tourism, culture and entertainment

Purpose: This research analyzed the influence of four information sources on such buying based on data from the China Family Panel Studies (CFPS) from 2014 to 2018. Methods: Regression analysis was used to examine the relationships among variables. Conclusions: 1) information sources (Internet, broadcast, print, and word of mouth) had a significant positive impact on tourism, culture, and entertainment buying; 2) the effects of information were significantly different based on age, education level, and place of residence (urban vs. rural); and 3) information source digitalization increased the share of TCE consumption in overall household consumption through improving social interactions and convenience of transactions. Implications: The findings contribute to alleviating the information asymmetry in tourism consumption, helping tourism enterprises develop targeted marketing measures, and promoting the improvement of residents' tourism consumption. Limitations of your study: Other factors in this research influence tourism, culture, and entertainment consumption, including the country of residence. For example, the data analyzed in this research were from China and the results may not be generalizable to other countries. Future researchers are encouraged to conduct similar studies in other countries, regions, and cultural contexts.

Keywords

information sources, tourism, culture, and entertainment consumption (TCE), information asymmetry, demographics, place of residence, information transformation and digitalization

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Introduction

Tourism, culture, and entertainment (TCE) participation is essential to many people's lifestyles (Briguglio & Sultana, 2018; Clark & Achterberg, 2014). This form of consumption is not only affected by income, age, interests, and education levels (Kim et al., 2007) but is also influenced by the accessibility, timeliness, accuracy, and comprehensiveness of information sources on TCE options (Şchiopu et al., 2016). However, TCE information sources are varied in scope and potentially also in accuracy (e.g., fake news and reviews). There may also be a lag between when suppliers create information and when consumers access it, and information asymmetry between suppliers and buyers creates risk for the latter (Oukarfi et al., 2020). While the Internet and social media platforms have expanded the information available, they may have inadvertently made information searches more complex.

The information sources available to consumers include mass communication channels such as the Internet, television and radio, and newspapers and magazines (Globalwebindex.com, 2019), as well as through word-of-mouth in interactions with other people. The variety, availability, and quality of information sources determine consumer information-gathering capacities and play a crucial role in purchasing decision-making. The rapid development of information communication technologies (ICTs) has introduced significant changes in how people search for information and make purchases. E-marketing is now the primary communication channel for TCE suppliers, while online platforms are becoming consumers' primary information source and booking venue (Chu et al., 2023).

Information sources impact the purchases of tourism and cultural products and services. However, the differences in effects among information sources, whether these effects vary by individuals, households, and regions, and how they influence buying are unclear. The primary purpose of this research was to examine the influence of information sources on TCE consumption using data from a household tracking survey in China. Apart from addressing the gaps in the literature, the study provides a reference for the government and companies to enhance TCE products and their communication.

Literature Review and Development of Hypotheses

Factors Influencing TCE Consumption

Tourism, culture, and entertainment (TCE) drive economic growth and development and previous scholars have comprehensively analyzed the factors affecting TCE buying, including the following.

External factors: These include macroeconomic factors (e.g., economic recessions) (Papatheodorou & Pappas, 2017), environmental pollution (Zhou et al., 2019), vulnerability (Kusune, 2020), and sensitivity of tourism (Falk, 2015) that affect TCE consumption as well as labor income risk (Pereira, 2019), health risks (Carneiro & Eusébio, 2019), and housing and commercial investment (Bohn, 2015). Some scholars emphasize that family age structure (Bernini & Cracolici, 2015), retirement (Deng et al., 2023), and economic uncertainty (Nguyen et al., 2022) have a significant effect on TCE consumption. Based on the absolute income and persistent income hypotheses (P. Zhang & Cao, 2022), others assert that increases in current and expected incomes, as well as expected and unexpected increases in asset prices (Lee & Kim, 2021), result in expanded household consumption of travel and culture. In contrast, based on the precautionary savings theory, other scholars have found that households increase precautionary savings to manage uncertainties such as health (Gao et al., 2021) and employment (Nilashi et al., 2019), resulting in a decline in TCE consumption.

Individual factors: The influences of age (Y. Liu et al., 2018), income (Alegre & Pou, 2004), gender (Lin et al., 2021), education level (Alegre et al., 2009), living standards (Bernini & Fang, 2021), and tourism literacy (Chang et al., 2019) on household and individual TCE consumption have been analyzed as well. Differences in personality, habits, marital status, presence of children, income from various sources, and consumption habits may also affect buying.

Asymmetric market information: Research on information acquisition and consumer behavior can be traced back to the asymmetric information theory proposed by Akerlof (1978), which holds that market failure results from contradictory or missing information and produces a market for "lemons" (inferior quality products). The research on asymmetric information has expanded to tourism. Access to information is a significant factor affecting consumption (Xiang et al., 2015). This access has changed significantly due to ICTs, which may be elevating the purchasing of tourism, culture, and entertainment. The ease of use and functionality of online platforms help to lower risk perceptions, reduce payment, time, and psychological costs, and increase the willingness and confidence of people to travel (Zelenka et al., 2021). However, certain scholars have reached the opposite conclusion (e.g., Tassiello & Tillotson, 2020). Internet information has inherent problems such as price dispersion, system loopholes, deception, and denial, which may aggravate uncertainty in consumption (Akhtar et al., 2019), and reduce trust between suppliers and consumers, resulting in decreases in willingness to travel.

