

INVESTIGATING THE IMPACT OF CURRENT ISSUES ON LEISURE, TOURISM, AND HOSPITALITY IN PSYCHOLOGICAL SCIENCE

EDITED BY: Anestis Fotiadis, Tzung-Cheng Huan and Chris A. Vassiliadis
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INVESTIGATING THE IMPACT OF CURRENT ISSUES ON LEISURE, TOURISM, AND HOSPITALITY IN PSYCHOLOGICAL SCIENCE

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Editorial: Investigating the Impact of Current Issues on Leisure, Tourism, and Hospitality in Psychological Science

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Editorial on the Research Topic

Investigating the Impact of Current Issues on Leisure, Tourism, and Hospitality in Psychological Science

As one of the world's most dynamic, fast-changing, and intense industries, tourism remains the primary engine of economic growth and sustainability generating a vast number of employment opportunities leading to poverty alleviation (Fotiadis et al., 2019a). Current challenges occurring from the Covid-19 pandemic indicate that the tourism and hospitality sectors are highly sensitive to changes and are crucial for the global economy (Polyzos et al., 2020; Shehzad et al., 2020). Psychological impacts of financial distress are a significant field of study. Usually, a financial crisis will create direct or indirect micro and macro impacts in different countries and environments.

The tourism industry is a complex environment comprising different sectors with their complex environments. Thereby, any change, be it a minor or major one, may have a significantly positive or negative impact on stakeholders. For that reason, community-based tourism is an emerging field, and growing numbers of studies are examining resident's behaviors and how development can be beneficial—or not—for a local community (Knez and Eliasson, 2017). Local communities tend to be more active when destination leadership is stable and innovative (Bichler, 2019). As Farmaki (2021) designates, special care should be used in post-crisis experiences, especially for the local community, as small local communities are unable to react easily to significant changes (Fotiadis et al., 2019b).

In recent years, the rise of medical tourism is an example that reshapes the tourism industry based on the fast-growing segments of retired tourists with their expectations regarding the provision and delivery of tourism products and services. As Garcia-Garzon et al. (2016) mention, medical travel has grown significantly during recent years, supporting new markets and advancing medical care. As expected, the recent pandemic transforms everything we knew so far and created a new tourism model where new types of medical tourism development are needed.

This special issue seeks to shed light on the current academic and practical perspectives within the leisure, tourism, and hospitality sectors. More so, this special issue investigates contemporary concerns relative to leisure, tourism, and hospitality to develop new theoretical constructs and perspectives, and stimulate dialogues in this respect while trying to strike a balance between theory and application. In this end, this special issue invited offerings from various disciplines in aiming to serve as a forum through which these various disciplines may interact and thereby expand the body of literature on leisure, tourism and hospitality, and social science at large. The

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relationship between psychological science and new methods used in the tourism industry, such as neuroscience, artificial intelligence, and big data analysis, can offer better insights into the new era tourism and hospitality industry.

As such, we briefly present the papers included in this issue.

The first paper, entitled “How to promote ethnic village residents’ behavior participating in tourism poverty alleviation: A tourism empowerment perspective,” is authored by Yang et al.. This study examines tourism empowerment’s effect on local village inhabitants’ behaviors contributing to tourism poverty mitigation in Zenlei Village in Sandu County of Guizhou Province in China. The authors develop four hypotheses related to the “Tourism Empowerment and Participation Behavior” subtheme. Then they examine four hypotheses in the mediating role of participation willingness in relation to tourism empowerment and participation behavior. Furthermore, they assess four more hypotheses to examine the moderating role of participation ability regarding tourism empowerment and participation behavior. As the results delineate, tourism empowerment has a significant interrelation with participation behavior, while there is a mediating effect among participation willingness, tourism empowerment, and participation behavior. Additionally, it is demonstrated that a strong positive correlation exists among tourism psychological empowerment and participation willingness when residents’ participation ability is high and weak when it is low.

The second paper is titled “Evaluation of self-assessed state of health and vitamin D knowledge in Emirati and international female students in United Arab Emirates (UAE)” and is authored by Abboud et al.. In this paper, the authors compare knowledge about vitamin D and the perceived state of health in Emirati and international female tourism students in Dubai, UAE. Their study focuses on a niche market in the middle east, as they are exploring female Emiratis and international female tourists. Their research questions explore how different dietary variables, such as assessed levels of supplementation, diet, and UV exposure, can affect the perceived state of health. In addition, they evaluated the participants’ self-assessed state of health in terms of vitamin D testing and general well-being indicators. As their results signify, there is an exceedingly low knowledge about the association of vitamin D deficiency and most diseases. Further, Emirati students reported using Vitamin D supplements much more than the international students.

The third paper deals with “Resident’s perspective on developing community-based tourism—A qualitative study of Muen Ngoen Kong community, Chiang Mai, Thailand,” authored by Lo and Janta. This study examines the benefits and challenges of Community-Based Tourism (CBT) and solutions to address identified shortcomings by studying the Muen Ngoen Kong community in Chiang Mai, Thailand. Focusing on the concept of CBT, the importance of CBT, and CBT development’s objectives, the researchers developed three research questions. The first one explores the challenges a community faces concerning CBT. The second one investigates benefits that Support CBT Development in the Community, while the third suggests solutions to solve the challenges. Results designate that there are many problems with how CBT is implemented. The most significant problems seem

to be resource ownership, benefit leaking, financial issues, and limited community participation.

The fourth paper is titled “Emirati adults have a higher overall knowledge on vitamin D compared to Tourists” and is authored by Saleh et al.. This research examines the level of knowledge of vitamin D, calcium, and physical activity among Emirati and tourist adults in Abu Dhabi. It is a cross-sectional study undertaken in three different malls in Abu Dhabi, where the retail and hospitality sectors are well-developed and include Emirati and tourist patrons. Another research question investigates if there are demographic differences in perceptions. Emirati participants showed a higher overall vitamin D knowledge than their tourist counterparts. Both groups indicated a low/medium level of knowledge regarding physical activity, calcium and vitamin D supplements.

The fifth research paper is a brief report titled “Promises and hurdles of medical tourism development in the Russian federation,” where Daykhes et al. are the authors of this study. The primary purpose of this research was to identify factors affecting the development of medical tourism in Russia and those factors that impede this area’s development using the expert assessment method. The authors surveyed the complex relationships that might exist between the health expenditure landscape and medical tourism. Another investigation area was to determine the main issues that impede the medical tourism field in Russia and suggest possible solutions for further development. They develop 10 research questions regarding the perception of foreign medical tourists, and their results suggest nine improvements for further progressing the industry in Russia.

The next study deals with the topic “Exploring consumers’ behavior for choosing sustainable food,” authored by Hsu et al.. In their study, the authors explore consumers’ interests in buying sustainable food in Taiwan. The study focused on interest instead of intention or behavior to better understand the formation of interest. For their study, the authors develop four hypotheses. The first one is examining the relationship between knowledge and interest in buying sustainable food. The second examines friends’ support regarding the level of interest, while the third addresses the relationship between price and interest. In the final hypothesis, they explore health incentives and levels of interest. The results indicate that the first three hypotheses were supported while the fourth was not.

Research paper number seven is titled “Behavioral model of middle-aged and seniors for bicycle tourism.” The authors of this study are Lin et al.. Their study seeks to determine the behavioral tendency of the middle-aged and seniors in bicycle tourism at environmentally protected scenic areas and its relevant influence factors. The authors use the theory of planned behavior (TPB) and develop six hypotheses. The first three hypotheses examine the relationship among sports habits and subjective norms, perceived behaviors, and respondents’ attitudes toward biking. The other three examine the association of respondent’s behavioral intentions and attitudes, subjective norms, and perceived behaviors. A structural equation model was developed, and each hypothesis was accepted.

The next paper is entitled “A study on the place attachment of golf club members,” authored by Chen et al.. In this paper,

the authors explore the memberships of golf clubs in Taiwan's central region and determine whether golfers' involvement in activities affects the degree of place attachment. They also add two factors of activity experience and experience value to develop a theoretical framework. This theoretical model was based on six hypotheses. The first two were related to how local attachment and activity experience are affected by involvement. The other four hypotheses identified significant relationships among activity experience, experience value, activity involvement, and local attachment. As their outcomes reveal, all hypotheses were supported except for the last one.

The last paper of this special issue is entitled "Examining ownership equity as a psychological factor on tourism business failure forecasting," authored by Korol and Spyridou. This paper examines ownership equity as a predictor of future business failure within the tourism and hospitality sectors. This study's main goals were to examine which ratios are the most important in a model forecasting failure for tourism businesses. The authors sought to determine if, in a strict financial model, there exist ratios that can be associated from a psychological point of view. Using an expert-driven approach, they demonstrated

that experts' judgment is an appropriate way to develop a bankruptcy prediction model. Finally, they conclude that the MAN ratio (total percentage of equity ownership by company directors), which is often considered an important psychological factor, was the fourth most important ratio for developing a bankruptcy model.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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Examining Ownership Equity as a Psychological Factor on Tourism Business Failure Forecasting

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This paper examines ownership equity as a predictor of future business failure within the tourism and hospitality sectors. The main goals of this study were to examine which ratios are the most important for a tourism business failure forecasting model and how significant is the “total percentage of equity ownership by company directors” ratio compared with other ratios associated with the probability of bankruptcy. A stepwise weight assessment ratio analysis (SWARA) was applied, and 12 tourism bankruptcy experts evaluated key ratios. Total percentage of equity ownership by company directors is considered a psychological factor, and it was identified as the fourth most important ratio for a business failure forecasting model. Academicians and practitioners can use the findings of this study whenever developing a forecasting model for tourism and hospitality enterprises.

Keywords: business failure, tourism and hospitality, psychological factors, stepwise weight assessment ratio analysis, equity

INTRODUCTION

Thomas Cook, one of the most well-known tourism companies in the world, suddenly declared bankrupt on September 23, 2019. The namesake and founder of the company, Thomas Cook, was a pioneer in the tourism/travel industry. He was the first person to systematically plan, organize, and personally host railway trips; most famously, his first railway excursion in 1841 accommodated about 500 passengers with inexpensive roundtrip tickets. There are several factors that might help explain and better understand this shocking bankruptcy.

The scholars Law et al. (2004) suggested at least three possible factors: (1) uncertainty and unpredictability associated with change stemming from Brexit (the United Kingdom's exit from the European Union), (2) the inability to cope with the increased/integral use of the internet across the travel industry, and (3) the failure of managers to develop new business models and/or adapt to emerging trends in various tourism industries. These are factors that contributed to the bankruptcy of Thomas Cook, but these are plausible factors that can/do impact industries of all kinds.

Some researchers have investigated the predictability and/or relative likelihood of a bankruptcy. For instance, Kim et al. (2012) have proposed contingency plans to mitigate business failures by using different financial indicators. Businesses in the hospitality and tourism industries are highly exposed to numbers of risks, yet very little interest has been shown in how to foresee a possible bankruptcy (Jang and Park, 2011). Predicting the likelihood of bankruptcy within the hospitality and tourism sectors is critical, especially given the unique determinants of a systematic risk associated with the characteristics and complexity of these sectors (Lee et al., 2015).

Although businesses are commonly interconnected via financial issues and concerns (Fotiadis et al., 2019b), all business enterprises are also inescapably affected by their owners (Hodari et al., 2017). Theories have examined businesses inclusive of both financial and human aspects (Smith et al., 2016; Fotiadis et al., 2019a). For example, Thomas Cook and Sons (aka Thomas Cook) was continued by his family, thus ensuring that his imprint was noticeable even as they expanded the company. Some studies indicate that entrepreneurs such as Thomas Cook are uniquely different and have a significant impact on the strategic direction and a business’s competitive advantage. However, it is extremely difficult to explore in-depth the nuances and subtleties of every entrepreneur, founder, owner, or especially the often-changing chief executive officers (CEOs) of a company. Alternative ways of predicting bankruptcy are recommended, ways that draw upon commonalities of all business enterprises. One way lies in viewing financial information found on companies’ balance sheets from a psychological point of view.

One generally accepted psychological financial factor is ownership equity. Ownership equity is well supported by agency theory. Ownership control agents, such as provision incentives in the form of equity to managers, transform managers not only into owners but into value maximizers according to Valenti and Schneider (2012). Yet there is a gap in this literature that raises a question, “How can ownership equity be used as a psychological factor in order to predict future business failure (bankruptcy) within the tourism and hospitality sectors?” To answer this guiding research question, there are two key sub-questions: which ratios are the most important for a tourism business failure model and how significant is “total percentage of equity ownership by company directors” ratio compared with other ratios associated with the probability of bankruptcy?

Vast amount of literature focuses on developing the bankruptcy forecasting model using various statistical or artificial intelligence methods; and regardless of the forecasting technique (linear or non-linear, regression or classification), majority of developed models are based solely on the use of financial ratios of analyzed companies alone. These models lack the connection between corporate finance and behavioral management. In the literature, no attempts have been made to verify the influence of any psychological factors on the corporate bankruptcy risk. The question arises whether psychological factors can be relevant predictors of a company’s risk of bankruptcy. The contribution of the paper is threefold. First, it investigates the best predictors of the financial crisis in the enterprise. Second, it determines the importance of psychological factor such as total percentage of equity ownership by company directors on the risk of bankruptcy in the company. Third, it identifies the need of implementation of bankruptcy risk forecasting models (with the use of both financial and psychological variables) in the tourism and hospitality sector.

Business Failure

Business failure is commonplace in today’s dynamic global business ecosystems. Business failure generally puts entrepreneurs in an extremely uncomfortable position as their companies cannot generate enough profit to pay their

reliabilities or generate enough cash flow to meet their operating expenses. Such an uncomfortable situation can ultimately force companies to file for bankruptcy, leading to layoffs, liquidation of existing assets, and ultimately total discontinuation of business operations. As shown in **Table 1**, there are several definitions attributed to business failure. The commonality among the definitions provided in **Table 1** refers to business failure as the stage when a company has to cease its operations owing to the inability to survive in the industry.

Whenever entrepreneurs fail, they have to grapple with several negative psychological emotions (e.g., shame, humiliation, anger, and guilt). These states/conditions have been widely studied within the realm of cognitive dissonance theory. Cognitive dissonance, in principle, suggests that people tend to avoid the discomfort associated with difficult situations (Tang, 2014). This is analogous to a business failure. A company facing the challenges of a highly competitive business environment may force an owner to avoid competitive realities until he/she can fully understand the situation, but lamentably, this is often to no avail. Owners and their businesses might ultimately succumb to failure and bankruptcy and the emotional fallout mentioned above.

Bankruptcy of enterprises is a dynamic system, covering many endogenous factors (e.g., age and size of company, type of industry, profitability, level of indebtedness, skills of managers, the level of entrepreneurship, knowledge, and competence) and exogenous factors (e.g., business cycle, bankruptcy law, availability of capital, suppliers, customers, inflation rate, fluctuation of exchange rates, interest rates, and technology) (Shin and Song, 2012). However, those issues have not been

TABLE 1 | Business failure definitions.

Definition	Study
Entrepreneurial business failure refers to the inability of the entrepreneurs (managers) to mobilize expertise and resources necessary to mitigate weaknesses and threats, resulting in the collapse of an entrepreneurship	Zhang et al., 2019
Business failure refers to the stage where a company has to stop all business operations or go out of business	Amankwah-Amoah, 2016
Business failure refers to voluntary shutting down of business operations owing to poor performance, resulting in insolvency, liquidation, or closure	Garcia Martinez et al., 2019
Business failure can be viewed as a synonym of “distressed businesses” and collapses of businesses. However, some “distressed businesses” can eventually transition to become collapsed businesses	Amankwah-Amoah and Wang, 2019
Business failure can be defined as the cessation of contributions to a business venture owing to its failure to meet the minimum threshold for economic viability as expected by the entrepreneur	Ucbasaran et al., 2012

combined into one compact, comprehensive theory. Bankruptcy of enterprises does not constitute a central element of any of the known trends of economic theory. There are only some elements of theory of bankruptcy present in selected economic theories (Table 2). This is a result of the enormous diversity of causes of bankruptcies.

There is a much higher entrepreneurial risk within the tourism industry than other industries. Power et al. (2017) suggested a higher likelihood of business failure that necessitates sustaining strategies in order to avoid such failure. This explains why development that sustains business strategies and the life cycle of a company, as well as ownership, are significant success factors for the tourism and hospitality sector (Getz and Carlsen, 2005; Wang et al., 2019).

Business Failure Models in Tourism and Hospitality Sectors

There are many indicators that can help predict the extent to which a business is moving toward a red-zone failure. The extant literature offers different viewpoints and perspectives about forecasting that help identify the warning signs of corporate failure.

The use of forecasting in predicting future events is considered across numerous disciplines. For example, meteorological forecasting of dangerous weather conditions can enable individuals, communities, and governments to prepare a timely response plan that, in turn, can help mitigate any adverse

physical safety and/or property impact (Ebi, 2007). Forecasting is an important tool within the tourism industry for decision making and preparations, such as projecting the number of tourist arrivals during peak and off-peak seasons. Similarly, forecasting models can be used to prepare contingency plans for tourism organizations. Financial risks are always a prime factor that can determine business success or failure. Consequently, it is essential for a business to develop a financial warning system that uses reasonable forecasting models. When doing so, business leaders can anticipate vulnerabilities and thereby prepare backup plans (Bucevska, 2011; Nik et al., 2016). Clearly, the using of forecasting models is important for strategic, even emergency, decision making. According to Kaur (2015), forecasting models are tools that decision makers can use to assess weaknesses and vulnerabilities in order to minimize and/or buffer any risks to such exposure.

However, forecasting models are unable to predict vulnerabilities with high-level accuracy because of the complexity of business ecosystems; it is impossible to identify all the variables linked to any kind of a market risk because dynamic future events are by nature highly emergent. As Christofides et al. (2016) pointed out, none of the well-established forecasting models were able to predict the Greece financial crisis in 2008. Nonetheless, it is important to continually improve forecasting models so that they can more accurately predict a pending or certain crisis on the horizon (Ionela, 2014, p. 166).

Currently, there are different forecasting models that can be used (Zigraiova and Jakubik, 2015; Kimmel et al., 2016) depending on where a company is situated on the spectrum of a possible financial failure. For instance, on the basis of the paradigm of business failure, Inmaculada (2017) categorized companies as chronic failure companies, a revenue financing failure company, or an acute failure company. Additionally, the literature offers several forecasting models [early warning systems (EWSs)] that help identify a financial risk such as Meyer and Pifer (1970), who employed a logit model to build an EWS for the banking sector. Another example is Inmaculada (2017), who used the Cox regression model to explore the nexus between the risk of failure and different types of positioning for a company. And Korol (2013) used a variant of the artificial intelligence model to predict bankruptcy of enterprises across Latin America and Central Europe with discriminant analysis, decisional trees, and artificial neural networks (ANNs). Lastly, the method fuzzy logic (FL) is one of the more sophisticated models that have been employed to predict enterprise bankruptcy (Korol, 2012).

Furthermore, the current literature includes statistic-based models and artificial intelligence-based models for forecasting enterprise bankruptcy. Alaka et al. (2018) conducted a literature review and found multiple discriminant analysis (MDA) and logistic regression (LR) as the two main statistical methods used to predict a bankruptcy. The artificial intelligence-based models such as support vector machines (SVMs), ANN, rough sets (RS), genetic algorithm (GA), case-based reasoning (CBR), and decision tree (DT) were found to be the most used techniques to forecast bankruptcy (Alaka et al., 2018; Shin and Bartolacci, 2007). Financial ratios (e.g., liquidity and profitability) are the most commonly used indicators to forecast business performance

TABLE 2 | Elements of theory of bankruptcy present in selected economic theories.

Economic theory	Elements of bankruptcy theory
A. Marshall's neoclassical theory	Bankruptcy of firms is a consequence of the withdrawal from the objective of maximizing profits
J. Schumpeter's entrepreneurship theory	Bankruptcy of inefficient and non-innovative companies is a prerequisite for the development of the economy as a whole. For this reason, bankruptcy is beneficial for the economy
Institutional trends	The scale and pace of bankruptcy procedures in the economy are conditioned by the quality of institutional infrastructure for bankruptcy. Attention is, however, paid to the fact that bankruptcy, owing to the existence of transaction costs and agency problems, can have negative effects at the microscale and macroscale
Managerial theories	Avoiding bankruptcy is a prerequisite for achieving the objectives which managers seek. Bankruptcy excludes benefits of managers. It is also bad for the owners and partners connected with the company
Biological theories	Bankruptcy is a natural element of the company's life cycle
Theory of value for shareholders	The desire to maximize value for shareholders ensures the survival of businesses in the long run. Bankruptcy precludes realization by the company of the postulate to maximize the value; it is therefore bad for the owners

and bankruptcy (Thai Siew and Abdollahi, 2013). All the abovementioned forecasting methods use different indicators to estimate performance or bankruptcy and are invaluable to owners and strategic leaders in the hospitality and tourism industries.

Using logit and discriminant analysis, Pereira et al. (2017) employed an econometric model and a multivariate model to predict the likelihood of business failure in the hospitality sector in Portugal. To this end, the authors used a historical dataset spanning from 2009 to 2013 that included a sample of 230 Portuguese companies. These researchers calculated 30 different financial ratios that were based on the balance sheets and income statements of those 230 companies. The most important ratios were current assets/short-term liabilities; cash flow/total liabilities; cash/current liabilities; working capital/total assets; and operating profit/operating costs. On the basis of the results of their study, Pereira et al. (2017) claimed that forecasting business failure might enable policymakers to design macroeconomic policies and tourism development programs accordingly.

Barreda et al. (2016) investigated the likelihood of corporate failure in four categories of business in the hospitality sector in the United States, namely, restaurants, hotels, resorts, and casinos. In their study, the authors used the logit model and MDA to determine which of these two models provide the more accurate forecast on a dataset spanning from 1992 to 2010. The key financial indicators used in their study were return on asset (ROA), quick ratio, debt equity, and asset turnover. Barreda et al. (2016) found the MDA model outperformed the logit model for overall bankruptcy forecasting.

Gémar et al. (2016) examined the likelihood of survival in the Spanish hotel industry using a sample of 1,033 hotels spanning from 1997 to 2009. Besides the financial indicators, they also included non-financial indicators in their analysis (e.g., size, location, type of hotel, management, and the launch time). They used an econometric analysis of survival, specifically the non-parametric Kaplan–Meier estimator of constructed variables to assess the influence of each variable. Furthermore, they used the Cox proportional hazards model to assess which variables influence the survival of hotels. The results of Gémar et al. (2016) study indicated that indeed the survival of firms in the hotel sector depends primarily on four factors: the size, location, management, and launch time during a period of prosperity. Lado-Sestayo et al. (2016) also investigated the determinants of survival within the Spanish hotel sector using a sample of 6,494 hotels located in 97 different tourist destinations and an impressive dataset spanning from 2005 to 2011. Lado-Sestayo et al. (2016) found that location was a significant determinant that affects the probability of survival of the hotels in their study. They also found that a low level of competition decreases the probability of expected survival. The results of their study indicated a positive relationship between the average profitability of a tourist destination and the firm's ultimate survival.

In a more recent study, Gemar (2019) examined factors that influence resort hotel survival in Spain. The author employed Cox's semi-parametric proportional hazards regression to examine which factors influence hotel bankruptcy and by how much each factor increases the risk of bankruptcy. Gemar (2019) found that bankruptcy in the case of resort hotels in

Spain depends on the size, location, business cycle, executive management, and the business cycle; bankruptcy did not depend upon hotel type or financial structure.

Kim and Gu (2006) developed a logit model and compared it to a discriminant model in order to determine which model provides a more accurate forecasting of bankruptcy. They found that both models actually provide an accuracy rate of 94% for in-sample restaurant businesses and 93% accuracy for the out-of-sample businesses 1 year prior to bankruptcy. However, Kim and Gu (2006) recommended the use of a logit model versus the discriminant model because of its theoretical soundness. Park and Hancer (2012) compared the logit model and ANNs for forecasting bankruptcy within the hospitality industry. The results of their study showed that the ANN provides a higher accuracy rate for the in-sample test than does the logit model. Park and Hancer (2012) also found that the logit and ANN models both achieved a 100% accuracy rate with a holdout sample.

Several researchers have tried to identify the main factors associated with the likelihood that a company will file for bankruptcy within a few years. Shkurti and Duraj (2010) considered Beaver (1967) as the pioneer of statistical methodologies for predicting bankruptcy by using a univariate approach. In a later study, Altman (1968) introduced the use of five financial ratios in a multifactor analysis (discriminant analysis) to test the financial forecasting model for predicting the likelihood of bankruptcy and non-bankruptcy among a number of trading companies across industries and countries. To date, this method and study have been the most impactful for forecasting firm bankruptcy. Specifically, Altman (1968) provided initial financial forecasting, as follows: $Z\text{-score} = 1.2(A) + 1.4(B) + 3.3(C) + 0.6(D) + 1.0(E)$, where A represents the working capital/total ratio; B the retained earnings/total assets ratio; C the earnings before interests and taxes/total assets ratio; D the market value of equity/book value of total liabilities; and E the sales/total assets ratio. Another vital consideration is the inverse relationship between time horizon and forecasting accuracy. Lin et al. (2014) have shown that in most cases an increase in time horizon is likely to decrease forecasting accuracy.

Nowadays, there persists a continued and growing argument over the most appropriate forecasting models. In an earlier study, Ohlson (1980) argued that MDA is not the most accurate forecasting model and suggested the use of the LR (logit) model developed by Cox (1958) as a better alternative. Mihalović (2016) compared the MDA model and the logit model to assess which one of these two models better predicts bankruptcy in the Slovak Republic and found that the logit method outperformed the MDA model. Garcia-Gallego et al. (2015) similarly determined that the logit model indeed outperformed the MDA model.

The probit method is a statistical method that is comparable with the logit method and is often used in forecasting analysis. Similar to the logit models, the probit models uses a dichotomous binary variable. However, the probit model differs from the logit model because it assumes that variables are normally distributed (Klieštík et al., 2015). The probit model has also been compared with other models. For example, MDA, logit, probit, and ANN

models were used to examine bankruptcy and non-bankruptcy of public firms in Taiwan using a dataset that spans from 1998 to 2005. The authors found that the probit, logit, and ANN models achieved the highest prediction accuracy of these models (Klieštík et al., 2015).

There has been a sustained growing interest in recent years for using soft computing methodologies to predict bankruptcy. Although soft computing methodologies might seem to provide more accurate predictions than do statistical methods, their sophisticated makeup and prerequisite specific knowledge and skill sets pose substantial difficulty for implementation and widespread usage. Among the most sophisticated soft computing methods used in forecasting are self-organizing maps (SOMs), multilayer perceptron (MLP), learning vector quantization (LVQ), radial basis function (RBF) networks, relevance vector machines (RVMs), and SVMs (Ribeiro et al., 2016). Also, the most applied forecasting methodologies according to Verikas et al. (2010), p. 995) are hybrid systems such as probabilistic neural networks (PNNs), Bayesian networks (BNs), DTs, GA, CBR, fuzzy DTs (FDTs), FL, and RS.

Importance of Ownership Equity

Informational and agency issues are two important factors that are associated with ownership structure and financial performance of firms. Mykhayliv and Zauner (2017) suggested these as important motives to establish an equity position. In principle, corporate equity positions can help mitigate

contracting problems between firms during the process of a joint venture or alliance formation. Farrell and Shapiro (1990) investigated conditions under which a firm with an initial equity position would likely increase its equity stake. In the context of perfect capital markets, Farrell and Shapiro argued that an increase in size of an equity stake leads to two different effects on firm profitability. When the firm has a large stake in the rival company, it will show greater interest in its profitability. In this case, the firm may be tempted to lower the size of its equity so that the rival can earn a much larger profit. In turn, this will lead to an increase in the value of the firm's initial equity stake but inversely result in a decrease in the firm's own operating profits. Farrell and Shapiro (1990) therefore concluded that a firm tends to increase its equity position only if the increase in the value of the initial equity stake surpasses the decrease in operating profits.

METHODOLOGY

In this study, we posit that the percentage of equity owned by the director of a company can function as a psychological factor that might determine the likelihood of failure/bankruptcy of a tourism business. To test this assumption, we applied an expert judgment method using the following four steps. First, we selected and confirmed the variables to include in the expert judgment method; this study utilized key financial ratios as key variables. Second, we created a list of 16 specific financial ratios to be analyzed. Third, 12 experts were enlisted who ultimately confirmed their participation in this study. Lastly, the experts were asked to rate the importance of each variable.

After completing these four steps, we employed the stepwise weight assessment ratio analysis (SWARA) method as suggested by Hashemkhani Zolfani et al. (2018). The use of the SWARA method is supported for its reliability in assessing experts' opinions related to the rate values and weight values of criteria i and its usefulness in supporting the coordination and gathering the data from consulting experts (Hashemkhani Zolfani et al., 2018). The SWARA method is subjective criteria-weighting that is widely used in the fields of management, economics, management, policy and environmental sustainability industry, manufacturing, and design and architecture (Ghenai et al., 2020). The steps employed for the SWARA method were as follows.

First, it is important to calculate the values of t_{jk} . The average attribute value of \bar{t}_j is obtained using the following formula:

$$\bar{t}_j = \frac{\sum_{k=1}^r t_{jk}}{r}$$

where t_{jk} represents the ranking of the j attribute by the k respondent, and r is the number of respondents.

Second, it is necessary to identify weights q_j . The weights of the attributes are thus calculated by dividing the mean value of each attribute by the sum of the attributes priority values (t_j) by

$$q_j = \frac{\bar{t}_j}{\sum_{j=1}^n t_j}$$

TABLE 3 | Business failure ratios.

Name	Definition
WCTA	Working capital/total assets
RETA	Retained earnings/total assets
EBITTA	Earnings before interest and taxes/total assets
TLTA	Total liabilities/total assets
METD	Market value of equity/total debt
STA	Sales/total assets
XRD	The ratio of research and development expenses to sales
NITA	Net income/total assets
MAN	The total percentage of equity ownership by company directors

TABLE 4 | Ratio significance as indicated by experts.

	XRD	NITA	METD	MAN	EBITTA	STA	WCTA	RETA	TLTA
Ex1	1	2	3	5	7	6	9	8	4
Ex2	1	3	2	7	8	6	9	4	5
Ex3	1	2	3	4	5	7	9	8	6
Ex4	2	1	6	8	7	3	9	5	4
Ex5	1	3	2	7	8	6	8	4	5
Ex6	2	1	3	4	6	7	9	8	5
Ex7	1	4	2	6	9	3	7	8	5
Ex8	1	2	3	7	5	4	9	8	6
Ex9	1	2	3	7	4	6	8	9	5
Ex10	2	4	1	3	5	8	9	7	6
Ex11	1	2	3	5	9	6	7	8	4
Ex12	3	1	2	5	6	4	7	9	8

TABLE 5 | Stepwise weight assessment ratio analysis (SWARA) methodology.

	XRD	NITA	METD	MAN	EBITTA	STA	WCTA	RETA	TLTA
Sum of ranks	17.00	27.00	33.00	68.00	79.00	66.00	105.00	86.00	63.00
Avg. attribute rank value	1.42	2.25	2.75	5.70	6.60	5.50	8.30	7.17	5.25
Attribute rank	9	8	7	4	3	5	1	2	6
Attribute weight	0.03	0.05	0.06	0.13	0.15	0.12	0.19	0.16	0.12
Dispersion	0.45	1.11	1.48	2.42	2.81	2.64	0.79	3.24	1.30
Variation	0.47	0.47	0.44	0.27	0.25	0.30	0.11	0.25	0.22
Ranking sum average V	60	=45*12/9							
Total square ranging deviator	1,849	1,089	729	64	361	36	2,025	676	9
Coefficient (W)	0.79	=12*6,838/[12*2*(9*3-9)]							
Significance of the concordance coefficient	75.98	=12*6,838/(12*9*10)							
Rank of table concordance	The null hypothesis H ₀ : The consent of experts in rankings is not accepted. Degrees of freedom (df) are $\nu = 9 - 1 = 8$, which is # of categories minus 1. The indication is $75.97 > 15.5$ at $\alpha = 5\%$								
Compatibility of expert judgment	Hence, we can reject the null hypothesis H ₀ .								

and the variation of the obtained values can be detected using the following formula:

$$\beta_j = \frac{\sigma}{t_j}$$

Third, the weighted values should be calculated. We can determine the reliability of the data by the coefficient of concordance in the responses provided by experts. In the case of repeated rankings for the same variables, as in our case, the coefficient of concordance is obtained using the following formula:

$$W = \frac{12S}{r^2(n^3 - n) - \sum_{k=1}^r t_k}$$

where S is the total square deviation of the rankings of each attribute; t_k the index of the repeated ranks in the r rank; r the number of respondents; and n the number of evaluation attributes.

Fourth, the values of χ^2 are calculated and obtained using the following formula:

$$X_{a,v}^2 = W.r.(n-1) = \frac{12S}{r.n(n+1) - \frac{1}{n-1} = \sum_{k=1}^r t_k}$$

In testing the $\chi^2 > \chi^2$, when the calculated value χ^2 is superior to the critical tabular value χ^2 for the selected level of significance (e.g., $\alpha = 0.05$), then the hypothesis regarding the concordance agreements of the experts cannot be rejected. Also, when $\chi^2\alpha$, $v > \chi^2$, the significance of concordance coefficient exists on the α level; therefore, we can conclude that group opinion is established, meaning that the experts have the same opinions. On the basis of the second criterion, the respondent assesses the relative importance of criterion j based on the previous ($j - 1$) criterion, for each specific criterion. And the coefficient k_j can be obtained using the following equations:

$$k_j = \begin{cases} 1, & \text{and } j = 1 \\ s_j + 1, & \text{and } j > 1 \end{cases}$$

$$q_j = \begin{cases} 1, & \text{and } j = 1 \\ \frac{k_j - 1}{k_j}, & \text{and } j > 1 \end{cases}$$

Finally, the relative weights of the evaluation criteria can be obtained using the following equation:

$$w_j = \frac{q_j}{\sum_{j=1}^n q_j}$$

where w_j denotes the relative weight of criterion j .

RESULTS

In the section “Methodology,” the need to identify the ratios was established and thus included in the analysis required by the SWARA method. In our study, a list of 30 ratios was provided to three experts who selected the ratios that they deemed are most suitable in forecasting business failure within the tourism and hospitality sectors. **Table 3** presents the most reliable ratios based on these experts’ judgment.

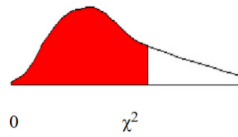
After the selection of the most appropriate ratios by the first three experts, the list of ratios was then given to 12 additional experts. The 12 experts were tourism-related academicians with significant experience in finance and publication records (see **Table 4**).

The experts gave nine points for the ratios considered the most important and 1 point for the ratio they considered the least important.

The SWARA methodology has several progressive steps. As **Table 5** indicates, the sum of ranks was elaborated and indicated that the most significant ratio is WCTA followed by RETA. The MAN ratio, which relates to ownership equity, is ranked as the fourth most significant, thus demonstrating the importance of this psychological ratio.

Hypothesis H₀ was established. H₀: *The consent of expert ranking is not accepted.* On the basis of the results shown in **Table 5**, we can see that the degrees of freedom are 8 for the rank of table concordance. Because the significance of concordance coefficient is higher than 15.5, the null hypothesis is rejected. The rejection of the null hypothesis signifies that the experts’ consent of rankings is accepted. This can also be viewed in **Figure 1**.

Chi-Square (χ^2) Distribution



The numbers in the table represent the values of the χ^2 statistics.

Areas of the shaded region (A) are the column indexes. You can also use the [Chi-Square Distribution Applet](#) to compute critical and p values exactly.

df	A=0.005	0.010	0.025	0.05	0.10	0.25	0.50	0.75	0.90	0.95	0.975	0.99	0.995
1	0.39E-4	0.00016	0.00098	0.0039	0.0158	0.102	0.455	1.32	2.71	3.84	5.02	6.63	7.88
2	0.0100	0.0201	0.0506	0.103	0.211	0.575	1.39	2.77	4.61	5.99	7.38	9.21	10.6
3	0.0717	0.115	0.216	0.352	0.584	1.21	2.37	4.11	6.25	7.81	9.35	11.3	12.8
4	0.207	0.297	0.484	0.711	1.06	1.92	3.36	5.39	7.78	9.49	11.1	13.3	14.9
5	0.412	0.554	0.831	1.15	1.61	2.67	4.35	6.63	9.24	11.1	12.8	15.1	16.7
6	0.676	0.872	1.24	1.64	2.20	3.45	5.35	7.84	10.6	12.6	14.4	16.8	18.5
7	0.989	1.24	1.69	2.17	2.83	4.25	6.35	9.04	12.0	14.1	16.0	18.5	20.3
8	1.34	1.65	2.18	2.73	3.49	5.07	7.34	10.2	13.4	15.5	17.5	20.1	22.0

FIGURE 1 | Chi-square (χ^2) distribution.

As can be seen, the calculated χ^2 value is 75.97. The tabular value of χ^2 is at a 5% significance level with 8 degrees of freedom of 15.5. Thus, the alternative hypothesis that “the consent of experts in rankings is accepted” is found to be valid.

