Original Article

Post-pandemic tourist behavior in the context of the industrial revolution 4.0: An empirical study in Vietnam

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Abstract: Recovery and growth of tourism are one of the greatest concerns of the Government as well as enterprises specializing in the travel sector. This paper aims to explore the impact mechanisms of factors on the travel intention and satisfaction of tourists in Vietnam, focusing on perceived service quality, monetary promotion, and social media. A survey was conducted with 421 tourists; the collected data was processed by Smart-PLS software. The research results have shown that perceived service quality and travel intention positively impact tourist satisfaction. Besides, both monetary promotion and social media show a favorable influence on travel intention. However, monetary promotion negatively impacts tourist satisfaction. Based on these findings, some practical implications are suggested to enhance the intention and satisfaction of tourists traveling to Vietnam in the future.

Keywords: Travel intention, satisfaction, Industrial Revolution 4.0, post-pandemic, social media.

1. Introduction

Vietnam has been considered one of the most dynamic countries in East Asia – Pacific with a GDP growth rate reaching an average of 6.35% from 2010 to 2019 (before the COVID-19 pandemic), maintaining growth during the epidemic, and being the top 40th largest economy in the world while ranking in fourth position (in 2020) and fifth position (in 2021) in ASEAN. Regarding its economic structure, the tourism sector plays an important role with its contribution to GDP remarkably increasing, climbing from 3.1% in 2011 to 9.2% in 2019 (Tourist Information Center, 2020).

Nevertheless, tourism suffered the hardest hit during the COVID-19 pandemic, which led to a significant decline in revenue in the two years 2020 and 2021. According to the General Statistics Office, the figure for tourism in 2021 was 6,500 billion VND, which was only half that of 2020. Revenue for other related services (accommodation, catering, and other services) decreased by 17%-19% (http://vietnamtourism.gov.vn, 2022). However, tourism has been considered the most resilient

industry during the economic recovery. The percentage of the population aged 18 years vaccinated with either at least one dose or with a basic full dose was 100% and 92.6%, respectively (Suckhoedoisong.vn, 2022). Globally, Vietnam ranks in the top six countries with the highest COVID-19 vaccine rates. Along with that, Vietnam has also completely opened the tourism sector in the "new normal" situation after the COVID-19 pandemic, which was much faster and earlier than other countries in the region. Acting as one of the most attractive destinations in Asia, the prospect of shortly recovering and developing Vietnam's tourism sector is completely feasible. Based on the above arguments, this study on factors affecting tourist behavior after the epidemic plays an important role in the development of Vietnam's tourism market in the current and coming periods.

Based on foundation theory, which is signaling theory and online relationship marketing (ORM), this study focuses on identifying the impact of factors on travel intention and satisfaction in Vietnam.

2. Literature review and research hypotheses development

2.1. Prospects of tourism recovery in the context of the post-COVID-19 pandemic

The COVID-19 pandemic has impacted negatively various economic fields in the world, in which, tourism has been considered one of the most heavily affected (Duro et al., 2021). Described as vulnerable and slow to recover, tourism globally has estimated a loss of 2 trillion USD in revenue in 2021 (United Nations, 2021). Besides, countries mainly depending on tourism have been hardest hit by the epidemic, which may take them longer to recover after the crisis. During COVID-19, the long-term restriction of travel to limit the spread of the pandemic has caused economies to stagnate, and an increase in unemployment and poverty (United Nations, 2022). Thus, lots of countries have been promulgating appropriate actions to adapt to the new context and recover their economies which have been heavily influenced by the pandemic (Duong et al., 2022). By prioritizing the recovery of domestic tourism and gradually releasing

restrictions for outbound travel, the tourism sector is expected to revive soon in many countries.