Information sources: The existing studies mainly consider the factors influencing tourism consumption. Few studies apportion effects by information source type or
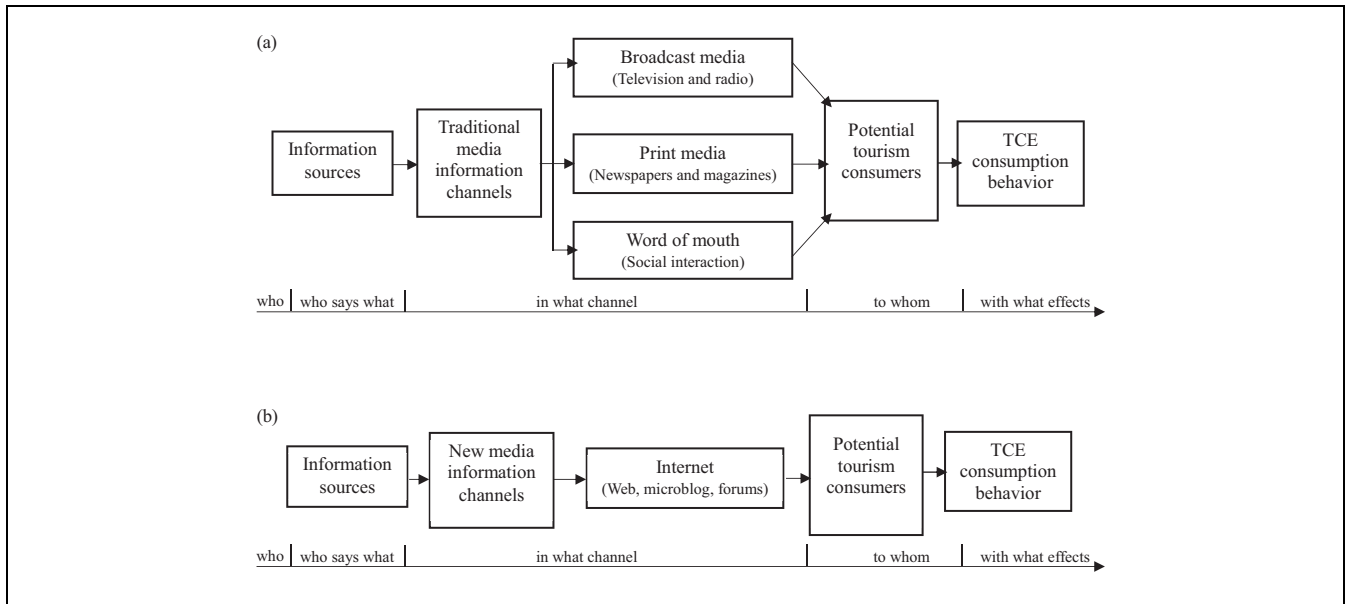
Figure 1. (a) Traditional media and tourism, culture and entertainment consumption and (b) new media and tourism, culture and entertainment consumption.

comprehensively analyze how information sources positively or negatively impact tourism, culture, and entertainment consumption. This research adopted an information dissemination perspective in exploring if and how information sources generate changes in such consumption.

Action Mechanisms

Consumer information behavior theory points out that the information environment has a decisive impact on consumer behavior (S. X. Chen et al., 2021). The traditional consumption information processing model simply divides the consumer information decision into different stages, and in each stage, the information has a different influence on the consumer. Information is transmitted from the sender to the consumer through the media, which generally goes through the following processes: attention, interest, desire, memory, action, and repurchase. In the theory of information communication, Lasswell was the first scholar who studied the communication activities of human society by establishing a model (Peng, 2015). He proposed the classic "5W" model—who, who says what, in what channel, to whom, and with what effects. These five elements constitute the basic content of communication studies. "Who" is the disseminator, responsible for collecting, processing, and transmitting information in the dissemination process. "Says what" refers to the content of the message, which is a combination of meaningful symbols. "In what channel" refers to the intermediary or material carrier

through which information is transmitted, such as by word-of-mouth, letter, telephone, newspaper, radio, television, or online. "To whom" refers to the receiver, audience, final object, and communication destination. "With what effects" refers to the reactions caused by the information within the audience at various levels of cognition, emotion, and behavior, which is an important measure to test the success of communication activities. Generally, information transmission through information channels is "unidirectional"; individuals search for information through information channels to obtain the information they need, thus affecting individual behavior (Tavitiyaman et al., 2021). When information channels transmit information, there are differences in the amount of information, speed, and communication efficiency. With the development of Internet technology, information transmission channels have gradually changed from traditional information channels to new information channels and presented new features, such as two-way interaction. Traditional broadcast and print media have become digitalized (Figure 1a), permitting access to them via smartphones, pads, laptops, and desktop computers. This has broadened the sources of TCE information for people and made access more convenient. The Internet can now access all three other information sources (print, broadcast, and word of mouth). Time and space barriers are removed between consumers, suppliers, and service providers through information communication technologies. Interactions have changed from discontinuous, one-way, and time-delayed to continuous, two-way, and real-time, facilitating greater TCE consumption.