Evaluation of the final weighting was the next and final step following the SWARA methodology (Table 6). This step utilizes the average attribute rank values and comparative importance values and requires dividing the higher category by the category above. For example, $WCTA/RETA = 7.17/8.30 = 0.86$. The new comparative value is added to the coefficient. Then, to arrive at a recalculated weight, the previous category recalculated weight should be divided by the new coefficient. In this case, the RETA ratio will be $1.00/1.86 = 0.54$. Finally, the new weight can be found by first finding the sum of the recalculated weight and then dividing each weight by the sum. In this instance, the sum equals to 2.13. So in the case of WCTA, it should be $1.00/2.13 = 0.47$. Again, the new recalculated weight indicates that WCTA is the most important ratio and MAN is still

remains in the fourth position rank. Lastly, the least important ratio is XRD with a 0.00 importance weight, which means that this ratio can be excluded from a future business failure forecasting model.

CONCLUSION

In the business failure forecasting literature, one of the biggest problems is determining which ratios should be used for the development of a dependable forecasting model. Typically, previously used ratios were strictly economic ones. However, during more recent research, other types of ratios have been used in the attempt to bolster this approach in order to increase the success in predicting future bankruptcies/failures. In particular, a psychological ratio related to economic ratios was evaluated for its importance and was tested.

There are different ways to evaluate the significance of ratios, and in this study, a SWARA method was considered the most suitable. The SWARA method is a relatively new, subjective criteria-weighting method commonly used in the fields of economics, manufacturing, industry, management, design, and architecture, as well as in developing environmental sustainability policies. The SWARA method, in contrast to other weighting methods, is an uncomplicated and straightforward method that uses a few select numbers of comparisons. Most importantly, the SWARA method has outperformed the other weighting methods when addressing which factor or process to prioritize within given economic, environmental, and policy conditions.

As the results in this study show, experts' judgment was considered significant; and the MAN ratio, the total percentage of equity ownership by company directors, was the fourth most important ratio for the development of a business model. Although highly promising, continued studies should be developed to further explore how psychological factors inside or

TABLE 6 | Stepwise weight assessment ratio analysis (SWARA) model: final weighting.

Criteria	Average attribute rank values	Comparative importance values	Coefficient	Recalculated weight	Weight
WCTA	8.30	–	1.00	1.00	0.47
RETA	7.17	0.86	1.86	0.54	0.25
EBITTA	6.60	0.92	1.92	0.28	0.13
MAN	5.70	0.86	1.86	0.15	0.07
STA	5.50	0.96	1.96	0.08	0.04
TLTA	5.25	0.95	1.95	0.04	0.02
METD	2.75	0.52	1.52	0.03	0.01
NITA	2.25	0.82	1.82	0.01	0.01
XRD	1.42	0.63	1.63	0.01	0.00

outside a company could likely affect possible futures for tourism and hospitality business failure or success.

The authors are aware of various limitations of the conducted study. The main difficulty is limited access to the information on the total percentage of equity ownership by company directors in the bankrupt enterprises. The ideal situation would be a possibility to develop the forecasting model with the use of such psychological variable separately for small- and medium-sized enterprises and large firms.

Nevertheless, the authors of this research are going to continue the study by adding this psychological factor as a non-financial variable to the early warning model. Knowing that such factor can play important role in the assessment of a bankruptcy risk, we can try to implement it to the model with other commonly used financial ratios.

DATA AVAILABILITY STATEMENT

All datasets generated for this study are included in the article/supplementary material.

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ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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A Study on the Place Attachment of Golf Club Members

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The purpose of this study is to explore the members of golf clubs in the central region of Taiwan and find out whether their involvement in activities affects the degree of place attachment and to add the two factors of activity experience and experience value so as to develop a theoretical framework. A questionnaire survey was used to collect 534 samples from golf clubs in central Taiwan for analysis using the following research tools: the Activity Involvement scale, Place Attachment scale, and Likert psychological scale. The results of the study show that (1) activity involvement has a significant positive impact on place attachment, activity experience, and experience value; (2) activity experience has a significant positive impact on experience value; (3) experience value has a significant positive impact on place attachment. This result verifies the theory that activity involvement impacts place attachment. It is suggested that the relevant bodies should strengthen the incentives given in the activities and strengthen the value of the leisure experience so as to facilitate the development of related industries in the future.

Keywords: golf, clubs, activities involved, place attachment, leisure sport

INTRODUCTION

With economic growth, the demands of modern people for quality of life are increasing day by day, and they are beginning to pursue a variety of leisure activities (Wang et al., 2012). Leisure activities are considered to improve quality of life and health (Vassiliadis et al., 2013a; Chick et al., 2016; Mehraliyev et al., 2019). There are many kinds of leisure activities, but according to degree of participant involvement, leisure activities can be roughly divided into two types: casual and serious (Scott, 2012). Golf, the game discussed in this study, is a kind of serious leisure activity. Those who engage in serious leisure activities (such as golf) must have certain professional skills (such as with golf technology) and invest a certain amount of time, money, and other resources in the activities they are engaged in. Serious leisure activities are thus usually highly involving activities, and the leisure benefits to the participants are higher than from casual leisure activities. Barbieri and Sotomayor (2013) summarize the differences in benefits between the two types of leisure, including social difficulties that are span difficulties, self-growth, engaging in leisure activities as a career, achieving certain long-term benefits, constructing a self-image, and creating leisure activities.

Sport has gained increasing popularity in Taiwan. This is partly due to the success of many well-known athletes. Some of the more popular forms of sport are basketball, baseball, badminton, and tennis. After Yani Tseng won many international trophies, golf also gained significantly in

popularity. However, because golf requires a large area of well-maintained grassland, which is quite scarce in Taiwan, golf remains a very expensive sport. An aging society has become the trend of the future, and as a result, enterprises have increasingly begun to take notice of the value of this market segment and to develop the expertise to meet its product needs, including travel and leisure products (Kim et al., 2015), and golf is a leisure activity that is good for the elderly. Danylchuk et al. (2015) found that more and more women are beginning to join the ranks of golf leisure participants, and as the market of older people expands, the importance of golf increases. Further, some companies are using technology to develop virtual golf courses and to offer a variety of golf activities for consumers to choose from, and so golf-related research is becoming increasingly important (Han et al., 2014).

Involvement means the degree to which an individual perceives a person, thing, or activity as important because of his or her needs, values, and interests (Chiu et al., 2014). Chiu et al. (2014) posit that the higher the level of activity involvement, the greater the willingness to partake in and frequency of activities. The concept of involvement stems from consumer behavior, which involves five elements, namely importance, pleasure, symbolism, risk, and risk consequences (Laurent and Kapferer, 1985; Kyle et al., 2003; Hwang et al., 2005; Mansfeld and McIntosh, 2009; Vassiliadis et al., 2013b). These five elements affect the consumer's willingness to purchase a product or service and the attitude toward the product or service. Later, the concept of involvement was adopted in tourism and leisure-related fields (Lu et al., 2015) and termed activity involvement, meaning a person's level of immersion in the activity experience (Prayag and Ryan, 2012), while the introduction of activity involvement are considered to be one of the important variables for predicting tourism or leisure behavior (Prebensen et al., 2012) and attitudes toward a place or activity (Shen et al., 2012). The elements involved in the activity contain three different originals, namely attraction, self-expression, and life center (Funk et al., 2004; Fotiadis and Vassiliadis, 2016); attraction means the attraction of the activity to the person, self-expression means whether people define their own values through the activity, and finally, centrality of life is the impact of the activity on people and their social circles, which coincides with the leisure benefits mentioned by Barbieri and Sotomayor (2013). In other words, as the level of involvement in the activity increases, the leisure benefits that individuals receive from the activity increase, and they are more willing to continue to engage in the activity.

In summary, the research problem is mainly based on golf leisure activities, taking golf course customers as an example to explore the degree of involvement of golf course customers in their activities and to understand their leisure behavior. Based on this research question, the purpose of this study is to explore the relationship between golf course customer activity, activity experience, experience value, and local attachment. It is hoped that through this research, we will develop a deeper understanding of golf leisure activities and provide advice to the relevant industries.

LITERATURE REVIEW

Golf-Related Research

In the past, there have been many studies on different market segments, such as seniors or women (Stubbs and MacGregor, 1997; Danylchuk et al., 2015; Kim et al., 2015), and Shoemaker (1989) found that the elderly are not a completely homogeneous market. This means that even among older people, the motivations and reasons for engaging in golf will vary from person to person, thus affecting their leisure activities (Danylchuk et al., 2015). This has deep implications for this study, in that even people of the same age group may have significant differences in their level of activity involvement, and this will have an impact on their subsequent behavior.

In addition, because technology is changing with each passing day and land is expensive in some countries, some countries have begun to develop virtual golf courses, and there has been corresponding academic research (Han et al., 2014). Some countries, such as Cyprus, have come to treat golf as a major business area. Boukas and Ziakas (2013) propose that the golf business is worth investing in as a tourist attraction. There are two main reasons for this. First, the ordinary customers who engage in golf are more likely to be repeat tourists, and the second is because of golf. The balls are targeted more at high-spending groups. From these studies, the importance of golf balls and related research topics can be observed.

Regarding the relationship between activity involvement and local attachment, Lewicka (2011) reviewed nearly 400 related studies published in 120 different journals and identified the importance and intensity of this relationship. Place attachment refers to the relationship between people and specific places (Hwang et al., 2005; Lee and Shen, 2013), usually because of past positive experience, and thus gradually became attached to the place (Kyle et al., 2003). The concept of local attachment is applied in many different fields of research, and the scale of the "place" varies. For example, there is research on a specific restaurant as a subject of local attachment (Debenedetti et al., 2014). From a whole range of research (Ramkissoon, 2015), it can be seen that the application of this concept of local attachment can be carried out in different scales, different industries, and with different variables. Nevertheless, the causal relationship between activities involved in local attachment is still the most commonly used chain of relationships among scholars (Stubbs, 1997; Lewicka, 2011). Therefore, this study also uses this as the infrastructure to construct the framework of this study.

Hypothesis Development

The relationship between people and places is one of the important topics that academic circles are continuing to explore (Lewicka, 2011). The concept of local attachment was born in, and the concept of local attachment is often applied by, the research institutes of the leisure tourism industry. Most of them are scholars. There is agreement that the degree of involvement associated with the activity is an important pre-institutional factor of local attachment (Kyle et al., 2003). The main concept is that when a person puts more effort into an activity in a place, it

will produce stronger feelings, and the feeling of local attachment will then form. This study, therefore, puts forward the following hypothesis:

H1: The “activity involvement” of golf course customers will positively affect their “local attachment.”

The relationship between activity involvement and activity experience stems from the concept of flow (Cheng et al., 2016). Its discussion shows that when a person is fully involved in an activity, it will be awkward. The ecstasy of realm, and thus better experience the fun and benefits of the event. This concept is applied in many leisure activities, especially in serious leisure activities, such as mountaineering (Cheng et al., 2016; Fotiadis et al., 2019), music appreciation or performance (Diaz, 2013; Wrigley and Emmerson, 2013), dance (Thin et al., 2013), etc., so this study proposes the following hypothesis:

H2: The “activity involvement” of golf course customers will positively affect their “activity experience.”

The concepts of customer experience and experience value are derived from marketing (Schmitt and Zarantonello, 2013), mainly for industries that rely on the provision of intangible goods or services, because the customer does not obtain the actual goods, so the goods obtained or the value of the service can depend on subjective experiences. Examples of such industries are wine tours (X. Chen et al., 2016), music festival tours (Andersson et al., 2017), the hot spring industry (Chen et al., 2013), etc. These terms are also used in leisure sports (Cronin and Lowes, 2016). In addition, online shoppers are not able to see the actual physical goods in advance, so these concepts are also used by online merchants for online shopping research. A relationship between the buying experience and its experience value has been explored by Bilgihan et al. (2014), and the current study argues that there is a clear causal relationship between the activity experience and the experience value. The corresponding hypothesis is:

H3: The “activity experience” of golf course customers will positively affect their “experience value.”

The extent that individuals interact with the people, things, or activities provided by a particular place is thought to have a significant impact on the formation of their local attachment (Prayag and Ryan, 2012). Scholars believe that a positive experience can produce unforgettable memories, which in turn add attachment to the place (Huan et al., 2004; Loureiro, 2014; Fotiadis et al., 2016), and even lead to post-event behaviors, such as sharing their experiences with people. For example, the authenticity of a tourist's experience of a monument will cause local attachment to the monument (Ram et al., 2016). The correlation between experience and local attachment is also applied in sports-related research (Brown et al., 2016), so this study proposes:

H4: The “experience value” of golf course customers will positively affect their “local attachment.”

The degree of activity involvement affects the value of the activity's own potency (Grohs and Reisinger, 2014). Even when buying physical items, the experience of buying will impact the perception of the value of the actual purchased item (Andrews et al., 2012). From this, it can be seen that the degree of involvement at the time of the event will affect the consumers or the players engaged in the activity, and the value of the goods or services they experience will change. Therefore, this study proposes the following hypothesis:

H5: The “activity involvement” of golf course customers will positively affect their “experience value.”

The degree of involvement in the activity itself also causes people to have deeper feelings about the place in which they do it (Prayag and Ryan, 2012). This kind of emotion is local attachment. Loureiro (2014) argues that local attachment will produce repeat visitations of respondents. When the place has positive behavioral intentions and behaviors associated with it, this leads to a higher estimate of place value and more enjoyable behaviors when in that place (Ram et al., 2016), so this study proposes:

H6: The “activity experience” of golf course customers will positively affect their “local attachment.”

METHODOLOGY

Research Scope, Objects, and Sampling Methods

This study takes the golf course as an example and uses it as the research scope, while the research object is the golf course customer. The survey was conducted from October 1, 2016, to December 31, 2016. This study used a random sampling method to issue questionnaires and cooperated with personnel to retrieve 534 samples. In terms of gender, most respondents were males, accounting for 60.9%. In terms of age group, “21–30 years old” is the most common, accounting for 42.9%, and “younger than 20 years old” is the second-highest, accounting for 21.3%. It can be seen that there are more and more young people investing in golf. In terms of education level, “university/college” was the most common, accounting for 65.4%, and the “postgraduate or above” was the second-highest, accounting for 21.3%.

Questionnaire Design

The questionnaire of this study consists of five parts. The main purpose of the first part is to investigate the socio-economic background of the respondents. The other four parts are the four facets of the study, namely activity involvement, activity experience, experience value, and local attachment. In terms of activity involvement, according to the opinions of Funk et al. (2004), it contains three different originals, namely, attraction, self-expression, and life center. For activity experience, according to Han et al. (2014), comments include health environment experience, environmental experience, social experience, and catering-related hospitality services. In terms of experience value, according to the opinions of Chen et al. (2014), customer

TABLE 1 | Reliability and validity.

	α	CR	AVE	MSV	ASV	AE	AI	PA	EV
(1) Activity experience (AE)	0.96	0.97	0.57	0.75	0.49	0.76			
(2) Activity involvement (AI)	0.97	0.95	0.61	0.48	0.38	0.57	0.78		
(3) Place attachment (PA)	0.95	0.95	0.71	0.52	0.47	0.63	0.69	0.84	
(4) Experience value (EV)	0.95	0.95	0.64	0.75	0.53	0.87	0.57	0.72	0.80

α , Cronbach's Alpha; CR, composition reliability; AVE, Average Variance Extracted; MSV, Maximum Shared Variance; ASV, Average Shared Variance.

TABLE 2 | Hypothesis testing results.

			Non-standardized coefficient	Standardized coefficient	Standard error	t-value	p-value
Activity involvement	→	Activity experience	0.43	0.57	0.04	11.86	***
Activity experience	→	Experience value	0.75	0.80	0.05	15.79	***
Activity involvement	→	Experience value	0.08	0.12	0.02	3.67	***
Activity involvement	→	Place attachment	0.33	0.43	0.03	9.89	***
Experience value	→	Place attachment	0.63	0.58	0.08	7.74	***
Activity experience	→	Place attachment	-0.12	-0.12	0.07	-1.68	0.09

*** $p < 0.001$.

return on investment, quality of service, pleasure, and beauty are considered. Finally, in terms of local attachment, according to Hwang et al. (2005) and Lee and Shen (2013), local attachment and local identity are considered. Please see the **Appendix** for the detailed measurement of the questionnaire.

Data Analysis

To test the hypotheses, the data were analyzed by Amos Software to model the structure and understand the causal relationship between its elements.

To achieve rigor in the structural equation model, first, the reliability and validity of the data were tested. Common Cronbach's α (Nunnally, 1978), compositional validity, and average extraction variation (Fornell and Larcker, 1981) were calculated and tested.

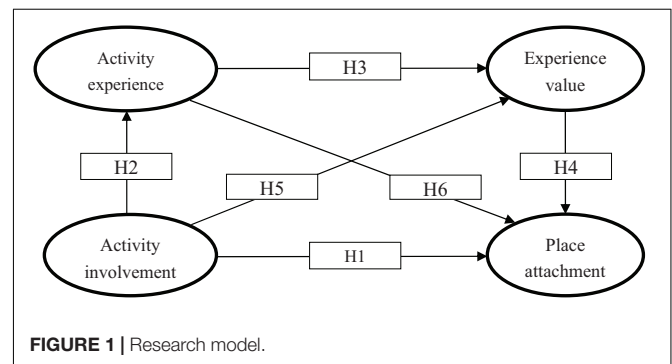
In order to ensure the compatibility of the model, this study also examined whether the fitness indicators met the standards proposed by other scholars (Hooper et al., 2008; Hair et al., 2009; Kline, 2011). Finally, the overall research structure was analyzed, as was the verification the relevant hypotheses.

RESULTS

Reliability and Validity

The reliability and validity indicators related to this study are summarized in **Table 1**. According to Nunnally (1978), the internal consistency of a Cronbach's α value above 0.9 is excellent, indicating that the reliability of each facet is sufficient, while 0.7 or above is within an acceptable range but and 0.8 is better.

Fornell and Larcker (1981) suggested that in structural equation model analysis, the composition reliability (CR) of each facet should be better than 0.7, the lowest should be 0.6, and the average extraction variation (Average Variance Extracted, AVE) needs to reach 0.5 to meet an excellent standard is recommended

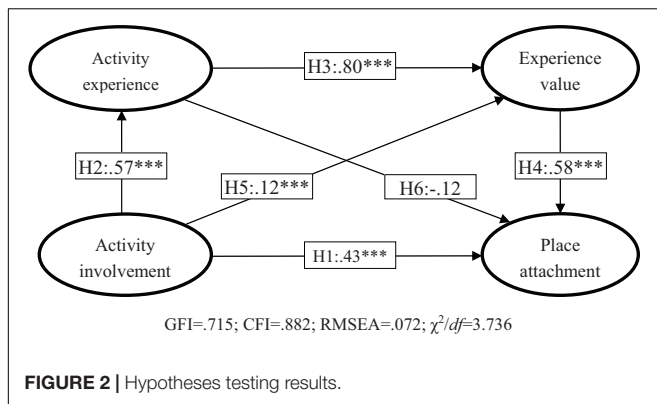


to be at least above 0.36. In addition, the Maximum Shared Variance (MSV) and the Average Shared Variance (ASV) should be as small as possible to ensure the validity level.

According to the analysis results of this study, the Cronbach's α , CR, and AVE values all have a high quality standard. However, in terms of activity experience and experience value, the MSV is greater than the AVE, indicating that there is a certain degree of commonality between variables or facets. However, this study has reached a high level of indicators, and in non-accurate science, it is difficult to completely discern discriminative problems, so this result has been deemed acceptable for this study.

Hypothesis Testing Results

The research model with 6 hypotheses is shown in **Figure 1** and the model fit index for this study is shown in **Figure 2**. The model-related indicators are as follows: GFI = 0.715; CFI = 0.882; RMSEA = 0.072; $\chi^2/df = 3.736$. According to the opinion of many scholars (Hooper et al., 2008; Hair et al., 2009; Kline, 2011), GFI and CFI must be at least 0.7 or higher, RMSEA less than 0.08, and chi-square versus degree of freedom (χ^2/df) less than 5. The relevant values for this research model are within the acceptable range.



In view of the reliability and validity of the study, the model meets the test criteria, so hypothesis testing was performed. The results are summarized in **Table 2** and **Figure 2**. According to the results, five of the six hypotheses in this study are supported, and the level of significance is less than 0.001. The results are as follows.

H1: The “activity involvement” of golf course customers will positively affect their “place attachment” is supported because the standardized β is 0.43 and the p -value is significant.

H2: The “activity involvement” of golf course customers will positively affect their “activity experience” is supported because the standardized β is 0.57 and the p -value is significant.

H3: The “activity experience” of golf course customers will positively affect their “experience value” is supported because the standardized β is 0.80 and the p -value is significant.

H4: The “experience value” of golf course customers will positively affect their “place attachment” is supported because the standardized β is 0.58 and the p -value is significant.

H5: The “activity involvement” of golf course customers will positively affect their “experience value” is supported because the standardized β is 0.12 and the p -value is significant.

H6: The “activity experience” of golf course customers will positively affect their “place attachment” is not supported because the p -value is 0.09, greater than 0.05.

The model proposed in this study actually has multiple intermediaries.

For example, activity involvement \rightarrow experience value is mediated through activity experience. The fact that all three paths are significant means that the mediation is only partial at best. The results show that activity involvement is more important in terms of generating good golfing experience and eventually place attachment. The “activity value” plays an intermediary role between “activity experience” and “place attachment”. In other

words, the respondents’ “activity experience” does not directly generate their “place attachment,” but it will be indirectly affected through the creation of “experience value.”

CONCLUSION AND SUGGESTIONS

Conclusion

Along with economic growth, the demands of modern people for quality of life are increasing day by day, and they are pursuing a variety of leisure activities (Wang et al., 2012). Combined with the growth of the aging market (Kim et al., 2015) and of female customers (Danylchuk et al., 2015), this has caused the golf industry to spring up and develop rapidly. Based on this background of earlier research, this study aimed to understand the relationship between activity involvement, activity experience, experience value, and place attachment in golf leisure activities, thereby constructing behavior patterns to provide a reference for operators planning and operating golf courses. Therefore, this study has both theoretical and practical importance.

Based on the above literature review regarding the golf industry, as well as the concepts of activity involvement and place attachment, we know that the golf industry is facing a changing environment, including in business model and in market structure. Understanding the behavior of this market an important goal so as to retain customers and expand to new customers. Therefore, this paper not only has rational meaning in theory but also has practical value for the golf industry.

Suggestions

In terms of academics: In the past, there were few related literatures and studies on activity involvement, activity experience, experience value, and place attachment in various leisure industries, and there was no in-depth discussion and research on the golf industry and the relationships between the above variables. This study suggests that the research model of this paper be used while adding other variables. The results will establish a more complete consumer behavior model, which will enable the academic community to establish a more complete theoretical foundation and understanding of research regarding golf course customers.

In terms of national development: This study explores the relationship between the activity involvement, activity experience, experience value, and place attachment of golf courses. Therefore, government is recommended to: (1) encourage people to engage in golf activities, (2) promote the advantages of golf to enhance the health of the people and improve their leisure and living standards, (3) encourage entrepreneurs to upgrade the environment and activities at golf courses, and (4) develop and promote the golf industry to enhance the positive image of the city or country.

In other applications: Based on the background of this research, this study reveals the relationship between the activity involvement, activity experience, experience value, and place attachment of golf customers. If this study proves the relationship between activity involvement and place attachment, the research

model of this study should also be able to be applied to different leisure or sports industries for planning and management.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation, to any qualified researcher.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants to participate in this study was not required in accordance with the national legislation and the institutional requirements.

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APPENDIX

TABLE A1 | Measure of the questionnaire.

Section A	
1	Playing golf is very fun
2	Playing golf makes me happy
3	I play golf for satisfaction
4	Playing golf keeps me active
5	Playing golf gives me a lot to discuss
6	Playing golf is the focus of my life
7	My relatives and friends often participate in golf
8	I like to talk to friends about the International Music Festival
9	Playing golf is my important way to socialize
10	I have made many golfers
11	Playing golf can relieve stress
12	Playing golf can really be yourself
13	Playing golf shows my values
14	I take my golfing results as my glory
15	I can swing at any time, even without a club
Section B	
1	Playing ball can relieve work stress
2	Playing ball helps body coordination
3	When you play well, you have a sense of accomplishment
4	I connect with friends' emotions through playing
5	Playing golf in Taiwan is a symbol of identity
6	The court has an appropriate level of difficulty
7	Bathroom equipment attached to fairway
8	Spacious and decorated clubhouse
9	Transportation between course fairways
10	Fully computerized course operation
11	Maintenance of golf team safety issues
12	There is good service at the reception counter
13	Course attendant has good service attitude
14	Number of pole brothers
15	Club staff have a good attitude
16	The service staff are very professional
17	Golf club drinks are very good
18	The meal prepared by the golf club was excellent
19	Golf club has well-prepared snacks
20	Golf club has nice cigars or cigarettes
21	Golf club has decent fresh fruit
Section C	
1	The quality of service of the golf club is worth my expense
2	Golf club facilities are very new
3	Membership system makes me feel good
4	The service of the staff makes me feel very respected
5	The service of the staff keeps me from worrying about enjoying myself

(Continued)

TABLE A1 | Continued

6	I can have fun every time I come
7	I feel comfortable every time I play
8	Happy playing is really not something money can buy
9	The decoration of the club is very noble
10	The good environment keeps me away from the hustle and bustle
11	The overall environment is very beautiful
Section D	
1	I rush to play
2	I feel joy at seeing the perfect arc of the ball
3	I see achievements
4	It has become a habit
5	I have forgotten why I wanted to play golf
6	I feel a sense of achievement in technological progress
7	Playing games makes me feel respect
8	Playing can help me get to know friends
9	I use golf as a fitness activity
10	Playing can make me temporarily forget the hustle and bustle
11	Playing can keep me in touch with friends
Section E	
1	I am proud to be a member
2	I want to stay a little longer every time I come
3	The club has become an important place for me to communicate with my friends
4	I often visit golf clubs
5	I like to be better at this golf club than elsewhere
6	This golf club is more important than elsewhere
7	You can get more satisfaction here at this golf club than elsewhere
8	For me, nowhere else can replace this



Behavioral Model of Middle-Aged and Seniors for Bicycle Tourism

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This research centers on the behavioral tendency of the middle-aged and seniors in bicycle tourism at environmentally protected scenic areas and its relevant influence factors. The theory of planned behavior (TPB) is adopted as the basis of this study. The middle-aged and seniors are the subjects of this research. A questionnaire survey is conducted at environmentally protected national scenic areas in Taiwan. A total of 230 samples are drawn with a random sampling method, and 210 are valid. The findings indicate two things. First, when applying the TPB to different fields of the study, the level of predictability may vary. Another finding is that subjective norm shows a higher level of susceptibility to sport habit and predictability to behavioral intention than the other two constructs. With an empirical analysis, the study is able to provide middle-aged and senior participants and sport administration authorities with relevant suggestions for reference at the end of this paper.

Keywords: sport habit, attitude, subjective norm, perceived behavioral control, behavioral intention, theory of planned behavior, national scenic area

INTRODUCTION

According to the 2018–2065 Population Projections for Taiwan conducted by the National Development Council (2018), the number of the aged population (65 and older) had exceeded the young age population (0–14) in 2017; by 2065, the aging index will climb to 450.1 (i.e., the aged population will be 4.5 times the young population) exhibiting the aging trend of Taiwan's population structure. Currently, the pursuit of better life quality is a tenet among the public. Seeking mental and physical fitness along with life satisfaction has become the norm. Huang (2006) indicates that leisure sports can increase personal life satisfaction and subjective well-being while bringing individuals and society multiple benefits, such as maintaining physical fitness, dispelling fatigue, relieving stress, and achieving self-affirmation. In terms of social benefits, leisure sport can promote harmonic interpersonal relationships and social networking. The right to and opportunities for leisure sports are for people of all ages. In the Taiwanese society that promotes "Sports for All," not only the youth are enthusiastic regarding various types of exercises, but also the middle-aged (45–64) and seniors (65 and older) are encouraged to participate in leisure sports. It echoes what Huang (2006) indicates above. This helps them adapt to their aging status, realize an ideal life in their old age, and, in turn, reduce social problems and costs.

In recent years, cycling sport has gained popularity among the public. Some cities in Taiwan have already established public bicycle rental systems. The broadly established bicycle paths provide the public with more access to cycling. The "Integrated Bicycle Path Network Construction Plan"

in 2012, promoted by the Sports Administration, Ministry of Education (Sports Administration Ministry of Education, 2012), points out that in response to the growing popularity of leisure sports, the National Development Council has followed the guidance of the “Economic Revitalization Project with Investment Expansion (NT\$500 Billions in 4 Years) in Public Works” to construct the around-the-island bicycle paths by establishing interconnected regional networks. Through the subsidies of the “Integrated Bicycle Path Network Construction Plan” to the local governments from 2012 to 2016, high-quality bicycle paths fitted with local terrains are constructed in order to meet the demands in leisure activities and sports (Maier and Weber, 1993). The plan attests to the government’s proactive promotion in the cycling sport. On the other hand, when cycling is combined with tourism, a new phenomenon of sport tourism is henceforth created: bicycle tourism (Beech et al., 2005). In 2017, around 2.5 million people are involved in bicycle tourism in Taiwan (National Development Council, 2018). Whether bicycle tourism is of participation, sightseeing, or nostalgia type, it has already attracted specific groups of people. With the change of physical functions among the middle-aged and seniors, appropriate exercise can help offer certain positive effects concerning their mental and physical status.

Tsai and Chou (2008) argue that the increased muscle strength could allow seniors to partake in more aerobic exercises, such as hiking and cycling. The fact validates the appropriateness of cycling sport for the middle-aged and seniors. Furthermore, bicycle tour itineraries offered by many tourist attraction authorities or travel agencies in recent years have helped to enhance their cognition toward this tourism phenomenon (Fotiadis et al., 2016a). For example, in 2014, the Sun Moon Lake National Scenic Area Administration (2014) introduced a 1.5-km bicycle/hiking path to connect the scenic spots of Wenwu Temple, Songbolun, and Dazhuhu in order to promote relevant bicycle tour itineraries and friendly facilities for seniors. Through hiking or cycling, tourists are immersed in nature and health atmosphere of the ancient salt-transporting trail at Songbolun. During the journey, tourists are able to take in the mountain and waterfront scenery along with the eco-diversity that the surrounding environment offers. It is noted that the bicycle path network development conducted by the government also allows more access for the middle-aged and seniors to engage in bicycle tourism.

Past studies on the sport participation of the middle-aged and seniors mainly focused on Tai chi (an internal Chinese martial art), Yuanji dance, Waidangong, and other leisure exercises (Yang, 2001; Chung et al., 2005; Huang, 2005; Hung, 2005; Wu, 2010; Chang W.H. et al., 2014; Vassiliadis and Fotiadis, 2014), while a minor portion of them explore the issues of water sports (Chien et al., 2012; Huang et al., 2012). In addition, Lin and Wu (2010) investigated the effect of walking exercise on cardiovascular risk factors of the middle-aged and seniors in communities. However, researches on the participation in cycling sport among the middle-aged and seniors are still relatively rare.

In light of the growing popularity of bicycle tourism and the comments of some scholars that previous researches largely focus on “who” participate in sport tourism, rather than “why”

participate (Gibson, 2005), this research centers on the behavioral tendency of the middle-aged and seniors in bicycle tourism at environmentally protected scenic areas and its relevant influence factors. The theory of planned behavior (TPB) is adopted as the basis of this study. With an empirical analysis, the study is able to provide middle-aged and senior participants and sport administration authorities with relevant suggestions for reference at the end of this paper.

The paper below is organized in the following way. *Literature Review* introduces the sport tourism and the TPB used in this paper. *Research Methodology* provides research framework and hypothesis, measurement, sampling site, sampling method, and respondents’ profile of this research. *Results* includes the examination of offending estimate, confirmatory factor analysis, reliability and validity, and hypotheses testing. *Conclusions, Contribution, and Suggestions* presents the conclusions, theoretical contributions, empirical suggestions, and suggestions for future research of this study.

LITERATURE REVIEW

Sport Tourism

The United Nations World Tourism Organization (UNWTO), 2008 defines tourism as follows: “Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. These people are called visitors (which may be either tourists or excursionists; residents or non-residents) and tourism has to do with their activities, some of which imply tourism expenditure.” Sport tourism is the participation of people in sport-related activities for a certain period of time in an environment outside their usual place of residence (Ritchie and Adair, 2002; Pigeassou, 2004; Bartolomé et al., 2009; Weed, 2009; Fotiadis et al., 2016b,c). There are several categorizations of sport tourism. Gammon and Robinson (Gammon and Robinson, 2003) recommend that sports tourism can be classified as hard sports tourism or soft sports tourism, while Gibson (2006) recommends that there are three categories of sports tourism: sports event tourism, celebrity and nostalgia sport tourism, and active sport tourism. Kazimierczak and Malchrowicz-Mosko have introduced specific and developmental trends of sport tourism and presented deeper analysis about the essence of sport tourism.

The hard definition of sport tourism refers to the mass of people participating at competitive sport events. Normally in these kinds of sport events, enthusiasm attracts visitors to the events. FIFA World Cup, Olympic Games, F1 Grand Prix, and local events such as Half-Marathon and NASCAR Sprint Cup Series could be expressed as hard sports tourism (Grabowski, 1999; Gammon and Robinson, 2003; Pigeassou, 2004; Tyrrell et al., 2004; Weed, 2009). The soft definition of sport tourism is when the visitors travel to take part in recreational sporting, or sign up for leisure interests. Hiking, running, skiing, bicycling, and canoeing can be expressed as soft sports tourism (Gammon and Robinson, 2003; Pigeassou, 2004; Weed, 2009). In this study, bicycle tourism is a kind of soft sport tourism.

According to Gibson (1998), activities that sport tourists partake can be categorized into three types depending on an individual's main purpose. Tourists can either be a participant of sport or a spectator, or a visitor of sport-related sites. This study, obviously, focuses on the first type of sport tourists, namely, the active sport participant (Gibson, 1998), with a slight distinction. Most studies on the motivation of an active sport participant mainly focus on younger people, for whom competing is a major motive. As proven by some studies, young athletes show a higher level of aggressive tendency (e.g., Keskin, 2018) and are prone to risk taking (Blazo and Smith, 2018). The main subject of this study aims at middle-aged to senior respondents. Their motivation for participating in sport activity is likely to be different than their younger counterparts (Gayman et al., 2017), as well as their concerns (Johnson and Rose, 2015).

Theory of Planned Behavior

In investigating people's behavior, the major part of the discussion on behavioral intention focuses on the "will" or "will not" of performing a specific behavior (Ajzen and Fishbein, 2005). The TPB bases the prediction of behavioral intention upon personal attitude, subjective norm, and perceived behavior control; behavioral intention is the best variable for behavior prediction (Ajzen, 1985). The TPB originates from the theory of reasoned action (TRA) proposed by Fishbein and Ajzen (1975); its fundamental assumption is that "human behavior is based on rational reasoning, and an individual can appropriately control his or her behavior with personal will." However, in reality, not all behaviors are subject to personal will; instead, they are also influenced by the external objective environment or the resource limitation. For example, the rather costly registration fee or not having the time for a bicycle sport event can determine individuals' participation decisions. Factors of this nature make TRA inapplicable in explaining sport participation. It is in this circumstance that Ajzen (1985) adds the "perceived behavioral control" variable into the TRA model via an integrated review of relevant social psychological literature. In the TPB developed by Fishbein and Ajzen (1975), "attitude" is a personal positive or negative perception or belief about a specific behavior. It is formed through the conceptualization of the judgment about a specific behavior.

"Subjective norm" is the social pressure perceived by an individual about a specific behavior he/she performs. However, "perceived behavioral control" is the level of control about a specific behavior, as perceived by the individual, who can even anticipate the probable impediments and obstacles of performing this behavior according to his/her past experience. Take this research as an example: if the middle-aged and seniors believe that cycling sport can enhance their health, and they deem this to be a very important positive consequence, then their attitude toward regular exercise will tend to be positive accordingly. In addition, if their relatives or friends approve of this idea that cycling sport is healthful, and the middle-aged and seniors are also willing to take their advice, the "subjective norm" in this case will be strong. Finally, if, most of the time, they cannot find companions to do cycling, and companions are a significant factor for their participation in cycling, they will regard "lack of a companion" as an obstacle; this in turn will consequently

influence their behavioral intention about cycling. However, the TPB also has its own limits. Hsu (2006) points out that the TPB could present good predictions while explaining the relationship between intention and behavior; however, research result inconsistency still occurs in the case of different research subjects, age groups, and behaviors probed in different research. This is where extra attention is required during the research process. Furthermore, the influence of a regular exercise habit on behavioral intention is corroborated by relevant research. In their study, Kaushal et al. (2017) indicate that a regular exercise habit is the most important factor determining whether or not an individual will continue to exercise regularly. A study on military personnel's sport attitude, values, and intention to participate in exercises by Chen (2008) also verifies that the "regular exercise factor" scored the highest in the sport behavioral intention. Accordingly, sport habits have a significant influence on the behavioral intention; their relation will be discussed in this paper.

From the related literature, it can be learned that the TPB has been applied to relevant research on exercise by seniors. Dean et al. (2007) examine the physical fitness training of the seniors through the TPB. Conn et al. (2003) employ the TPB to investigate the sport behavior of female seniors. Gretebeck et al. (2007) adopt the TPB to discuss the physical activities and body functions of the seniors. The TPB has also been long applied to the research on sport participation (Hamilton and White, 2008) and tourism activities (Quintal et al., 2010), thereby indicating its applicability to research on sport tourism issues. Ajzen and Driver (1992) divide the behavior to be predicted into two categories: daily activity (such as biking) and less-participated activity (like mountain climbing). According to their research results, perceived behavioral control could effectively predict the behavioral intention concerning daily activities, but failed to predict the behavior itself. Contrarily, for the less-participated behavior, the perceived behavioral control could present good predictions for both behavioral intention and the behavior itself. This discovery elicited from the literature review constitutes the motivation for this research. Therefore, this study will extend the TPB model by adding a new factor of sport habit and taking the middle-aged and seniors as the research subjects to investigate their behavioral intention of participation in bicycle tourism.