Vietnam has been a highly appreciated destination for traveling in Asia in recent years. The tourism sector has contributed significantly to the GDP of Vietnam. Hence, as soon as the pandemic was under control, the Government and relevant agencies (such as the Vietnam National Administration of Tourism, local agencies, travel businesses, etc.) deployed a number of suitable policies; especially conducting promotion programs to revive Vietnam's tourism sector. As a result, the number of domestic and international tourists increased rapidly in 2022, reaching more than 101.3 million local arrivals and over 3.4 million international arrivals (Vietnam National Administration of Tourism, 2023).

Travel restrictions were removed for foreign tourists along with the widespread COVID-19 vaccination and this reinforced the confidence of both travel agencies and tourists before making decisions of traveling. Furthermore, the Government and stakeholders boosted the Industrial Revolution 4.0 (IR 4.0) application (e.g., travel application, social networks, etc.) into promotion programs that allow travelers to update the situation and plan safe tours for themselves. By conducting a range of appropriate solutions, Vietnam's tourism sector has been expected to completely recover and rapidly develop in the context of the post-COVID-19 pandemic.

2.2. The signaling theory and online relationship marketing (ORM)

The signaling theory is concerned with the behavior of communicating and evaluating information in a transaction to reduce the possible information asymmetry between two parties (Spence, 2002). This theory has been widely applied in research on management (Connelly et al., 2011), marketing (Boateng, 2019), and e-commerce (Li et al., 2015). Accordingly, a signaler who might be an individual, a product, or a business, seeks to communicate its positive attributes to impact the receiver's perception, decision-making, and intention (Connelly et al., 2011). Various signals

are conveyed to influence consumer perception and behavior, such as monetary promotion (Erdem et al., 2008), firm reputation (Li et al., 2019), brand equity (Luu et al., 2023), and quality (Luu et al., 2023; Wells et al., 2011). Previous studies explored that effective signals can change both positively and negatively the recipients' perception and behavior. For example, Erdem et al. (2008) found that price is the most important signal of brand quality but frequent monetary promotion may lead to unintended results of reducing brand equity. Luu et al. (2023) suggest that the quality of the information system and brand equity are crucial signals that improve users' trust in mobile banking.

IR 4.0 has been creating strategic changes in the business environment of all fields in almost all countries around the world. According to Schumacher et al. (2016), Industry 4.0 is a mix of advanced technologies, which use the internet widely to support certain technologies. It uses digital platforms and integrates all smart technologies to optimize the firm's processes and methods of production. The IR 4.0 has promoted "superior automation", and "hyper connectivity", and brought opportunities to improve the productivity of individuals and organizations. In that context, consumers have tendencies to consume wisely by integrating various sources of information and combining online communication channels with traditional ones to get superior efficiency of consuming. And this trend has also been taking place in the tourism sector (Omar et al., 2020).

In the context of the IR 4.0, many enterprises have taken advantage of information technologies as effective tools to convey signals to their customers, with the aim of positively impacting customer behaviors, such as customer engagement and interaction via public media like social media or travel blogs (Bhati et al., 2021; Boateng, 2019). Applying IR 4.0 in promotion programs to disperse the destination's information has encouraged the rapid development of online relationship marketing (ORM), and has significantly impacted tourist intention and behavior (Bhati et al., 2021). Over the past decade, lots of destination promotion campaigns have been implemented via digital platforms, especially social networks. These platforms have been considered an important means to shape destination images, which

impact tourists' perceptions (Bhati et al., 2021; Nguyen Phuc & Bui Thanh, 2022; Di Pietro et al., 2012). Tourists can access these channels to update information about the pandemic situation and find warnings for their health if traveling (Bhati et al., 2021; Rasoolimanesh et al., 2021); or collect information about destinations' images after the epidemic, which enables them to make a decision about traveling (Duong et al., 2022).

Hence, this study not only focuses on monetary promotion and perceived service quality but also considers other factors like social media as a signal to convey information about travel destinations to tourists, which can impact travel intention and satisfaction.