As a new information channel, the Internet can effectively transmit consumers' feelings, evaluations, experiences, and word-of-mouth to other consumers and businesses, and finally, realize a virtuous circle of information dissemination (Figure 1b). Traditional media are mainly in the form of text, images and video. New media not only have rich text, images and videos, but also offer interactivity, social contact, augmented/virtual reality and other features, and the communication content is also richer and more diversified. In Lasswell's "5W" model, the connection through the Internet information channel greatly improves the depth and breadth of the communication effect, no matter who says it or to whom (Kunold & Onnasch, 2022). This new feature of Internet channels provides consumers with a convenient platform to obtain, screen, and feedback information, share experiences, and create tourism demand. It greatly reduces the information asymmetry in the tourism market, reduces the risk perception of cultural travel consumption, lowers the cost of payment, time, and psychological costs, and makes the consumption decision of tourism consumers more systematic and rational. However, other scholars have come to the opposite conclusion. Xu et al. (2021) believe that price dispersion, system loopholes, deception, price discrimination based on customer characteristics, and deniability in the Internet market aggravate consumption uncertainty and reduce the willingness to travel. C. M. Chen et al. (2019) regard Internet use as a type of leisure and find that there is a substitution relationship between Internet use and cultural travel consumption, that is, the increase in Internet use time also crowds out family cultural travel consumption.

Hypotheses Development

Information sources are the main channels for consumers to obtain tourism-related information (including the Internet, broadcast media, print media, and word of mouth). Many scholars point out that broadcast media, print media, and word of mouth are traditional information sources, while the Internet is a new information channel (Ni & Wang, 2021; Sun et al., 2020). Owing to the dissimilarities of different information sources, the costs of tourism information acquisition vary, affecting final travel choice decisions.

Internet: An estimated 63% of the world's population used the Internet in 2021 (International Telecommunication Union [ITU], 2022). The Internet encourages people to take the initiative to obtain information that is more purposeful and targeted; moreover, they have a keen sense of information acquisition (H. Zhang, 2021). TCE consumers now enjoy more convenient transactions via cashless payment modes involving apps, QR codes, and fingerprint and facial recognition. Time savings can be reallocated to greater TCE participation. More discounts, coupons, and gift cards provided by TCE organizations stimulate higher consumption levels. The online sphere has eliminated historic information barriers to consumption. People spend 61% of their online media time, or around 6.75 hr daily (Globalwebindex.com, 2019). It is noteworthy that the residents of urban areas (75.6%) are making greater use of the Internet than those living in rural areas (38.8%) (ITU, 2022). Internet penetration varies by country; for example, in China, it stood at 73% of the total population in 2021 (China Internet Watch, 2022). Online, people find it more convenient to acquire products and services of interest and expand the range of products and services from which to choose. Owing to the scope and interactivity of the Internet, consumers have extensive access to copious quantities of information cost-free and can vicariously experience destinations. These online experiences and interactions encourage people to book travel. As part of Internet activity, social media platforms are pervasive worldwide. There were around 4.65 billion social media users worldwide in April 2022 (Kepios, 2022), equivalent to almost 59% of the total population. People spend 2.5 hr daily using social media (Globalwebindex.com, 2019). As with the Internet, social media use is much greater in cities than rural communities.

Print media: Print media, including newspapers and magazines, provide information about politics, economics, society, culture, fashion, and travel. People can view print content in its traditional "hard copy" format or view the content online. Reading online content is now greater than hard copy reading in all countries (Globalwebindex.com, 2019). Newspapers are inexpensive and deliver up-to-date news from around the world on various topics. Magazines are more expensive and colorful and often address special interests, including travel and culture. They also have specific reader demographic profiles, which enhances market targeting (Hilmi & Ngo, 2011). On a daily basis, people spend 6% of their total media time reading print media (Globalwebindex.com, 2019). Although not now used as much as the Internet, print media still significantly positively affect culture and tourism consumption.

Broadcast media: Broadcast media play a key role in many people's lives. TV and radio watching and listening are often regarded as leisure activities. Around 25% of total media time (about 2.5 hr) is spent per day on broadcast TV and radio (Globalwebindex.com, 2019). There are now specialized channels and content on travel and various aspects of culture and history, which can stimulate travel and cultural participation. Also, popular TV series and dramas often stimulate tourism (Hua et al.,

2021). Connected TV and video streaming are experiencing robust growth in use (Interactive Advertising Bureau, 2021).

Word of mouth (WOM): WOM is interpersonal communication among consumers that significantly affects purchasing decisions (Lai et al., 2018). WOM has long been considered one of the most potent factors in consumer purchasing. The influence of user-generated content (UGC) and electronic word-of-mouth (eWoM) on tourism decision-making is significant and is growing (Litvin et al., 2008, 2018; Pourfakhimi et al., 2020).

Based on these differences among the four information sources, the following hypotheses were proposed:

H$_{1a}$: *There are significant differences in the effects of information sources on tourism, culture, and entertainment consumption.*
H$_{1b}$: *The Internet has the greatest effect on tourism, culture, and entertainment consumption.*

Age: The effects of information sources may be connected to age, education level, and place of residence (urban vs. rural). In terms of age, tourism participation first increases and then decreases with an increase in age (H. Li et al., 2016). These researchers found domestic travel in China was lower for those under 25 and over 55. Generations Y and Z were brought up in the Internet and social media eras, so they are more likely to use online sources (Xiang et al., 2015).