Bicycle Tourism at the National Scenic Areas in Taiwan

Bicycle tourism is prosperous in Taiwan. According to the National Development Council (2018), around 2.5 million people are involved in bicycle tourism in 2017. Thus, bicycle tourism is one of important sport tourism in Taiwan. The Taiwan Tourism Bureau has promoted bicycle tourism intensively and developed various cycling routes. For examples, the Taiwan Tourism Bureau has promoted Creative Cycling Routes, Top 10 Cycling Routes, Taiwan Cycling Festival (please see **Map 1**), and Taiwan KOM (King of Mountain) Challenge (please see **Map 2**). Inevitably, the Taiwan Tourism Bureau has also developed cycling routes at its national scenic areas (Tourism Bureau, Republic of China (Taiwan), 2019).

The national scenic areas in Taiwan are managed by the Taiwan Tourism Bureau. The National Scenic Area is established



MAP 1 | Biking map for Taiwan Cycling Festival. Source: Taiwan Tourism Bureau, Republic of China (Taiwan) (2019).

according to Article 11 of the “Statute for the Development of Tourism,” and Articles 18 and 19 also point out the areas with beautiful landscape, ecology, culture, and humanistic tourism value of nature, which should be planned to be established as national scenic areas, prohibited from destruction of relevant ecological tourism resources, and maintained for the sustainable development of natural resources. Currently, there are 13 national scenic areas in Taiwan (Bureau).

Bicycle tourism is one of the tourism activities preferred by the middle-aged and seniors in Taiwan. These middle-aged and seniors have time and money to be involved in the activities at national scenic areas (Tourism Bureau, Republic of China (Taiwan), 2019). Therefore, bicycle tourism at environmentally protected national scenic areas in Taiwan becomes an important issue of this study.

RESEARCH METHODOLOGY

Research Framework and Hypothesis

According to the literature review regarding the sport tourism and the TPB, research objectives, and the research framework, the following hypotheses are proposed:

H1: Sport habit has a positive impact on a respondent's attitude toward biking.

H2: Sport habit has a positive impact on a respondent's subjective norm toward biking.

H3: Sport habit has a positive impact on a respondent's perceived behavioral control toward biking.

H4: Attitude has a positive impact on a respondent's behavioral intention toward biking.

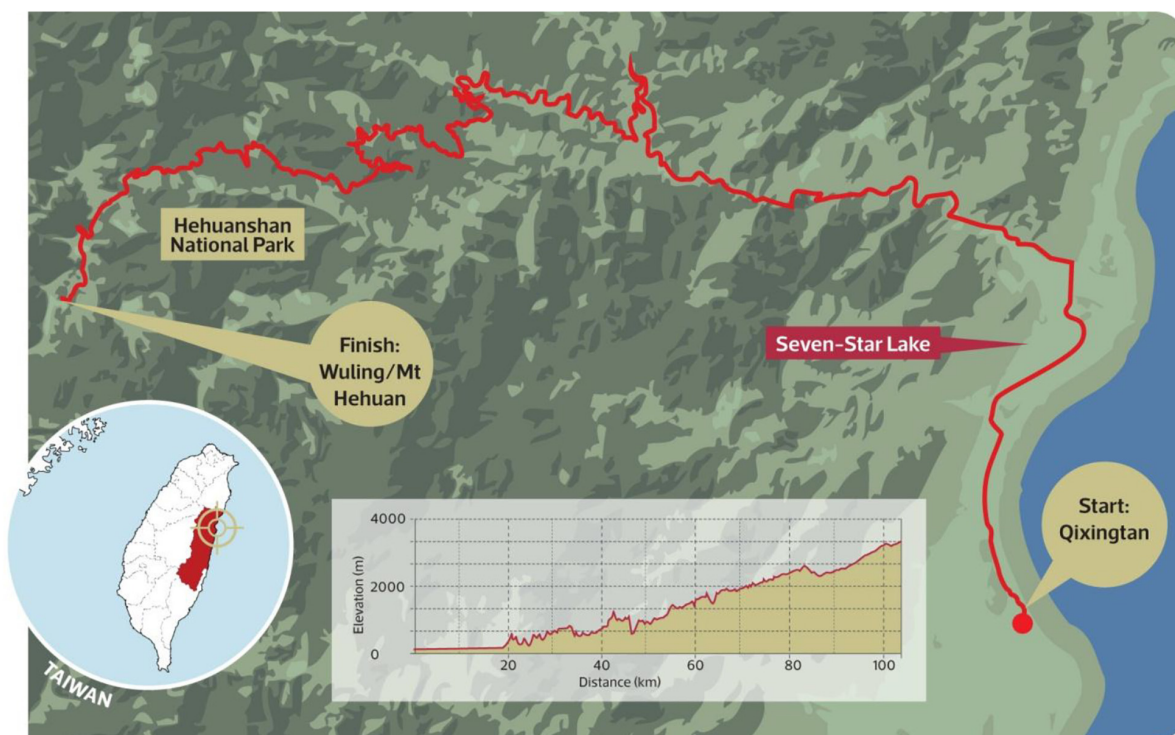
H5: Subjective norm has a positive impact on a respondent's behavioral intention toward biking.

H6: Perceived behavior control has a positive impact on a respondent's behavioral intention toward biking.

Based on the TPB and the principles of establishing a theoretical framework, and the relation among hypotheses, a research framework was developed, as shown in **Figure 1**.

Measurement

The behavioral tendency scale used in this research was adapted from past studies of sport behavior (Huang, 2005; Lin, 2006; Lo, 2007) and the TPB (Ajzen and Fishbein, 1980; Ajzen, 1991; Han and Kim, 2010). The sport habit scale was compiled according to past studies (Zhang, 2002; Guo, 2003; Tsai, 2006). The behavioral tendency scale has 16 questions in total, categorized into four parts: attitude, subject norm,



MAP 2 | Biking map for Taiwan KOM (King of Mountain) Challenge. Sources: Taiwan Tourism Bureau, Republic of China (Taiwan) (2019).

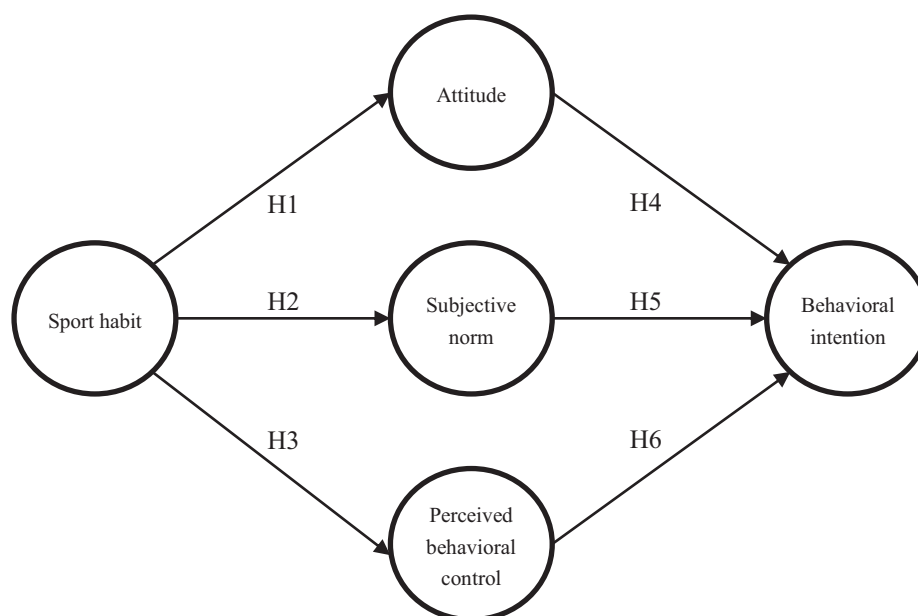


FIGURE 1 | Research framework.

perceived behavioral control, and behavioral intention. The sport habit scale has five questions. All the questions are five-point Likert scale. The respondents answered the questions based on their perception in the following five levels: strongly

agree, agree, neutral, disagree, and strongly disagree, with scores of 1, 2, 3, 4, and 5, respectively. Regarding the mean and standard deviation of all questions of the measurement, please see **Table 1**.

TABLE 1 | Means and standard deviation of all questions of the measurement.

Questions	All		M-age	Senior	Male	Female
	Mean	SD.	Mean	Mean	Mean	Mean
Attitude						
A1. Bicycle tourism is good for me	1.86	0.68	1.80	1.92	<u>1.75</u>	<u>1.97</u>
A2. Bicycle tourism is pleasurable for me	1.96	0.66	<u>1.86</u>	<u>2.07</u>	<u>1.86</u>	<u>2.07</u>
A3. Bicycle tourism is enjoyable for me	2.01	0.73	1.95	2.07	<u>1.89</u>	<u>2.14</u>
A4. Bicycle tourism is fun for me	2.00	0.72	1.92	2.10	1.92	2.09
Subjective norm						
B1. My family thinks I should be involved in bicycle tourism	2.47	0.83	2.43	2.51	<u>2.33</u>	<u>2.62</u>
B2. My friend thinks I should be involved in bicycle tourism	2.43	0.82	2.38	2.50	<u>2.25</u>	<u>2.65</u>
B3. My sport companions think I should participate in bicycle tourism	2.40	0.87	2.34	2.46	<u>2.21</u>	<u>2.61</u>
B4. I think I should be involved in bicycle tourism	2.19	0.76	2.15	2.24	<u>1.98</u>	<u>2.43</u>
Perceived behavioral control						
C1. I have enough sport resources to participate in bicycle tourism	2.58	0.98	<u>2.38</u>	<u>2.83</u>	<u>2.32</u>	<u>2.89</u>
C2. I have enough energy to participate in cycling tours	2.41	0.91	<u>2.28</u>	<u>2.57</u>	<u>2.16</u>	<u>2.69</u>
C3. I have enough skills to participate in cycling tours	2.55	0.99	<u>2.39</u>	2.74	<u>2.24</u>	<u>2.91</u>
C4. I have enough time to participate in cycling tours	2.62	0.95	2.54	2.72	<u>2.44</u>	<u>2.84</u>
Behavioral intention						
D1. In the future I may continue to participate in bicycle tourism	2.91	1.05	2.80	3.04	<u>2.67</u>	<u>3.19</u>
D2. In the future I want to participate in bicycle tourism again	2.64	1.05	2.63	2.65	<u>2.38</u>	<u>2.95</u>
D3. In the future I have plans to participate in bicycle tourism	2.74	1.03	2.64	2.85	<u>2.48</u>	<u>3.03</u>
D4. In the future I plan to participate in different types of bicycle tourism	2.99	1.11	<u>2.82</u>	<u>3.19</u>	<u>2.71</u>	<u>3.31</u>
Sport habit						
E1. Participating in bicycle tourism becomes a routine activity in my daily life	2.83	1.1	2.72	2.96	<u>2.58</u>	<u>3.12</u>
E2. Participating in bicycle tourism is a natural thing for me	2.48	0.9	2.37	2.63	<u>2.21</u>	<u>2.80</u>
E3. I will automatically participate in bicycle tourism spontaneously	2.46	0.87	<u>2.32</u>	<u>2.63</u>	<u>2.25</u>	<u>2.70</u>
E4. I often participate in bicycle tourism	2.56	0.93	<u>2.43</u>	<u>2.72</u>	<u>2.35</u>	<u>2.80</u>
E5. I will feel strange if I don't get involved in bicycle tourism for a long time	2.58	0.96	<u>2.41</u>	<u>2.78</u>	<u>2.34</u>	<u>2.85</u>

M-age, middle-aged; the pairs of numbers underlined are significantly different.

Sampling Method

The middle-aged and seniors at environmentally protected scenic areas in Taiwan are the subjects of this research. A questionnaire survey is conducted at Sun Moon Lake National Scenic Area, East Coast National Scenic Area, and Northeast and Yilan Coast National Scenic Area. The surveys are conducted with face-to-face questionnaire interviews at the visitor centers of the administration offices of the above three national scenic areas. All interviewers are trained for the surveys. The population is the middle-age and seniors who participated in the cycling tours hosted by the Giant Adventure (a travel agency operated by Giant, one of the top 10 bicycle producers in the world). Convenient sampling was used to generate a total of 230 samples. The interviewers will approach every third tourist who will walk into the centers and ask him/her to participate in the survey. A total of 220 questionnaires are returned for a response rate of 95.6%, of which 210 are valid, for an effective response rate of 95.4%.

RESULTS

Respondent Profiles

Among the 210 valid samples, 112 are males and 98 are females, which account for 53.3 and 46.7% of the samples, respectively.

As for the age distribution, the smallest age group, 75 and older, takes up only 3.8% of the effective samples, while the “45–54” age group and the “55–64” age group are the top two categories, which account for 51.9% and 33.3% of the effective samples, respectively. The remaining “65–74” age group accounts for 11.0% of the effective samples.

With respect to the education level, 40.0% of the effective samples have a “college degree,” the biggest category, followed by 24.8%, the “general and vocational high school” category, while the smallest one is the “elementary school” category, 5.2%. Therefore, most of those middle-aged and senior subjects have a college degree. For the “Annual frequency of participating in sport tourism,” the “less than one time (included)” group is the largest, which accounts for 58.6% of the effective samples, while the “Four times” and “Five times” are the smallest two groups, with both merely 5.7%, indicating that most of the subjects participate in the sport tourism only once a year.

Examination of Offending Estimate

From Table 2, it is concluded that the error variances of this research are non-negative, ranging from 0.02 to 0.10, and the standardized regression coefficients are distributed from −0.04 to 0.91. This result consists with the offending estimate examination criteria raised by Hair et al. (2016): (1) whether or not the negative

TABLE 2 | Test results of offending estimate.

Questions	Standardized coefficient	Standard error
1. A1 ← Attitude	0.76	0.03
2. A2 ← Attitude	0.88	0.02
3. A3 ← Attitude	0.87	0.03
4. A4 ← Attitude	0.87	0.03
5. B1 ← Subjective norm	0.78	0.03
6. B2 ← Subjective norm	0.89	0.02
7. B3 ← Subjective norm	0.89	0.03
8. B4 ← Subjective norm	0.78	0.03
9. C1 ← Perceived behavioral control	0.82	0.03
10. C2 ← Perceived behavioral control	0.86	0.03
11. C3 ← Perceived behavioral control	0.85	0.03
12. C4 ← Perceived behavioral control	−0.04	0.10
13. D1 ← Behavioral intention	0.91	0.02
14. D2 ← Behavioral intention	0.83	0.04
15. D3 ← Behavioral intention	0.91	0.02
16. D4 ← Behavioral intention	0.90	0.03
17. E1 ← Sport habit	0.88	0.03
18. E2 ← Sport habit	0.87	0.04
19. E3 ← Sport habit	0.90	0.03
20. E4 ← Sport habit	0.88	0.04
21. E5 ← Sport habit	0.85	0.05

error variance exists and (2) whether or not the standardized regression coefficient is higher than or too close to 1.0. The result shows that no offending estimate exists, allowing the overall model fit to be examined.

Reliability and Validity Measurement Model Analysis

According to the suggestions of Bagozzi and Yi (1988), the convergent validity of the measurement model is examined using the standardized path coefficient, the average variance extracted (AVE), and the composite reliability in order to conduct the analysis of the measurement model and the associated examination with convergent validity and discriminant validity.

Composite reliability and convergent validity

This research examines the convergent validity of the measurement model using the standardized path coefficient, the AVE, and the composite reliability. Generally speaking, the composite reliability should be >0.60, and the AVE should be >0.50 (Fornell and Larcker, 1981).

The standardized parameter estimates used in the confirmatory factor analysis associated with behavioral tendency are listed in **Table 3**: for the attitude dimension, the factor loading ranges from 0.76 to 0.88; for the subjective norm dimension, it is from 0.78 to 0.89; for the perceived behavioral control dimension, it varies between 0.82 and 0.86; and that for the behavioral intention dimension, it is between 0.83 and 0.91. For the four latent variables, i.e., attitude, subjective norm, perceived behavioral control, and behavioral intention, the composite

TABLE 3 | Composite reliability and convergent validity.

Latent variable	Factor loading	Composite reliability	Average variance extracted
Attitude	A1	0.76	0.91
	A2	0.88	
	A3	0.87	
	A4	0.87	
Subjective norm	B1	0.78	0.90
	B2	0.89	
	B3	0.89	
	B4	0.78	
Perceived behavioral control	C1	0.82	0.88
	C2	0.86	
	C3	0.85	
	C4	−0.04	
Behavioral intention	D1	0.91	0.93
	D2	0.83	
	D3	0.91	
	D4	0.90	
Sport habit	E1	0.85	0.93
	E2	0.89	
	E3	0.91	
	E4	0.88	
	E5	0.84	

reliability is 0.91, 0.90, 0.88, and 0.93, respectively, while their AVE is 0.72, 0.70, 0.71, and 0.79, respectively.

The standardized parameter estimates used in the confirmatory factor analysis associated with the sport habit dimension are also listed in **Table 3**: the factor loading ranges from 0.84 to 0.91; the composite reliability is 0.93; the average variance is 0.76; the composite reliability is >0.60; and the AVE is >0.50, indicating that the internal quality of the model is good, with required composite reliability and convergent validity.

Discriminant validity

This study adopts the confidence interval method used by Torkzadeh et al. (2003) to verify if there is any statistical difference in the correlation between two dimensions. As shown in **Table 4**, none of the correlation coefficients between two dimensions includes 1.0, which means that discriminant validity exists among the dimensions.

Hypotheses Testing

The structural equation modeling analysis of this research is conducted with the following indices used by scholars (Fornell and Larcker, 1981; Hooper et al., 2008; Kline, 2011; Hair et al., 2016): the χ^2 test, the ratio of χ^2 to the degree of freedom, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the root mean square error approximation (RMSEA), the comparative fit index (CFI), and the parsimony comparative fit index (PCFI). After modification, the indices of the modeling are shown in **Table 5**: the GFI is 0.90 (>0.80); the AGFI is 0.87 (>0.80); the RMSEA is

TABLE 4 | Bootstrap correlation coefficients between behavioral intention and sport habit.

Parameter	Estimated	Bias-corrected		Percentile method	
		Lower	Upper	Lower	Upper
Sport habit → Attitude	0.05	0.10	0.27	0.10	0.27
Sport habit → Subjective norm	0.10	−0.20	0.15	−0.22	0.12
Sport habit → Perceived behavioral control	0.10	−0.36	−0.06	−0.35	−0.05
Sport habit → Behavioral intention	0.08	0.58	0.83	0.58	0.83
Attitude → Subjective norm	0.68	0.57	0.79	0.56	0.78
Attitude → Perceived behavioral control	−0.11	−0.26	0.05	−0.27	0.04
Attitude → Behavioral intention	0.51	0.36	0.64	0.36	0.63
Subjective norm → Perceived behavioral control	−0.04	−0.15	0.06	−0.15	0.07
Subjective norm → Behavioral intention	0.67	0.55	0.79	0.55	0.78
Perceived behavioral control → Behavioral intention	0.04	−0.08	0.16	−0.08	0.16

TABLE 5 | Overall model fit analysis.

Fit Indices	Allowable range	Modified model	Model fitness assessment
χ^2 (Chi-square)	The smaller the better	217.94	Pass
Ratio of χ^2 to degree of freedom	<3	1.53	Pass
GFI	>0.80	0.90	Pass
AGFI	>0.80	0.87	Pass
RMSEA	<0.08	0.05	Pass
CFI	>0.90	0.98	Pass
PCFI	>0.50	0.81	Pass

0.05 (<0.08); the CFI is 0.98 (>0.90); and the PCFI is 0.81 (>0.50). All of these values conform to the criteria of model fitness, indicating that the whole results of this research are acceptable.

The result of the analysis is presented in **Figure 2** and summarized into **Table 6**. The result indicates that all the proposed causal relationship is statistically significant at varying degrees of the probability level. The sport habit has significant and positive impact on attitude ($\beta = 0.460$, $p < 0.001$), subjective norm ($\beta = 0.612$, $p < 0.001$), and perceived behavior control ($\beta = 0.444$, $p < 0.001$). Therefore, hypotheses 1, 2, and 3 are supported. Attitude ($\beta = 0.218$, $p < 0.05$), subjective norm ($\beta = 0.322$, $p < 0.01$), and perceived behavior control ($\beta = 0.206$, $p < 0.01$) all have positive impact on behavioral intention; thereby hypotheses 4, 5, and 6 are also supported.

From the result, one can see that sport habit is a strong predictor for attitude, subjective norm, and perceived behavior control. Especially in the case of subjective norm, the beta value is .612 and the R^2 value is .374, both values being the highest of the three paths. On the other hand, the traditional TPB model shows only a moderate level of predictability to behavioral intention. The beta for the three antecedents to behavioral intention are

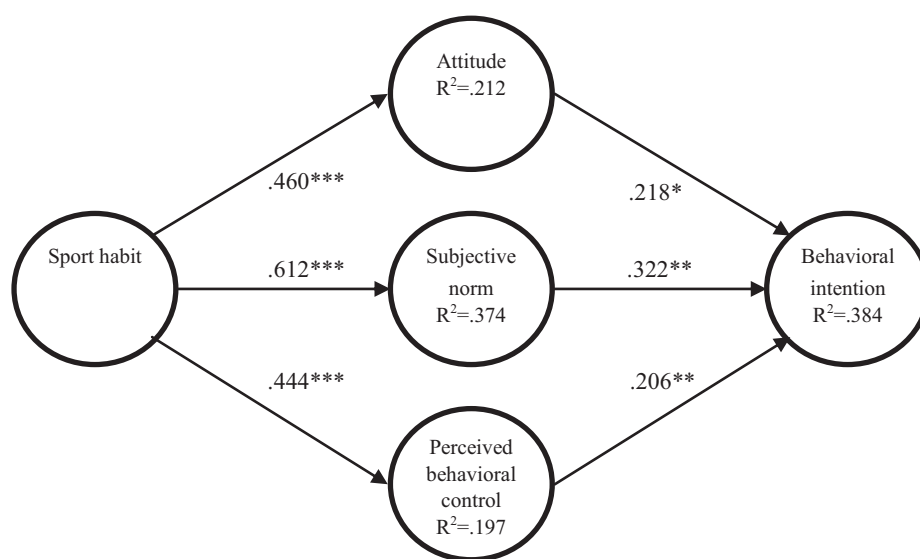
**FIGURE 2 |** Model diagram of this research.

TABLE 6 | Empirical results of hypotheses.

Hypothesis	Path relation	Path value	Tenable?
1	Sport habit → Attitude	0.460***	Yes
2	Sport habit → Subjective norm	0.612***	Yes
3	Sport habit → Perceived behavioral control	0.444***	Yes
4	Attitude → Behavioral intention	0.218*	Yes
5	Subjective norm → Behavioral intention	0.322**	Yes
6	Perceived behavioral control → Behavioral intention	0.206**	Yes

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

0.218, 0.322, and 0.206, respectively. The probability level is also slightly less significant ranging from 0.05 to 0.01 levels. Moreover, the three antecedents explain a total of 38.4% of the variance of the behavioral intention ($R^2 = 0.384$). Although there are no set rules regarding the requisite level of R^2 , past studies using the TPB model do show a high level of predictability to behavioral intention with R^2 ranging from 0.5 (e.g., Kim and Han, 2010) to 0.7 (e.g., Han and Kim, 2010).

The findings indicate two things. First, when applying the TPB to a different field of study, the level of predictability may vary. This suggests that the TPB is not comprehensive enough to capture every decision-making behavior. In fact, many argue (Han and Kim, 2010; Chang L.-H. et al., 2014) that the TPB needs to be modified in the study of experiential phenomenon. Another finding that is worth mentioning is that subjective norm shows a higher level of susceptibility to sport habit and predictability to behavioral intention than the other two constructs. This potentially suggests that peer opinion is vital for middle-aged and seniors to participate in sport tourism. It also indicates that sport can be a bonding agent in social situation (Baciu and Baciu, 2015).

CONCLUSION, CONTRIBUTIONS, AND SUGGESTIONS

Conclusion

The findings support the hypotheses and the proposed model of this study. Sport habit of the respondents is a valid predictor for their attitude, subjective norm, and perceived behavior control regarding participating in bicycle tourism. The causal relationship is particularly strong between sport habit and subjective norm. The three antecedents also show moderate impact on behavioral intention.

The R^2 for behavioral intention is relatively low compared to past studies (e.g., Han and Kim, 2010; Kim and Han, 2010). One of the reasons is that previous studies often add other predictors to aid the predictability of the TPB model. This study supports these previous studies (i.e., lack of additional predictors result in a low R^2 value).

There is one more thing to note. The sample size of this study is relatively small for structural equation modeling, but the researchers did assert that the size of 150 responses is adequate

for a model that is composed of less than seven constructs (Hair et al., 2016). Our sample size, 210, is bigger than 150, so it is still adequate for the tests of this study. Nevertheless, small sample size is one of the limitations of this study. This is due to the difficulty of identifying eligible respondents and enlisting their participation in the study. Thankfully, the proposed model only consists of five constructs. However, it is still preferable to have a larger sample size. For instance, the sample actually comprises of very few seniors (individual over 75). Furthermore, more than half of the respondents are not frequent participants of the sport. These limitations can affect the result of this study, which should be taken into account.

Theoretical Contributions

As mentioned in the previous section, this study makes contribution to tourism literature and theory because it extends the TPB model by adding a new factor of sport habit and taking the middle-aged and seniors as the research subjects to investigate their behavioral intention of participation in bicycle tourism.

These findings allow the study to posit a theory. Respondents' sport habit works best when they have companions. Most, if not all, sports are social event (Baciu and Baciu, 2015). Especially for an adult whom competing is a less important incentive, socialization can replace the desire to win as the main motivation to engage in sport. Among other factors, sports can be responsible for the health of adolescents, and it improves not only their physical health but also their socialization, as emphasized by Coakley (2011) and Giulianotti (2004) who believe that sports have a great potential to help solve problems and improve the quality of life of individuals and communities. This is also true in the case of middle-aged and seniors.

Empirical Suggestions

This research aims at discussing the behavioral intention of the participation of the middle-aged and seniors in bicycle tourism, and further investigates the influential factors of behavioral intention. At the end of the paper, constructive advice is provided for the middle-aged and senior participants as well as the relevant authorities of sport tourism, based on the empirical analysis results. Furthermore, several suggestions are presented, in the hope of shedding light on the future studies of sport tourism. Based on the research results, the following suggestions are proposed for reference.

First, for the middle-aged and senior participants of bicycle tourism, hypothesis 1 of this research implies that if the middle-aged and seniors perceive bicycle tourism positively, they are more likely to take part in this activity. Therefore, it is advised that they should cultivate a positive and optimistic life attitude. As an old Chinese saying goes, "Eating appropriately is better than taking any medicine; exercising regularly is better than having herbal tonics of any kind." After all, people need to exercise to stay active and alive. The proper cognition of "being active" is an important factor for the middle-aged and seniors in their stages of life. Hence, it is proposed that they should consult with others or take their own life patterns into account to develop interests in suitable sports, and acquire further understanding of them. Sport for older generation should be sustainable and safe as slow sport

is. For example, Chiu (2011) lists four principles for selecting appropriate sports for seniors: (1) Many senior participants in sports have different physical restrictions; hence, trainers need to assess their physical conditions to design their exercise prescriptions, such as weight-bearing or non-weight-bearing, and low-intensity or medium-intensity exercises. (2) Sports like cycling, swimming, chair, or floor exercises are appropriate options. Dancing and water aerobics are also favorable selections. However, trainers should still pay heed to the safety, fun, and feasibility of those sports. Most important of all, seniors should engage in these sports and be motivated to continue. (3) Individualization, personal uniqueness of the seniors, diversity, and trainees' interests should all be considered in selecting the exercise style. (4) Exercise prescriptions should include the improved style of muscle-stretching and strengthening activities as well. From the above discussion, there are a variety of exercises that are suitable for the middle-aged and seniors, such as bicycle tourism, which was studied in this research. Besides its lower intensity, its combination of sports and tourism allows seniors to enjoy both at the same time, thereby elevating their satisfaction in such aspects as physiology, psychology, social networking, and relaxation. Therefore, it is advised that the middle-aged and seniors should try their hand at bicycle tourism after obtaining some understanding about it. Through the participation in bicycle tourism, participants can come to perceive this tourism pattern more positively, and their willingness to continue performing it will be enhanced. The research results also show that the subjective norm of the middle-aged and seniors for participating in bicycle tourism has a significant influence on their behavioral intention. It suggests that they need the encouragement and support of their friends and family to do the exercises. However, the possible dangers of seniors' engaging in outdoor sports, most of the time, have been highlighted due to some sporadic accidents reported by the media, triggering concerns and impeding their involvement in outdoor sports. Therefore, it is recommended that the middle-aged and seniors should select exercises appropriate for their physical condition. Through safe and smooth engagement in exercises, friends and family will accordingly recognize the benefit of the outdoor sports, so the senior participants can have more opportunities to take part in more diversified sport tourism.

Second, for organizers of the bicycle tourism of middle-aged and seniors, based on the research results, the influence of perceived behavioral control on behavioral intention is significant. Therefore, in order to encourage the participants to become more involved in the tour, it is recommended that the organizers of bicycle tourism provide the middle-aged and seniors with comprehensive information about the riding and routes, and that they should pay close attention to the situations of flat tire or other mechanical malfunction incidents that might occur en route. The difficulty level of activities should also be taken into account while designing bicycle tourism for the middle-aged and senior riders, since especially headwinds and slanting slope of roads can be burdensome to them. Besides investigating the participants' age distribution and physical conditions in advance, it is recommended to appoint leading cyclists at the front and escorts at the back of the

bike team. Furthermore, field surveys of event venues and rest stops should be conducted beforehand in order to avoid inappropriate sections of the road, thereby strengthening the safety of participation. Certainly, it is crucial that the organizers possess risk management ability. They have to be aware of the physical conditions of the middle-aged and seniors, and handle emergencies by making prompt and appropriate handling, such as CPR or heatstroke treatment. With the deliberate and comprehensive arrangement, the middle-aged and seniors will feel more secure and comfortable. After experiencing the positive results of bicycle tourism, they will have higher motivation for rejoining similar activities.

Suggestions for Future Research

In reviewing the literature, it is found that previous relevant research on sport tourism, which is conducted according to the TPB, mainly focuses on marine activities. Since the leisure characteristics of marine activities differ from those of terrestrial activities, the theoretical contribution of this research is to expand the application of the TPB, providing future research on the TPB with valuable reference data for comparison. Because of the aging population in Taiwan, the sport issues of the seniors have been highly valued in recent years. Therefore, the analysis of bicycle tourism in this research can not only offer the middle-aged and seniors with diversified activity options but also provide a practical and valuable reference for relevant research on sport tourism and exercises for senior adults in the future.

As for future research, it is worth noting that the influence of sport habits on behavioral intention did not reach the significant level after it is integrated into the model for investigation. This result might imply that more influential factors are involved in the participation of the middle-aged and seniors in bicycle tourism. Therefore, further investigations are recommended, especially on the physical aspects involved in bicycle tourism, as these are more complicated than other simple activities, such as taking a stroll. Finally, future research could be undertaken to investigate if muscle endurance, cardiovascular function, or even physical coordination and sense of balance plays an influential role in the participation of the middle-aged and seniors in bicycle tourism.

DATA AVAILABILITY STATEMENT

All datasets generated for this study are included in the article/supplementary material.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/participants legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

S-WL made substantial contributions in developing the research framework, designing the methodology, conducting the survey, writing the manuscript, and searching for references. S-YH

and M-YL made substantial contributions in conducting the survey, writing the manuscript, and searching for references. J-LH made substantial contributions in designing the methodology, revising the manuscript, and writing the authors' response notes.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Exploring Consumers' Interest in Choosing Sustainable Food

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In order for humans to achieve a healthier diet and maintain ecological balance, a new concept regarding sustainable food has been introduced. The aim of this study is, therefore, to explore consumers' interest in choosing sustainable food. The study utilized "Do Survey," an internet survey platform, to distribute questionnaires. Survey invitations were sent out in a snowball manner. Invitations were posted in multiple online communities and forwarded by various members to other sites; 333 valid responses were collected. The results show that family and friend support and health incentive are the two strongest predictors for sustainable food buying interest. Price accessibility, on the other hand, has no impact on interest. This is not to say that price accessibility does not influence behavior. It just means that it is not the factor that fosters interest. Once an individual is interested, she/he may still rely heavily on price accessibility in purchasing sustainable food.

Keywords: sustainable food, level of knowledge, family and friend support, price accessibility, health incentive, interest

INTRODUCTION

The advancement of civilization has improved living standards, but advancement comes with certain undesired outcomes. For example, people nowadays tend to overindulge themselves; consequently, obesity is a common problem in many countries such as Taiwan (Hwang et al., 2006) and America (Maiano et al., 2016). Obesity can also lead to other forms of sickness and increase health risk (Manna and Jain, 2015; Danziger et al., 2016). According to a study (Oyebode et al., 2014) in the *British Medical Journal*, daily consumption of fruits and vegetables reduces the risk of health-related death by 42%, cancer by 25%, and heart problems by 31%. Despite the compelling findings, people are still prone to an unhealthy diet. It is therefore important to study their decision-making.

In the study of decision-making and behavioral intention, many researchers have adopted the theory of planned behavior (TPB) proposed by Fishbein and Ajzen (1975). The theory is quite versatile. It has been applied to environmental protection-related research, such as green hotels (e.g., Han and Kim, 2010). The theory posits that behavioral intention is contributed to by attitude, subjective norm, and perceived behavior control (Ajzen, 1991). Researchers (Vermeir and Verbeke, 2006) also suggest additional antecedents, such as price consideration, convenience, and quality, to enhance prediction. Another interesting point to consider is the "interest" construct. Renninger (2000) suggests that an individual's personal interest is a strong determinant for her/his intrinsic motive. Yet, most studies only focus on the attitude-behavior paradigm. There is a recent

study (Siegel et al., 2019) that proves the moderating effect of interest on the attitude–behavior relationship. However, there are limited studies on the formation of interest itself. The goal of this study is to bridge a gap by examining the factors that contribute to consumers' sustainable food buying interest. The aim of this study is, therefore, to explore consumers' sustainable food buying interests. The study is also interested in understanding what contributes to the interest in buying sustainable food. The study is focused on interest instead of intention or behavior to better understand the formation of interest.

LITERATURE REVIEW

Sustainable Food

Sustainable food is food produced by using sustainable agriculture, which is farming in sustainable ways including efficient land usage and environment-friendly farming techniques (Vermeir and Verbeke, 2006). Sustainability also addresses reducing food waste, lowering production cost, producing healthier food, and maintaining economic profit for the suppliers (Vermeir and Verbeke, 2006; Hobbs, 2007; McCarthy, 2014). Although this new wave of consumerism mainly focuses on environmental issues, it also incorporates other considerations such as animal welfare, human rights, and labor working conditions (Henderson, 2004; Vermeir and Verbeke, 2006). The goal is certainly admirable, but studies have shown conflicting results. For example, there are studies (e.g., Sobal, 2017; Hsu et al., 2018) that suggest that an individual's food choice is rarely influenced by altruistic motives for the environment and/or livestock, while other studies have shown the exact opposite (e.g., Sellitto et al., 2018). This suggests that sustainable food consumption behavior is still an understudied issue. This is especially true in countries where environmental awareness has just begun to take root (Hoek et al., 2011). Daily food consumptions are still dictated by egoistic factors, such as convenience, habit, price, health benefits, enjoyment, and subjective norms (Vermeir and Verbeke, 2006). Meanwhile, the drive to push individuals to electively accept new dietary choices is hindered by factors such as benefit uncertainty (Kim and Iwashita, 2016; Fennell and Bowyer, 2019), rejecting unfamiliar products, and decreased taste satisfaction (Hoek et al., 2011).

A problem that may be brought about by the advancement is the mistreatment of livestock (Robbins, 2012) to improve the quality of food products. In order to maintain quality and increase production, genetic and pharmacologic manipulation is common (Tagliabue, 2017). In terms of environmental impact, Steinfeld et al. (2006) show that livestock account for 18% of the overall greenhouse gas emissions. There is also an assertion that the projection is an underestimate (Goodland and Anhang, 2009; Lee et al., 2014). Regardless, consuming less meat is one of the ways to slow down global warming. Furthermore, people must address the matters being raised. One is that genetically modified products tend to cause certain illnesses, such as neurodegenerative disorders (Holm et al., 2016). Another is the use of chemicals polluting land (Vermeir and Verbeke, 2006). And, there is livestock consuming copious amount of food

(Nellemann, 2009; Fotiadis et al., 2019b), resulting in the need for more farmable land and subsequent ecological destruction.

In short, in order for humans to achieve a healthier diet and maintain ecological balance, a new concept regarding consuming sustainable food is identified as sustainable consumption. However, people still prefer meat products when they know for a fact that consuming more vegetables is healthier (Hoek et al., 2011). Despite the growing awareness of the need for environmental protection and the need for healthier living (Seyfang, 2006; Fotiadis et al., 2016a), the demand for sustainable food remains a niche market that is only able to attract customers with a certain profile (Fotiadis et al., 2016b).