2.3. The impact of monetary promotion on travel satisfaction

Monetary promotion in the tourism field can be used as an effective marketing tool to boost travel demand and improve destination competitiveness (Balcilar et al., 2021). In a particular context, monetary promotion programs (e.g., service discounts, holiday package deals, free admission, etc.) can be considered as a temporary solution to promote travel demand as well as enhance the destination images, which significantly contribute to the recovery of growth for tourism (Duong et al., 2022).

Due to the prolonged negative impact of COVID-19, consumers may face common problems of noticeably reduced income or even no income (Ozili, 2022). Thus, monetary promotion may be an urgent and effective solution to increase tourism demand (Duong et al., 2022). However, price reduction policies might not be a strong enough measure to influence tourist behavior, because these continuous policies can result in the decline of brand perception and equity of destinations in the long term (Erdem et al., 2008; Yoo et al., 2000), or negatively impact customer perception of service quality (Campo & Yagüe, 2008). Based on the prior research results, we argue that solutions to simulate demand based on monetary promotion can be effective in the post-pandemic context; however, the abuse of price reduction might negatively affect customer satisfaction when it can reduce travel quality. Hence, two hypotheses are suggested as follows:

H1: Monetary promotion has a positive effect on travel intention.

H2: Monetary promotion has a positive effect on travel satisfaction.

2.4. The impact of social media on travel intention

The influence of social media on choosing behavior can be defined as "social influence" (Pan et al., 2021). However, this influence can lead to actions in various ways depending on the source of information collected from social media. According to Di Pietro et al. (2012), tourists use social media for a number of purposes, including entertainment purposes, information exchange, and choosing travel destinations. Ebrahimi et al. (2020) show that social media plays a mediating role in the relationship between destinations' brand and their images, and reputations. In the context of the COVID-19 epidemic, researchers argue that social media and other public networks are effective tools that enable potential tourists to evaluate destinations' risks and images before influencing travel intention (Duong et al., 2022), behavior (Bhati et al., 2021), or their willingness to support destination recovery (Duong et al., 2022). Thus, the next research hypothesis is suggested as follows:

H3: Social media has a positive effect on travel intention.

2.5. The impact of perceived service quality on travel intention and satisfaction

Perceived quality refers to "the consumer's evaluation of the comparison between their expectations and perception of the service performance". Studies on this topic adopting the signaling theory have shown that perceived quality is one of the important signals influencing user behavioral intentions, such as improving customer trust (Luu et al., 2023), and purchasing intention (Wells et al., 2011). Cronin and Taylor (1992) suggest that perceived quality is the premise of customer satisfaction in the service sector.

Previous research has expressed that tourist behavioral intentions result from the combination of their expectations and perception (Konecnik & Gartner, 2007). In the context of

the highly competitive tourism industry, service quality is identified as the main factor explaining the tourist attitude towards a certain destination (Kim et al., 2018). Furthermore, good service quality not only provides tourist satisfaction but also improves the destination's image. Consequently, this increases the number of loyal customers who are willing to re-travel and leave their positive recommendations. Based on the above arguments, the research hypotheses are suggested as follows:

H4: Perceived service quality has a positive effect on travel intention.

H5: Perceived service quality has a positive effect on travel satisfaction.

2.6. The impact of travel intention on tourist satisfaction

Bringing customer satisfaction is one of the most important priorities in management practices because it is considered the vital element of a firm success over a long period (Jones & Suh, 2000). Customer satisfaction can be defined as "the meeting and/or exceeding of customer expectations" (Barsky, 1995, p.17). According to Jones and Suh (2000), customer satisfaction in the service sector includes two aspects: transaction-specific satisfaction and overall satisfaction. Accordingly, transaction-specific satisfaction relates to the users' evaluation right after using the service, while overall satisfaction focuses on the whole evaluation in the long term, based on the overall experiences with a particular organization (Bitner & Hubbert, 1994). This study adopts the satisfaction definition based on transaction-specific satisfaction.