Education: The digital and tourism literacy of individuals impact their capabilities to process what information sources offer, and they are connected with education levels (Caldevilla-Domínguez et al., 2021; Peco-Torres et al., 2021). Education and income have positively influenced travel frequency and distances (LaMondia et al., 2014). The development of the Internet has expanded the amount of information available; however, it is more difficult for consumers to screen information and make correct judgments. There is a "digital divide" with the Internet; those with more education have greater access and obtain more benefits from being online (Van Deursen & Helsper, 2015).

Place of residence: There are differences in access levels to information sources between urban and rural areas. As a result, there are stark dissimilarities in TCE consumption among those living in cities and people residing in predominantly agricultural areas. The network infrastructure in rural areas is often incomplete, and service is not as good as in urban areas, especially with broadband Internet (Benda et al., 2020). Also, rural residents have lesser access to print and Internet than people living in cities. Rural residents tend to have lower income and education levels and low digital literacy (Fong, 2009).

Based on these apparent differences, the following hypothesis was proposed:

H$_2$: *The effects of information sources are significantly different according to age, education level, and place of residence.*

Research Design and Methodology

Data Source

The China Family Panel Studies (CFPS) is a nationwide, large-scale, multidisciplinary social tracking survey project. It conducts follow-up interviews every 2 years, reflecting the three levels of community, family, and individual, and provides high-quality microdata to study Chinese household financial problems. As of 2018, five surveys have been conducted. Because "culture and tourism consumption" was included in the questionnaire for the first time in 2014, this research was based on the data from 2014, 2016, and 2018. Data cleaning and matching and eliminating missing and abnormal data were done to obtain the data set for analysis. The research covered 18,169 households in 4,682 villages (communities) in 1,264 counties (county-level cities) in 32 provinces, including 172,278 individuals who met the research needs and 22,059 respondents with the same observation records. Additionally, regarding access to information, this study is based on the information and communication theory, which is divided into four media channels: the Internet, broadcast media, print media, and word of mouth (Table 1).

Comparing 2014 and 2018, the importance of the Internet for obtaining information increased by 27.44%; broadcast media decreased by 2.82%; print media decreased by 6.95%; and word of mouth increased by 1.14%.

Variable Descriptions

Explained variable: Per capita, TCE consumption expenditure was determined by dividing the total amount of household TCE consumption by the household size. The total household consumption on TCE was based on the CFPS database. The sum of "How much did your family spend on travel in the past 12 months, including travel expenses such as transportation, accommodation, and tickets to scenic areas?" and "how much did your family spend on culture and entertainment in the past 12 months, including buying books, newspapers, and magazines, going to movies and theaters?"

Explanatory variable: People obtain information from four main sources: Internet, broadcast, print, and word of mouth. The Internet data were derived from answers on "the importance of the Internet for you to obtain information" in CFPS. Broadcast media statistics were

Table 1. Descriptive Statistics.

Name	Variable	Description	n	Mean	St. Dev.
Tourism, culture, entertainment consumption (TCE)	TCE_{it}	Per capita consumption of culture and tourism	37,498	5.56	1.77
Internet	X_{it}^{Net}	Importance of the Internet as an information channel: 1–5	97,929	2.46	0.09
Broadcast media	X_{it}^{Broad}	Importance of TV and radio as information channels: 1–5	97,929	2.44	0.11
Print media	X_{it}^{Print}	Importance of newspapers and magazines as information channels: 1–5	97,929	1.79	0.06
Word of mouth	X_{it}^{Wom}	Importance of communicating with others as a channel of information 1–5	97,938	2.66	1.44
Age	Age	Age of respondents	97,938	45.32	17.49
Gender	Gend	Male = 1, female = 0	97,938	0.42	0.55
Education level	Edu	Respondents highest education attainment	96,313	2.78	1.61
Marital status	Mar	Married or not, married = 1, other = 0	97,938	1.82	1.80
Employment status	Emp	Work status of interviewees, work = 1, other = 0	97,938	0.77	2.64
Level of health	Hea	Health level of respondents	97,938	2.94	1.41
Household composition	Fam	Number of people living together	97,010	3.67	1.79
Household net assets (RMB)	Pro	Total amount of cash and deposits	97,010	43,478	145,348
Net household income (RMB)	Inc	Annual net household income	95,442	80,137	180,734
Urban or rural	Urb	Rural residents = 0, urban residents = 1	97,938	0.41	0.99
District code	Dis	District/county classification number of the family	97,912	351	1,227
Social communication frequency	Scf_{it}	Frequency of residents using Internet for social communication	97,938	−3.65	5.23
Business communication frequency	Bcf_{it}	Frequency of residents using Internet for business activities	97,938	−2.48	6.57

derived from the survey question on "the importance of TV for you to obtain information," print media data from "the importance of journals to access information," and word of mouth from the "importance of what others tell you."

Control variables: Personal characteristics in CFPS included age, gender, education level, health level, and employment status. Household data were household size, savings, and annual income. The place of residence variables was urban and rural classifications and county coding.