Level of Knowledge

In the studies relating to taking environmentally friendly actions, lack of knowledge is one of the common barriers. In the study of Chan (2008), hoteliers were reluctant to adopt an environmental management system because of the lack of knowledge and skill. The study of Han et al. (2009) concluded that hotel customers' perception was affected by their knowledge about green practices, and that consequently dictated their behavior to some degree. Environmental knowledge can also change how customers perceive green marketing efforts of service suppliers (Yeh et al., 2016). Regarding knowledge, the level of wine-related knowledge was used as a segmentation tool to categorize customers to predict their wine purchasing behavior (Mitchell and Hall, 2004).

Knowledge matters in predicting individuals' decision-making and subsequent behaviors. Knowledge is specifically pertinent to this study because the phenomenon we are examining is still in the process of change. For many countries, the environmental movement is just growing. The concept of sustainable food is intriguing but still foreign to many people. For them to accept a new concept and form new beliefs enough to change their present course of action is a challenge (Habermas, 2015). This is why an adequate level of knowledge is critical in promoting interest in sustainable food.

The study of environmental education states that environmental education can be categorized into five different phases, which include awareness, knowledge, attitude, skills, and participation (Stapp et al., 1969; Yeh et al., 2016). Given the rise of the environmental movement in many countries, it is safe to assume that we are at least at the "awareness" stage (Ballantyne et al., 2008; Chan et al., 2014). The linkage between knowledge and subsequent behavior is still weak (Roczen et al., 2014; Fotiadis et al., 2019a). This study examines the transition from knowledge to interest.

Currently, there are many misconceptions about sustainable food or even just the concept of sustainability. The misconceptions can hinder the effort to achieve sustainability (Muthu, 2017; Yin and Laing, 2017). Adequate knowledge helps individuals to make good decisions. This study assessed the level of knowledge that the respondents possessed regarding sustainable food in two ways. First, the respondents were asked to self-evaluate their own level of understanding in the matter. Second, respondents were asked a series of questions derived from a list of common misconceptions about sustainable

food (Lemonick, 2009). This allowed the study to gauge the environmental knowledge of the respondents.

Family and Friend Support

The opinion of someone important to an individual can greatly influence her/his views and decisions. There are many concepts describing the influence of group on an individual. For example, in the TPB model, subjective norm is used. Peer pressure and social pressure (Cui et al., 2016) are both terms used to describe individuals being influenced by their peers. Individuals often change their attitudes, values, and behaviors to conform to those of their peers. People are often seeking acceptance or approval from others (Hamilton et al., 2016); hence, other people's opinion can affect choices of individuals.

Many researchers (e.g., Tarkiainen and Sundqvist, 2005; Han and Kim, 2010) posit that individuals' behavioral intention is contributed to by three factors, namely, attitude, subjective norm, and perceived behavioral control. We use "attitude," "subjective norm," and "perceived behavioral control" in singular because they are being referred to as factors or constructs. In some studies, a linkage between subjective norm and attitude is proposed and tested. This raises the possibility of a mediating role of subjective norm between attitude and behavioral intention. In short, family and friend support can change the attitude and behavior of an individual. Some studies investigate the moderating effect of social opinion in the attitude-behavioral causal relationship (e.g., Al-Swidi et al., 2014). These studies suggest that attitude is, to a degree, shaped by social norm, and the relationships in the traditional TPB model are more complicated than usually modeled. If attitude is considered as an intrinsic motivation to perform or avoid an action, family and friend support is an extrinsic motivation (Mishkin et al., 2016).

Price Accessibility

An individual's choice can often be categorized into push and pull motives (Ryan et al., 2010). Individuals are pushed to certain choices by motivational factors but arrive at a choice by evaluating possible choices and selecting one that offers the best outcome or raises fewer objectionable concerns. This is where the construct of constraint comes in, or in TPB terms, perceived behavioral control. In many studies, price acts as either an incentive or a deterrent to a purchase decision (Tarkiainen and Sundqvist, 2005; Van Doorn and Verhoef, 2015; Paul et al., 2016). Han and Kim (2010) applied this in the study of green consumption and found price to be a strong determinant of behavioral intention. In other words, price can play a major role in decision-making.

Health Incentive

One of the incentives for people to engage in sustainable consumption is health (Verbeke and Poquiqui López, 2005). Especially in the current health-conscious world, more and more people prioritize personal health when making decisions (Potvin and Hasni, 2014; Manna and Jain, 2015; Radnitz et al., 2015). People are starting to desire leaner meat (Verbeke and Poquiqui López, 2005), organic choices, and non-genetically modified products (Tarkiainen and Sundqvist, 2005). A healthy lifestyle

is often linked with a sustainable environment; hence, the term LOHAS (lifestyles of health and sustainability) is introduced (Paul et al., 2016). Therefore, health incentive is thought to be an important contributor to an individual's decision to engage in sustainable consumption.

Interest

Interest refers to the pleasure that one associates with the idea of the existence of an object or taking an action (Habermas, 2015). Although the concept of interest is not new, many scholars see it as a part of attitude (Ajzen, 2002; Mishkin et al., 2016) or even the same thing. In their study, Potvin and Hasni (2014) treated interest, motivation, and attitude as similar constructs. However, some studies suggest otherwise. Renninger and Hidi (2015) asserted that interest triggers productive engagement and the potential for optimal motivation. If one is interested in an action, performing the action provides her/him with meaning, and thus, she/he has a favorable attitude toward it (Kong et al., 2018). There is also a recent study that uses interest as a moderator for the attitude-intention causal relationship (Siegel et al., 2019). Based on the works cited, the authors accept that interest is a different concept than attitude, but it can play an important role in shaping behavior.

With the recent rise of health concerns amongst people, interest in healthier food is gaining momentum (Radnitz et al., 2015). Very few studies examine this emerging phenomenon and try to understand the related formation of interest. However, Hung et al. (2016) postulated that individuals' knowledge is an indicator of interest in new meat products. The main focus of their study was, however, still the traditional attitude-intention paradigm. Interest remained a small part of their investigation and a part of the attitude construct. Tarkiainen and Sundqvist (2005) studied organic food buying behavior in Finland. In their study, terms such as personal and collective interest were used. However, the authors only mentioned them in literature section and never incorporated the concept of interest in their research design. Verbeke and Poquiqui López (2005) studied ethical food choice in Belgium. In this study, the concept of interest has been properly explored. The authors suggested that the determinants of interest include socio-demographics, food neophobia, acculturation level, and openness to new things. From these factors, one can see that the authors attributed the formation of interest to personality traits, such as socio-economic status and personal preference. The study also asserted the importance of social factors relating to personal interest, which can affect food choice. The fear of new things (i.e., neophobia) is another interesting issue in their study. Neophobia is a frequently researched topic in food choice studies and is known to have effect on attitude (Huang et al., 2019).

As previously stated, interest is the positive feeling one gets when performing certain behaviors (Habermas, 2015). It then stands to reason that before a positive attitude can be formed and motivation aroused, an individual must first have interest in a subject. This is especially true when an individual is exposed to a new and unfamiliar subject (Verbeke and Poquiqui López, 2005; Huang et al., 2019) where a lot of uncertainty exists. Uncertainty can dampen desire (Vermeir and Verbeke, 2006).

The point is that it is important to examine the factors that contribute to the increase of interest.

RESEARCH METHOD

Research Framework and Hypotheses

Past studies, such as that of Hung et al. (2016), indicate that individuals' level of knowledge can influence their interest in a subject. A similar study shows that interest and knowledge show a high level of correlation (Hvenegaard, 2017). There are also other studies, such as those of Mitchell and Hall (2004) and Yeh et al. (2016), suggesting that knowledge is an important determinant of behavior. Even though most studies do not link knowledge directly to interest, the causal relationship between the two is an intriguing topic. It is clear that level of knowledge increases individuals' interest in a certain subject. Therefore, the study proposes a research framework as shown in **Figure 1** and hypothesizes that:

H1: Individuals' knowledge positively increases their level of interest in buying sustainable food.

Research on TPB has established that subjective norm affects intention (Ajzen, 2002), and in some studies (e.g., Tarkiainen and Sundqvist, 2005; Han and Kim, 2010), subjective norm affects attitude too. Hassan et al. (2019) also suggest that social influence often interacts with personal interest and has the tendency to merge. This shows that individuals' interests are often reshaped by collective interest. In fact, there are several terms specifically designated for the phenomenon, such as bandwagon effects (Liu et al., 2018), conformity (Smith and Haslam, 2017), and herd behavior (Kameda and Hastie, 2015). Therefore, the study hypothesizes that:

H2: Individuals' friends and their support increase their level of interest.

In most of the studies regarding constraints (e.g., Tarkiainen and Sundqvist, 2005; Van Doorn and Verhoef, 2015), price is a common factor investigated. Aschemann-Witzel and Zielke (2017) indicated that price is a major barrier to purchasing organic food (see also Aschemann-Witzel and Zielke, 2017). However, that does not address the link between price concern and interest. Therefore, the study hypothesizes that:

H3: Individuals' price acceptability increases their level of interest.

With some of the food-related problems, such as obesity (Hwang et al., 2006; Maiano et al., 2016) or genetically modified food (Holm et al., 2016), health concern is a major incentive (Vermeir and Verbeke, 2006; Radnitz et al., 2015) or (Tagliabue, 2017) deterrent for food choice. Seo et al. (2016) pointed out that health-related factors can influence people's willingness to buy. Therefore, the study hypothesizes that:

H4: Individuals' health incentive increases their level of interest.

Sampling Method

Due to time and resource constraints, the study utilized an internet survey platform named "DoSurvey" to distribute the questionnaire. Given that this paper aims to understand the behavior of Taiwanese citizens, the survey request was sent to Taiwanese forums, social media, and websites. The survey was conducted in 2016 from March to April. Survey invitations were sent out in a snowball manner. Invitations were posted in multiple online communities and forwarded by various members to other sites. In total, 333 usable questionnaires were obtained. Given that the study proposes a model containing five constructs, more than 300 responses is considered adequate for the analysis (Yeh et al., 2016). Because the study utilized an online survey, there is no need to consider the response rate.

Questionnaire Design

The questionnaire has six sections. One of the sections is designed to collect basic information about the respondents. The other sections are designed to collect information about respondents' level of knowledge, family and friend support, price acceptability, health incentive, and interest.

Constructs have the following basis in the literature. The level of knowledge construct is composed of a series of yes/no questions and another two items, based on Han et al. (2009), Lemonick (2009), Hung et al. (2016), and Yeh et al. (2016). The family and friend support construct is composed of seven items, based on Han and Kim (2010), Godbey et al. (2010), and Cui et al. (2016). The price acceptability construct is composed of two items, based on Godbey et al. (2010) and Paul et al. (2016). The health incentive construct is composed of three items, based on Verbeke and Poquiqui López (2005), Hung et al. (2016), and Paul et al. (2016). The interest construct is composed of four items, based on Renninger and Hidi (2015) and Verbeke and Poquiqui López (2005). Most of the questions in these sections have five-point Likert scale responses. Details of items and their descriptive statistical outputs are shown in **Table 1**.

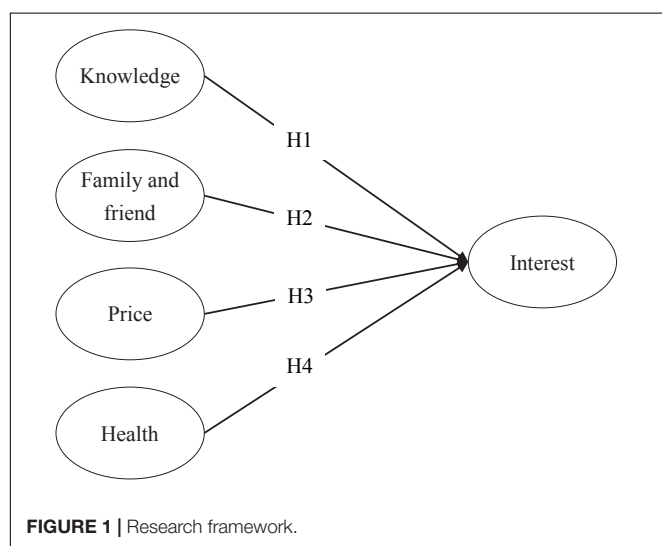


TABLE 1 | Items used in the survey.

Construct/Items/References	Mean	SD
Level of knowledge* ; Cronbach's $\alpha = 0.868$; CR = 0.770; AVE = 0.528 Han et al. (2009), Lemonick (2009), Hung et al. (2016), and Yeh et al. (2016)		
I know a lot about sustainable food	2.77	0.92
I know where to purchase sustainable food	2.62	1.16
I know where to park my car when visiting	3.15	1.02
Family and friend support ; Cronbach's $\alpha = 0.828$; CR = 0.875; AVE = 0.505 Godbey et al. (2010), Cui et al. (2016), Han and Kim (2010), and Paul et al. (2016)		
My friends support my decision to purchase sustainable food	3.21	1.03
My family supports my decision to purchase sustainable food	3.88	0.85
People I know support my decision to purchase sustainable food	3.39	0.96
People who purchase sustainable food are a community	3.25	0.92
I can share my interest of sustainable food with people I know	3.40	0.98
Public opinion for more use of sustainable food is growing	3.20	0.95
I know a lot of people who purchase sustainable food	2.41	1.08
Price acceptability ; Cronbach's $\alpha = 0.773$; CR = 0.862; AVE = 0.757 Godbey et al. (2010) and Paul et al. (2016)		
I am willing to accept that sustainable food costs more	2.89	1.03
I am willing to re-budget if I want to purchase sustainable food	3.13	1.06
Health incentive ; Cronbach's $\alpha = 0.761$; CR = 0.876; AVE = 0.711 Verbeke and Poquiqui López (2005), Hung et al. (2016), and Paul et al. (2016)		
Sustainable food is healthier	3.72	0.90
Sustainable food is leaner	3.67	0.95
Sustainable food can improve my dietary balance	2.79	1.13
Interest ; Cronbach's $\alpha = 0.857$; CR = 0.770; AVE = 0.528 Verbeke and Poquiqui López (2005), Renninger and Hidi (2015)		
I often search for information about sustainable food	3.42	0.88
I like to talk to people about sustainable food	2.76	1.02
I am interested in sustainable food	3.60	0.96
I am interested in purchasing sustainable food	3.49	0.95

*Series of yes/no questions designed to assess respondents' knowledge regarding sustainable food; see **Table 3**. CR, construct reliability; AVE, average variance extracted.

RESULTS

Sample Characteristics

The gender distribution of the sample was relatively equal between male (53.2%) and female (46.8%). About half of the respondents (52%) were between 18 and 24 years old. Respondents between 45 and 54 years old accounted for 15.3% of the sample, and respondents above 55 years accounted for 14.7% of the sample. Respondents between 25–34 and 35–44 years old each accounted for about 9% of the sample. In terms of education level, 70.6% of the respondents possessed a university degree, and 12.9% had a postgraduate degree. This indicates that the respondents were highly educated. Of the respondents, 61.6% were single. As for monthly disposable income, 30.3% of the respondents had NT\$5,001–10,000; 20.4% of the respondents had NT\$10,001–30,000; 19.2% of the respondents had NT\$3,001–5,000; and 15.3% of the respondents had NT\$30,001 or more. US\$1 is around NT\$30 (New Taiwan Dollar).

Reliability and Validity of Measurement

The questionnaire information on level of knowledge, family and friend support, price acceptability, health incentive, and interest has a five-point Likert scale response. The Cronbach's α values of the constructs are all above the suggested acceptable level of 0.7 (Nunnally, 1978). Fornell and Larcker (1981) suggested

TABLE 2 | Discriminant validity.

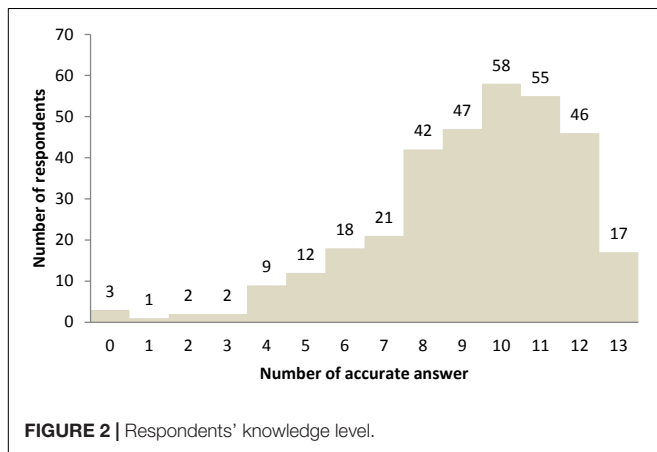
	FFS	HI	IT	LK	PA
Family and friend support (FFS)	0.710				
Health incentive (HI)	0.533	0.843			
Interest (IT)	0.663	0.561	0.745		
Level of knowledge (LK)	0.439	0.221	0.368	0.727	
Price accessibility (PA)	0.562	0.304	0.365	0.517	0.87

that composite reliability should reach 0.6 and average variance extracted should reach 0.5. **Table 1** shows that appropriate values were attained. The wording of items and CR (construct reliability) values are presented in **Table 1**. Discriminant validity information is also provided in **Table 2**. The values are adequate (Gefen and Straub, 2005).

One portion of questions designed to assess respondents' knowledge level in sustainable food is a series of yes/no questions. The questions were developed considering some of the common misconceptions about sustainable food (Lemonick, 2009). These questions are listed in **Table 3**. From the table, one can see that most questions were widely known. Questions 2, 3, 4, 6, 8, and 11 were answered accurately by more than 80% of the respondents. There were, however, still about one-third to one-half of the respondents who possessed misconceptions regarding questions

TABLE 3 | Questions to assess respondents' level of knowledge.

Questions	Accurate	%
Sustainable food is vegan.	240	72.1%
Sustainable food helps to decrease carbon emission by reducing meat consumption.	302	90.7%
Sustainable food may be nutrition deficient.	299	89.8%
Sustainable food may be nutrition imbalanced.	285	85.6%
Sustainable food is more humane.	130	39.0%
Sustainable food is healthier.	307	92.2%
Sustainable food helps to prevent cancer.	186	55.9%
Sustainable food is good for the environment.	299	89.8%
Sustainable food is without meat product.	225	67.6%
Sustainable food helps to alleviate global warming.	142	42.6%
Sustainable food helps to alleviate famine in the world.	288	86.5%
Sustainable food requires less labor.	214	64.3%
Sustainable food costs more money.	162	48.6%

**FIGURE 2** | Respondents' knowledge level.

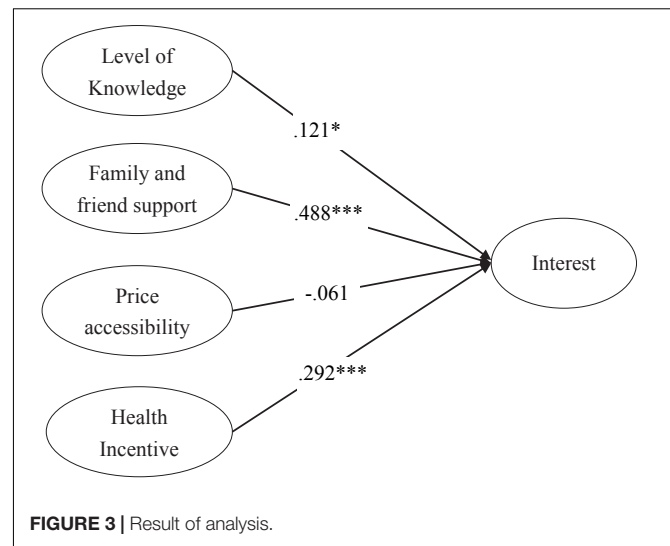
1, 7, 9, 12, and 13. Questions 5 and 10 identify two of the most misunderstood matters.

From **Figure 2**, one can see that most respondents possess at least a moderate level of knowledge about sustainable food. Curiously, there were three respondents who answered all the questions wrong. Most respondents were able to get more than eight accurate responses, indicating a moderate to high level of knowledge. Therefore, the sample has respondents with a level of knowledge about sustainable food that skews high.

Hypotheses Testing

The study utilized structural equation modeling (SEM) to examine the proposed causal relationships. The partial least squares (PLS) approach was used, which focuses on the analysis of variance (Wong, 2013). The study used a software named "SmartPLS" specifically designed to run PLS based on SEM (PLS-SEM) analysis.

The PLS-SEM uses different indices for model fit than conventional SEM. The conventional SEM is covariance-based, while PLS path modeling maximizes a correlation-based criterion (Henseler and Sarstedt, 2013). It is suggested that the standardized root mean square residuals (SRMRs) be lower than

**FIGURE 3** | Result of analysis.

0.08 and normed fit index (NFI) be higher than 0.8 (Henseler et al., 2016; Ramayah et al., 2017). The SRMR was equal to 0.053, and NFI was equal to 0.896. Both indices met the requirement given for the software.

The result of estimation is presented in **Figure 3**. The result indicates that three of the four paths are significant. The first one hypothesizes the causal relationship between knowledge and interest. The β value is .121 with a probability of .013. This means that the level of knowledge significantly contributes to the level of interest at a moderate level. Therefore, hypothesis H1 is supported. The second path links family and friend support to level of interest. The β is .488 with a probability less than 0.001. It is the most significant contributor for interest in terms of β being significant and the value of the coefficient. Therefore, hypothesis H2 is supported. The third path is for the linkage between price acceptability and interest. The β value is equal to -.061, but at an insignificant level. This means that hypothesis H3 is not supported. Finally, the linkage between health incentive and interest has a β value of .292 with a probability of 0.001. This finding supports H4.

DISCUSSION AND CONCLUSION

Theoretical Implications

The goal of this study is to understand factors contributing to people's interest in sustainable food. The idea is to modify TPB (Ajzen, 1991), a model famous for studying human decision-making. In order to design a research tool specific to this study, some constructs were slightly modified. However, the idea remains similar. The subjective norm (Fishbein and Ajzen, 1975) was altered to family and friend support, and perceived behavior control (Ajzen, 2002) was replaced with price acceptability and health incentive. The idea is that the absence of obstacles piques the interest of respondents in sustainable food. The findings are, to an extent, similar to some from past studies. For example, knowledge is a powerful enough contributor for interest. While

past studies often dealt with knowledge-to-intention (Chan, 2008; Han et al., 2009; Yeh et al., 2016) or knowledge-to-behavior (Mitchell and Hall, 2004) linkages, the result of this study indicates that knowledge also increases individuals' interest. Similar findings have been derived in a tourism destination study (Lee and Bai, 2016), where respondents' interest was generated from destination information.

Managerial Implications

The construct of family and friend support, or subjective norm (Tarkiainen and Sundqvist, 2005; Han et al., 2009), showed a highly significant impact in terms of β on individuals' level of interest. In fact, the construct was the strongest contributor to interest amongst the four predictors based on β means; this finding is consistent with those of some past studies (Tarkiainen and Sundqvist, 2005; Han and Kim, 2010). It is an indication that social norm is a key factor for new trends or movements to succeed. It is also one of the key concepts in TPB (Fishbein and Ajzen, 1975), where the opinion of important others can greatly affect one's choice.

Price accessibility, however, does not appear to have significant impact on interest. This is different from most of the past studies (Tarkiainen and Sundqvist, 2005; Van Doorn and Verhoef, 2015), where price was often found to be a major factor of behavior. In fact, the finding of this study even yields an insignificant negative result. This suggests that behavior and interest are constrained in different ways. One way to look at this is that respondents often expected sustainable food to be pricier than conventional food. This can be seen in **Table 3**, where more than half of the respondents believed sustainable food costs more. If sustainable food costs less, this may lead to people dealing with questions or beliefs that are not being addressed. Many studies (e.g., Fritz et al., 2017) have found connections between authenticity and willingness to pay a price premium. Maybe it works in reverse, where authenticity is also judged by price tag.

Past studies (Tarkiainen and Sundqvist, 2005; Radnitz et al., 2015) often found healthiness of food to be one of the most frequently mentioned motives for food choice. The relationship between health consciousness and attitudes toward buying food has been established in some of the studies (Potvin and Hasni, 2014; Manna and Jain, 2015; Radnitz et al., 2015). The result of this study echoes those findings where health incentive is the second strongest contributor of the four. This suggests that individuals are often motivated by egoistic factors to guide their behavior and choice.

In summary, this study is meant to explore consumers' sustainable food buying interest. The results of the present study show that family and friend support and health incentive are the two strongest predictors for sustainable food buying interest. Price accessibility, on the other hand, possesses no impact on consumers' sustainable food buying interest. This is not to say that price accessibility does not influence consumers' sustainable food buying

interest. It just means that it is not the factor that fosters consumers' sustainable food buying interest. Once individuals have sustainable food buying interest, they may still rely heavily on price evaluation in making sustainable food purchase choices.

Limitations and Future Research

There are limitations in this research. First, the sample is likely composed of individuals with relatively high level of knowledge regarding sustainable food compared to a random sample from Taiwan's population. It will be interesting to have results from individuals who are representative of Taiwan's population or a particular segment there is a reason to study. In this study, an attempt at moderation analysis yielded no statistically significant results. A future study with a different sample should examine moderation again. The fact that the survey was conducted using an online survey platform is at the core of the limitations. A diverse, similar online survey that has more of a tendency to elicit respondents skeptical about sustainable food could allow examination of demographics to help understand where support and resistance come from. Finally, this study focuses on the determinants of the construct interest. Future studies could see how interest impacts attitude, intention, and behavior.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation, to any qualified researcher.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

S-YH, J-LH, and H-CC contributed to the development of research framework, conducted the survey, wrote, and searched for references. H-CW contributed to the research framework, designed the methodology and revised the manuscript.

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Emirati Adults Have a Higher Overall Knowledge on Vitamin D Compared to Tourists

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Objectives: In the last decade, vitamin D deficiency has become a major global issue. One of the main functions of vitamin D is the proper absorption of calcium in the gastrointestinal track. Optimal vitamin D levels are mandatory for adequate calcium absorption and bone health. The purpose of this study was to assess the level of knowledge of vitamin D, calcium, and physical activity among Emirati and tourist adults in Abu Dhabi.

Methods: This is a cross-sectional study that took place in three different malls in Abu Dhabi and included Emirati and tourist adults. Participants were asked to fill in a questionnaire consisting of 32 questions. These included questions on vitamin D, calcium, supplement, and physical activity knowledge. Another section of the questionnaire included general information on age, sex, education, weight, and height. The collected data were statistically analyzed using descriptive statistics using IBM SPSS statistics for Windows version 26.0 (SPSS Inc., Chicago, IL, United States). Statistical significance was set at $P < 0.05$.

Results: Out of 147 adults, 113 were females and 34 males. The mean age, height, and weight were 27.9 ± 8.6 years, 162.7 ± 10.4 cm, and 66.5 ± 19.5 kg, respectively. Emiratis had statistically significant higher basic knowledge on vitamin D compared to tourists (44.9 vs 27.1%), respectively. More than 66% of the whole sample was aware that vitamin D deficiency can affect muscle strength, as well as that calcium may affect osteoporosis. In a multiple regression model to analyze the possible effects of other factors to knowledge, it was found that only age (Beta: 0.045, $P < 0.014$) and nationality (Beta: 0.750, $P < 0.018$) were independently and significantly associated to vitamin D.

Conclusion: Emirati participants showed a higher overall vitamin D knowledge than their tourist counterparts. Both groups had low/medium level of knowledge when it comes to physical activity and calcium and vitamin D supplements.

Keywords: knowledge, vitamin D, calcium, physical activity, nutrition, Emiratis, tourists

INTRODUCTION

Vitamin D and calcium levels have been a major concern in the last 20 years, and many studies have been conducted to analyze how diet and supplements may provide a beneficial effect especially to those people who are deficient (Holick and Chen, 2008; Alemu and Varnam, 2012). Vitamin D deficiency in both children and adults poses a major global health issue (Wahl et al., 2012).

Vitamin D mainly contributes to the regulation of calcium and phosphate metabolism and the maintenance of a healthy skeleton. Humans synthesize vitamin D primarily from sun exposure; however, other sources of vitamin D are provided through intake of selected foods and nutritional supplements (Charoenngam et al., 2019). Deficiency of vitamin D is very prevalent in the Middle East region, and it has recently reached 81% among various age groups (Mithal et al., 2009; Holick, 2017).

There are two forms of vitamin D: vitamin D₃ and vitamin D₂. Both precursors come from diet and sunlight and are finally converted in the kidney to form 1, 25-dihydroxyvitamin D (calcitriol), which is the active form (Zhang and Naughton, 2010). The Endocrine Society's Clinical Practice Guideline defines vitamin D deficiency, insufficiency, and sufficiency as serum concentrations of 25(OH)D of <20, 21–29, and 30–100 ng/ml, respectively.

One of the major functions of vitamin D is the absorption of calcium in the gastrointestinal track. Optimal vitamin D levels are mandatory for adequate calcium absorption. It has been observed that the body can only absorb 10–15% if vitamin D status is not adequate (Khazai et al., 2008).

In addition, physical activity (PA) is an important factor in health promotion and disease prevention. Lack of PA has been shown to contribute to the development of many chronic diseases such as diabetes type 2 and cardiovascular disease. Consequently, PA guidelines have been developed to give people knowledge about what is, in general, a minimum amount of PA to improve health. The recommendations concluded that adults should exercise for 30 min on most days of the week (Vaara et al., 2019). The lack of knowledge on vitamin D, calcium, and PA could be a potential risk factor for the development of non-communicable diseases such as osteoporosis, cardiovascular disease, and cancer. Data from United Kingdom, Saudi Arabia, United Arab Emirates, and Kuwait report mixed results on the lack of awareness and knowledge on vitamin D (Alemu and Varnam, 2012; Al-Mutairi et al., 2012; Salmanpour et al., 2016; Zhou et al., 2016; Alamoudi et al., 2019; Almuqati et al., 2019).

The purpose of this study was to assess the overall knowledge on vitamin D, calcium, supplements, and PA among Emirati and tourist adults in Abu Dhabi.

MATERIALS AND METHODS

This is a cross-sectional study that took place in three different malls in Abu Dhabi and included Emirati and tourist adults. Initially, it was scheduled to invite 200 adults to participate, but

due to the coronavirus disease, we succeeded to collect only 147 subjects (98 Emiratis and 49 tourists).

The inclusion criteria were age >18 years old, not taking any medication or vitamin supplements, and not having a medical condition such as cardiovascular disease, diabetes, or osteoporosis. The researchers were waiting outside of malls and were randomly approaching the subjects. First some basic questions were asked to make sure the selected participants were qualified to participate in the study; then, they were administered with the questionnaire. The questionnaire included 32 basic knowledge questions on vitamin D, calcium, vitamin D and calcium supplements, and PA knowledge. Another section of the questionnaire included general information about the characteristics of the participants such as age, sex, education, weight, and height.

The level of knowledge was defined as Low/Medium/High, where Low was <40% correct responses to all questions, Medium from 41 to 70%, and High >70%. The study was approved by the ethical committee of Zayed University, and all participants signed a consent form.

Statistical Analysis

The IBM SPSS Statistics (version 26) was used to enter, prepare, and analyze the collected data. Descriptive statistics including the means and standard deviations were reported for numerical data, and the frequencies and percentages were used to summarize the categorical data. The Chi-square test of homogeneity was used to test for differences in individual knowledge questions between Emiratis and tourists, while the independent two-sample t-test was employed to examine differences in the knowledge components between Emiratis and tourists. Statistical significance was set at $P < 0.05$.

RESULTS

Table 1 presents the characteristics of the sample. Out of 147 adults, 113 were females and 34 males. The mean age, height, and weight were 27.9 ± 8.6 years, 162.7 ± 10.4 cm, and 66.5 ± 19.5 kg, respectively. Out of the total sample, 67.3% were Emirati and 32.7% were tourists, while 39.1% were overweight and obese.

Table 2 compares the knowledge of Emiratis and tourists in all four categories. Emiratis had statistically significantly higher basic knowledge on vitamin D compared to tourists (44.9 vs 27.1%). Both Emirati and tourists had low/medium knowledge on PA and supplements.

The individual's statistically significant responses on knowledge questions are presented in **Table 3**. More than 66% of the whole sample were aware that vitamin D deficiency can affect muscle strength, as well as that calcium may affect osteoporosis. Emirati had higher knowledge in six out of nine questions compared to tourist ones.

Table 4 shows the comparison of overall score of knowledge among Emirati and tourist sample. Emirati had statistically significantly higher knowledge on vitamin D compared to that of tourists. No significant differences were found on the other three parameters when comparing the two groups.

TABLE 1 | Characteristics of study participants according to gender ($n = 147$).

	Male ($n = 34$)		Female ($n = 113$)		Total ($n = 147$)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age (years)		32.2 ± 9.8		26.6 ± 7.8		27.9 ± 8.6
Height (cm)		172.1 ± 9.8		159.8 ± 8.9		162.7 ± 10.4
Weight (KG)		80.6 ± 24.2		62.2 ± 15.7		66.5 ± 19.5
BMI						
Underweight	1	2.9	13	11.5	14	9.5
Normal	14	41.2	60	53.1	74	50.3
Overweight	11	32.4	20	17.7	31	21.1
Obese	8	23.5	20	17.7	28	19.0
Nationality						
Emirati	14	41.2	85	75.2	99	67.3
Tourists	20	58.8	28	24.8	48	32.7
Education level						
High School or less	9	26.5	27	23.9	36	24.5
Diploma	3	8.8	20	17.7	23	15.6
Bachelor	15	44.1	55	48.7	70	47.6
Postgraduate	7	20.6	11	9.7	18	12.2
Taking medication						
Yes	6	17.6	18	15.9	24	16.3
No	28	82.4	95	84.1	123	83.7

Data expressed as mean \pm standard deviation.

TABLE 2 | Comparison of knowledge level between Emirati and tourists.

Knowledge component	Nationality	Knowledge level		
		Low (%)	Medium (%)	High (%)
Vitamin D knowledge	Emirati	4.1	51.0	44.9
	Tourists	8.3	64.6	27.1
	Total	5.5	55.5	39.0
Calcium knowledge	Emirati	6.1	60.6	33.3
	Tourists	12.5	62.5	25.0
	Total	8.2	61.2	30.6
Physical activity knowledge	Emirati	30.3	59.6	10.1
	Tourists	25.0	47.9	27.1
	Total	28.6	55.8	15.6
Vitamin D and calcium supplements knowledge	Emirati	41.4	53.5	5.1
	Tourists	43.8	52.1	4.2
	Total	42.2	53.1	4.8

Low (<40%), Medium (41–70%), High (>70%).

Using a multiple regression model to analyze the possible effects of other factors to knowledge, it was found that only age (Beta: 0.045, $P < 0.014$) and nationality (Beta: 0.750, $P < 0.018$) were independently and significantly associated to vitamin D (Table 5).

DISCUSSION

The current study shows that Emiratis have a higher overall knowledge on vitamin D compared to that of tourists.

Both groups showed low/medium knowledge on calcium, supplements, and PA. Many local and international countries have reported mixed results. The countries that showed low awareness on vitamin D may also explain why these countries have a high percentage of vitamin D deficient population. On the other hand, similar data from the same countries showed that their population had very high awareness on vitamin D levels, and their results are in agreement with our data too (Alemu and Varnam, 2012; Zhou et al., 2016; Almuqati et al., 2019).

In a United Kingdom study, almost 54% of the participants had low knowledge on the basic symptoms of vitamin D

TABLE 3 | Statistically significant responses of the sample to individual questions.

	Tourists (%)	Emirati (%)	P-value
Q1: Can pancreatitis effect vitamin D absorption?	45.8	67.7	0.011*
Q2: Do you think that the deficiency of vitamin D can lead to baldness?	58.3	28.6	0.001**
Q3: Do you think that the deficiency of vitamin D can decrease muscle strength?	79.2	91.9	0.027*
Q4: Do you think that vitamin D deficiency can lower bone density?	50.0	77.8	0.001**
Q5: Does alcohol have an effect on vitamin D absorption?	68.8	85.9	0.015*
Q6: Do you think that animal sources (meats/egg) have more vitamin D than plant sources?	50.0	69.7	0.02*
Q7: Does dietary calcium affect osteoporosis?	81.3	96.0	0.003**
Q8: Are there any harmful effects if one takes more than 2,000 mg of calcium?	41.7	15.2	0.001**
Q9: Are vitamin D supplements safe, if you are not vitamin D deficient?	68.8	51.5	0.048*

*Statistically significant at $P < 0.05$. **Statistically significant at $P < 0.01$.

TABLE 4 | Comparison of overall score of knowledge among Emirati and tourist sample.

Knowledge component	Nationality	n	Mean	Standard deviation	t	P-value
Vitamin D knowledge	Emirati	98	6.92	1.71	2.74	0.007*
	Expatriate	48	6.06	1.88		
Calcium knowledge	Emirati	99	6.23	1.33	1.89	0.060
	Expatriate	48	5.76	1.56		
Physical activity knowledge	Emirati	99	5.32	1.87	-1.36	0.176
	Expatriate	48	5.80	2.25		
Vitamin D and calcium supplements knowledge	Emirati	99	4.51	1.89	-0.01	0.995
	Expatriate	48	4.51	1.68		

*Statistically significant set at $P < 0.05$.

TABLE 5 | Regression analysis for factors affecting knowledge levels.