In prior studies on behavior topics, satisfaction, and behavioral intention are two main constructs which have a significant relationship (Cronin et al., 2000). In the field of tourism, several studies have shown a positive relationship between tourist satisfaction and travel intention (Chen, 2020; Nguyen Phuc & Bui Thanh, 2022; Liu et al., 2017). Hence, hypothesis H6 is suggested as follows:

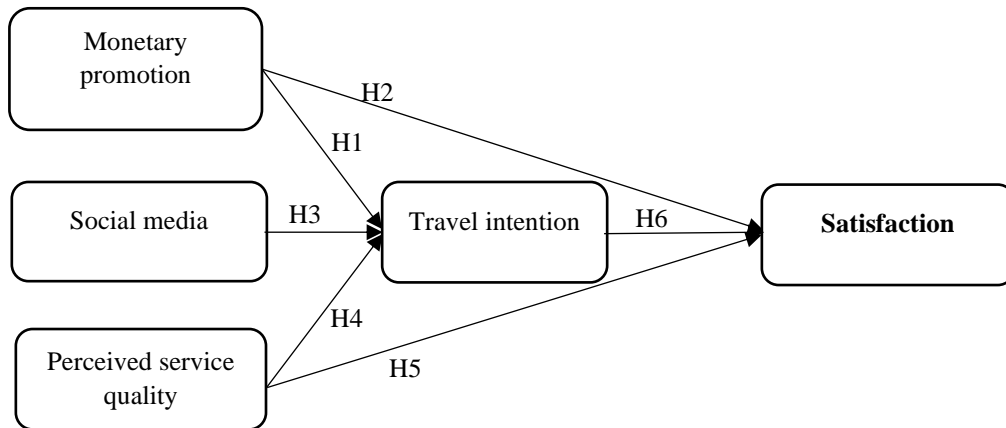*H6. Travel intention has a positive effect on tourist satisfaction.*

Figure 1: The proposed research model
Source: Author's suggestion.

3. Research methodology

3.1. Research design

This study used both quantitative and qualitative research methods. Qualitative research was conducted through in-depth interviews with nine experts, including two scientists in tourism management, two managers in travel companies, and five tourists with a frequency of traveling within a year. The interviews aimed at testing the suitability of the research items and model. Next, group discussions were carried out to check the appropriateness of the questionnaire with the respondents. Participants in the group discussions were individual tourists of different age brackets. Based on the information collected from group discussions, the items were semantically adjusted to be suitable for the surveyed persons.

The quantitative research method enabled the analysis of the primary data through PLS-SEM. Analytical techniques include: (1) Analyzing the measurement model to identify the construct reliability, the convergent validity, and the discriminant validity; (2) Analyzing the structural model to investigate the relationship between latent constructs. The software used was Smart-PLS.

3.2. Research measures

The measures were adopted and adapted from the relevant studies published in prestigious journals. The results of in-depth interviews and group discussions modified the content of the measures to suit the research context. As a result, five constructs, along with 19 items were included in the study. Namely, three observation variables of Monetary Promotion (MP) and four variables of Social Media (SM) were adopted from Duong et al. (2022). Six observations of Perceived Service Quality were adapted from Campo and Yagüe (2008). For Travel Intention (TI), three observation variables were adopted from Rasoolimanesh et al. (2021). The three items of Satisfaction were adopted from Rasoolimanesh et al. (2016) and Rasoolimanesh et al. (2019). A five-point Likert scale, which was coded from 1 (Completely disagree) to 5 (Completely agree), was used.

3.3. Samples and data collection

The survey subjects were tourists who had traveled to Vietnam's tourist destinations. Since this study used PLS-SEM to analyze data, a sample size of 100-200 was recommended (Hoyle, 1995).

The survey was conducted by both direct and indirect approaches. Survey subjects included both domestic and foreign tourists. For a direct approach: Due to limitations in the accessibility of international tourists to various destinations, we decided to conduct a direct survey of visitors to Hanoi with the assistance of tour guides. As a result, there were 216 responses collected by the direct distribution. After removing 10 invalid responses (due to many blank answers), there were 206 valid answers from foreign tourists.