Model Construction

The CFPS database has several cases where household TCEs zero, although the TCE consumption cannot be negative. Therefore, ordinary OLS estimation cannot provide a constant estimation (Suess et al., 2018). However, if the individuals whose TCEs are 0 are deleted, a large amount of data and authenticity are lost, which may bias the estimation results. Therefore, the mixed panel Tobit model was used for maximum likelihood estimation. An econometric model was constructed as follows:

$$LNTCE_{it} = \rho_0 + \rho_1 X_{it}^{Net} + \rho_2 X_{it}^{Broad} + \rho_3 X_{it}^{Print} + \rho_4 X_{it}^{Wom} + C_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

Where the explained variable TCE_{it} denotes the per capita consumption expenditure on TCE. Explanatory variables X_{it}^{Net}, X_{it}^{Broad}, X_{it}^{Print}, and X_{it}^{Wom} denote Internet, broadcast, print, and word of mouth. C_{it} represents control variables, including individual, household, and place of residence variables. ρ_0 is a constant term, i represents a respondent, t denotes the year, μ_i is an unobserved random variable, and ε_{it} is a random error term.

Results

Benchmark Regression Analysis

Table 2 shows the benchmark regression results of the influence of information sources on TCE consumption. Column (1) includes the Internet, broadcast media, print media, and word of mouth in the mixed panel *Tobit* model without including other control variables. Considering the problem of missing variables, individual, household, and place of residence variables were gradually added in Columns 2 to 4. Column (2) includes the control variables of individual characteristics of age, gender, education level, marital status, and employment status of the respondents in the model. Column (3) shows the results of the control variables at the household level, including household size, savings, and income. Column (4) includes district and county codes in the model to

Table 2. Baseline Regression Results.

Variables	$LNTCE_{it}$			
	(1)	(2)	(3)	(4)
X_{it}^{Net}	5.528*** (24.553)	5.193*** (20.777)	4.007*** (17.899)	3.986*** (17.834)
X_{it}^{Broad}	2.198*** (10.076)	1.739*** (7.980)	1.278*** (6.522)	1.280*** (6.542)
X_{it}^{Print}	3.509*** (13.777)	2.240*** (9.160)	1.464*** (6.692)	1.469*** (6.721)
X_{it}^{Wom}	0.091*** (8.081)	0.097*** (8.546)	0.076*** (7.412)	0.076*** (7.383)
Age		0.019*** (5.141)	0.015*** (4.277)	0.016*** (4.397)
Age^2		0.000 (0.556)	0.000 (0.015)	−0.000 (−0.070)
Gend		−0.106*** (−5.389)	−0.101*** (−5.492)	−0.102*** (−5.557)
Edu		0.276*** (33.162)	0.228*** (29.497)	0.229*** (29.551)
Mar		−0.093*** (−13.857)	−0.085*** (−13.289)	−0.084*** (−13.245)
Emp		0.029*** (5.750)	0.032*** (6.647)	0.031*** (6.463)
Hea		−0.035*** (−4.477)	−0.030*** (−4.029)	−0.030*** (−3.978)
Fam			−0.199*** (−36.298)	−0.197*** (−36.090)
Pro			0.000*** (16.151)	0.000*** (16.183)
Inc			0.000*** (7.648)	0.000*** (7.646)
Dis				0.000*** (5.870)
C	2.691*** (13.598)	1.654*** (7.727)	3.155*** (16.157)	3.127*** (16.034)
n	37,496	36,879	36,471	36,459
R^2	.0116	.0299	.0531	.0534

Note.*** indicate significance at the 1% levels, respectively.

control for local customs, cultural environments, regional economies, and other factors affecting TCE consumption. As shown in Table 2, Internet, broadcast, print, and word of mouth significantly increased TCE consumption. The degree of influence on TCE consumption was in the following order: Internet (3.986), print media (1.469), broadcast media (1.280), and word of mouth (0.076). These findings were preliminary verifications of H_1.

Regarding the other control variables, the regression coefficient of the square term of age was negative; in other words, age had an inverted U-shaped relationship with TCE expenditures, which passed the 1% significance test. TCE consumption expenditure first increased and then decreased with advancing age levels. The coefficient for gender was negative, indicating that women expanded TCE expenditures more readily than men. TCE spending was positively correlated with education levels. TCE expenditures of married people were 8.4% higher than unmarried. Employed respondents generated more demand for TCE consumption than the unemployed. Health status was positively correlated with TCE spending. Additionally, the number of household members significantly negatively affects TCE consumption decisions and scale.

Robustness Test

To ensure the core conclusions' reliability and better ascertain the effect of information source dependence on TCE consumption, robustness tests were conducted on the benchmark regression results using winsorize,

substitution variables, and selection of sub-samples. First, the winsorize method deleted outliers. The responses within a 5% range of TCE consumption were eliminated via the head-tail reduction method, and a panel mixed *Tobit* estimation was reperformed. Second, the explained variable was replaced. The proportions of TCE consumption expenditures to income were used to evaluate marginal TCE consumption tendencies, replacing the original interpretation with a model for re-estimation. Third, balanced panel data were selected. The original model used unbalanced panel data from 2014, 2016, and 2018. For this purpose, 22,059 respondents continuously existing in the three periods were selected for the model estimation. The results showed that if the explained variables were outliers processed by tail shortening, they were replaced by marginal TCE consumption propensity, or balanced panel data were selected. The symbol and significance level of the model's estimated coefficients did not fundamentally change (Table 3), which verified the robustness and reliability of the baseline regression results.

Heterogeneity Tests

Next, differences in the impacts of information sources on TCE consumption were tested for age and education levels and urban and rural areas. The specific results were as follows.