Dependent variable	Vitamin D knowledge			Calcium knowledge			Physical knowledge			Supplements knowledge		
	B	SE	P-value	B	SE	P-value	B	SE	P-value	B	SE	P-value
Intercept	3.297	0.824	0.000	5.770	0.843	0.000	3.797	0.653	0.000	2.832	0.585	0.000
Age	0.045	0.018	0.014*	0.021	0.018	0.245	-0.004	0.014	0.779	0.009	0.013	0.502
BMI	0.024	0.022	0.281	-0.003	0.023	0.894	-0.003	0.018	0.855	-0.022	0.016	0.161
Gender	0.494	0.329	0.135	0.174	0.336	0.605	-0.281	0.261	0.282	-0.071	0.233	0.760
Taking medication	0.321	0.356	0.369	-0.087	0.364	0.811	-0.042	0.282	0.882	-0.154	0.253	0.544
Nationality	0.750	0.312	0.018*	0.523	0.319	0.104	-0.222	0.247	0.371	0.192	0.221	0.387
Diploma	-0.282	0.416	0.499	0.113	0.426	0.792	0.379	0.330	0.253	0.379	0.296	0.202
Bachelor	0.189	0.320	0.556	-0.059	0.327	0.857	-0.066	0.253	0.794	-0.004	0.227	0.985
Postgraduate	-1.198	0.484	0.014	-0.583	0.495	0.241	0.205	0.384	0.593	0.697	0.343	0.044
F	3.180			0.802			0.664			1.137		
P-value	0.002			0.602			0.723			0.342		
R ²	24.2%			9.2%			9.6%			9.4%		

*Statistical significance set at $P < 0.05$.

deficiency, while 34% did not get enough sunlight, and 11% did not have enough vitamin D from food sources (Alemu and Varnam, 2012). A Chinese study assessing the knowledge of 515 students about vitamin D concluded that the participants had low knowledge levels on vitamin D, and they should include vitamin-rich food sources in their diet (Zhou et al., 2016).

In a recent cross-sectional study in Saudi Arabia, 1,022 participants' knowledge on vitamin D was evaluated and it was

concluded that there is a very high level of inadequate knowledge of vitamin D that is also related to the educational levels of the population (Alamoudi et al., 2019).

More recently, a cross-sectional study was also conducted in Sharjah, United Arab Emirates. A total of 503 adults were selected from public places using a convenience sampling method. Vitamin D deficiency knowledge was very common in the majority of the adults (Salmanpour et al., 2016).

On the other hand, and in the neighboring country of Kuwait, investigations of the level of awareness, knowledge, and attitude of representative groups from the general population toward sun protection showed that the majority of the population had good knowledge toward sun protection and its relation to vitamin D; however, low knowledge on calcium was observed (Al-Mutairi et al., 2012).

Similar results were also observed in another cross-sectional study that included students from Saudi Arabia. The authors evaluated 501 medical students and found that most students were aware of the risks of unprotected sun exposure. Almost 71% of the students were familiar with the association of vitamin D level and sun exposure (Almuqati et al., 2019).

It is worthy to note that our study has many limitations: (a) It does not represent the population of Abu Dhabi, (b) the sample size was small, and (c) we did not have information whether the sample consumed any vitamin D or calcium supplements the last year. The last one could affect significantly the knowledge level. Nevertheless, our study provides some initial data about the knowledge level on vitamin D and the need for larger sample studies in the near future.

CONCLUSION

The study highlights a high knowledge level among the Emirati participants on dietary vitamin D compared to tourists; however,

a low/medium knowledge level of both groups on calcium, vitamin D and calcium supplements, and PA was observed. Future intervention studies on a large sample are needed to accurately investigate the level of awareness in order to determine the possible reasons for the low knowledge of calcium and PA.

DATA AVAILABILITY STATEMENT

The data used to support the findings of this study are available upon request from the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Research Ethical Committee, Zayed University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

RH and MA contributed to the conception, design, and statistical analysis of the study. AS, JA, MA, and HA collected the data and organized the database. DP contributed to the conception and design of the study and wrote the first draft of the manuscript. All authors contributed to manuscript revision and approval.

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Evaluation of Self-Assessed State of Health and Vitamin D Knowledge in Emirati and International Female Students in United Arab Emirates (UAE)

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Introduction: Globally, vitamin D deficiency is one of the most common deficiencies, affecting nearly half the world's population. The objective of this survey was to assess and compare the knowledge about vitamin D and the perceived state of health in Emirati and international tourist female students in Dubai, United Arab Emirates (UAE).

Methods: This is a cross-sectional study that took place in universities in Dubai, United Arab Emirates. This survey consisted of 17 multiple choice questions and was adapted from a study recently conducted in Poland. The first part of the survey assessed levels of supplementation, diet and UV exposure. Another section evaluated the participants' self-assessed state of health in terms of vitamin D testing, symptoms related to vitamin D deficiency and general wellbeing. The collected data were statistically analyzed using SPSS statistics for windows version 26.0 (SPSS Inc., Chicago, IL, United States). Statistical significance was set at $P < 0.05$.

Results: 105 respondents were Emiratis and 65 were international students. The average age was 21, with an average BMI 23.3 kg/m². Almost one-third of each group reported using Vitamin D supplements once weekly. The vast majority of both groups reported rarely getting tanned. Almost all participants in both groups reported regular consumption of Vitamin D rich foods. In both groups, more than half reported consuming milk and cheese regularly and up to one-third reported consuming fish in a regular manner. Although more than half of the students rated their health as good; more than two-thirds reported experiencing muscle pain; only half reported having their blood Vitamin D levels measured once; half reported experiencing problems with concentration and more than three-quarters reported experiencing bad mood in the past month. The prevalence of these symptoms was almost similar across different categories of vitamin D supplementation, tanning habits, dietary intake, or nationality. No statistically significant differences were noted between the Emirati and International tourist students regarding any of the studied variables.

Conclusion: Notably, more Emirati students were aware of the association between vitamin D and osteoporosis than International tourist students (40% vs. 21.9%, respectively; $p < 0.05$). On the other hand, both groups had lower knowledge about the relationship between vitamin D deficiency and depression, Rheumatoid Arthritis and Hypertension, and the optimal vitamin D level; however, no statistically significant differences were noted regarding this knowledge of Emiratis and international students.

Keywords: vitamin D, health, Emiratis, tourists, vitamin D deficiency, knowledge, habits

INTRODUCTION

Globally, vitamin D deficiency is one of the most common nutritional deficiency, affecting nearly half the world's population (Grant et al., 2017; Wimalawansa et al., 2018). Vitamin D is a critical nutrient, fundamentally required by the human body to function properly; and suboptimal status is detrimental for an array of health outcomes. Hypovitaminosis D is associated with an increased risk of osteoporotic and stress fractures, decreased physical function, cardiovascular disease, some cancers, deranged immune system, negative pregnancy outcomes, depressive symptoms, and even mortality (Roth et al., 2018; Scott and Ebeling, 2019; Mendes et al., 2020).

Solar Ultraviolet B (UVB) exposure is the primary source of vitamin D, and for long, it has been assumed that people residing in areas of the world where sunlight is plentiful year-round, such as in the Gulf region, would be obtaining their requirements of vitamin D; however, traditional covered clothing, indoor working lifestyle, transportation, use of sunscreen, avoidance of sunshine due to fear of developing skin cancer, sedentary lifestyle, and indoor exercising hinder skin exposure to UVB and the subsequent cutaneous production of vitamin D (Van Schoor and Lips, 2017; Haq et al., 2018). Vitamin D supplementation and dietary fortification of foods are meant to compensate for unavoidable or inconvenient lack of solar UVB exposure (Grant et al., 2017).

Existing reports from the Gulf region, particularly the United Arab Emirates (UAE) provide evidence of a cluster of risk factors to vitamin D deficiency, including insufficient knowledge regarding the sources of vitamin D as well as the importance of adequate sun exposure. In addition, a few lines of evidence suggest a low knowledge regarding the health implications of vitamin D deficiency, coupled with a low testing rate and avoidance of vitamin D supplementation (Al Anouti et al., 2011; Salmanpour et al., 2016; Ibrahim and Al-Tameemi, 2019). Hence, the reports of an epidemic of vitamin D deficiency among Emiratis and residents of the UAE (Yammine and Al Adham, 2016; Bani-issa et al., 2017; Al Zarooni et al., 2019; Al Amiry and Shahwan, 2020), with a prevalence reaching 85% in some reports (Yammine and Al Adham, 2016).

Female undergraduate students are a particularly vulnerable population to vitamin D deficiency, due to several factors such as cultural reasons, dress code, limited sun exposure, extensive use of sunscreen and limited dietary intake vitamin D rich foods (Al Anouti et al., 2011; Al Amiry and Shahwan, 2020). The time of early adulthood is critical in young females' lives; it is when they

establish their behaviors and lifestyle choices, and lay foundation for future health trajectories for themselves, and for their partners and offspring. Addressing vitamin D deficiency at a younger age is expected to improve the general wellbeing of females, as well as their productivity and long-term health outcomes (Nimri, 2018). The low level of knowledge of vitamin D and general health self-assessment could be a potential risk factor for the development of non-communicable diseases such as osteoporosis, cardiovascular disease and cancer.

In this cross-sectional study, we assess the knowledge of vitamin D and associated habits among a sample of Emirati and international tourist undergraduate female students in Dubai, UAE. We evaluate the participants' knowledge of the health effects of vitamin D, as well as their vitamin D supplementation, intake of sources of vitamin D, tanning habits, and physical activity. We also explore their self-reported health and vitamin D non-specific deficiency symptoms.

MATERIALS AND METHODS

This cross-sectional study aimed to evaluate the self-assessed state of health and vitamin D knowledge in Emirati and international tourists in Dubai, UAE. The main aim was to analyze practices and knowledge of vitamin D supplementation, dietary vitamin D intake and most importantly vitamin D deficiency associated diseases, among undergraduate Emirati and International tourist female students in Dubai, UAE. This study was granted the Ethics Approval from Zayed University. Participants were asked to read and sign a consent form explaining the purpose of the study.

Recruitment was done through face to face contact in universities in Dubai. The sampling included only females and excluded all males. International tourist students were females from Arab countries, GCC countries in addition to India and Pakistan. Participation was voluntary, the only inclusion criteria were age >18 years old and there were no exclusion criteria. The research coordinator attempted to collect data from random students during convenient time, such as breaktime in the cafeteria or during classes after obtaining permission from lecturers. Then the study coordinator explained the main aims of the data collection and briefly the kind of questions they will be asked. After randomly approaching 200 participants, only 105 Emiratis and 65 International Tourists students completed the survey.

The survey was provided by Waszak et al. (2018), who kindly agreed to the use of his questionnaire (**Appendix 1**) for the data

collection that took place between January and March 2020, in Dubai, UAE. The questionnaire included 17 open and multiple-choice questions and was prepared in English. The survey took approximately 5 min to complete.

After completing demographic data, participants were asked about the type and frequency of their vitamin D supplementation. Then, questions concerning frequency of sun tanning or solarium tanning was collected. The dietary habits were also examined with questions about the type and frequency of consuming vitamin D-rich foods. Participants were asked to report any common symptoms of vitamin D deficiency. They were also asked about their serum 25-hydroxyvitamin D (25OHD) level, if known.

Moreover, the final two questions of the survey evaluated the knowledge about the optimal level of serum 25OHD and the diseases related to its deficiency. One question required the selection of the optimal level of serum 25OHD, a score of 1 point will be for choosing the correct answer (30–50 ng/ml). Second multiple-choice question was a list of 22 diseases, prepared according to the Central European recommendations (Waszak et al., 2018). Participants would earn 1 point (maximum of 20 points) for each correct selection of vitamin D deficiency-associated disease. To prevent earning a 100% score simply by choosing all the available answers, three of the diseases listed in the test were not vitamin D-related (pleuritis, aortic dissection and Down's syndrome.). There was no success/failure threshold value. Vitamin D-related diseases included in test were selected according to literature (Holick, 2004; Rosen et al., 2012; Kmiec et al., 2013; Płudowski et al., 2013). Data will be analyzed using SPSS version 26 where each participant is given a code to ensure that all participants are anonymous.

RESULTS

Out of the 200 female students who were approached to participate in the study, 105 Emirati students and 65 international tourist students agreed to participate. They signed a consent form and completed the questionnaire. Thirty students refused participation due to other commitments at the time of the survey.

According to **Table 1**, the average age of the participating students was 21 years, with an average BMI of 23.3(4.9) kg/m². In detail, the majority (62.4%) were of normal weight, 20.6% were overweight, 10% were underweight and 7.1% were obese. Among the 170 students, almost half (45.8%) had a light brown skin, which burns minimally and tans easily; 28% were of darker white skin, which tans after initial burn; the minority had either a brown skin, which rarely burns and tans darkly easily (8.9%), blue eyes with fair skin, which burns easily and tans poorly (4.8%), or a dark brown or black skin, which never burns and always tans darkly (2.4%).

Descriptive data of the participants' supplementation, diet, UVB exposure, and physical activity are presented in **Table 2**. Almost one-third (32%) of the Emirati students reported using Vitamin D supplements (pills, capsules, or liquid form), compared with 26.7% of the international students. Noticeably, Vitamin D supplementation was predominantly once weekly.

TABLE 1 | Characteristics of the study participants.

	Total (n = 170)	Emirati (n = 105)	Tourist (n = 65)
Age (years)	21.2 ± 3.0	20.1 ± 2.3	21.9 ± 3.2
Weight (kg)	60.5 ± 12.9	62.1 ± 13.3	59.4 ± 12.6
Height (cm)	161 ± 6	162 ± 6	160 ± 5
BMI (kg/m ²)	23.2 ± 4.9	23.7 ± 4.5	23.0 ± 5.1
BMI categories			
Underweight (%)	10.0	7.7	11.4
Normal (%)	62.4	61.5	62.9
Overweight (%)	20.6	24.6	18.1
Obese (%)	7.1	6.2	7.6
Skin type			
Pale white skin, blue/hazel eyes, blond/red hair; Always burns, does not tan (%)	10.1	4.6	13.6
Fair skin, blue eyes; Burns easily, tans poorly (%)	4.8	4.6	4.9
Darker white skin; Tans after initial burn (%)	28.0	29.2	27.2
Light brown skin; Burns minimally, tans easily (%)	45.8	47.7	44.7
Brown skin; Rarely burns, tans darkly easily (%)	8.9	9.2	8.7
Dark brown or black skin; Never burns, always tans darkly (%)	2.4	4.6	1.0

BMI, body mass index.

Around one-quarter of Emirati students (23.1%) reported using multivitamins compared with 16.2% of international tourist students. Very few students reported using either calcium pills, calcium and vitamin D (Ca–D) pills, or cod-liver oil supplements.

The vast majority of the Emirati students (92.1%) reported getting tanned rarely. This was also the most common practice among International participants (81.2%). Very few participants reported sunbathing or solarium tanning at least once weekly (Emirati: 1.6%; International: 7.9%).

All of the Emirati students and almost all of the international students (98.1%) reported regular consumption of Vitamin D rich foods. In both groups, more than half reported consuming milk (Emirati: 61.5%; International: 52.4%), almost half stated that they consumed cheese regularly (Emirati: 47.7%; International: 45.7%), and up to one-third reported consuming fish in a regular manner (Emirati: 30.8%; International: 29.5%). Regarding egg consumption, approximately half of international students stated that they consumed them regularly, compared with about one-third of Emirati students (49.5 and 36.9%, respectively). More than half of the Emirati (56.9%) and almost half of the international participants (49.5%) reported consuming coffee daily or almost daily.

Almost half of each group reported never or rarely exercising (Emirati: 49.2%; International: 48.6%). Overall, a minority of students reported exercising on a daily or almost daily basis (Emirati: 10.8%; International: 15.2%). The remainder of the students reported exercising at least once weekly (Emirati: 40%; International: 36.2%).

TABLE 2 | Participants' supplementation, diet, UVB exposure and physical activity.

	Emirati (<i>n</i> = 105)	Tourist (<i>n</i> = 65)	<i>p</i> -value
Supplements usage			
Multivitamin (%)	23.1	16.2	0.264
Vitamin D (%)	32.3	26.7	0.430
Calcium pills (%)	1.5	3.8	0.650
Calcium and Vitamin D pills (%)	3.1	1.9	0.637
Cod-liver oil (%)	1.5	2.9	1
Vitamin D supplementation frequency			
Every day (%)	16.9	14.3	0.925
Once a week (%)	24.6	24.8	
Once a month or rarely (%)	4.6	6.7	
No supplementation (%)	53.8	54.3	
Tanning habits (sunbathe or solarium)			
Once a week or more often (%)	1.6	7.9	0.236
Once a month (%)	6.3	10.9	
Rarely (every couple of month) (%)	92.1	81.2	
Vitamin D-rich products regular consumption			
Milk (%)	61.5	52.4	0.243
Fish (%)	30.8	29.5	0.863
Cheese (%)	47.7	45.7	0.802
Eggs (%)	36.9	49.5	0.108
None (%)	0.0	1.9	NA
Drinking coffee			
Daily or almost daily (%)	56.9	49.5	0.077
Weekly (%)	24.6	16.2	
Rarely or none (%)	18.5	34.3	
Physical activity – frequency			
Daily or almost daily (%)	10.8	15.2	0.687
Weekly (%)	40.0	36.2	
Monthly or none (%)	49.2	48.6	
Vitamin D testing			
Ever measured 25(OH) Vitamin D level (%)	52.3	51.4	0.830

UVB, ultraviolet B-rays; 25(OH) Vitamin D, 25-hydroxyvitamin D; NA, not applicable.

Only half of the Emirati (52.3%) and international (51.4%) participants reported having their blood Vitamin D levels (25-hydroxyvitamin D) measured at least once. No statistically significant differences were noted between the Emirati and International tourist students regarding any of the studied variables.

As per **Table 3**, more than two-thirds of the students reported experiencing muscle pain in the past month. More students using vitamin D supplements (73.1%), not being tanned (70.5%), and consuming a high vitamin D diet (71.1%) experienced muscle pain compared with their counterparts, without reaching a statistically significant difference between the compared groups. Half of the sample reported experiencing muscle weakness regardless of their D intake or tanning; this was more common in the international (55.2%) than the Emirati students (47.7%); also without reaching statistical significance. Around 43% of the participants reported experiencing problems with concentration in the past month. The latter symptom was more reported in students using vitamin D supplements

(48.7%) compared with those not supplementing (38.5%); however, without reaching a statistically significant difference between them. More than three-quarters of the students reported experiencing a bad mood in the past month. The prevalence of this symptom was almost similar across different categories of vitamin D supplementation, tanning habits, dietary intake, or nationality.

Table 3 shows that approximately 10% of the participants rated their health as very good. Specifically, a higher percentage of students getting tanned (16.7%), consuming a high vitamin D diet (13.3%) and Emiratis (13.8%) reported having a very good health status in comparison with those not getting tanned (9.6%), consuming a low-vitamin D diet (8.0%) and international students (8.6%), respectively. Overall, more than half of the participating students rated their health as good. More participants reporting vitamin D supplementation usage (7.7%), not getting tanned (6.8%), consuming a low-vitamin D diet (6.9%), rated their health as poor compared with their counterparts (not supplementing: 4.3%; getting tanned: 0%; and consuming a high-vitamin D diet: 4.8%). Similarly, more international students rated their health as poor, compared with Emiratis (8.6 and 1.5%, respectively). Yet, all of these differences did not reach statistical significance. None of the participants rated their health to be very poor.

Table 4 details the participants' knowledge of vitamin D-related diseases. In general, the students reported extremely poor knowledge about the association of vitamin D deficiency and the majority of diseases. Interestingly, less than one-third of the sample (28.8%) knew about the association between vitamin D and osteoporosis; notably, more Emirati were aware of this relationship compared with international students (40% vs. 21.9%, respectively; $p < 0.05$). A similar proportion of students (28.8%) knew about the relationship between vitamin D deficiency and depression, and only up-to one-tenth were aware of the association between vitamin D deficiency and Rheumatoid Arthritis and Hypertension. Finally, less than 5% knew about the association between vitamin D and the development of other diseases. No statistically significant differences were noted regarding the knowledge of Emiratis and international students.

Only 38.2% of the students had a proper knowledge of the optimal vitamin D level, without a statistically significant difference between Emiratis (43.1%) and international students (35.2%).

DISCUSSION

We surveyed local and international undergraduate students in Dubai and assessed their vitamin D-related knowledge and habits, as well as their perceived health status. Vitamin D deficiency is epidemic in the UAE, in both genders, in both local and non-local populations, and especially in the 17–31 years' age group (Yamine and Al Adham, 2016; Bani-issa et al., 2017; Al Zarooni et al., 2019; Al Amiry and Shahwan, 2020). It is well documented that primary sources of vitamin D include exposure to UV rays, supplementation,

TABLE 3 | Vitamin D habits and non-specific deficiency symptoms.

	Vitamin D supplementation		<i>p</i>	Tanning		Dietary vitamin D		<i>p</i>	Group		<i>p</i>
	Yes	No		Yes	No	High	Low		Emirati	Tourist	
	(<i>n</i> = 78)	(<i>n</i> = 92)		(<i>n</i> = 24)	(<i>n</i> = 146)	(<i>n</i> = 83)	(<i>n</i> = 87)		(<i>n</i> = 105)	(<i>n</i> = 65)	
Vitamin D non-specific deficiency symptoms											
Muscle pain (%)	73.1	65.2	0.270	58.3	70.5	71.1	66.7	0.231	69.2	68.6	0.692
Muscle weakness (%)	51.3	53.3	0.797	50.0	52.7	50.6	54.0	0.803	47.7	55.2	0.891
Problems with concentration (%)	48.7	38.5	0.180	41.7	43.4	43.4	43.0	0.870	43.1	43.3	0.691
Bad mood (%)	71.8	78.3	0.330	75.0	75.3	78.3	72.4	0.971	75.4	75.2	0.412
Self-rating health											
Very good (%)	10.3	10.9	0.162	16.7	9.6	13.3	8.0	0.290	13.8	8.6	0.404
Good (%)	53.8	55.4		45.8	56.2	49.4	59.8		60.0	51.4	
Fair (%)	28.2	29.3		37.5	27.4	32.5	25.3		24.6	31.4	
Poor (%)	7.7	4.3		0.0	6.8	4.8	6.9		1.5	8.6	
Very Poor (%)	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	

and diet (Giustina et al., 2020). Modern dietary changes, lack of exercise, excessive heat, sun avoidance, and cultural habits are the main factors that predispose residents of the UAE to vitamin D deficiency (Al-Anouti et al., 2013; Salmanpour et al., 2016; Ibrahim and Al-Tameemi, 2019). These practices are widespread among university students in the UAE (Al Anouti et al., 2011; Al Amiry and Shahwan, 2020), and were likewise common in our sample.

Our results add to the large body of evidence showing the poor knowledge about vitamin D, its health implications and sources among the general population and specifically undergraduate students around the world, in the Gulf region and the UAE (Janda et al., 2010; Babelghaith et al., 2017; Ibrahim and Al-Tameemi, 2019; Tariq et al., 2020). A recent study among adults in Abu Dhabi and Sharjah showed that only 21% of the participants knew that sunlight is the main source of Vitamin D (Ibrahim and Al-Tameemi, 2019). Similarly, a large study among university students in Canada (Boland et al., 2015) reported poor knowledge on vitamin D sources (26%), factors affecting its level (23%), its health effects (37%) and the recommended vitamin D intake (8%). Poor knowledge was also reported in a recent survey among undergraduate female students in Pakistan, where only 13% knew about the food sources of vitamin D (Tariq et al., 2020). Similar to the findings of Waszak et al. (2018), when asked about the association between vitamin D deficiency and the development of diseases, osteoporosis and depression were the most frequently chosen answers by both local and international students. However, only one-quarter of our sample knew about these associations. This is a concerning finding, especially when it comes to osteoporosis. The results reemphasize the lack of understanding of osteoporosis reported among Arab females (Al Attia et al., 2008).

Our findings are also suggestive of low vitamin D intake in female undergraduate students; whereby less than half were supplementing, the vast majority reported tanning rarely, and less than half reported regular consumption of vitamin D-rich products, such as fish, cheese or eggs. These findings seem to be universal: a recent study among 96% of Canadian undergraduate

students, showed that 96% of them did not meet the DRI for vitamin D (Frehlich et al., 2017). Waszak et al. (2018) reported a low consumption of vitamin D-rich products, specifically fish, among female university students in Poland, as well the lack of any form of supplementation and avoidance of tanning in the vast majority of them.

TABLE 4 | Participants' knowledge on vitamin D-related diseases and optimal Vitamin D Level.

	Emirati (<i>n</i> = 105)	Tourist (<i>n</i> = 65)	Total (<i>n</i> = 170)
Rheumatoid Arthritis* (%)	6.2	16.2	12.4
Multiple Sclerosis* (%)	3.1	12.4	8.8
Type I Diabetes (%)	3.1	5.7	4.7
Asthma (%)	3.1	8.6	6.5
Psoriasis (%)	6.2	3.8	4.7
Crohn's Disease (%)	3.1	4.8	4.1
Ulcerative Colitis (%)	1.6	1.0	1.2
Tuberculosis* (%)	4.6	0.0	1.8
Chronic Obstructive Pulmonary Disease (%)	1.5	1.9	1.8
Hypertension (%)	7.7	14.3	11.8
Ischemic Heart Disease (%)	0.0	1.9	1.2
Type II Diabetes (%)	6.2	4.8	5.3
Renal Failure (%)	1.5	2.9	2.4
Hepatic Failure (%)	1.5	1.0	1.2
Osteoporosis** (%)	40.0	21.9	28.8
Depression (%)	33.8	25.7	28.8
Schizophrenia (%)	1.5	2.9	2.4
Celiac Disease (%)	0.0	4.8	2.9
Sarcoidosis (%)	3.1	0.0	1.2
Down's Syndrome (%)	0.0	0.0	0.0
Aortic Dissection (%)	0.0	0.0	0.0
Pleuritis (%)	0.0	0.0	0.0
Other (%)	15.4	5.8	9.5
Optimal Vitamin D Level (%)	43.1	35.2	38.2

***p* < 0.05, **p* < 0.10.

Our results also highlight the low rate of vitamin D testing among Emirati and International undergraduate female students; as only half of our sample reported ever getting tested. These results are in line with the ones recently reported in the UAE by Ibrahim and Al-Tameemi (2019) among adults in Abu Dhabi and Sharjah, where less than half of participants reported checking their blood Vitamin D blood regularly, and among adults in Al Ain, where only 43.4% of the participants reported that they were tested for vitamin D, and by Salmanpour et al. (2016) in Sharjah. This finding is also common among undergraduate students elsewhere; Tariq et al. (2020) reported that only 27.7% of undergraduate female students in Pakistan ever tested for vitamin D.

We did not find any differences in the knowledge of vitamin D, its sources, and health benefits, as well as practices of supplementation, diet, UVB exposure, and physical activity between the Emiratis and International students. This might be explained by the fact that the majority of participating International students were from GCC countries. Many lines of evidence suggest that poor knowledge about nutritional sources of vitamin D and the health risks associated with its deficiency is common in the region (Khan et al., 2017; Alamoudi et al., 2019). A recent study from Oman showed that up-to three-quarters of sampled female undergraduate students provided incorrect responses for important sources of vitamin D, and only, 78% knew about the role of vitamin D in preventing osteoporosis. Also, the vast majority of the sample showed very low awareness in terms of the current recommended daily dose of vitamin D; and most importantly, a large proportion of them showed a negative approach toward exposure to sunlight and a low frequency of sufficient sunlight exposure (23%) (Khan et al., 2017). Similarly, a qualitative study conducted among female university students in KSA reported limited knowledge about vitamin D and vitamin D deficiency, as well as a limited sun exposure due to intense heat, cultural reasons, and an infrastructure that makes sun exposure difficult (Christie and Mason, 2011).

We, also, did not find any differences in the self-rated health, nor the prevalence of vitamin D non-specific deficiency symptoms between the compared groups, specifically students supplementing with vitamin D versus non-supplementing, and those getting tanned versus those not getting tanned. This could be explained by the fact that factors other than input determine vitamin D status and its health implications. Indeed, vitamin D status can vary quite markedly in groups of people with apparently similar input level and is affected by calcium intake, some therapeutic agents, adiposity levels, and exercise (Abboud et al., 2017). Furthermore, the symptoms that we investigated, especially the relationship between vitamin D and muscle pain, weakness and bad mood might be confounded by numerous factors other than vitamin D, such as stress, lack of physical activity, consumption of certain medications or presence of other medical conditions, such as hypothyroidism or fibromyalgia (Mayo Clinic, 2005); all of which we did not address in the present research.

It is important to mention the limitations of this study. Our results are limited by the small sample size, the convenient

nature of its design, and the use of a female-only sample. Thus, our findings do not represent the population of Dubai nor that of International students in the Emirate. Second, we employed a questionnaire developed by European researchers and previously used in European research (Waszak et al., 2018). This questionnaire has not taken in consideration some aspects that are representative of the population of the current study. Further, the information collected is self-reported, thus, our findings might be subject to recall bias or inaccuracy. Specifically, it is very challenging to assess reported dietary vitamin D levels (defined in our study as low versus high dietary vitamin D) without valid subjective dietary assessment methods such as the food record method or food frequency questionnaires; which was not the case in our study (Willet, 1998). Third, we acknowledge the potential pitfalls of collecting information via manual surveys, such as the uncontrolled environment and distractions, as well as accessibility issues (Wharton et al., 2003). In addition, all questions related to dietary intake and supplementation did not include the detailed content description of the items. It would be great if these food items were better described in the questionnaire. All of which make our findings subject to a potential respondent bias and call into question the generalizability of data.

Our findings indicate that, despite the overwhelming evidence about the health benefits of vitamin D, knowledge of Emirati and International tourist students in Dubai about Vitamin D, its sources and health implications is extremely poor. In addition, we highlight the low vitamin D testing rate in this population, as well as their suboptimal supplementation practices. Our results also suggest that symptoms potentially relating to vitamin D deficiency, such as muscle pain and weakness, and bad mood are widespread among the study population. In line with the most recent clinical practice guidelines for vitamin D in the United Arab Emirates (Haq et al., 2018), our results pinpoint the great need for awareness among the general public of Emirati and International students regarding vitamin D, as well the need to test for vitamin D and treat vitamin D deficiency, which remains often misdiagnosed. Specifically, the public should be informed on the health implications and needs for vitamin D sufficiency, in addition to the means to achieve it, i.e., the importance of combining sun exposure, vitamin D fortified food items, supplements, and regular outdoor physical exercise. All of this could be achieved through primary health care facilities, social and health workers, school teachers, as well as government-sponsored mass media programs, online or m-health educational programs (Bonevski et al., 2015; Goodman et al., 2015; Haq et al., 2018; Fotiadis et al., 2019). Specifically, a public program of targeted education is needed, whereby educators teach the need for vitamin D sufficiency and the benefits of a healthy lifestyle. In the UAE, numerous complex public health issues related to vitamin D deficiency need to be addressed, and health policy should further focus on implementing and sustaining healthy habits required for vitamin D sufficiency among national and international residents. This primary prevention strategy is expected to enhance the health status of the entire population (Waszak et al., 2018). Finally, making available, affordable and widely accessible vitamin D testing facilities to all who are at

high risk of clinical vitamin D deficiency is worth considering (Haq et al., 2018).

CONCLUSION

Future research should assess the status of vitamin D deficiency and its implications on the general health of UAE nationals, and residents countrywide, as well as to identify barriers toward suboptimal intake of vitamin D and low rates of vitamin D testing, in addition to means to improve intake of this vitamin and scale-up public testing.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Zayed University Ethics Committee. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MA, DP, and PW contributed to the conception and design. RH and RR performed the statistical analysis of the study. NA, MA, DP, and RH collected the data and organized the database. MA contributed to the conception and design of the study. MA and RR wrote the first draft of the manuscript. DP and PW reviewed the manuscript. All authors contributed to the manuscript revision and approval.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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APPENDIX 1

This questionnaire is completely anonymous. It was created for the purpose of scientific research only. The questionnaire consists of several questions, which are one or multiple choice type.

Sex*

- ☐ Female
- ☐ Male

Age*

Height*

Weight*

University*

- ☐ Zayed University
- ☐ Other:

Field of study*

Country of origin*

(1) Are you currently taking any of the following supplements?

- ☐ Multivitamin
- ☐ Vit. D pills
- ☐ Calcium pills
- ☐ Calcium + vit. D pills
- ☐ Cod-liver oil
- ☐ None
- ☐ Othere:

→ If yes, how often?

- ☐ Every day
- ☐ Once a week
- ☐ Once a month or rarely

(2) How often do you sunbathe or go to a solarium?

- ☐ Once a week or more often
- ☐ Once a month
- ☐ Rarely

(4) Which of following skin types describes best the type of skin that you have?

- ☐ Pale white skin, blue/hazel eyes, blond/red hair; Always burns, does not tan
- ☐ Fair skin, blue eyes; Burns easily, tans poorly
- ☐ Darker white skin; Tans after initial burn
- ☐ Light brown skin; Burns minimally, tans easily
- ☐ Brown skin; Rarely burns, tans darkly easily
- ☐ Dark brown or black skin; Never burns, always tans darkly

(5) Do you often suffer from common cold during autumn or winter?

- ☐ Often (once a month)
- ☐ Rarely (every three months)
- ☐ I haven't had a common cold last year

(6) Which products containing vitamin. D do you eat regularly? (twice or often per week)

- ☐ Milk
- ☐ Fish
- ☐ Cheese
- ☐ Eggs
- ☐ None

(7) How often do you exercise?

- ☐ Daily or almost daily
- ☐ Weekly
- ☐ Rarely or none

(8) Have you felt muscle pain during last month?

- ☐ Yes
- ☐ No

(9) Have you felt muscle weakness during last month?

- ☐ Yes
- ☐ No

(10) Have you had any problems with your concentration during last month?

- ☐ Yes
- ☐ No

(11) Have you had a bad mood or felt depressed during last month?

- ☐ Yes
- ☐ No

(12) How often do you drink coffee?

- ☐ Daily or almost daily
- ☐ Weekly
- ☐ Rarely or none

(13) How would you rate your health?

- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor
- ☐ Very poor

(14) Have you ever measured your vitamin D level (25-OH-D3)?

- ☐ Yes
- ☐ No

(15) If yes, what was the result approximately? (ng/mL)

(16) What disease(s) is related to vitamin D deficiency? (according to your knowledge)

- ☐ Rheumatoid arthritis
- ☐ Multiple sclerosis
- ☐ Type I diabetes

- ☐ Asthma
- ☐ Psoriasis
- ☐ Crohn's disease
- ☐ Ulcerative colitis
- ☐ Tuberculosis
- ☐ Chronic obstructive pulmonary disease (COPD)
- ☐ Hypertension
- ☐ Ischaemic heart disease
- ☐ Type II diabetes
- ☐ Renal failure
- ☐ Hepatic failure
- ☐ Osteoporosis
- ☐ Depression,
- ☐ Schizophrenia

- ☐ Celiac disease,
- ☐ Sarcoidosis
- ☐ Down's syndrome
- ☐ Aortic dissection
- ☐ Pleuritis
- ☐ Other:

What is the optimal level of vitamin D (25-OH-D) in the blood?

- ☐ <20 ng/mL
- ☐ 20–30 ng/mL
- ☐ 30–50 ng/mL
- ☐ 50–100 ng/mL
- ☐ >100 ng/mL



Promises and Hurdles of Medical Tourism Development in the Russian Federation

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Background: Development of medical tourism improves access to healthcare in countries where the necessary medical procedures are not available or accessible to its citizens. In the country of destination, medical tourism stimulates economic development and raises the quality of healthcare provided. There are both microeconomic and macroeconomic factors affecting the development of medical tourism. Microeconomic factors relate to the receivers and providers of healthcare. Macroeconomic factors relate to the government policy being implemented to support the development of medical tourism. This study aims to identify factors affecting the development of medical tourism in Russia.

Methodology: An expert survey of 36 heads of medical organizations in Russia was conducted to assess the problems that impede the development of the medical care system to foreign patients in Russia, as well as propose possible solutions. The degree of covariation among experts was calculated using the Kendall concordance coefficient.

Results: The experts gave consistent evaluation to numerous sets of problems that impede the development and proposed concrete measures for the development of inbound medical tourism in Russia. These measures ranged from microeconomic to macroeconomic approaches and were directed toward a holistic and coordinated development of medical tourism within Russia.

Conclusion: Based on the results, Russia has several micro- and macroeconomic competitive advantages and disadvantages in facilitating medical tourism. The study yielded a set of measures for the development of inbound medical tourism and the promotion of the export of medical services in the Russian Federation, which can be extended to other countries or parties who are seeking to develop medical tourism.

Keywords: medical tourism, Russia, health policy, expenditure, medical care, emerging, services

INTRODUCTION

Medical tourism is a growing industry that facilitates travel to another country in pursuit of general medical or surgical care, which is not available or accessible in the country of residence. Development in technology and freedom of movement contribute to the growth of this industry (Crush, 2015; Cesario, 2018). Furthermore, significant growth of health spending worldwide has

been documented in the emerging markets, led by BRICS (Jakovljevic et al., 2017). This landscape of strengthening legal framework and institutional capacities in these nations serves as a promise that they might 1 day become global hubs for medical tourism (Jakovljevic et al., 2019b).

Medical tourism allows patients to significantly decrease the cost and waiting time of medical care, while receiving higher or same quality care. Chuang et al. (2014) and Lovelock and Lovelock (2018) identified factors from the patient's side that affect the medical tourism industry: necessity of medical procedure, personal factors, factors related to the country of destination, and financial solvency. Currently, more than half of all users of medical tourism are women who seek medical services related to cosmetic or reproductive medical profiles (Cesario, 2018).