The results of sample statistics showed that visitors from Europe accounted for the largest proportion with 60.7% of the total responses; followed by travelers from Asia, Oceania (Australia, New Zealand) and the Americas with response proportions being 12.6%, 11.65%, and 10.2%, respectively. The percentage of tourists from Africa was only 2.4%, and the same for unidentified respondents (due to blank answers on nationality). On the other hand, the figures revealed that 31.9% of foreign travelers visited Vietnam for the first time while over two-thirds of the respondents had been to Vietnam more than once. For frequency, the number of foreign visitors to Vietnam visiting at least twice a year accounted for one-fifth of the total (with 19.8%

of respondents). 40.6% of international travelers informed that they came to Vietnam less than one time a year while the rest of the tourists traveled once a year.

Additionally, the online survey was implemented via the link designed on Google Docs, and disseminated via social media to reach out to domestic tourists. There were 219 responses collected by online distribution. Excluding four invalid answers (due to filling in the same answer for all the questions), 215 valid responses were gathered by online survey. Combining with a direct approach, a total of 421 valid responses were analyzed. The profile of the respondents is described in Table 1.

Table 1: Profile of the respondents

	Criteria	Frequency	Percentage (%)
Gender	Male	195	46.3
	Female	226	53.7
	Total	421	100
Nationality	Vietnamese	215	51.1
	Others	206	48.9
	Total	421	100
Age	Under 18 years old	7	1.7
	18-24 years old	153	36.3
	25-35 years old	138	32.8
	36-54 years old	89	21.1
	55-65 years old	22	5.2
	Above 65 years old	12	2.9
	Total	421	100
Marriage status	Single	251	59.6
	Married	170	40.4
	Total	421	100
Education	Graduated from secondary school or below	12	2.9
	Graduated from high school	53	12.6
	Graduated from university/college	211	50.1
	Graduated with a master's degree or above	145	34.4
	Total	421	100
Frequency of traveling within a year	More than 3 times a year	79	18.8
	Three times a year	88	20.9
	Two times a year	118	28
	One time a year	122	29
	Others	14	3.3
	Total	421	100

Source: Generating from data collected.

4. Research results

4.1. The measurement model

To examine the measurement model by using PLS-SEM, the convergent validity of

items in each construct reflecting their relevance is evaluated by the Outer loading and AVE (Hair et al., 2016). Accordingly, the Outer loading of all items should be at least 0.7, which means that the latent variables can

explain at least 50% of the variation of observation variables, while AVE scores should be 0.5 or above (Hair et al., 2016).

The results of the Outer loading showed that PSQ1 and PSQ6 belonging to the perceived service quality (PSQ) are lower than 0.7. Therefore, the two items were removed from the research model. Next, the convergent validity

was checked for the second time. The results showed that the Outer loading of all items were greater than 0.7, ranging from 0.781 to 0.941, both Cronbach's Alpha and CR of all constructs were greater than 0.7 while AVE of them exceeded 0.5. Thus, all items and constructs met the requirements of both construct and convergent validity.

Table 2: The results of examining the measurement model

Constructs	Outer loadings	Cronbach's Alpha	CR	AVE
Monetary Promotion (MP)	(0.913-0.941)	0.920	0.950	0.862
Social Media (SM)	(0.856-0.927)	0.930	0.950	0.825
Perceived Service Quality (PSQ)	(0.781-0.812)	0.819	0.878	0.642
Travel Intention (TI)	(0.818-0.917)	0.816	0.891	0.732
Satisfaction (SA)	(0.903-0.940)	0.912	0.945	0.851

Source: Results from data analysis.

To examine the discriminant validity, the HTMT scores were used (Henseler et al., 2015). It is required that HTMT scores must be lower than 0.9. The results of HTMT (Table 3) showed that the constructs in the research model met the requirements of discriminant validity. Besides, the VIF scores of all constructs were lower than

5, which illustrated that there was no multicollinearity in the model.