Age: According to the age classification standards of the United Nations World Health Organization, residents were divided into younger, middle-aged, and

Table 3. Robustness Test.

	LNTCE$_{it}$		
Variables	Shrink tail processing	Substitution variables	Balance panel
X_{it}^{Net}	3.734*** (17.485)	7.715*** (3.185)	5.653*** (17.358)
X_{it}^{Broad}	1.134*** (6.058)	1.968 (1.138)	2.583*** (9.121)
X_{it}^{Print}	1.357*** (6.451)	6.224** (2.452)	3.021*** (10.472)
X_{it}^{Wom}	0.074*** (7.521)	0.284** (2.057)	0.153*** (9.501)
Control variables	Control	Control	Control
C	3.319*** (17.693)	−19.543*** (−5.511)	1.471*** (5.050)
n	36,091	93,020	22,059
R^2	.0537	.0203	.0485

*Note.*** and **, are significant at 1%, 5%, levels, respectively. Results of other control variables are not listed due to space limitations.

Table 4. Regression Structure of Different Age Levels.

	LNTCE$_{it}$		
Variables	Younger (18–40)	Middle-aged (41–65)	Elderly (66-)
X_{it}^{Net}	2.484*** (7.225)	4.930*** (13.512)	4.344*** (5.548)
X_{it}^{Broad}	0.134 (0.434)	2.112*** (6.539)	1.871*** (3.310)
X_{it}^{Print}	1.160*** (3.324)	1.767*** (4.954)	1.666*** (2.872)
X_{it}^{Wom}	0.035** (2.303)	0.114*** (6.803)	0.088*** (2.728)
Control variables	Control	Control	Control
C	2.966*** (6.657)	2.770*** (3.051)	8.713** (2.279)
N	15,221	15,036	4,249
R^2	.0706	.0563	.0344

*Note.*** and ** indicate significance at the 1%, 5% levels, respectively. The results for the other control variables are not listed owing to space limitations.

elderly (younger: 18–40; middle-aged: 41–65; older: 66 years or older). Through grouping regression, it was found that the influence of information sources on TCE consumption varied significantly with age (Table 4). The influence of the Internet on the TCE consumption of middle-aged and younger people was greater than that of the elderly. In comparison, the influence of broadcast media on the TCE consumption of the elderly was greater than for print media and word of mouth. The main reasons could be as follows. Information technology is transforming society and changing people's ideas and behaviors. Older adults may have a lower acceptance of modern technologies such as the Internet, and the willingness to change TCE participation may differ from younger and middle-aged people. Therefore, they may be less affected by the Internet. The capacity of older people to learn innovative technologies is also lower.

Education. Referring to the studies of Sun et al. (2020) and Zhao et al. (2022), respondents were divided into three education-level categories (illiterate/semiliterate, junior high school/senior high school/technical school/ vocational high school, and college/undergraduate/

master's degrees). Table 5 clearly shows that the channel dependence on the Internet, broadcast, print, and word of mouth has significant heterogeneity in their effect on the cultural and tourism consumption of residents with different education levels. The cultural and tourism consumption of college, undergraduate, and master's residents with a higher education degree is significantly influenced by network and print media. However, network and airwave media significantly affect the consumption of illiterate or semiliterate residents with low education levels. Additionally, print media had no considerable influence on illiterate or semi-illiterate residents.

Place of Residence. Table 6 shows significant differences in the effect of information acquisition channels on the cultural and tourism consumption of urban and rural residents. The influence coefficients of network, broadcast, and word of mouth on urban residents were 1.353, 0.228, and 0.042 higher than those of rural residents. The influence coefficient of print media on rural residents' cultural and tourism consumption was 0.046, which was higher than that of urban residents. The possible reasons are as follows. First, urban residents with an elevated level of

Table 5. Regression Structure of Different Educational Levels.

	$LNTCE_{it}$		
Variables	Illiterate/semiliterate	Junior high school	College/Bachelor/Master
X_{it}^{Net}	1.606*** (3.946)	3.320*** (11.837)	4.748*** (7.026)
X_{it}^{Broad}	1.167*** (3.783)	0.926*** (3.625)	1.688*** (3.105)
X_{it}^{Print}	0.575 (1.248)	0.771*** (2.876)	2.317*** (3.553)
X_{it}^{Wom}	0.041** (2.046)	0.062*** (4.867)	0.103*** (3.467)
Control variables	Control	Control	Control
C	4.358*** (12.048)	3.425*** (13.713)	3.036*** (4.937)
n	5,263	23,934	7,262
R^2	.0317	.0404	.0441

Note.*** and ** indicate significance at the 1%, 5% levels, respectively.

Table 6. Regression Results of Urban and Rural Groups.

Variables	Rural	Urban
X_{it}^{Net}	2.639*** (9.500)	3.392*** (11.034)
X_{it}^{Broad}	0.759*** (2.973)	0.987*** (3.663)
X_{it}^{Print}	0.787** (2.505)	0.741*** (2.657)
X_{it}^{Wom}	0.036** (2.537)	0.078*** (5.662)
Control variables	Control	Control
C	3.995*** (15.422)	3.440*** (13.011)
N	12,450	23,643
R^2	.0296	.0474

Note. *** and ** indicate significance at the 1%, 5% levels, respectively.

education, stable vacation time, and a strong ability to accept information such as the Internet, periodicals, and newspapers, are more willing to contact new things. It is easier to turn tourism plans into tourism activities. Second, although the Internet penetration rate in rural areas has improved, many farmers already have smartphones and other network terminal devices. However, they still cannot use the functions of booking tickets, online shopping, or information search independently, making rural residents less dependent on online media information.