The development of medical tourism is important for improving the economy and the quality of healthcare in the country of destination. Recently, a number of studies took place, which were directed toward analysis of cost-effectiveness of medical tourism, overall community satisfaction, healthcare satisfaction, and attitudes toward medical tourism. These studies had proved that the above-mentioned factors directly affect local population's perception on the positive impact of medical tourism, which, in turn, affects the willingness to support the development of medical tourism in the country of destination (Sarantopoulos et al., 2015; Suess, 2018).

There have been several studies worldwide dedicated to analyzing organizational technologies and factors affecting medical tourism, the majority of which highlighted economic development from medical tourism as a beneficial impact for the society as a whole (Jakovljevic and Ogura, 2016).

During the evaluation of organizational effectiveness using the example of the medical tourism model in Malaysia, the need for the coordination of all elements of the healthcare system to foreign citizens and the existence of an established channel for the exchange of information were identified (Lee and Fernando, 2015). Heung et al. (2011) identified factors affecting the development of medical tourism in Hong Kong. Coordinated policies, regulations, government support, spreading expenses, issues with patient capacity, and the health needs of the local population are the main obstacles to the development of this type of tourism. Elimination of these barriers should be promoted by a new policy in the field of advertising. This approach should strengthen the government's policy to encourage investment in the medical tourism market, setting standards for the admission of foreign citizens for treatment. Thus, it could lead to the development of an entire range of medical services for foreign citizens in medical institutions.

The necessity of coordinated policy in relation to state organizers and medical professional community is also supported by a study conducted in Greece. It has revealed that private physicians often resist the development of the medical tourism segment in the country. They seem to be unsatisfied with the conditions for accepting foreign patients due to lower government prices for the provision of medical services to foreign patients, which reduces the salaries of doctors (Skountridaki, 2017).

Russia has a free and universal healthcare system for its citizens. All citizens participate in compulsory health insurance scheme provided by the government, which is financed from income tax. Both public and private medical organizations participate in the state insurance scheme. Private medical insurance schemes are available and provide treatment coverage in both private and public medical organizations. Majority of Russia's hospitals are publicly owned, divided into federal, regional, and municipal. Most of the healthcare volume is provided in public hospitals through a state insurance scheme. Foreign citizens are required to have private medical insurance scheme while in Russia.

Currently, the approximate size of the global medical tourism market is \$439 billion annually, according to international payment systems (Destination Healthcare Guide, 2019). At the end of 2017, at least 11 million people went for treatment abroad. In accordance with the prediction that up to 4% of the planet's population would be within the range of living opportunities in order to receive medical care and in need of them, it is estimated that by 2025, global medical tourism market will increase to \$3 trillion annually (Medical Tourism, 2019).

At the beginning of 2017, Russia was ranked 34th in the world offering medical services to foreign patients (Medical Tourism Index, 2018). The minister of healthcare of Russian Federation had stated that in 2017, Russia was visited by roughly 110,000 foreign patients for medical treatment (Skvortsova, 2018). Under Russia's strategic national development paradigm until 2024, inbound medical tourism needs to be increased to 1 billion USD annually, on estimate to 500,000 foreign patients treated annually. In comparison, Turkey had attracted 746,000 foreign patients for medical treatment in the same period (International Medical Travel Journal, 2017).

Currently, Russia accumulates roughly 70% of all inbound medical tourism within the Commonwealth of Independent States (CIS). Most patients come from the following regions: Central Asia (62% of patients), East European countries (32.2%), and Southeast Asia (5.2%). In public hospitals, inpatient care of the following profiles was in demand: oncology, ophthalmology, cardiology, oral and maxillofacial surgery, neurosurgery, traumatology, and orthopedics. In private medical organizations, less radical medical treatments were in demand: dentistry, gynecology, and reproductive technologies (MedRussia, 2019).

The authors of this study, having searched scientific literature on the subject, could not conclude that there is a single, united, and agreed methodology of organizing medical tourism in the world. Across the globe, different approaches in different countries with different healthcare systems are applied. Given the potential growth of this industry in the upcoming years and a deficit of scientific research in determining the best practices of organizing medical tourism, the authors believe that it is important to conduct research in this field.

The purpose of this study was to establish factors that contribute to the development of medical tourism in the Russian Federation and factors that impede the development of this area using expert assessments method. We seek to understand further ramifications of these complex relationships and how they refer

to the health expenditure landscape in this vast region (Connell, 2013).

METHODOLOGY

The following research focused on the scientific assessment of the modern Russian healthcare system in providing systematic medical care to foreign citizens in medical organizations of Sverdlovsk (Ekaterinburg) and Moscow regions, identifying main issues that impede its further development and possible solutions.

The research was conducted using the method of expert evaluations. The method consists of structured analysis of the problem by the chosen experts in the corresponding field, followed by a quantitative assessment of the experts' answers and evaluation of results. Kendall's coefficient of concordance was used to quantify the degree of agreement among the responders, Pearson fitting criterion was used to assess the significance of the differences in answers, and Friedman's non-parametric test was used for multiple comparisons of related samples (Glantz, 2011).

Experts were asked to evaluate on a five-point scale a set of measures aimed at optimizing the organization of medical tourism in the Russian Federation and to evaluate a number of aspects of its further development. A set of criteria were proposed regarding which experts to include into the research sample:

- Informed consent of the expert to participate in the study;
- Work experience in executive, administrative, or managerial position of 10 years or more;
- Experts' level of competence being average or higher (method of evaluation described below).

The number of experts depends on many factors and conditions. To determine the minimum number of experts required for this research, it was proposed to use the following formula (Mishin, 2003):

$$n = 0.5 * (\frac{3}{e} + 5)$$

where:

n—the minimum number of experts required to participate in the research;

e—the margin of error of expert evaluation results ($0 < e < 1$). With the proposed margin of error being (e) 0.05, the minimum number of experts required for valid results is 32. During the research, 36 expert samples were collected from the executive management of state medical organizations in the above-mentioned regions.

On the basis of the scientific study of management systems, the main criterion for selecting candidates for expert evaluation is the criterion of competence based on past performance (Gorshkov and Sheregi, 2009). To determine the level of competence, self-assessment method was applied.

The expert level of competence was evaluated on the basis of a self-assessment questionnaire, which allowed us to calculate the total competency index (k) of each expert. The average competency index for the entire expert group was also

determined. The index was calculated on the basis of experts assessing their knowledge, experience, and forecasting abilities using a scale of "high," "medium," and "low." The numerical values of the scales were 1, 0.5, and 0, respectively. In order to calculate the coefficient of expert competence, the following formula was used (Gorshkov and Sheregi, 2009; Sokolov et al., 2019):

$$k = \frac{k_1 + k_2 + k_3}{3}$$

where:

k₁—the numerical value of the expert's self-assessed level of theoretical knowledge of the subject;

k₂—the numerical value of the expert's self-assessed level of practical knowledge (experience) of the subject;

k₃—the numerical value of the expert's self-assessed level of ability to predict future development of the subject.

The range of competency coefficient was from 1 (full competence, i.e., estimated values of the coefficients k₁ = k₂ = k₃ = 1) to 0 (complete incompetence: k₁ = k₂ = k₃ = 0).

The experts whose competency indexes were equal to or greater than the average were included in the research sample.

In order to quantify the degree of agreement between experts' answers, Kendall's coefficient of concordance was applied (Morozov, 2000): $W < 0.3$, the consistency of the expert's opinions being unsatisfactory; $0.3 < W < 0.7$, the consistency of the expert's opinions being average; and $W > 0.7$, the consistency of the expert's opinions being high.

The calculation of Kendall's coefficient of concordance was done in several stages:

- The assembly of an expert panel group (number of evaluated factors $n = 38$; number of experts $m = 36$)
- Collection of experts' factors evaluation through a survey questionnaire and ranking the factors in a consecutive order;
- Compilation of a rank summary matrix based on a survey questionnaire followed by verification of the matrix.
- Degree of agreement assessment between experts' answers;
- Assessment of the statistical significance of the concordance coefficient using Pearson's consent criterion.

For visual representation of the final results, graphic geometric interpretations were used.

In addition, in order to assess the statistical significance of the differences in experts' answers within a certain question in the survey, the non-parametric Friedman test was used for multiple comparison of related samples. The Friedman test is a non-parametric statistical test that is a generalization of the Wilcoxon criterion and is used to compare objects with ranking according to individual measurement values. It is a non-parametric analog of ANOVA repeated analysis of variance (Glantz, 2011). Mean and standard deviations were calculated for experts' score answers. All calculations were carried out using IBM SPSS v.22.0.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with

the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

RESULTS AND DISCUSSION

Results on the expert's level of competence were the following:

- 86.1% of the respondents rated their level of theoretical knowledge on the subject as high;
- 75.0% of the respondents rated their level of practical knowledge (experience) on the subject as high;
- 69.4% of the respondents rated their level of ability to predict future development of the subject as high.

The average level of competency index for the formed expert panel group was satisfactory— 0.86 ± 0.14 .

Q.1 Assessment of the Pressing Problems in Modern Russian Healthcare in Regard to Medical Services Provision to Foreign Patients

Experts were asked to rate on a five-point scale the importance of the most pressing problems in modern Russian healthcare system, which hinder or impede the development of a systematic provision of medical services to foreign citizens; experts were also able to give an open-ended answer. The results are represented in Figure 1.

The highest rating in terms of significance (average = 3.83; s.d. ± 1.30) was applied to the problem of insufficient awareness of foreign patients about opportunities to receive good quality medical services in the Russian Federation. The problem of shortage of medical personnel who speak foreign languages in domestic clinics was also present (average = 3.81; s.d. ± 1.50). The third identified problem was a shortage of resources in the Russian medical organizations (average = 3.31; s.d. ± 1.14).

Among the most frequent problems formulated by the experts in the open-ended answers were the lack of developed transport logistics for delivering foreign citizens to medical centers (11.1% of the expert panel group), the lack of money for international quality certification of Russian medical organizations (8.3% of the expert panel group), and the lack of supporting services that take into account the nationalities of the patients (food, accommodation, leisure, etc.; 8.3% of the expert panel group).

Q.2 Necessary Basic Measures to Create a System of Export of Medical Services to Foreign Patients in the Russian Federation

The generalized description of experts' answers to an open question about the necessary basic measures for creating a system of export of medical services to foreign patients in the Russian Federation is as follows.

Measures in the field of providing medical organizations of the Russian Federation with qualified personnel and material and technical resources were mentioned most frequently (25% of the experts). This category included

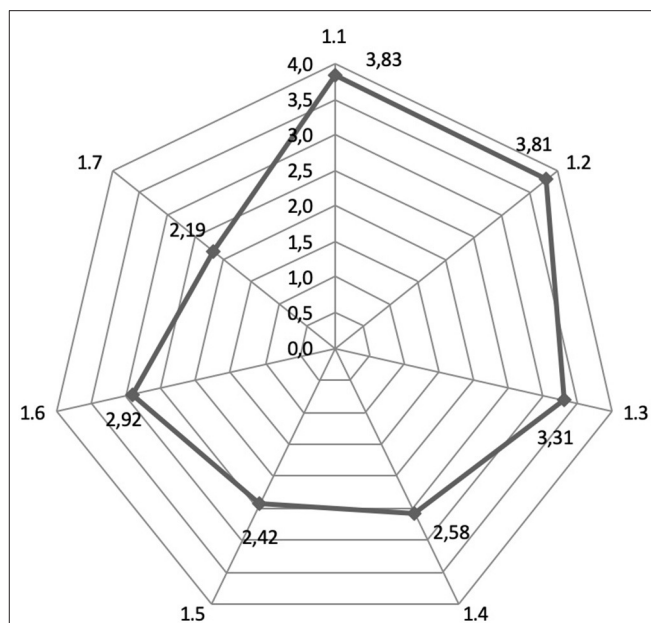


FIGURE 1 | Assessment of the pressing problems in modern Russian healthcare in regard to medical services provision to foreign patients. (1.1—Lack of awareness of foreign patients; 1.2—Deficiency of medical personnel who speak foreign languages; 1.3—Deficiency of resources [staff, modern medical equipment, etc.]; 1.4—Deficiency of financial resources for foreign patients to pay for further treatment in case of complications; 1.5—The difficulty of obtaining and extending visas to foreign patients; 1.6—Lack of legal support for foreign citizens; 1.7—Lack of a state reporting system for providing medical assistance to foreign citizens).

introducing modern technologies, guidelines, and standards for the provision of medical services, improving the material and technical basis of medical organizations to expand the range of services, and studying and using world standards of service in the export medical services market.

Measures to increase the level of awareness of foreign citizens, including those related to the use of modern information and communication technologies, were mentioned in the second rank (22.2% of the experts). This category included information support for the provision of services to foreign citizens on the websites of medical organizations, posting of information on foreign language websites about the possibility of providing certain types of medical services in the institutions of this region, the work of call centers to inform patients, the creation of mobile applications, and online counseling for an initial selection of foreign citizens.

Organizational measures were mentioned in the third rank (16.7% of the experts). This category included the creation of an organizational structure to support the export of medical services as a coordinating center at the federal level in the format of an autonomous non-profit organization and the development of road maps for the implementation of regional projects for the development of international tourism.

Q.3 Competitive Advantages of Medical Organizations of the Russian Federation for the Formation of a Steady Flow of Foreign Medical Tourists

The description of experts' answers to an open question about competitive advantages of medical organizations of the Russian Federation for the formation of a steady flow of foreign medical tourists is given as follows.

Availability of advanced medical procedures at a relatively low cost of treatment was mentioned most frequently (55.6% of the experts).

A high level of material and technical equipment of medical organizations and the qualifications of medical personnel were mentioned in the second rank (47.2% of the experts).

Features of the geographical location of the Russian Federation, in particular, a large number of border countries and proximity to Central Asia, as the most promising region for medical tourism were mentioned in the third rank (16.7% of the experts).

Q.4 Assessment by Experts of Ways to Promote Medical Tourism to Attract Foreign Patients

Experts were asked to rate on a five-point scale the ways to promote medical tourism to attract foreign patients in order to receive medical services in the Russian Federation. The results are presented in **Figure 2**.

The highest rating in terms of significance (average = 4.19; s.d. \pm 1.26) was obtained for using the recommendations of doctors and partner organizations abroad and in the Russian Federation ($p < 0.05$ by Friedman test). Using the recommendations of patients who have already been treated in the clinics of the Russian Federation in the framework of medical tourism was recognized as in the second rank of significance (average = 4.28; s.d. \pm 1.03). The third rank of significance (average = 4.11 points; s.d. \pm 1.29) was divided by such measures as promoting a medical organization's website in search engines (Yandex, Google, etc.), using social networks (Vkontakte, Twitter, Facebook, etc.), and promoting medical tourism through international cooperation at the state level.

Q.5 Assessment by Experts of Various Forms of Payment by Foreign Citizens for the Provision of Medical Services

The description of experts' answers to an open question about which form of payment by foreign citizens for the provision of medical services is the most preferable is presented as follows.

The experts recognized the use of cash payment by the patient himself or herself with the mandatory presence of his or her voluntary medical insurance policy as the most preferred payment method (69.4% of the experts).

Payment by the patient himself in cash was mentioned by the experts in the second rank (22.2%); 13.9% of the experts believe

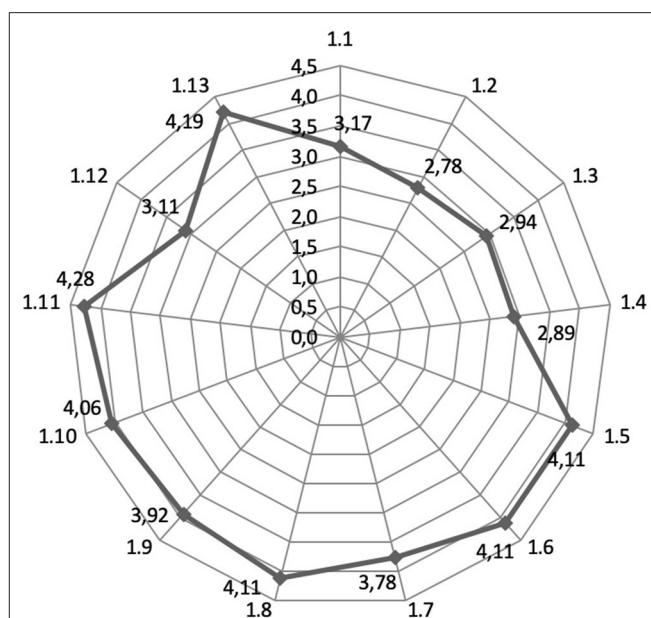


FIGURE 2 | Assessment by experts of the ways to promote medical tourism to attract foreign patients to receive medical services in the Russian Federation [1.1—Advertising on television; 1.2—Advertising on the radio; 1.3—Advertising in the print media; 1.4—Outdoor advertising; 1.5—Promotion of the medical website organizations in search engines Yandex, Google, etc.; 1.6—Social networks (Vkontakte, Twitter, Facebook, etc.); 1.7—Development of the VHI sector in foreign countries; 1.8—International cooperation at the state level; 1.9—Participation in international exhibitions; 1.10—Participation in international conferences; 1.11—Recommendations of doctors and partner organizations abroad and in the Russian Federation; 1.12—Work with messages sent to the website of a medical organization; 1.13—Recommendations of patients who have previously been treated in medical organizations of the Russian Federation].

that payment for medical services of foreign citizens should occur only within the framework of voluntary medical insurance (third rank).

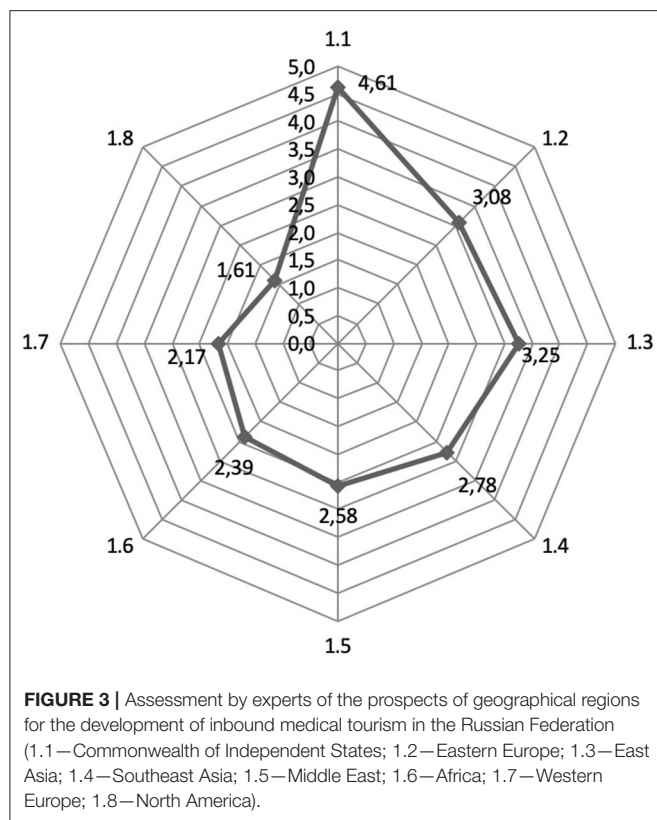
Q.6 Organizational and Legal Decisions Necessary for the Development of Medical Services Export in the Russian Federation

The description of experts' answers to an open question about the necessary organizational and legal solutions for the development of the medical services export system in the Russian Federation is provided as follows.

The need to improve the legislation at the federal and regional levels of the Russian Federation was mentioned most often (33.63% of the experts).

The visa facilitation for foreign citizens wishing to receive medical care in the Russian Federation was mentioned in the second rank (13.9% of the experts).

The need to improve the system for providing paid medical services and to develop the procedure for their provision was mentioned in the third rank (5.6% of the experts).



Q.7 Assessment by Experts of the Prospects of Geographical Regions for the Development of Inbound Medical Tourism in the Russian Federation

The experts were asked to rate on a five-point scale the prospects of geographical regions for the development of inbound medical tourism in the Russian Federation. The results are presented in Figure 3.

The experts recognized the neighboring countries (Commonwealth of Independent States) as the most promising region in terms of attracting foreign patients (average = 4.66; s.d. \pm 0.69), which, according to the Friedman test, was statistically significantly different from the estimates of all other regions ($p < 0.05$). The second- and third-ranking places that experts gave are East Asia (average = 3.25; s.d. \pm 1.40) and Eastern Europe (average = 3.08; s.d. \pm 1.44), respectively, as promising areas for attracting medical tourists.

Q.8 Assessment by Experts of the Measures to Improve the Development of Inbound Medical Tourism and to Promote the Export of Medical Services in the Russian Federation

The experts were asked to rate on a five-point scale the system of measures to develop inbound medical tourism and to promote

the export of medical services in the Russian Federation. The results are presented in Figure 4.

The experts recognized the use of the latest treatment technologies in combination with an international level service based on the principles of “everything for the patient” as the most important measure (average = 4.47; s.d. \pm 0.94). The experts recognized international certification and accreditation of medical centers (average = 4.25; s.d. \pm 1.30) as the second group of measures in significance, and information support (creating a specialized site for the promotion of medical services; average = 4.11; s.d. \pm 1.19) as the third group in significance.

Experts focused on the need to offer foreign medical tourists a wide range of medical services from small manipulations to complex high-tech procedures and comprehensive “all inclusive” packages due to the different financial capabilities and different life situations of the alleged patients in the open part of the question.

Q.9 Assessment by Experts of the Export Potential of Medical Organizations in the Russian Federation

The question about assessing the export potential of medical organizations was directed only to experts who hold executive management positions in medical organizations ($n = 18$).

An increase in the number of treated patients by 10–20% was mentioned most often (55.6% of the experts) as the export potential of a medical organization, which it is able to realize without prejudice to the state guarantee program. An increase in the number of treated patients by 20–40% was mentioned in the second rank (27.8% of the experts), and an increase in the number of treated patients by 40–60% was mentioned in the third rank (5.6% of the experts). In only one case (5.6%), the expert (executive manager) answered that his organization lacked export potential.

Q.10 Assessment by Experts of the Amount of Investment in Medical Organizations Required to Obtain International Certification

The description of experts’ answers to an open question about the amount of investment in medical organizations of the Russian Federation required to obtain international certification is given as follows. This question was directed only to experts who hold executive management positions in medical organizations ($n = 18$).

The majority of the experts (61.1%) indicated that significant investments were required first of all for major repairs, equipment purchases, and other large expenses; 22.2% of executive managers noted that international certification requires investments for staff training, cosmetic repairs, and other minor expenses; 16.7% of executive managers believe that their organization is ready for international certification and only minor investments are required.

CONCLUSION

There are a few pressing issues in modern Russian healthcare system that hinder or impede the development of the provision of medical services to foreign citizens (Goroshko and Pacala, 2018; Jakovljevic et al., 2019a); together with the results from the panel of experts, they can be summarized as follows:

- Insufficient awareness of foreign patients about the possibility of receiving high-quality medical services in the Russian Federation.
- Deficit in domestic clinics of medical personnel who speak foreign languages.
- Underdeveloped tourism services and infrastructure.
- Weak marketing abroad (bad packaging) of tourism opportunities in Russia.

However, the Russian healthcare system has a strong competitive advantage in the development and provision of medical tourism (Reshetnikov et al., 2020):

- Ability to offer diverse and advance medical services;
- Demand from CIS countries with less developed healthcare system;
- Additional demand from numerous work migrants present in Russia;
- Economic viability of obtaining advanced medical services by foreign medical tourists in Russian medical organizations, due to significantly lower prices in comparison to leading countries within medical tourism (Figure 5).

According to experts, CIS countries, Eastern Europe, and East Asia are the most promising regions in terms of attracting foreign patients to receive medical services in the Russian Federation (Reshetnikov et al., 2019).

The system of providing medical services to foreign patients in Russia is at the initial stage. In order to increase the flow of medical tourists to Russia, necessary actions to promote medical tourism in Russia need to be taken. These include the formation of partnerships with medical organizations abroad in order to diagnose, select, and rehabilitate patients; active advertisement of the experiences of patients being treated in Russia; targeted promotion of Russian medical organizations in internet search engines in the country of patients' origin; and targeted promotion in social networks of individuals seeking cost-efficient medical care (Tsymbal and Consultant, 2014).

To increase the efficiency of providing medical services to foreign patients, necessary basic measures need to be taken. Russian medical organizations are required to increase competencies of medical personnel dealing with foreign patients by demanding these personnel to have the knowledge of foreign languages (primarily English) or at least facilitate a system where the foreign patient is accompanied by a translator. Additionally, further improvement in capital expenditure would increase the level of service provided (Jakovljevic et al., 2008). A series of marketing steps in the targeted country would increase foreign patients' awareness of opportunities in medical tourism in Russia.

The experts gave good assessment with a high degree of consistency to the following set of measures for the development

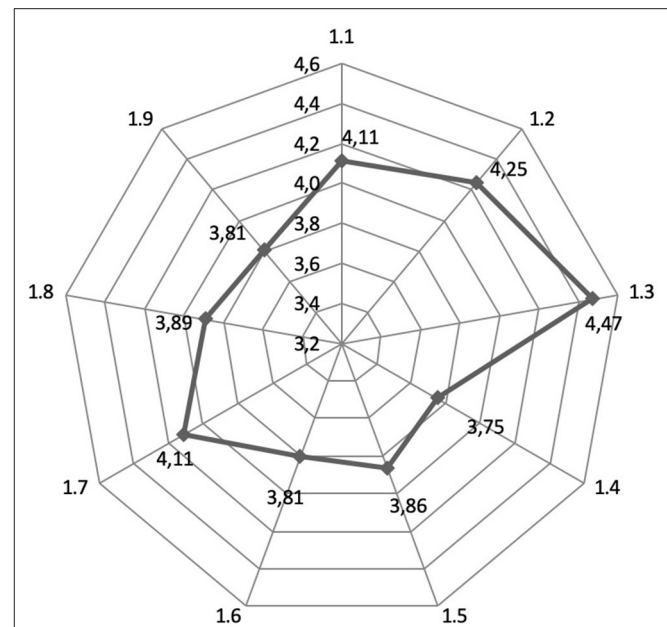


FIGURE 4 | Assessment by experts of the measures to improve the development of inbound medical tourism and to promote the export of medical services in the Russian Federation [1.1—Solving the problem of a medical visa facilitating for medical tourists; 1.2—International certification and accreditation of medical centers; 1.3—Using the latest treatment technologies in combination with an international level service based on the principles of “everything for the patient”; 1.4—Developing and implementing educational programs for the study of foreign languages among medical staff; 1.5—Coordinating body to promote the export of medical services; 1.6—Training of medical staff in international service skills; 1.7—Information support (creation of a specialized site for advertising medical services); 1.8—Economic benefits for medical tourism organizations; 1.9—Formation of packages of integrated services including both medical and non-medical services for the support of foreign nationals].

of inbound medical tourism and the promotion of the export of medical services in the Russian Federation:

1. The use of the latest treatment technologies in combination with an international level service based on the principles of “everything for the patient”;
2. International certification and accreditation of medical centers;
3. Measures of information support for the promotion of inbound medical tourism using the capabilities of the Internet;
4. Facilitated obtaining a medical visa for medical tourists;
5. Economic privileges for organizations of the medical tourism system;
6. The creation of a single coordinating body to promote the export of medical services;
7. Training of medical staff in service skills at an international level;
8. The formation of packages of comprehensive services, including both medical and non-medical services to accompany foreign citizens;

Medical procedure	Avg. cost in USA	Avg. cost in Israel	Avg. cost in Russia
In vitro fertilization	\$16 000 - \$20 000	\$5 000 - \$6 000	\$1 200 - \$3 500
Coronary artery bypass surgery	\$120 000 - \$130 000	\$20 000 - \$35 000	\$2 000 - \$5 000
Hip Replacement	\$41 000 - \$43 000	\$35 000 - \$40 000	\$2 800 - \$10 000
Knee Replacement	\$38 000 - \$40 000	\$20 000 - \$30 000	\$2 800 - \$5 000
Bone marrow transplantation	\$240 000 - \$260 000	\$100 000 - \$120 000	\$40 000 - \$60 000
Cataract surgery	\$5 000 - \$6 000	\$3 500 - \$4 000	\$420 - \$2 000

FIGURE 5 | Price comparison of medical procedures between major hospitals in the USA, Israel, and Russia (Klimin et al., 2019).

9. The development and implementation of educational programs for the study of foreign languages among medical staff.

This brief research report identifies promises and hurdles of medical tourism development in the Russian Federation. This brief research report also identifies regions that are most promising in attracting foreign patients for treatment in Russia, lays out general marketing steps, and delivers micro- and macroeconomic measures necessary to increase the quality of care and flow of foreign patients to Russia. Complete research results and their concrete scientific findings will be presented once the research is concluded.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was provided by the participants.

AUTHOR CONTRIBUTIONS

AD: data collection, literature review, data compiling, data analysis, and main text formulation. MJ: development of research's concept, expert editorial guidance, and analysis and interpretation of results. VR: research framework development and guidance, expert editorial guidance, and analysis and interpretation of results. VK: development of research methodology and data analysis. All authors contributed to the article and approved the submitted version.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Resident's Perspective on Developing Community-Based Tourism – A Qualitative Study of Muen Ngoen Kong Community, Chiang Mai, Thailand

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Community-Based Tourism (CBT) has been presented as an alternative to sustaining tourism development in developing countries. This tourism model offers local residents an opportunity to manage natural and cultural resources in order to promote the local economy and generate greater benefits. The objective of the study is to investigate the benefits and challenges of CBT as well as solutions to address identified shortcomings by studying Muen Ngoen Kong community in Chiang Mai, Thailand. In order to achieve these objectives, qualitative methods, field observations, and interviews were employed, and qualitative data were analyzed using thematic analysis. The results of the field observation and interview data from local residents were reported, analyzed, and discussed. To practice CBT, the findings indicated that several challenges had been experienced in the implementation of CBT, including conflict over resource ownership and benefit leaking, financial issues, and problems of community participation. However, an abundance of tourism resources and security related concerns were identified as benefits of CBT in the area. In close collaboration with government agencies, product development was recommended to create a unique condition for CBT and address the shortcomings. It is crucial to involve local residents, empower the local community, conserve and cultivate cultural resources, and, finally, to maintain the overall sustainability of tourism resources.

Keywords: community-based tourism, benefits and challenges, community development, Chiang Mai, thematic analysis, case study

INTRODUCTION

Changes in Tourist Behaviors

In recent decades, tourist behavior has begun to change as tourists seek a new inexperienced approach to destinations, where they can experience local culture and involve themselves in their travels. Therefore, their intent to travel is not only to explore new existing destinations, but also culture, ethics, ancient indigenous remains, and local history in which they can go beyond ordinary travels and have authentic and meaningful experiences based on personal perceptions. Likewise,

from a tourism perspective, as tourism has become an activity to serve travel purposes and boost a country's economy, it also allows local communities to offer an opportunity for the tourists to learn and enjoy their culture, promoting their own heritage and historical story (López-Guzmán et al., 2011). Based on the basis of initiatives and the management of natural and cultural resources, the local community must be the one who serves tourists a tourism product; however, by doing that, it also brings limits of tourism improvement to the local community. Considering these aspects, the local community has increasingly been recognized as important in tourism development and in the future direction of tourism (Butler and Pearce, 2003; Mason, 2003; Telfer and Sharpley, 2007).

Since the 1980s, tourism literature has observed that a basic key resource in tourist sustainability is involvement and inclusion of local residents in local communities (Hardy et al., 2002). Community participation is considered as one of the most necessary tools for rural community development. Woodley (1993) ensures that community participation creates sustainability and better opportunities for local residents by generating valuable benefits from tourism in local residents' locality. Tosun (2006) added that tourism promotes the conservation of local resources and offers employment opportunities, tourism revenue, and infrastructure improvement (Liu and Var, 1986; Mehta and Kellert, 1998; Archer et al., 2001; Lindberg, 2001). Participation at a local level is primarily required to develop tourism planning and secure community economic growth (Murphy, 1985), which leads to local economic development, by influencing business, industries, and job opportunities in communities (Roseland and Connelly, 2005). To promote community participation, the concept of sustainable development has been called for improvement of life quality in the communities. This concept emphasizes and relies on issues of social quality and environmental responsibility. For this reason, the development gives residents with different levels of income and skills opportunities and provides them with a better quality of life, and, more importantly, provides their locality with environmental protection (Roseland and Connelly, 2005). Local participation encourages community empowerment and involvement in decision-making, as well as identification of local problems and difficulties (France, 2003). Lea (1988) points out that tourism will make local residents feel less valued if they are not empowered and fully participate in tourism developments. Consequently, sustainable outcome from tourism will be less likely to be generated (Lea, 1988). Perhaps, local resident's potential and local knowledge increases the possibility that community involvement can be of major importance in tourism development. Essentially, the participation of the local community is important in this industry as it ensures that tourists get a memorable, unforgettable visiting experience and enables the community to gain benefits from their visits at the same time. Residents offer helpful supporting data in decision-making processes due to their local knowledge; therefore, tourism planning and development must utilize resident's potential and encourage local involvement. Opportunities to access markets and grow businesses in communities can be created

by doing so, thus offering job opportunities and poverty reduction in rural areas.

Tourist Behavior in Thailand

The context for this study is Thailand, which is known as the second largest economy in Southeast Asia. Its high ratio of revenue is in relation to the informal economy (Çakmak et al., 2018). Thailand has witnessed an increasing number of tourists in recent years. With over 73 million visitors in 2017 (Tourism Statistics 2017", 2017), Thailand has become a popular travel destination for tourists all over the world. Chinese tourists in particular are attracted to the country, especially after the launch of the movie "Lost in Thailand" which was filmed in many cities in Thailand. In this sense, Chinese tourists have become and are considered as the largest group of tourists visiting Thailand. According to Tourism Statistic in 2019 (Domestic Tourism Statistics (Classify by region and province 2019), 2019), there were 1.1 million tourists who visited Chiang Mai in January, in which 28.5% of them were foreign tourists. The number of tourists visiting Chiang Mai has increased since last year by 1.11% (Domestic Tourism Statistics (Classify by region and province 2019), 2019). With the increasing number of tourists over recent years, Chiang Mai, once unpopular among tourists, has been rapidly explored by new groups of visitors. Chiang Mai, literally described as "a new city in the former time," is the second largest city in Thailand. The city has the busiest international airport in Thailand's northern part and contains a variety of natural resources, unique cultural heritage sites, and popular adventurer destinations, which attract international tourists. This city without a doubt attracts migrants from surrounding rural areas and neighboring countries. This phenomenon, both in number and choice of natural and cultural destinations, increasingly suggests a new trend in tourist behavior in Thailand.

The sections below are organized as follows. Section "Literature Review" introduces the concept of community tourism as an alternative means of tourism in developing countries, as well as in Thailand, and its related previous studies. Section "Methodology" presents the research design, data collection, and methods, interviewees' profiles, and description of the research site. Section "Results" provides the findings of key concepts and themes derived from interviews. Sections "Discussion," "Conclusion," and "Suggestion for Future Studies" include explanations of the research site's current circumstance, benefits, and challenges toward tourism development from both the community committee and local perspectives, and suggestions for future research.

LITERATURE REVIEW

Community-Based Tourism

Community-Based Tourism (CBT) has been presented as an alternative means to traditional mass tourism in developing countries, and is developed as a community development tool that aids communities in taking control over tourism management and development and deliver benefits to the communities which are generated by tourism activities

(Trejos and Chiang, 2009). Additionally, CBT as a community development tool helps to strengthen and empower remote communities by assisting in tourism resource management and ensuring community participation (Jamal and Getz, 1995; Travel, 2009).

Concept of CBT

The concept of CBT was first presented in Murphy's work (Murphy, 1985) in which it is presented as directly related to community tourism in developing countries and was developed further to a greater extent by Murphy in 2004 (Murphy and Murphy, 2004). The concept, in accompaniment with other existing works, advanced research and opportunities for tourism development in rural areas. There are other existing models of tourism, including Pro-Poor Tourism (PPT), that aids specific remote areas in poverty reduction by generating net benefits, and Community Benefit Tourism Initiatives (CBTIs) that helps distribute and transfer benefits to communities through tourism initiatives without control of projects (Simpson, 2008), as well as Donor-Assisted Community-Based Tourism (DACBT; Harrison and Schipani, 2007) that alleviates community poverty by promoting subsistence economies and maximizing the use of natural resources in order to obtain benefits and create community enterprises for further income. In sum, the abovementioned works paved a line of initiatives necessary for communities to manage and control tourism planning and development due to residents participating in tourism activities in their own local communities, and offering tourism products which the tourists are seeking and help to determine the number of tourists visiting the area.

Importance of CBT

Considering tourism as an optional tool to strengthen local economies, CBT becomes a poverty reduction tool that aids local community in various ways, such as by offering educational opportunities, environment conservation and income-generating activities (Cooperation, 2014). Hence, principles and mechanisms for developing CBT are mainstream (Bramwell and Sharman, 1999). Although CBT can increase benefits for the community and reduce negative impacts obtained from the use of community resources, CBT calls for an effective long-term plan. Hence, a tourism project should firstly perform by empowering local communities in rural areas in order to advance their potential and utilize their land and resources for community development (Mearns, 2003). Thus, with respect to this kind of tourism, possible solutions have emerged in order to deal with the negative impacts and problems of mass tourism in developing countries, consequently, to be future-oriented toward development planning for community improvement.