In total, the correlation between the variables qualified for the reliability of the research, which enabled us to conduct the next steps of data analysis.

Table 3: The results of examining the discriminant validity (HTMT)

	Monetary Promotion	Perceived Service Quality	Satisfaction	Social Media	Travel Intention
Monetary Promotion					
Perceived Service Quality	0.214				
Satisfaction	0.085	0.446			
Social Media	0.066	0.318	0.370		
Travel Intention	0.467	0.371	0.684	0.304	

Source: Results from data analysis.

Table 4: The results of the structural model

Hypotheses	β	T-values	P-values	F²	Results
H2: Monetary Promotion -> Satisfaction	-0.205	4.225	0.000	0.064	Supported
H1: Monetary Promotion -> Travel Intention	0.341	7.123	0.000	0.15	Supported
H5: Perceived Service Quality -> Satisfaction	0.251	7.240	0.000	0.102	Supported
H4: Perceived Service Quality -> Travel Intention	0.199	4.061	0.000	0.047	Supported
H3: Social Media -> Travel Intention	0.207	4.387	0.000	0.053	Supported
H6: Travel Intention -> Satisfaction	0.602	12.741	0.000	0.515	Supported

Source: Results from data analysis.

4.2. The structural model

To evaluate the structural model as well as examine the research hypotheses, bootstrapping technique was applied with 1,000 samples before

checking Path Coefficients, T-Value, P-Value, and f² (Hair et al., 2016).

Table 4 expresses the results of the hypothesis examination. All hypotheses (H1, H2, H3, H4, H5, H6) are supported with

T-values greater than 1.65 and P-values less than 0.05 (Hair et al., 2016). Accordingly, Perceived service quality and Travel Intention positively affect tourists' satisfaction, while Monetary Promotion shows a negative impact on satisfaction (β = -0.205). Travel Intention was influenced by Monetary Promotion, Perceived Service Quality, and Social Media.

R^2 expresses the variance of endogenous variables and is explained by the exogenous variables (Hair et al., 2016). The results in Table 5 show that Monetary Promotion and Travel Intention explain 44.4% of the variance of Satisfaction. Additionally, 24.9% of the variance of Travel Intention is explained by Monetary Promotion, Perceived Service Quality, and Social Media.

Table 5: R^2 and R^2_{adj}

	R^2	R^2_{adj}
Satisfaction	0.448	0.444
Travel Intention	0.254	0.249

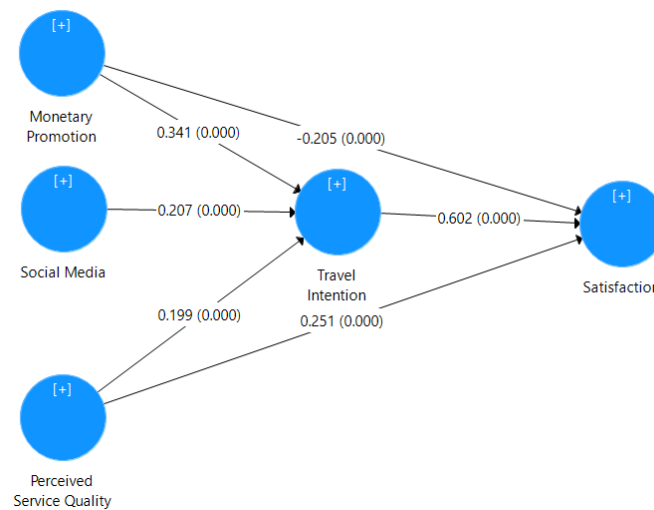*Source:* Results from data analysis.

Figure 2: The results of the structural model
Note: β and P-value are expressed on the line of the model.
Source: Results from data analysis.

5. Discussions and implications

This study has revealed the impact mechanism on travel intention and tourist satisfaction in Vietnam through three factors, including monetary promotion, social media, and perceived service quality. The research results provide valuable evidence for managers of tourism companies as well as stakeholders in the context of the "new normal" situation after the COVID-19 pandemic.