In conclusion, print media (newspapers, periodicals, magazines) are more traceable and accessible for rural residents to accept and trust. Therefore, print media have a greater impact on rural residents' cultural and tourism consumption than urban residents. Therefore, the promotion effect of various information channels on urban residents' cultural and tourism consumption is greater than that of rural residents. The above conclusions further verify hypothesis 2.

Digitalization of Information Sources and the Share of TCE Consumption in Overall Household Consumption

Following the rapid development of ICTs, information sources have significantly changed. People's information sources gradually change from word of mouth, print, and broadcast media to the Internet and online. In other words, information sources are more digital. The proportion of TCE consumption in the share of overall household consumption was taken as an explanatory variable to evaluate movement in the share of household consumption, including consumption of services ($Share_{it}^{service}$), consumption of necessities ($Share_{ij}^{necessary}$), other consumption ($Share_{ij}^{other}$), total consumption ($Share_{ij}^{total}$). The proportion of the importance of the Internet to the four information sources (Internet, broadcast media, print media, word of mouth) was considered the explanatory variable ($X_{it}^{Digital}$) in examining the effect of the digitalization of information sources on the share of TCE consumption in overall household consumption.

Column (1) of Table 7 shows that the digitalization of information sources resulted in a higher proportion of TCE consumption in service consumption and increases in TCE consumption. Digitalizing information sources enlarged the share of TCE consumption in overall household consumption. Columns (2) and (4) indicate that the information source digitalization significantly increased the ratio of TCE consumption to the consumption expenditures on essential goods and the ratio of TCE consumption to total consumption. However, column (3) shows a significant negative effect on the proportional relationship between TCE consumption and other consumption. The positive effect of information source digitalization on TCE consumption was reflected in service consumption and the consumption of necessities while overshadowing other consumption, such as medical treatment.

First, information source digitalization increased the share of TCE consumption in overall household consumption through greater social interactions. The Internet improves the symmetry of market information and creates greater interaction and feedback between TCE organizations and consumers. Additionally, online social interactions increase information sharing, forming a peer group effect. Therefore, the frequency of engaging

Table 7. Effect of Information Source Digitalization on Share of TCE Consumption.

Variables	$Share_{it}^{service}$ (1)	$Share_{ij}^{necessary}$ (2)	$Share_{ij}^{other}$ (3)	$Share_{ij}^{total}$ (4)
$X_{it}^{Digital}$	0.048*** (2.887)	0.019** (2.018)	−0.023 (−0.793)	0.010** (2.540)
Control variables	Control	Control	Control	Control
C	−0.151*** (−3.723)	−0.145*** (−6.190)	−0.276*** (−3.907)	−0.094*** (−10.059)
N	87,314	92,000	93,248	92,049
R^2	.015	.006	.001	.014

Note. Cultural travel, education and training, health care, and beauty are regarded as service consumption, while durable goods, clothing, shoes and hats, and food are regarded as necessities consumption, and medical, beauty, health care, training are regarded as other consumption.
Note. ***, and ** indicate significance at the 1%, 5% levels, respectively.

Table 8. Mediating Effect Analysis.

Variables	Scf_{it} (1)	$Share_{it}^{total}$ (2)	Variables	Bcf_{it} (3)	$Share_{it}^{total}$ (4)
$X_{it}^{Digital}$	24.188*** (36.864)	0.012** (1.990)	$X_{it}^{Digital}$	38.353*** (60.644)	0.012** (1.964)
Scf_{it}		0.024*** (6.954)	Bcf_{it}		0.015*** (5.278)
Control variables	Control	Control	Control variables	Control	Control
C	−20.096*** (−33.217)	0.965*** (145.218)	C	−19.299*** (−34.220)	0.964*** (146.322)
N	93,848	87,314	N	93,848	87,314
R^2	.0614	.0824	R^2	.0821	.0776
Sobel test	α, β significant, do not need Sobel test		Sobel test	α, β significant, do not need Sobel test	
Mediation effect	Significant		Mediation effect	Significant	

Note. ***, and ** indicate significance at the 1%, 5% levels, respectively.

in Internet interactions with others was selected to evaluate social interaction (Scf_{it}) and to examine if information source transformation and digitalization increased the share of TCE consumption against total consumption through greater social communication. Table 8 shows that the coefficient of change on social interaction was 24.188, which was significant at $p = .01$.

Additionally, when $X_{it}^{Digital}$ and Scf_{it} were incorporated into the model, the effect coefficient of the two on the share of TCE consumption was still positive and passed the significance test. In other words, the mediating effect of social interactions was significant. Moreover, the Sobel test was not required. This shows that information source digitalization enlarged the share of TCE consumption by improving social interactions.