Objectives of CBT

The main purpose of CBT is to include local communities in tourism by managing tourism resources and by providing further fundamental infrastructure such as accommodation, restaurants, and additional services to host tourists. Simultaneously, further elements should be added to the communities, such as healthcare, transport systems, and learning and training sites or providers

(López-Guzmán et al., 2011). Following on from Hiwasaki (2006), CBT typically has four objectives. (1) Conservation of resources: sustaining the environment and bringing about positive impacts on both natural and cultural resources in the area through tourism. Consequently, tourism creates value. (2) Social and economic development: delivering a new approach to local economic development, in which costs and benefits are equitably distributed to residents participating in tourism activities. (3) Empowerment and ownership: increasing empowerment and ownership which is recognized by local communities by allowing local residents to participate in appropriate tourism planning and management. (4) Quality visitor experience: ensuring tourists partake in authentic and meaningful experiences through social and environmental responsibility.

Previous Studies

As **Table 1** illustrates, academic literature shows that many CBT projects have been introduced in Africa (Briedenhann and Wickens, 2004; Lepp, 2007; Manyara and Jones, 2007; Novelli and Gebhardt, 2007; Kibicho, 2008; Sebele, 2010), Asia (Hiwasaki, 2006; Nyaupane et al., 2006; Harrison and Schipani, 2007; Okazaki, 2008; Harris, 2009; Yang and Wall, 2009), Latin America (de Holan and Phillips, 1997; Zorn and Farthing, 2007; Trejos and Chiang, 2009), and Oceania (Dyer et al., 2003).

Generally, local communities suffer from a lack of financial resources to support project initiatives, probably due to the level of host involvement in management and the degree of economic leakage and local control. There may be conflicts between different actors involved in tourism areas where the local government is involved (Nyaupane et al., 2006), which results in inadequate community priorities (Manyara and Jones, 2007). In this sense, CBT helps avoid the conflicts by enabling coordination between several different types of policy and creating unity for exchanging knowledge and thoughts between all members of the community (Kibicho, 2008). Finally, one sensitive controversial issue in academic literature concerns the number of tourists who visit the area. The number of tourists can vary based on travel style which depends on motivation, development of destination, event selection criteria, and involvement (Priporas et al., 2018). Nyaupane et al. (2006) added that fewer tourists is better because it allows a greater degree of interplay with valuable community resources, such as living culture and heritage, and prevents interference in private areas of the local culture from tourists. However, it is important to note that income generated by tourism with fewer visitors will be limited.

As tourists are seeking activities they are inexperienced in the locality (Valek and Fotiadis, 2018), CBT brings benefits for the communities in a variety of ways. In practice, CBT fulfills what tourists are seeking by allowing them to understand and learn about community culture and traditional lifestyles and to interact with resources of the communities. In the meantime, this event generates income for the communities and also generates tourism income for the communities. Community participation has been praised for its effective community development and is also a major key factor in successful CBT. This is emphasized by a study that showed when level of participation in an activity increases, the participants receive greater benefits generated from

TABLE 1 | Academic literature in many CBT projects in Africa, Asia, Latin America, and Oceania.

Locations	Findings
South Africa	Development opportunities of tourism projects in rural areas are acquired by formalizing participatory management among the local communities and public sectors (Briedenhann and Wickens, 2004)
Uganda	Residents have positive attitudes toward tourism, stating that it creates community development, generates income, and brings random good fortune (Lepp, 2007)
Namibia	Benefits of conservancies can only be realized by creating optimal tourism initiatives and initiating new approaches of successful tourism projects in younger generations (Novelli and Gebhardt, 2007)
Kenya	Conservation orientation of Community-Based Ecotourism (CBE), with support agencies' approaches involving investment that promotes neocolonialism and reinforces dependency (Manyara and Jones, 2007)
Kenya	For success in CBT projects, high levels of leadership is required in order to operate their own resource in accord with the community's benefits (Kibicho, 2008)
Botswana	Joint ventures in local communities with proper management can preserve natural resources and provide sustainable livelihood opportunities by increasing levels of participation in tourism activity (Sebele, 2010)
China	Degrees of economic leakage of a destination varies according to local involvement together with tourist number and type (Nyaupane et al., 2006)
Japan	In Japan, proper management of a park system can build tourism actors' unity in which the mechanism becomes an optimal solution to ensure community participation (Hiwasaki, 2006)
Laos	DACBT and business operation support of tourism enterprises can be a viable tool for poverty reduction and financial availability in rural communities (Harrison and Schipani, 2007)
Philippines	CBT cannot be predicted to result in success because there are always unique factors in a particular case which may lead to different consequences. The model proposed in the work can initially evaluate the situation of tourism development in a community and suggest further projects for the community to launch. (Okazaki, 2008)
Malaysia	PPT in Bario is not only providing job opportunities to locals but also reinvigorating economic regeneration through empowering local residents and involving them in tourism activity. (Harris, 2009)
China	Diverse and high-quality ethnic products, especially locally made products, must meet domestic and international market demand in order to give tourists an authentic experience (Yang and Wall, 2009)
Cuba	When tourism activities are appropriately managed by local communities, opportunities are created to eradicate poverty and effect commodity dependence. However, there is always a threat brought to the local economy through the management (de Holan and Phillips, 1997)
Peru	The advantages and disadvantages of an outsider role in helping communities operate tourism are determined and perceived only by the communities itself. Forming alliances with the outsiders could facilitate communities' control over resources as long as tourism practice is done in close contact with the supporters and their relationship is developed. (Zorn and Farthing, 2007)
Costa Rica	Benefits of CBT not only allow tourists to perceive inexperienced life in rural communities, but also strengthen and promote business development. As a result, CBT generates employment and local residents begin to embark on small enterprises. (Trejos and Chiang, 2009)
Australia	Cultural tourism helps communities break away from dependency, if communities can properly manage uncertainty about the exact nature of the community's equity (Dyer et al., 2003)

such an activity (Chen et al., 2020). According to Tosun (2000), community participation principles promote sustainable tourism development, provide employment opportunities for locals, and subsequently, produce greater outcomes for development taking place in the locality. In fact, unless the involved effort has reflected benefits, the community will be unlikely to participate (Murphree, 2005). This is also found in a study by Lea (1988) that showed tourism will not reflect back benefits and is less likely to generate sustainable outcomes if resident empowerment and participation fail to take into account the decision-making process of tourism development.

Benefits and Challenges of CBT

Community-Based Tourism is an alternative optimal means for conserving natural and cultural resources and developing tourism projects. It is one of the potentially viable options to tactically sustain local livelihoods and eradicate poverty, as well as address the existing global challenges of tourism development (Timothy and Tosun, 2003). The benefits of CBT are differentiated based on current community conditions and can be seen in various perspectives such as economic profits, environmental protection, and quality of life. One of its goals

is to create jobs and economic security in communities (Tamir, 2015). Jobs such as guides, travel agents, security guards, and cleaners are especially indicated in employment and even unskilled workers will be hired as CBT raises the need. Sebele (2010) stated that as long as there is waged employment in the locality, community members eradicate poverty and lift their standard of living.

Furthermore, the core of CBT is active community participation which bring about a positive impact on community resources and is considered as a development strategy that responds to community needs (Tosun, 2000). Choi and Sirakaya (2006) stated that communities can take control over their resources and manage tourism activity after the communities have accomplished tourism development. As a result, the communities obtain a greater benefit. When using tourism to call for community development, it is reliable in principle, but in practice, it faces some challenges (Scheyvens, 2002) and these must be identified in an initial stage of planning to ensure the possibility of success. A challenge can be related to the heterogeneous nature of communities or community members, for instance, class, gender, and ethical factors, which may negatively affect the intention of participation. Scheyvens

(Scheyvens, 2002), identified that inadequate resources, information, and consultation to make an effective engagement with stakeholders can lead to vulnerability in tourism. Financial risks are always an initially significant factor for business success or failure in communities (Korol and Spyridou, 2020). When finance is unavailable at a local level, communities will lose their own control of resources to outside enterprises (Scheyvens, 2002). It is noted that in order to anticipate the vulnerabilities and prepare backup plans, a financial warning system is essential for business (Korol and Spyridou, 2020).

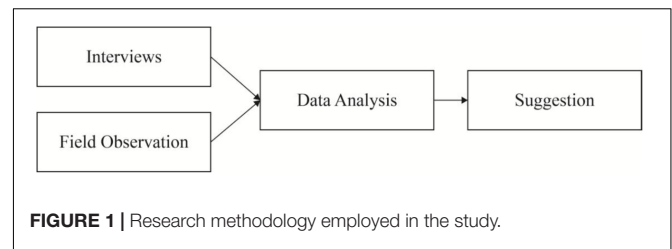
CBT in Thailand

The interests in experiencing the traditional way of life and cultural heritage along with the interests in improving the socio-economic status of local communities, many of which are rural and socioeconomically marginalized, have led to the development and promotion of CBT. In Thailand, several local destinations offer tourism in the form of CBT and related tourism structures such as homestay and agro-tourism. For decades, CBT in Thailand has been developed to create opportunities for sustainable development and address financial shortages in communities through participation enhancement. Since then, CBT enterprises have been established in many parts of Thailand. Some destinations were reported to have successfully aided in local communities in achieving the basis of CBT, while many did not (Boonratana, 2009). Essentially, Boonratana (2009) had reported observations that a number of tourist destinations knowingly or unknowingly do not implement the ideals and principals of CBT. The same study also indicated that several destinations and product and service developments are managed by a few community members or by external businesses with little or no participation from the local communities, which results in a loss of control. In Thailand, the terms of “homestay” and “community-based ecotourism” are often used synonymously. CBT, community tourism, and ecotourism are frequently labeled as “One Tambon One Product.” Nonetheless, any form of tourism in Thailand associated with local communities is regarded as CBT and community-based ecotourism. Suansri (2003) summarized the implementation of CBT and relevant terms in Thailand as complex and confusing, and that CBT in Thailand is lacking a standardized terminology.

METHODOLOGY

Research Design and Methods

As **Figure 1** illustrates, this study employed a qualitative research design, relying on field observation and interviews. As the value of qualitative research is increasingly being recognized, qualitative methodologies intend to generate knowledge grounded in human experiences (Sandelowski, 2004). These kinds of methods can offer insights to the question of why people engage in particular actions (Rosenthal, 2016) and be used when analyzing large qualitative data sets. It is imperative to conduct this analysis in a rigorous and methodical manner to obtain meaningful and useful results (Attride-Stirling, 2001).



Two types of primary data collection are administered: one focuses on a self-administered field observation taking place in the community and the another aims at interviews with community committee members and local residents. Based on methodologies in literature review, these qualitative methods are used due to methodology designs employed in previous studies employed not adequately explaining phenomenon explored in qualitative studies. In other words, it allows for identifying gaps in the literature which this study can attempt to address.

While the field observation method of data collection is used to understand how groups of people interact and behave in a particular context (Hammersley and Atkinson, 2007), interviews are used to ensure that interviewees clearly understand given questions and to ensure information accuracy. Additionally, it allows for a better understanding of context within a given scenario and shows how people interact in a specific field. More unexplored and unexpected answers can be given in individual questioning. Based on the literature, many attempts have been made in order to initiate and carry on tourism projects in specific rural communities. However, some are properly managed and accomplished. This raises a question, “What are the benefits and challenges that are derived from community resources in respect of CBT?” To answer the research question, three key sub-questions are posed: what are the challenges that are derived and distributed to the community in respect of CBT, what are the benefits that support CBT development in the community, and what is the solution to address the identified challenges? By using the research methods, the paper could contribute a deeper understanding on CBT in Thailand and further provide benefits to the relevant industries. In sum, qualitative methods provide precise answer to specific questions and reach a richness of description and explanation of nearly unidentifiable local contexts (Miles et al., 2014).

Data Collection

As can be seen in **Table 2**, the methodology used for this exploration begins with informal face-to-face interviews and free discussions with community committee members and local residents. Community committee members are regularly confronted with benefits and challenges in tourism development, resource management, and inducing participation. On the other hand, local residents relate to tourism activities and hospitality industries, taking into account those who have settled in and are intimately acquainted in the area. With aspects and opinions of the community committee members and local residents, interviews are conducted to obtain and perceive the basis of community benefits and challenges, how they are derived and

TABLE 2 | Participant information, interview time duration, and field observation notes.

Sources	Categories	Interviewee job titles	Interview duration (min)/no. of notes
Interviewee A	Local	Hostel Owner	62.14
Interviewee B	Local	Hairstylist	62.38
Interviewee C	Local	Hostel Receptionist	64.40
Interviewee D	Local	Grab Driver	23.42
Interviewee E	Committee	Diner Owner	64.29
Interviewee F	Local	Housewife	19.20
Interviewee G	Committee	Grocery Store Owner	57.45
Interviewee H	Committee	Grocery Store Owner	57.45
Interviewee I	Local	Coffeehouse Owner	27.46
Interviewee J	Committee	Landlord	62.25
Field Observation Notes	Researcher	–	27

distributed to the community, which constraints have been encountered, and the nature of interaction and community participation. In addition, meeting dialogues are audiotaped openly for the purpose of transcription and analyses. This relies on the collaboration of the local residents in Muen Ngoen Kong community.

The aim of this paper is to investigate the benefits and challenges of a specific geographical area, Muen Ngoen Kong community in Chiang Mai, Thailand, and to discuss suggestions obtained from interviews in relation to existing knowledge of CBT development to address identified shortcomings found in terms of community tourism. In order to achieve these purposes, data collected from interviews were obtained after two research site visits between the middle of August in 2018 and late February in 2019 (a total of 7 months). Meeting with the community was established by the support of a lecturer in Chiang Mai Rajabhat University. Since the researcher was introduced to the community, the connection and relationship with the community was continuously sustained and the communication and opinion sharing occurred through social media platforms (LINE group and Facebook).

During August in 2018, the first visit was held and the meeting with community leaders and committees was also conducted. The researcher was given a 1-h community tour by a community committee. Geographic information, community facilities, important historical sites, culture, and living style were introduced. Informal interviews with community leader, committees, and several locals were spontaneously conducted during the meeting at Muen Ngoen Kong community office. The interview discussed major challenges that the communities had faced and solved, donor funds from the local government, and local perspectives toward tourism in the community.

However, the second visit was held in early February. Field observations was adopted and lasted from February 16th until 26th (a total of 10 days) and 27 important notes were created. The noted reports involved three main topics: benefits, challenges in relation to CBT development, and suggestions to address identified shortcomings. On the other hand, 10 interviews

with community committees who are regularly confronted with benefits and challenges in tourism development, resource management, and community participation and local residents who are involved in tourism and hospitality industries, taking into account those whom have settled in and are intimately acquainted with the area, were conducted.

As can be seen in **Table 2**, the informant careers are diverse, ranging from a diner owner, two grocery store owners, a landlord, hostel owner, hairstylist, hostel receptionist, grab driver, housewife, and coffeehouse owner, four of whom were community committees. Before interviews, the purpose of the interview and the theme created by the researcher which was to be discussed (generally the same) was informed to and clarified with the interviewee. Informants were asked and gave permission to be interviewed and audiotaped openly for the purpose of transcription and analyses. The interviews were mostly conducted at the interviewee's home or workplace where they could feel comfortable cooperating with the researcher. The interviews lasted between 30 min and 1 h and the interviewees preferred to speak in the Thai language as it is the common language spoken in daily life. Total interview duration was 7 h 25 min and a 204-page conversation in Thai was obtained from the interviews and transcribed and translated into English.

Data Analysis

This research uses Braun and Clarke's (2006) thematic analysis procedure, a six-phased method, to analyze raw data and convert it into useful results. To establish and fulfill the trustworthiness assessment, as it is qualitative data, Lincoln and Guba (1985) outline criteria for trustworthiness during each phase of the thematic analysis. Indeed, Braun and Clarke's (2006) six-phased procedure is iterative and reflective as it has been developed over time and links a continual moving between phases. This particular procedure includes revisiting collected data, generating codes, establishing themes, re-examining themes, defining themes, scripting, and, finally, reporting findings. Relying on the literature review, interviews, and field observation notes, suggestions are given in order to address the identified shortcomings.

Description of Research Site

Muen Ngoen Kong community, which is situated in the largest city in northern Thailand, Chiang Mai, has occasionally been overlooked, and has not yet developed structured tourism as more emphasis is placed on other nearby communities. Set up in 1999, Muen Ngoen Kong is a community which was established by the collaboration of local aboriginal peoples. The purposes of the establishment are to solve problems that occur occasionally, to develop livelihoods, and to manage common property resources in order to present opportunities for economic development through the sustainable use of existing cultural resources, especially historical sites. It has an approximate area of 2.4 km². Compared to other communities in Chiang Mai, the community, as shown in **Figure 2**, is rather small. Arranged in the shape of an irregular hexagon, the community is situated in the Chiang Mai Old City, bordered by Khuan Khama community on the north, Buak Hard community

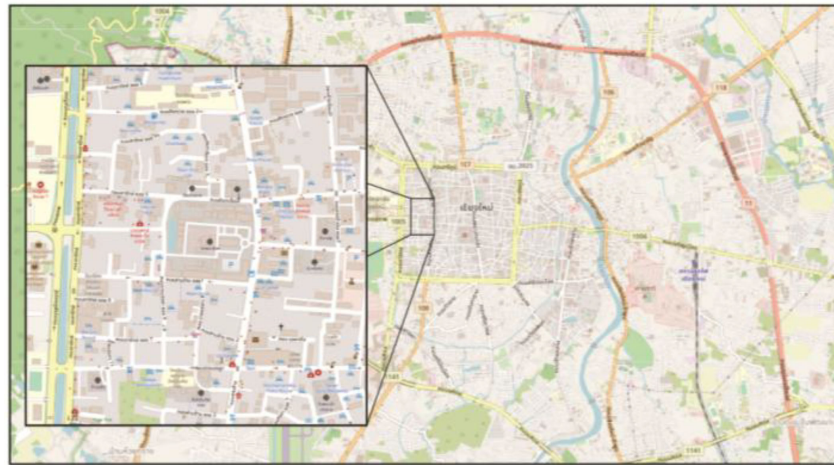


FIGURE 2 | Location of Muen Ngoen Kong Community in Chiang Mai, Thailand.

on the south, Samlaan Road on the east, and Arak Road on the west, some 700 km from Bangkok, the capital city of Thailand. Chiang Mai Old City is one of the main places of interests for tourists. In the past, Chiang Mai Old City was founded by the first king of Lanna, King Mungrai, 720 years ago and the city used to be the center of the Lanna Kingdom which was a melting pot of culture and crafts. With the legacy of Lanna's history, Lanna and Chiang Mai became the center for historical sites to visit in Asia.

Muen Ngoen Kong community has a population of 1882 people (844 men, 1038 women, and 773 households in the 2018 census). The community is governed by a group of eligible and elected people including a leader, a vice leader, and seven committee members who were voted by the community citizens. In this community, tourism development has not been advocated for and prioritized yet as well as in other nearby communities. As a matter of fact, there are currently a few hotels and hostels in the hands of multinational foreign and local owners. With the respect of cultural resources in the community of Muen Ngoen Kong, and more particularly ancient historical sites, such as Phra Singh Temple and Prasat Temple, cultural preservation is the most important factor to be considered. Financial contributions made by the government have been very crucial in this area, creating and improving small businesses managed by local peoples. Furthermore, the attempt to increase tourist volume through the role of cultural resources has been noted as significant as well.

RESULTS

Research Results

To determine the understanding of participants, thematic analysis were employed and applied to analyze all the transcripts, and three key concepts were derived from the process. Based on research questions, these categories have been labeled as "Benefits," "Challenges," "Suggestions," and "Miscellaneous Theme." Miscellaneous Theme was conducted to store irrelevant notes that did not belong to any category. Unavoidably,

participants' understanding may overlap with existing categories or each other. The results consider that understanding of a specific context are well interpreted and concepts are relative to each other. As **Figure 3** illustrated, interviews and field observation highlighted three key themes in Muen Ngoen Kong community and proved that the community has difficulty in participating in tourism management and planning. These include Challenges, Benefits, and Suggestions.

The Challenges of CBT

Muen Ngoen Kong community has several challenges toward CBT, these include the following:

Conflict Over Resource Ownership (Tamir, 2015) and Benefit Leaking

An important determinant for success and failure of CBT development is ownership issue (Denman, 2001). When tourism reaches a sufficient level, communities are involved in the industry. The analysis indicates that local residents lost a number of valuable natural resources, located in Muen Ngoen Kong community; the most important of these is land to outside investors. It is stated "a large number of guest houses are owned by outsider investors (Interviewee G)." It is indicated that to be successful in tourism management, resources must be managed efficiently and collectively, community member should be resourceful (Fotiadis et al., 2019). In this regard, the community determined that loss of the right to possess and own the land has incurred more costs than benefits. An interviewee added "locals might not perceive its importance (of land ownership), but others do. That's why they keep stepping into this area (Interviewee J)." In the perspective of a community committee, the resources ownership issue is considered as a major challenge. Several major service businesses operating in the community are owned and managed by outside investors who have signed long-term contracts (over five years in duration) with local landlords. A community committee described the impact of

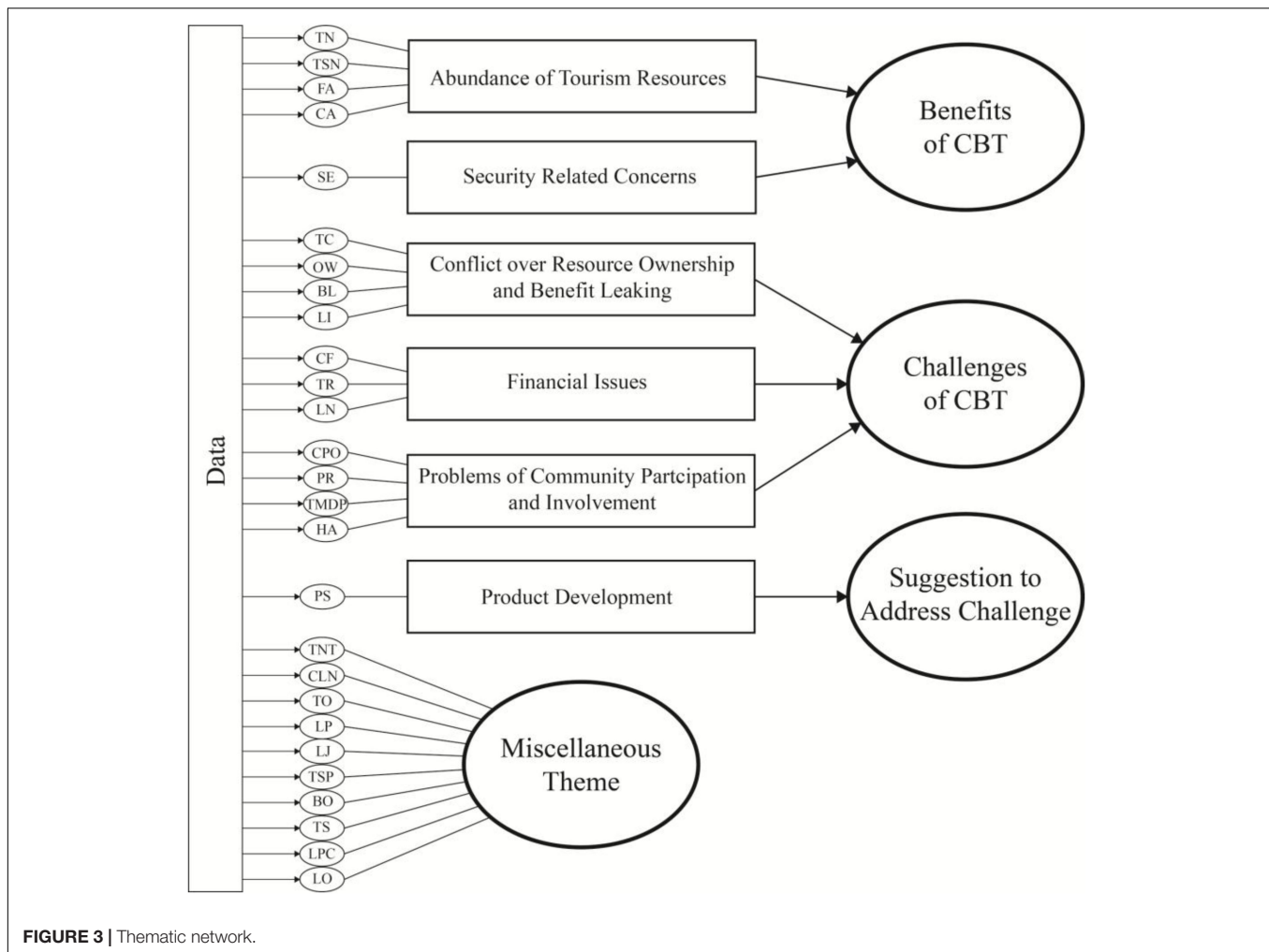


FIGURE 3 | Thematic network.

having outsiders in the community: Due to the number of non-registered populations and ownership by the outside investors, the community committee members had indicated that landlords have doubtlessly lost rights to possess and control land resources. From this an insight into the negative responses to leadership from the community hosts and local entrepreneurs was gleaned, as it is perceived that they cannot deal with the available resources productively (Fotiadis et al., 2019).

Financial Issues

Almost every informant in this study revealed that financial resources and capital issues remain a big challenge for them to set up facilities in line with the minimum requirements. Developing tourism facilities in communities frequently requires funding or donor support from government sectors or stakeholders (Reed, 1997). Hence, ownership issues, community interest, and knowledge are not the only key factors for community members to be involved in CBT, but also available financial resources at a local level. The need for financial resources for tourism investment is inadequate and not readily available in most cases, especially in developing countries (Long, 1991; Pearce, 1991; Tosun, 1998) and also in the community. A local stated

“as I noticed, if the resource is adequate, local government should provide a steady and progressive development, right? (Interviewee B).” This has become as a major challenge to implement tourism development in Muen Ngoen Kong community. Finance for tourism is insufficient at a local level and is derived from donors and a small number of government sectors. However, a community that is managing to survive with the limited and inadequate financial support from the government has shown high levels of effective cooperation in order to deal with the shortage that occasionally occurs (Fotiadis et al., 2019). It is mentioned “in fact, locals are short of money to run a business and mostly, the outsider investors have a larger capital (Interviewee E).” With respect to non-local capital, the possibility to completely control and manage tends to be difficult and becomes an obstacle of the community to improve wellbeing and encourage a participatory approach.

Problems of Community Participation and Involvement

Community-Based Tourism involves local participation, with the handing over of control to communities resulting in more benefits to livelihood (Mitchell and Reid, 2001). While CBT offers

the high possibility to create jobs and increase a community's income-generating capability through tourism development, local participation provides community members a greater opportunity to obtain benefits from the development (Tosun, 2006). Since local residents are part of the tourist product, the success of tourism is decided by the participation and cooperation of the local community.

From the analysis, it is explicit that community participation and involvement are a vital part of shaping and achieving the expected developments in the community. A community committee stated that they organize some mutual activities for building intimacy through friendship among residents, for example, annual activities and festivals, maintenance of tourism historical sites and heritages, and street cleaning. A committee said "when we have street cleaning or maintenance of tourist sites, we prepare all the equipment and start doing it together (Interviewee E)." The same committee added "we informed business owners [of] the cleaning schedule and they sometimes gave us packs of bottled water." However, it is more likely to be unsuccessful in different groups of local people. Despite the fact that the committee members regularly hold meetings at least once a month to follow up on local's complaint letters and give written reports to community representative members, the closeness between local residents and the committee members and people's attitudes to tourism development in the community is not likely to be improved. This reduces the possibility of board members to realize and understand local aspects and demands toward tourism development.

Essentially, the results of an interview revealed that some community members are participating in activities which took place in the community and was organized by tourism offices in regard to CBT development in the area. However, there was not much cooperation while the activities ran their course. A local argued to the above committee's words "locals attended the activities in the temple (a common place that locals gather) but showed less cooperation (Interviewee B)." Thus, this ensures that the participation at the CBT development activities was restricted by receiving less cooperation with activities in terms of tourism development.

The Benefits of CBT

Muen Ngoen Kong community revealed the advantages it gained toward tourism resources and improvements to community security; these include the following:

Abundance of Tourism Resources

Muen Ngoen Kong community is promoted as a site for community tourism in Chiang Mai where famous ancient architecture, community culture, history, and a unique slow-paced way of life are major tourism attractions. The community is south-west of Chiang Mai city, which is a quiet quarter. Tucked away from the tourist-flooded streets and popular grand department stores, tourists will be surprised by the living city spirit. Local Lanna temples, traditional craftsmanship, edgy graffiti, Thai cooking classes, and spicy street food are the best way to understand their true way of life.

According to the tourist's opinions, the purpose for visiting Muen Ngoen Kong community is to witness a perfect living city spirit, traditional workshops where they make clothing by hands, contemporary street art, and traditional food. The tourism products are the purely tangible cultural heritage and a way to interact with the local community. On the other hand, locals indicated that tourists visited their community with the aim to experience the community's cultural attractiveness. Based on the analysis and field observation notes, potential attractive tourist destinations in the community are as follows:

- **Wat Phra Singh**

The second most reputable active temple in Chiang Mai after Wat Phra That Doi Suthep is a long-established temple in which its name is literally translated as "The Monastery of the Lion Buddha." Wat Phra Singh is very busy with visitors and worshipers all year round and is usually overcrowded during the Thai New Year festival in mid-April, and religious holidays. Every Thai New Year festival (Songkran), Lion Buddha will be presented to Chiang Mai locals in the ceremonial event around main roads for ritual baths. Through providing a cultural environment and hosting religious holiday events, visitors are aroused and the community receives attention.

- **Wat Prasat**

Located opposite Wat Phra Singh in the old city wall of Chiang Mai, the founding date is unknown but is generally believed to date back to the end of the 16th century. This is an attractive temple complex and the temple contains a ubosot (ordination hall), a viharn, (assembly hall), and two chedis (pagodas). The ordination hall, assembly halls, and one pagoda are constructed in a straight line. Another chedi, a tall cone-shaped structure which enshrine important relics, flanks the west wall of each of the buildings.

The remarkable and astonishing site is notable mostly for its viharn, whose walls are partly decorated with murals from the early 19th Century. The panels on the entrance and four sets of pillars made of teak are intricately decorated with Lanna-style carved flower motifs and animal figures of which the gilt has faded. A unique feature of this temple is the short tunnel that leads to the chedi directly behind it. While most temples usually have a set principle Buddha image in a viharn, the Wat Prasat Buddha image is in a chedi which can partly be seen from the viharn. Also, on both sides of the tunnel entrance are several seated Buddha images. One of the images is a bronze dating back to 1590, the others are stucco and of a more recent date. The temple is under the care of the Thai Fine Arts Department.

- **Location**

Location is an important factor for CBT projects because the area where tourism is taking place needs to be accessible. In most cities, the best attraction is located in center, so if this is what tourists intend for their trip, tourists might want to stay in a hotel with easy access to those amenities. In this case, Muen Ngoen Kong area, where Wat Phra Singh and Wat Prasat are located close to each

other, is in the western part of the old city wall of Chiang Mai, and on the main street. The surrounding area of the community is also crucial. Interesting environments and varied infrastructure enabling attractive leisure activities can be essential factors attracting business clients. The community location is considered to be an advantage because tourists can visit one or more sites all together once they arrive at the community. Furthermore, there are night markets, traditional restaurants, and street food to attract tourists other than cultural attractions.

Security Related Concerns

Security issues have been identified as one of the major challenges in the implementation of CBT in local communities as criminal activity and traffic incidents are a primary concern to the tourism industry (Tamir, 2015). The existence of drugs and events of theft, robbery, and begging in a destination can be perceived as harmful events to tourist flow. Committee members agreed that traffic accident issues around Muen Ngoen Kong community have been considered as the main barrier to promote tourism. Yet, traffic accidents and crime activity do not happen frequently. It is assured to be "Rarely seen. We have not been informed. Previously, it [bag snatching] happened in a small street, but it does not occur currently (Interviewee G)." However, the public may expect police to respond to these issues by focusing on its causes.

To address the issues, local governments have succeeded in strengthening and supplying effective crime prevention solutions through coordination and sharing of the best volunteer community police training programs. A committee added "we have volunteer community policemen. They are looking after us. They help monitor at night. One of our community committee [members] earned a place in the police team (Interviewee H)." Ample practice in volunteer community police roles in preventing crime have been implemented among community committee members and it has shown to reduce violence, including shootings and homicides, in neighborhoods.

In essence, community policing and its actions enable formalizing police-community collaboration and connection in which all civilians devote themselves to crime prevention through communication. However, educating the residents on security and safety and reporting crime to authorities may be required. Indeed, according to the analysis, the majority of informants reported the absence of a security problem. Seven out of 10 informants claimed that the possibility of crime occurrence in the community is very rare and it is not directed to foreign tourists. A committee added there is a higher possibility of crime happening during the festive season, and Muen Ngoen Kong community may be targeted. Thus, tourist security should always be considered and primarily prioritized in tourism planning and CBT implementation.

The Suggestion to Address the Identified Challenges

Muen Ngoen Kong community suggested product development as a solution to address the identified challenge.

Product Development

In most cases, CBT is progressed and developed in accordance with community resources, CBT aims, and specific local needs due to the core of the CBT plan being to determine how best to use resources as a development tool (Scheyvens, 2002; Asker et al., 2010). However, there are many CBT projects that have failed because of the impropriety of products. The existing issues of products are that products are not designed to be demanded by buyers, and not developed in close consultation with partners who can provide training programs, necessary equipment, and market access, and without appropriate knowledge of product development, usually established by private sectors.

In the case of Muen Ngoen Kong community, informants indicated similar issues and suggested the need to increase the number of leading restaurants and develop superior products owned by the community. However, the first activity before going forward with what informants suggested above is to conduct market analysis and research for the strength and weakness of the community toward product development or business opportunities. Political situation, tourist volume, community readiness to take action to manage and tackle an incident, transport, and additional services should be all analyzed.

DISCUSSION

This study attempted to examine benefits and challenges of CBT in Muen Ngoen Kong community as well as suggestions in relation to local perspectives in order to address those shortcomings. This discussion addresses its current circumstances from the perspective of both community representatives and locals. This case study extends the literature by focusing on Muen Ngoen Kong community, which is located between well-known tourist destinations in the central of Chiang Mai Old City, Thailand. However, the community has been under-researched in regards to investigating CBT benefits and challenges.

Research Question 1: What Are the Challenges That Are Derived and Distributed to the Community in Respect of CBT?

Cole (2006) pointed to the lack of ownership as a challenge to CBT, and this has been evidenced by this study. The research findings from interviews indicated the inexistence of a sense of ownership over tourism development in the community. Community sustainability is often derived from opportunities and resources to develop on their own. As land is considered as a community resource, land ownership issues become a problem for developing accommodations in the area, resulting in difficulties for CBT development. When the resource is directly related to the community's tourism and it will become an important determinant for the community's economy (Tamir, 2015), it becomes an issue of how the

community land should be used by either the community or by foreign people.

Based on field observation notes, major service businesses are not only owned by foreign people but also by the community resident themselves. Some indigenous businesses that start their own enterprises are affected by public doubt about whether they can succeed or not. Hence, conflict over community land is sometimes raised by community capacity and intention where the community guesthouse, hostel, hotel, and homestay were constructed for business purposes. However, it is argued that tourism entrepreneurs can lead to successful rural development, if cooperation among the entrepreneurs and local government is formed (Fotiadis et al., 2019). Alternatively, handing over of land ownership to foreign people who have larger capital for investment may be a conscious attempt to foster greater community economics. But, there is a possibility that this move instead results in a benefit leaking. Surrendering control of land ownership to outsiders without building a sufficient capacity, appropriate structures, and systems for their own community is a recipe for failure.

Scheyvens (2002) also identified insufficient financial resources as another challenge to develop communities using CBT principles. The same author (Scheyvens, 2002) described that if financial resources are unavailable at a local level, there is a high possibility for communities to lose ownership of the community's property in various ways to outsiders. From the interviews, local residents welcome and support outside donor projects taking place in the community and show an interest in tourism planning. Nonetheless, they need to accept that existing donor projects from outside will deny the community a participatory and decision-making approach. As seen in other cases, a long-term partnership between outsider stakeholders and communities can aid the communities in reaping benefits from tourism development. In this case, the community's interest is the first concern and creating programs tailored to the need may help them the most. However, the community is in need of expertise and tools to make the programs possible. Therefore, it necessitates requesting outsider consultation. The community relies on outsider advice and know-how until they have the capability to forsake the help of outsiders, as observed in Bolivia (Jamal and Stronza, 2009).

While CBT offers the high possibility of creating jobs and increases a community's income-generating capability through tourism development, local participation provides community members with a greater opportunity to obtain benefits from the development.

As CBT is an alternative means to enhance a significant level of local participation by allowing communities to control tourism projects, there are also other means to present wider opportunities for a participatory approach. In bicycle tourism, it is reviewed that the behavioral intentions of participants can be enhanced by having compassion, encouragement, and support of friends and family (Lin et al., 2020). Additionally, a study indicates that if a person put effort into an activity, a stronger feeling of involvement will be produced (Chen et al., 2020). However, in this case, the interviews and field

observation had shown that the absence of local participation is rather obvious. Despite the fact that the intention of participants cannot be created productively in different groups of local people, it also diminished the closeness of their friendship. Significantly, with the situation of elected committee members' minority voice, the possibility of participating in community decision-making process for cultural managements is decreased. In developing tourism communities where group cohesion is required to acquire decision-making advantages and integrating tourism, group solidarity is essential (Mitchell and Eagles, 2001; Mitchell and Reid, 2001). Therefore, management decisions should be done in close alignment with community members, because they are the ones that have a better understanding of the situation and the ones who receive the benefits that results from the management decisions (Thaman et al., 2016). It is argued that, because management in the tourism industry field sometimes requires immediate decisions (Murphy, 1985), it is difficult to ensure that all voices are represented in the decision-making process (Nault and Stapleton, 2011). However, using forecasting models can address and ease strategic and urgent decision-making because it can assess weakness in order to minimize any risks (Korol and Spyridou, 2020).