Based on the research results, once again, travel intention shows a significant impact on tourist satisfaction. This finding agrees with prior studies of Chen (2020), Nguyen Phuc and Bui Thanh (2022), and Liu et al. (2017). Besides, monetary promotion expresses its important role in fostering travel intention (β = 0.341). This result is appropriate for the research of Duong et al (2022) who illustrate that if tourism companies offer more attractive monetary promotion programs, they can increase significantly the travel intention of tourists. The outbreak of the COVID-19 pandemic caused a sharp decline in the global economy and personal income. Thus, after the pandemic, price is paid much attention to before deciding to travel. However, monetary promotion shows a negative impact on tourist satisfaction (β = -0.205). This finding is consistent with the suggestion of Yoo et al. (2000) and Campo and Yagüe (2008). This fact can be explained thus: that to offer monetary promotion, tourism companies have tendencies to cut some related services to reduce their cost, which can negatively influence tourists' experiences.

Social media has a positive impact on travel intention (β = 0.207). This research result reinforces the argument of Duong et al. (2022) and Bhati et al. (2021). This relationship implies that social media should be used as an effective communication channel to improve destinations' image as well as foster the behavioral intentions of potential tourists.

Perceived service quality favorably influences both travel intention and satisfaction with scores of β being 0.199 and 0.251, respectively. The better-perceived service quality tourists get, the more satisfaction they feel. The service quality of tourism companies can be perceived through the quality of aviation and accommodation and added services in travel packages. This research finding is similar to the suggestion of Campo and Yagüe (2008) and Cronin and Taylor (1992) for this topic. Tourists who have experienced high service quality get more excited, which leads to fostering their travel intention. This implies that if tourists have bad experiences, their trust in service quality would be lost. Consequently, they don't have a tendency to revisit.

The research results have provided valuable practice for enhancing travel intention and tourist satisfaction. Based on the findings, some practical implications are suggested as follows:

Firstly, improving the perceived service quality through: (1) Focusing on developing attractive destinations because they not only can significantly influence travel motivation but also are considered as basic elements of tourism service that constitute various travel packages. (2) It is necessary for the Government to formulate a sustainable tourism development strategy along with consistent and supporting policies such as improving the infrastructure system for tourism activities, which is convenient for tourists to visit. (3) Improving human resources. Human resources who are professionally trained, dedicated, and enthusiastic are considered important factors significantly increasing tourist satisfaction. (4) Diversifying travel packages, especially focusing on establishing a supply chain including related services, towards meeting international standards, paying much attention to preserving and promoting traditional cultural values, building national image and brand along with a valuable national tourism identity.

Secondly, fostering travel communication programs via social media. The local authorities should set up fan pages that frequently promote the destinations' image to potential clients. Travel agencies should combine with social media to widely disperse tourism information.

Thirdly, customizing flexible monetary promotion programs while maintaining tourism quality to provide good experiences for their customers.

6. Conclusion, limitations, and future research

In conclusion, this study has clarified the significant influences of monetary promotion, social media, and perceived service quality on travel intention and tourist satisfaction in Vietnam. Besides the findings of the positive and remarkable impact of social media and perceived service quality, this paper has also explored the two-way impact mechanism of monetary promotion on travel intention and tourist satisfaction, which significantly contributes to the decision-making of managers in tourist agencies. Nevertheless, there are several limitations to this study. First, data collected from the survey used a cross-sectional research design. So, it is necessary to conduct other studies using longitudinal research to review and improve the generality of the findings in this research model. Second, R^2 of Travel Intention and Satisfaction are relatively small, only 0.249 and 0.444, respectively. These results show that there might be other factors that have not been identified in this study. Therefore, future research should find out and explore their impacts on Travel Intention and Satisfaction. Third, this study has not investigated the influence of control variables (such as demographic factors of respondents) on the dependent constructs (Travel Intention and Satisfaction). Further research should focus on identifying these relationships.

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