Second, information source digitalization increased the share of TCE consumption by offering more convenient transactions. Referring to Yi and Zhou (2018), the frequency of Internet business activities (1 means "never," 2 "once a few months" and "once a month," 3 "2-3 times a month" and "once or twice a week," 4 "3-4 times a week" and "almost every day") was selected as the proxy variable for the convenience of Internet transactions to explore the mediating effect of digitalization on promoting convenient transactions to promote share of TCE consumption. Column (3) of Table 6 shows that

digitalization had a significant positive effect on the convenience of transactions, and the regression coefficient was 38.353 (significant at $p = .01$). According to column (4), the regression coefficients of information source digitalization ($X_{it}^{Digital}$) and convenience of transactions (Bcf_{it}) on the share of TCE consumption were significantly positive. Digitalizing information sources increased TCE consumption by improving the convenience of transactions.

Conclusions

Based on the China Family Panel Studies (CFPS) data, this research examined the impact of information sources on tourism, culture, and entertainment (TCE) consumption using panel data and Tobit and mediation effect models. It explored differences in the effects of information sources on such consumption by demographic and place of residence characteristics. The influence of transforming information sources from analog to digital on TCE consumption was also investigated. The main conclusions were as follows:

First, the regression analysis results indicated that the Internet, broadcast, print, and word of mouth positively and significantly increase TCE consumption. The positive effects were greatest for the Internet, followed by print, broadcast, and word of mouth. R. Luo et al.

(2022) also found that in urban and rural areas, for families who do not use the Internet, internet usage can indeed promote family tourism consumption, and the effect is significant and steady. The results remained robust after several tests, including tail reduction, substitution variables, and selective subsamples.

Second, the effect of information sources on TCE consumption was significantly affected by age, education level, and place of residence. The Internet's influence on younger respondents' TCE consumption was greater than that of older adults. In addition, some scholars have found that Internet usage has dissimilar effects on the tourism consumption of families with varying income levels. The greatest impact is on middle-income families (Z. Liu & Yang, 2022). Broadcast media influenced the consumption of older respondents. The elderly are relatively lonely, and radio can reduce the elderly's sense of loneliness and isolation (R. Luo et al., 2022). Hence, the radio is an important way for the elderly to get information. The Internet and print media most impacted those with higher education degrees. Respondents with low education levels were more influenced by the Internet and broadcast media than by print because print media requires readers to have a greater vocabulary and strong logical thinking ability (Gössling, 2021). Internet, broadcast, and word-of-mouth information sources had a stronger upward effect on urban resident TCE consumption; print media had a greater influence on such consumption for rural residents.

Third, information source digitalization increased the share of TCE consumption in overall household consumption through improving social interactions and convenience of transactions. These changes significantly increased the ratio of TCE consumption to the consumption of services and essential goods and the ratio of TCE consumption to total consumption. The advent of new technologies has generated a series of mutations in the dynamics and structure of production and consumption at the global and tourism destination levels, changing the requirements of tourists (Şchiopu et al., 2016). However, it significantly negatively affected the proportion of TCE consumption to other consumption, such as medical treatment. Tourism may positively affect people's health in the long run (Pessot et al., 2021) as it restrains other consumption expenditures. Additionally, these advances in information sources led to more TCE consumption by promoting greater social interaction and more convenient transactions.

Implications

Based on the results and conclusions, there were several implications. First, there is a need to improve information and communication infrastructure, especially in providing Internet service in rural areas. Local governments should expand and improve the construction of 5G networks and communication base stations, expand and upgrade the coverage of networks, give full play to the role of Internet information sources in narrowing the disparities in access to information, and promote a more equitable flow of information among different regions. The sources of information need to be enriched for all people. Particularly, governments should continue to expand rural informatization, give more emphasis to the critical role of the Internet and other new information channels (H. M. Li & Zhang, 2019), improve the weaker state of rural network infrastructure, and redress the situation of "information island" in rural areas (Wang et al., 2022). Also, local governments and tourism and culture agencies should reinforce contact with information management departments and standardize information transmission quality through different sources. While reducing the cost of information acquisition and screening, the authenticity and reliability of information should be ensured to reduce misleading and false information.

Second, greater awareness should be established of the availability and importance of information sources. People should be aware of the importance of information sources, and steps should be taken to increase digital and tourism literacy.

Third, TCE marketing activities should be conducted considering the differences in preferences and use according to demographic and place of residence characteristics. TCE organizations should utilize all sources to ensure a more consistent information supply. Additionally, government departments and TCE organizations should educate and coach people to better use information in TCE consumption.

Limitations and Future Research Needs

There are recognized limitations in conducting secondary data analysis, such as the China Family Panel Studies (CFPS) (Black, 2018; Goodwin, 2012). These include the potential of methodological and data collection problems (e.g., with validity), missing data, lack of generalizability, and the absence of variables that may be relevant to the research. There are future opportunities for scholars to conduct specific surveys using the variables examined in this research.

Other factors in this research influence tourism, culture, and entertainment consumption, including the country of residence. For example, the data analyzed in this research were from China and the results may not be generalizable to other countries. Future researchers are encouraged to conduct similar studies in other countries, regions, and cultural contexts.

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Supplemental Material

First, open the CFPS website (http://www.isss.pku.edu.cn/cfps/en/index.htm), and then, click on the "Data"→"New users, both please register here"→"register," and then fill in those information: "Work Email, Identifying Code, etc. Finally, click "submit." Next, you will receive an email notifying you of the outcome of the project review. If approved, you can download and use the CFPS data.

Data Availability Statement

Data set and the estimation codes will be made available on request.

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