Research Question 2: What Are Benefits That Support CBT Development in the Community?

Although tourism in Muen Ngoen Kong community revealed various challenges, the community still has strong points to support CBT development. As the interview and field observation findings indicated, tourism resources in the community serve its purpose for CBT as they are located in the community and attract tourists all year around. Tamir (2015) described that locational advantages of an area being close to a top tourist destination is presented as an opportunity for CBT development. It may be convenient that tourists can enjoy one or more destinations and CBT sites at the same time.

Although the culture of the community appreciates and attracts a number of guests, this study has shown a high level of security protection through community policing and actions. Arguably, Tamir (2015) indicated that the security issue is one of the major challenges in implementing CBT, as criminal activity threatens the tourism industry. Although the community crime scale is small, criminal activities such as bag snatches and theft are major security-related challenges toward CBT initiatives.

Research Question 3: What Is Solution to Address Identified Challenges?

CBT projects often suffer from a lack of financial sustainability. Mostly, it is due to the absence of business expertise, knowledge among members (Forstner, 2004; Gascón, 2013; Kontogeorgopoulos et al., 2014), and access to the market. When CBT is developed based on community assets, the aim to develop a greater economy is the first major concern. Marketing notable community products and introducing special

offers may become a focus for the supply side of the spectrum, but what tourists are going to buy might be overlooked. In this sense, products should be designed based on market demand. From interviews and field observations, findings mentioned the need for superior products locally owned by the community as a solution toward financial sustainability. Häusler (2005) suggested communities must conduct a market analysis in order to explore their strengths and weaknesses and then determine business opportunities. Additionally, products should be developed through a partnership in which they can assist in providing necessary skills and market access (Dodds et al., 2018), and marketing strategy can be more successful if a communication plan is built based on tourist motivation and involvement (Priporas et al., 2018). Kontogeorgopoulos et al. (2014) advised the third government agency to assist with the One Tambon One Product (OTOP) program. Because the purpose of the program is to promote the best local products at a local level, communities can adopt this program to put themselves into a proper market in order to foster community wellbeing. In the work of Kontogeorgopoulos et al. (2014), it is demonstrated that OTOP program application has assisted Mae Kampong village in developing community-based homestay projects. As a result, the village received its recognition for OTOP Village Champion in 2014.

CONCLUSION

Through the case study at Muen Ngoen Kong community, Chiang Mai, Thailand, this study attempted to investigate the benefits and challenges of CBT in Muen Ngoen Kong community and discuss the suggestions obtained from two qualitative data collection methodologies: interviews and field observations, and the thematic analysis process. It concluded that CBT efforts in the community affect the livelihoods of local residents in two different ways: abundance of tourism resources and security-related concerns. Community-Based Tourism contributed its benefits to community subsistence by allowing large volumes of tourists seeking a new approach to discovering cultural destinations and experiencing local culture in order to involve themselves in their travels, and providing criminal protection programs to ensure tourists' and local's safety. In most cases, the security issue is a major challenge that hinders the progression of tourist development. However, in this case, the community succeeded in strengthening and supplying effective crime prevention solutions through coordination with local government.

Despite the attractiveness of tourism resources and the benefits of a volunteer police program in addressing security issues, there have been several barriers to sustain the community in the long-term. The key challenges that determine the success of CBT are: conflict over land ownership and benefit leaking, financial issues, and problems of community participation and involvement. The community shared some of these challenges which may occur in many developing countries.

Several studies had indicated that, without creating opportunities for local residents to possess their land and to participate in the decision-making process, benefits that are generated from the tourism development are nearly impossible to be sufficient (Long, 1991; Tosun, 1998; Clancy, 1999; Timothy, 1999). According to this challenge, it was revealed that some community members felt the profit from tourism often does not filter down to the local economy and the costs they incurred far outweigh the benefits. Additionally, it may become a critical issue that locally owned small businesses are operating against stronger competitors and under imperfect market conditions. Consequently, they lost the essentials for their wellbeing.

CBT initiatives in relation to product development must be developed according to the strength of the community and should embrace collaborating with third government agencies. While many CBT initiatives emphasize the importance of collective management in communities, external tourism enterprises with the potential to provide knowledge, market access, and additional sources are often overlooked (Dodds et al., 2018).

SUGGESTION FOR FUTURE STUDIES

The research findings of this study indicate that several challenges have had a negative impact on the development of CBT at the research site. Additionally, this study investigated benefits and opportunities that should be strengthened and developed in the future steps of community development. Based on the findings of the research, solutions to address the identified challenges were suggested by local residents. However, product development as the solution to overcome several challenges remains an issue of how community land should be used by the community or foreign people.

Essentially, to increase the consistency of coding procedures, multiple coders or a team of researchers with expertise in qualitative research and coder comparison analysis should be applied. This quality assurance method will ensure that the coding process and interpretation are illustrative of the data. If multiple coders or coder comparison are not possible, detailed notes of any decision that had been made should be kept.

In qualitative research, the researcher is a part of the research process itself. Knowing biases occur during the interpretation and analysis processes should be reported openly in manuscripts. Hence, it must be clear to the reader on how the background could produce biased findings.

With the rich conversation transcribed from the recordings, there should be hidden and unexplored challenges, benefits, and solutions regarding the possibilities of CBT development. Careful coding processes and interpretations with multiple coders should be reprocessed in order to discover hidden challenges and benefits as well as solutions in relation to CBT. Another limitation that should be considered is the generalizing of findings due to unique cultures and locations. Nonetheless, it can be the basis

for more consideration of community development contexts in coping with CBT.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation

and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

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Y-CL made substantial contributions in exploring research concept, developing the research framework, and designing the methodology. PJ made substantial contributions in data collection, writing the manuscript, and searching for references. Both authors made substantial contributions in data analysis, result interpreting and discussing, drafting the manuscript, and writing the authors' response notes.

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How to Promote Ethnic Village Residents' Behavior Participating in Tourism Poverty Alleviation: A Tourism Empowerment Perspective

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Local villagers are regarded as the main part of tourism development in the ethnic village, their participation in tourism poverty alleviation has a vital impact on sustainable tourism development and poverty reduction. Based on the planned behavior theory and capacity approach theory, we investigated the influence of tourism empowerment on ethnic village residents' behavior participating in tourism poverty alleviation, especially focusing on the mediating effect of participation willingness and the moderating effect of participation ability. We took Zenlei Village in Sandu County of Guizhou Province in China as research subjects and analyzed 239 valid samples through the structural equation model and hierarchical regression. The results indicate that: (a) Tourism empowerment has a remarkable positive effect on participation behavior. (b) Participation willingness plays a partial mediating role between tourism empowerment and participation behavior. (c) Participation ability positively moderates the positive relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness. That is, the positive relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness would be stronger when villagers have higher participation ability. Whereas, participation ability has not yet played a moderating role between tourism social empowerment, tourism political empowerment, and participation willingness.

Keywords: tourism empowerment, participation behavior, participation willingness, participation ability, tourism poverty alleviation

INTRODUCTION

Tourism is characterized by high degree of industrial correlation, low threshold of employment, strong comprehensive driving force and great radiation traction, these traits have increasingly highlighted tourism's role in promoting regional economic development and helping the poor out of poverty, thus, it has become one of the important forms of anti-poverty. Tourism poverty alleviation is based on the principle of "poverty alleviation," the development of tourism as the strategies and approaches, the anti-poverty and elimination of poverty of vulnerable groups as

the core goal, the premise of economic benefits, the comprehensive development of poor communities as the content, the development of poor population as the core, the positive social change as its ultimate goal (Zhou, 2002). Tourism poverty alleviation is not exactly about expanding the size of the industry as it is about offering opportunities to the poor to gain economic and other livelihood benefits, or to participate in decision-making (Ashley et al., 2001). Due to its remote location, inconvenient transportation, low level of social development, less external interference and influence on natural landscape and cultural customs, ethnic villages, poor areas, and areas rich in tourism resources have a high degree of overlap.

In the context of targeted poverty alleviation, the characteristics of “blood transfusion” and “blood production” of tourism poverty alleviation make itself play an increasingly prominent role in driving the development of ethnic villages and poverty reduction of poor villagers. Residents of ethnic villages, as the resource provider, industry operator, and activity beneficiary of tourism poverty alleviation, also provide an indispensable endogenous force for tourism poverty alleviation (Fotiadis et al., 2016). Ethnic village tourism poverty alleviation cannot be separated from the participation of residents, which is not only effectively safeguard residents’ rights and interests (Hwang et al., 2012), but also help protect the resources and environment (Sebele, 2010) and implement relevant policies on tourism development (Lamberti et al., 2011).

However, due to the imbalance of social development in ethnic villages, the villagers seem to be in a disadvantaged position (Li et al., 2016). A series of problems such as low participation enthusiasm and frequency of residents occurs in the process of tourism poverty alleviation in ethnic villages, leading to a strange circle of “more help, more poverty.” The participation of residents is related to the sustainable development of tourism (Murphy, 1988; Sharpley, 2014; Khalid et al., 2019; Shen et al., 2019) and the vital interests of residents (Hwang et al., 2012). During the critical period of China to eradicate absolute poverty and secure a decisive victory in building a moderately prosperous society in all respects, how to inspire ethnic village residents to participate in tourism poverty alleviation and improve the quality and effectiveness of tourism poverty alleviation has become an urgent issue for industry and academia (Yang, 2017).

Based on the systematic review of both of domestic and abroad researches, we find that fewer scholars explored the affecting factors of residents’ participatory tourism behavior through empirical researches. In a few relevant articles, the researchers mainly proved that ecotourism cognition (Huang et al., 2014), perceived justice (Xu et al., 2015), participation opportunities (Zhang, 2015), individual characteristics (Simon, 2016), and attitudes to tourism impacts (Ribeiro et al., 2017) have significant effects on residents’ participatory tourism behavior, but few scholars explored the influence mechanism of residents’ participatory tourism behavior from the perspective of empowerment. Community participation faces various challenges and obstacles (Stone and Stone, 2011), such as operational, structural, and cultural barriers (Tosun, 2000; Dogra and Gupta, 2012). The structural barriers generating by power relations are regarded as the main obstacles for the

community to participate in tourism (Weng and Peng, 2010). If the rights of community residents are not guaranteed or even deprived in tourism development, other obstacles for poor residents to participate in tourism cannot be effectively solved (He and Li, 2019). Tourism empowerment emphasizes giving residents personal rights, realizing the balance of power relations, improving the enthusiasm of community residents to participate in tourism development, and paying attention to the empowerment of community residents. The essence of tourism empowerment is to enhance residents’ rights in tourism development, break the unbalanced power relationships, and stimulate better development of communities and tourism (Zuo and Bao, 2008). Thus, one aim of this study is to test the influence of tourism empowerment on ethnic village residents’ participation behavior in tourism poverty alleviation.

In the past, most of the researches on the function mechanism of tourism empowerment were theoretical and static studies, lacking of corresponding quantitative evaluation studies, and the empirical studies involving mediating variables were relatively few. During the process of tourism development in ethnic communities, community empowerment is an effective way to promote the willingness of residents to participate in tourism exchange (Liu and Li, 2016). Meanwhile, the theory of planned behavior holds that individuals’ behavior is directly caused by their behavioral intention which is influenced by individual behavioral attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). In another word, residents’ participation willingness directly affects their participation behavior. Although some literatures have revealed the influence of tourism empowerment on residents’ participation willingness or residents’ participation willingness on their participation behaviors (Stylidis et al., 2014; Almeida-García et al., 2016; Lin et al., 2017; Strzelecka et al., 2017), few studies have comprehensively evaluated the relationship among tourism empowerment, residents’ participation willingness and residents’ participation behaviors. Therefore, the second purpose of this study is to analyze the internal mechanism of the influence of tourism empowerment on ethnic village residents’ participation behavior in tourism poverty alleviation from the perspective of villagers’ participation willingness, test the mediating effect of villagers’ participation willingness and theoretically expand the understanding of the impact mechanism of tourism empowerment.

Though previous studies confirmed that tourism empowerment had a positive impact on participation willingness (Liu and Li, 2016), this effect is the same for different village resident individuals needs to be revealed (Fotiadis et al., 2019). In minority areas, the lack of poor peasant households’ ability is the main reason for their low participatory tourism willingness (Wang et al., 2010; Lü, 2012). Yang and Ba (2012) proposed that only through the ways of strengthening the training of tourism knowledge and skills and the training of tourism management mode, Mandarin and other knowledge and abilities can encourage impoverished population participate in tourism poverty alleviation to the greatest extent. Individual characteristics and individual social and cultural factors (such as age, gender,

cultural background, experience, personality, etc.) will indirectly affect behavioral attitudes, subjective norms and perceived behavioral control through influencing behavioral beliefs, and ultimately affect behavioral intentions and specific behaviors (Lim and Dubinsky, 2005). Various ability factors such as the health status and education level affect residents' willingness to participate in tourism poverty alleviation (León, 2007; Lu et al., 2017). The influence of tourism empowerment on villagers' participation willingness may vary owing to the differences in their participation ability. Therefore, the third aim of this study is to investigate the moderating effect of ethnic village residents' participation ability in tourism poverty alleviation between tourism empowerment and villagers' participation willingness.

We hope to contribute to the literature on tourism poverty alleviation and tourism empowerment for ethnic village residents in the following ways. First, by taking tourism empowerment as the antecedent variable of ethnic village residents' participation behavior in tourism poverty alleviation, to a certain extent, fills the gap in the long absence of empirical research to explore the relationship between the two, and helps explain how to motivate ethnic village residents' participation behavior in tourism poverty alleviation. At the same time, our research not only helps to enrich the theoretical system of tourism empowerment, but also helps to construct the framework of tourism empowerment in practice. By introducing the power relationship into the study of tourism poverty alleviation in ethnic villages, it provides a new perspective and theoretical breakthrough point for us to explore the ways and effective modes for ethnic village residents to participate in tourism poverty alleviation, which is also a reflection of the accelerating penetration and integration trend of tourism science and other social sciences in recent years. Second, by exploring the mediating effect of residents' willingness to participate in tourism poverty alleviation in ethnic villages, our study discusses how residents' willingness to participate in tourism poverty alleviation helps to explain the effectiveness of tourism empowerment, so as to provide new ideas for relevant research on participation willingness. Third, by investigating the moderating effect of poverty alleviation ability of ethnic village residents participating in tourism, our study clarified the potential boundary conditions for the effectiveness of tourism empowerment. In addition, we also hope that this study will help relevant authorities to formulate management countermeasures for stimulating ethnic village residents to participate in tourism poverty alleviation, so as to generate new breakthroughs in tourism poverty alleviation in ethnic village and accelerate the pace of poverty alleviation for ethnic village residents.

The overall structure of this paper is as follows. In section "Theoretical Overview and Research Hypotheses," the theoretical overview of tourism empowerment, participation behavior, participation willingness, and participation ability is conducted to extract the research hypotheses developed. Section "Materials and Methods" mainly explains the research design and measurement. The analysis results of reliability and validity, correlation, main effect, mediating effect, and moderating effect are shown in section "Results." Finally, we elaborate on the

theoretical contributions, management implications, limitations, and future research.

THEORETICAL OVERVIEW AND RESEARCH HYPOTHESES

Tourism Empowerment and Participation Behavior

Empowerment is first proposed by Solomon (1976) in the late 1970s, it refers to the process of improving individuals' and groups' ability and awareness of rights through external intervention and assistance, thereby reducing or eliminating their sense of powerlessness (Zimmerman, 1990). Sen's (1981) theory of right poverty argues that empowering the poor is the fundamental approach to solve the problem of poverty. In the field of tourism research, tourism empowerment is the research object that attracts the scholars' concern (Boley et al., 2018). Akama (1996) firstly proposed the initial function of tourism empowerment. Tourism empowerment means that stimulating the potential advantages of community residents and increasing their influence and control over the internal and external environment when the established rights remain unchanged, to expanding residents' rights and promoting the transfer and redistribution of residents' rights and interests under the condition that the democratic consciousness and resource control of community residents are generally improved (Zhang, 2013). Tourism empowerment is a multi-dimensional concept, Scheyvens (1999) proposed that tourism empowerment should be divided into four dimensions: tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment, the four-dimensional framework has been widely recognized by the academic community. Sofield (2003) further specified the concept, theory and method of tourism empowerment.

The essence of poverty alleviation process of tourism in ethnic villages is regarded as the process of each stakeholder's possession, distribution and use of tourism resources, and the process of rights game and exchange. From the actual situation, the lack of ethnic village tourism resources property rights, and the dual impact of market economy after the formation of the atomization state caused by the high cost of cooperation tends to make the community interact with external stakeholders and game often in a state shall not be entitled to. Therefore, it is necessary to combine the two issues of power in politics with poverty alleviation through tourism.

Ethnic village residents' behavior to participate in tourism poverty alleviation means that villagers participate in various affairs activities on the process of tourism poverty alleviation, for instance, taking part in song and dance performances, displaying ethnic culture, providing accommodation and catering, selling commodities with ethnic characteristics, and participating in decision-making, management, and supervision of ethnic village tourism. Tourism empowerment can increase the opportunities for residents to participate in tourism poverty alleviation, which in turn has a direct positive impact on residents' participation

behavior (Zhang, 2015). Thus, tourism empowerment may affect the behavior of residents to participate in tourism poverty alleviation.

Firstly, tourism empowerment is the most direct characteristic of tourism, and economic influence is the most obvious characteristic of tourism. Tourism economic empowerment means that the development of tourism significantly improves the employment rate, income, and living standard of community residents (Scheyvens, 1999). For the residents who treat tourism as a means of livelihood (Su et al., 2016), it will become an important direct motivation for them to actively participate in tourism poverty alleviation. Indeed, community tourism does greatly promote the development of local economy, and also solves the way out of part of the surplus labor force. The participation rate of community residents in tourism also increases rapidly.

Secondly, tourism psychological empowerment means that the mental status of residents can be changed in tourism poverty alleviation. If the common rural scenery and traditional ethnic customs have been recognized by non-local tourists, residents' pride and self-confidence might have been effectively enhanced (Scheyvens, 1999). Stronza and Gordillo (2008) confirmed that the pride of residents in an Amazon community is the most important non-economic benefit in the development of local tourism. Realizing the uniqueness and value of the local community's traditional culture, natural resources and traditional knowledge, the villagers are proud of their own culture and tradition from the bottom of their hearts and actively participate in poverty alleviation through tourism (Wang, 2013).

Thirdly, according to Maslow's "hierarchy of needs," it suggests that harmonious interpersonal communication is one of the basic needs of individuals. Tourism social empowerment shows that the overall sense of community has been confirmed and strengthened by the combination of tourism development and community construction (Sun, 2008). It encourages residents to involve themselves in tourism poverty alleviation for the sake of satisfying their social needs by enhancing the cohesion and cooperation among residents of ethnic villages. Perkins and Zimmerman (2004) illustrated that the empowerment of the tourism community contributes to the improvement of the quality of life of the community and the linkage of community organizations. In the meanwhile, the increasing power of tourism society includes the growth of some groups recognized by all communities, the development of community public services, and the strengthening of the overall image of the community. As for the community, the government and enterprises are the external stakeholders of the tourism industry, and the internal stakeholders of the community also need to mobilize and integrate to form a joint force. On this basis, a new community organization system is built to prepare for the effective participation of the community.

Lastly, the lack of residents' political rights is the root of the failure of community participation and the main reason for hindering the healthy development of tourism (Zuo and Bao, 2008). Tourism political empowerment emphasizes providing residents with approaches and opportunities to express their opinions and participate in decision-making, management, and

supervision of tourism (Scheyvens, 1999), which means, in this way, it can encourage residents to have the inner motivation to achieve real participation by giving them full decision-making and discourse power. If the local government does not provide relevant approaches for residents, the possibility of residents participating in tourism development will be greatly reduced (Aas et al., 2005). Given the above analysis, we propose the following hypothesis:

Hypothesis 1a (H1a): Tourism economic empowerment positively affects ethnic village residents' behavior participating in tourism poverty alleviation.

Hypothesis 1b (H1b): Tourism psychological empowerment positively affects ethnic village residents' behavior participating in tourism poverty alleviation.

Hypothesis 1c (H1c): Tourism social empowerment positively affects ethnic village residents' behavior participating in tourism poverty alleviation.

Hypothesis 1d (H1d): Tourism political empowerment positively affects ethnic village residents' behavior participating in tourism poverty alleviation.

The Mediating Role of Participation Willingness

Ethnic village residents' willingness to participate in tourism poverty alleviation refers to the subjective desire of villagers to participate in tourism poverty alleviation, including the desire to engage in tourism-related work, tourism-related activities, and tourism development affairs of ethnic village. Social exchange theory states that residents as rational people, the formation of their participation willingness is based on the principle of reciprocity and mutual benefit, the premise to stimulate their participation willingness is that their perceived benefits are greater than perceived costs (Vargas-Sanchez et al., 2011). When residents' comprehensive income from tourism development exceeds their expectations, they will have a positive participation attitude (Yang et al., 2005).

Specifically, tourism economic empowerment effectively protects the tourism economic incomes of residents by establishing a reasonable benefit distribution mechanism. Keogh (1990) showed that there is a significant positive correlation between residents' perception of the impact on tourism economic interests and their attitude toward tourism support. The greater the economic interests of tourism development perceived by residents, the more inclined they are to support the development of tourism. Current studies have proved that residents' attitudes toward tourism were positively correlated with their tourism economic benefits (López et al., 2018). The more benefits residents gain, the more active participation attitude toward tourism development they hold (Ouyang et al., 2017). The most direct influence of tourism psychological empowerment on residents is leading them to form the consciousness of national culture (Di Castri, 2004). Boley et al. (2014) took three villages in the United States as research objects, the empirical results found that psychological empowerment promoted residents' support

for tourism development by inspiring their self-confidence. Tourism social empowerment means that the tourism activities undertaken by residents promote the internal balance of the village and standardization of the social order. The research conducted by Liu and Li (2016) based on the ethnic villages of Kanas community in Xinjiang shows that social empowerment can boost the development of the community and positively affect residents' support for tourism. The realization of tourism political empowerment offers villagers various approaches to express their demands and appeals for building up a sound extension mechanism. It affects residents' willingness to participate in tourism by influencing their trust toward local government actors (Nunkoo and Ramkissoon, 2012).

We believe that the theory of planned behavior can effectively analyze the behavioral characteristics of ethnic village residents participating in tourism poverty alleviation. According to the theory of planned behavior, the participation willingness of ethnic village residents is the inherent reason and direct motivation to drive their behavior of participating in tourism poverty alleviation. The stronger is the participation willingness of village residents, the more likely they participate in tourism poverty alleviation. As an indicator to measure residents' acceptability for developing tourism (Andriotis, 2005), participation willingness can predict residents' participation behavior. Most studies have proved that there is a significant correlation between behavioral intention and actual behavior (Zeihaml et al., 1996). Besides, Huang et al. (2014) and Lu et al. (2017) empirically studied the relationship between residents' willingness and behavior to participate in tourism development, the findings suggested that the former one had a significant positive effect on the latter one. Based on the above discussion, we put forward the following hypotheses:

Hypothesis 2a (H2a): Participation willingness plays a mediating role between tourism economic empowerment and ethnic village residents' behavior participating in tourism poverty alleviation.

Hypothesis 2b (H2b): Participation willingness plays a mediating role between tourism psychological empowerment and ethnic village residents' behavior participating in tourism poverty alleviation.

Hypothesis 2c (H2c): Participation willingness plays a mediating role between tourism social empowerment and ethnic village residents' behavior participating in tourism poverty alleviation.

Hypothesis 2d (H2d): Participation willingness plays a mediating role between tourism political empowerment and ethnic village residents' behavior participating in tourism poverty alleviation.

The Moderating Role of Participation Ability

Sen's (1999) theory of feasible ability holds that the welfare of the individual is secured by individual ability, the cause of poverty is lack of ability, which is composed of a series of functions,

such as the function of avoiding hunger, disease, and receiving education. Banerjee and Duflo (2011) further point out that one of the reasons why poor people are unable to get rid of poverty is that their ability to obtain the right information is limited, instead, they would like to believe in the unreal information. They also argue that poor people might have the weak self-cognition ability and seem to give up the long-term planning to choose the short-sightedness and stereotypes (Hung et al., 2011).

Ethnic village residents' ability to participate in tourism poverty alleviation refers to the subjective conditions possessed by residents and conducive to their participation in tourism poverty alleviation, such as relevant tourism basic knowledge and skills, abundant personal time and certain economic resources, and information acquisition capabilities (Hung et al., 2011). The participation behavior of poor farmers is characterized by significant ability dependence, those with low participation ability have the problem of insufficient participation (Tian and Zhang, 2018). The willingness of poor people to participate in tourism poverty alleviation varies significantly among poor people with different population characteristics (Lu et al., 2017). The study of Wang and Xiang (2017) found that community residents' participation ability had a significant positive impact on their participation motivation. This is in accordance with the view held by Li and Liu (2019), their research indicated that if community residents could fully understand tourism poverty alleviation policies and possess relevant skills, their enthusiasm for participating in tourism poverty alleviation would increase.

Past studies usually measured the level of individuals' participation ability according to their self-perception of whether they could perform a specific behavior (Bandura, 1977). Residents with high participation ability are more likely to recognize the convenient conditions, and they have strong self-confidence when facing challenges. Nevertheless, residents with low participation ability perceive more barriers to implementation, they have lower self-confidence and tend to be more anxious. Ethnic village residents have different abilities to participate in tourism, their participation intentions also differ significantly (Li et al., 2009). For residents with high participation ability, they are more likely to recognize their own advantages in the process of tourism poverty alleviation, and believe that participating in tourism poverty alleviation is an important opportunity for them to get rid of poverty and become prosperous (Sun, 2008). There are inter-positive relations among tourism empowerment, recognition, and willingness, that is, the greater the benefits brought by tourism empowerment, the higher the residents' recognition of tourism poverty alleviation, and the stronger their willingness to participate in tourism poverty alleviation. On the contrary, residents with low participation ability lack confidence in their capacity to perform relevant work of tourism poverty alleviation activities. Even if tourism empowerment is fully realized, their participation willingness will not be actually strong (Yang, 2017). To summarize, we propose the following hypotheses:

Hypothesis 3a (H3a): Participation ability positively moderates the relationship between tourism economic

empowerment and ethnic village residents' willingness participating in tourism poverty alleviation.

Hypothesis 3b (H3b): Participation ability positively moderates the relationship between tourism psychological empowerment and ethnic village residents' willingness participating in tourism poverty alleviation.

Hypothesis 3c (H3c): Participation ability positively moderates the relationship between tourism social empowerment and ethnic village residents' willingness participating in tourism poverty alleviation.

Hypothesis 3d (H3d): Participation ability positively moderates the relationship between tourism political empowerment and ethnic village residents' willingness participating in tourism poverty alleviation.

Based on the above theoretical views and research hypotheses, the theoretical model of this study is shown in **Figure 1**.

MATERIALS AND METHODS

Study Area

Zenlei Village, which is one of the first batches of traditional villages in China, is in Dujiang Town, Sandu Shui Autonomous County, Guizhou Province. It lies in the mountains of the watershed between the upper reaches of the Duliuijiang River and the Longjiang River. The history of this village is more than 300 years ago, and it is a well-known Chinese historical and cultural village with its original ecological national culture being well-protected. According to the data provided by the village committee in August 2019, there are 236 peasant households with a population of 1054 in Zenlei Village, of which 65% are Shui nationality, mainly living in Shangzhai and Xiazhai, 35% are Miao nationality, mainly living in Zhongzhai and Paichangzhai. The Shui and Miao compatriots live in harmony and depend on each other for mutual development. Zenlei Village has a beautiful natural environment and is a tourist resort integrating natural ecology, cultural landscapes, and folk customs. It has been chosen as one of the famous Chinese tourist villages with cultural traits. Since the village began to develop tourism early this century, it has gotten a sound economic and social

benefit and had a profound influence on the villagers' labor life. In recent years, Zenlei Village has positively responded to the national strategy of "targeted poverty alleviation, industrial poverty alleviation," encouraging village residents to vigorously develop ethnic cultural tourism and actively participate in local tourism poverty alleviation, and striving to motivate them to achieve both material and mental poverty alleviation. At present, Zenlei Village has achieved staged aims, forming a characteristic poverty alleviation development mode of "courtyard economy plus mountain tourism." Thus, it is reasonable to choose Zenlei Village as a case to study the tourism poverty alleviation of ethnic villages, as it is typical and representative.

Sample and Procedures

To reduce the impact of common method variance, the research group conducted two surveys. From June 20 to 29, 2018, the research group conducted a quantitative study in Zenlei Village by distributing the questionnaires, and made a supplementary survey in the village on August 9 to 11, 2019. The participants in this study were the residents of Zenlei Village. They filled out questionnaires depending on their actual situation. For the residents who were illiterate or semiliterate, the substitute-filling questionnaire method was applied. All questionnaires were collected by the research group on the spot. The data reflected the subjective judgment of residents.

A total of 248 residents participated in the questionnaire survey. After rejecting the invalid questionnaires, 239 valid questionnaires were finally retained. The effective recovery rate was 96.37%. The results obtained from the descriptive statistics analysis are presented in **Table 1**. It can be seen from **Table 1** that there was a significant difference between the males and females ratio, with males accounting for 60.25% and females accounting for 39.75%. Most of the respondents aged between 30 and 39, accounting for 25.94%. The educational level of respondents was mainly in primary school and never attended school, accounting for 41.84% and 31.38% respectively. The per capita annual income of respondents was mainly distributed between 3001 and 5000 yuan, accounting for 29.29%. The residence length of respondents was mainly distributed in 21 years and above, accounting for 69.87%.

Measures

This study used the existing domestic maturity scales as the measurement tool. Except for controlled variables, all other variables were scored with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement of independent variable tourism empowerment adopted the scale developed by Wang et al. (2015), including four dimensions: tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment, with a total of 13 items. Among them, tourism economic empowerment includes three items, one example is "Part of my income comes from the development of local tourism," the reliability of this scale is 0.81. Tourism psychological empowerment includes three items, one example is "I am proud of being a villager in this village," the reliability of this scale is 0.84. Tourism social empowerment includes three

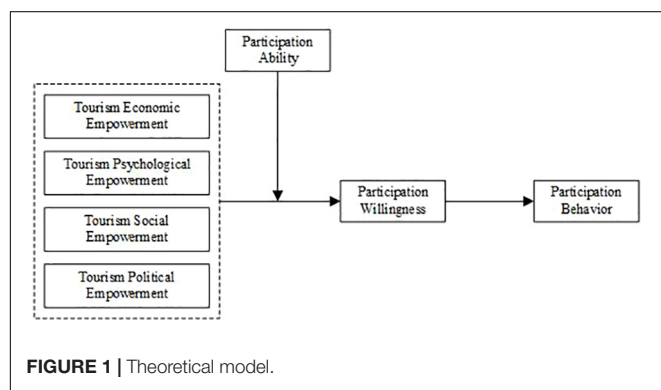


TABLE 1 | Descriptive statistics.

Characteristic	Category	Frequency	Percentage
Gender	Male	144	60.25
	Female	95	39.75
Age	20 and below	19	7.95
	21 to 29	35	14.64
	30 to 39	62	25.94
	40 to 49	48	20.08
	50 to 59	40	16.74
	60 and above	35	14.64
Education level	Never attended school	75	31.38
	Primary school	100	41.84
	Middle school	51	21.34
	High school and above	13	5.44
Per capita annual income	Less than 2300 yuan	44	18.41
	2301 to 3000 yuan	57	23.85
	3001 to 5000 yuan	70	29.29
	5001 to 8000 yuan	31	12.97
	8001 to 11000 yuan	15	6.28
	11001 yuan and above	22	9.21
Residence length	5 years and below	12	5.02
	6 to 10 years	39	16.32
	11 to 20 years	21	8.79
	21 years and above	167	69.87

items, one example is “The development of tourism deepens my relationship with others in this village,” the reliability of this scale is 0.81. Tourism political empowerment includes four items, one example is “I can participate in the formulation of local tourism development plans,” the reliability of this scale is 0.84. The scale in the study of Yang et al. (2005) which includes six items was used to measure the dependent variable participation behavior, an example item is “I often participate in the establishment of village tourism policies,” and the reliability of this scale is 0.86. The mediator variable participation willingness was measured by using a scale which is developed by Huang (2012) and contains seven items, an example item is “I support the development of local tourism,” and the reliability of this scale is 0.88. The moderator variable participation ability was measured by using a scale from Yang et al. (2005) that contains six items in total, an example item is “Our family has certain economic conditions, and we can provide certain financial assistance for tourism poverty alleviation,” and the reliability of this scale is 0.83. Additionally, demographic characteristic variables including gender, age, educational level, per capita annual income, and residence length were used as controlled variables.

RESULTS

Reliability and Validity Analysis

We used Amos 21.0 and SPSS 21.0 for reliability and validity analysis. As shown in **Table 2**, the Cronbach's alpha (CA) and composite reliability (CR) of all latent variables are greater

TABLE 2 | Results of reliability and validity analysis.

Latent variable	Measurement item	Factor loading	AVE	CR	CA
Tourism economic empowerment (ECE)	ECE1	0.83***	0.62	0.83	0.81
	ECE2	0.90***			
	ECE3	0.60***			
Tourism psychological empowerment (PSE)	PSE1	0.78***	0.63	0.84	0.84
	PSE2	0.77***			
	PSE3	0.83***			
Tourism social empowerment (SOE)	SOE1	0.81***	0.59	0.81	0.81
	SOE2	0.84***			
	SOE3	0.64***			
Tourism political empowerment (POE)	POE1	0.77***	0.54	0.82	0.84
	POE2	0.74***			
	POE3	0.70***			
	POE4	0.72***			
Participation willingness (PAW)	PAW1	0.47***	0.53	0.88	0.88
	PAW2	0.64***			
	PAW3	0.72***			
	PAW4	0.80***			
	PAW5	0.82***			
	PAW6	0.83***			
	PAW7	0.73***			
Participation ability (PAA)	PAA1	0.68***	0.44	0.83	0.83
	PAA2	0.59***			
	PAA3	0.70***			
	PAA4	0.72***			
	PAA5	0.67***			
	PAA6	0.65***			
Participation behavior (PAB)	PAB1	0.68***	0.52	0.86	0.86
	PAB2	0.64***			
	PAB3	0.53***			
	PAB4	0.78***			
	PAB5	0.87***			
	PAB6	0.76***			

*** $p < 0.001$.

than 0.70, indicating that the measurement model has expected reliability. The average variance extracted (AVE) of each latent variable is greater than or very close to 0.50, showing that the convergent validity of the measurement model is sound. It can be seen from **Table 3** that the square root of AVE of each latent variable is greater than its correlation coefficient with other latent variables, reflecting that the measurement model has good discriminant validity.

Correlation Analysis

Table 3 shows the mean, standard deviation, and correlation coefficient of each variable. From **Table 3** we can see that tourism economic empowerment ($r = 0.48$, $p < 0.01$), tourism psychological empowerment ($r = 0.37$, $p < 0.01$), tourism

TABLE 3 | Results of correlation analysis.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
(1) Gender	–											
(2) Age	0.14*	–										
(3) Education	0.01	–0.52**	–									
(4) Income	0.04	0.00	0.12	–								
(5) Length	0.16*	0.18**	–0.13*	0.11	–							
(6) ECE	–0.04	0.13	–0.05	0.20**	0.14**	0.79						
(7) PSE	0.11	0.09	0.02	0.17**	0.21**	0.38**	0.79					
(8) SOE	0.11	0.01	0.03	0.20**	0.03	0.56**	0.66**	0.77				
(9) POE	0.10	0.04	0.10	0.27**	0.14*	0.49**	0.31**	0.48**	0.73			
(10) PAW	0.11	0.09	0.13	0.23**	0.10	0.27**	0.53**	0.49**	0.32**	0.73		
(11) PAA	0.10	0.04	0.08	0.19**	–0.01	0.24**	0.33**	0.34**	0.34**	0.23**	0.67	
(12) PAB	–0.02	0.01	0.11	0.26**	0.00	0.48**	0.37**	0.39**	0.62**	0.36**	0.40**	0.72
Mean	0.60	3.67	2.01	2.92	3.44	2.68	3.66	3.20	2.41	3.79	3.08	2.37
SD	0.49	1.49	0.87	1.48	0.94	1.12	1.00	1.09	1.08	0.94	0.95	0.95

* $p < 0.05$, ** $p < 0.01$. The bold value on the diagonal is the square root of AVE.

social empowerment ($r = 0.39$, $p < 0.01$), and tourism political empowerment ($r = 0.62$, $p < 0.01$) are significantly and positively correlated with participation behavior. Also, tourism economic empowerment ($r = 0.27$, $p < 0.01$), tourism psychological empowerment ($r = 0.53$, $p < 0.01$), tourism social empowerment ($r = 0.49$, $p < 0.01$), and tourism political empowerment ($r = 0.32$, $p < 0.01$) are also significantly and positively related to participation willingness. Hypotheses H1a, H1b, H1c, and H1d are preliminarily supported. Moreover, participation willingness has obviously positive correlation with participation behavior ($r = 0.36$, $p < 0.01$). Hypotheses H2a, H2b, H2c, and H2d receive preliminarily support. Furthermore, participation ability is significantly and positively related to tourism economic empowerment ($r = 0.24$, $p < 0.01$), tourism psychological empowerment ($r = 0.33$, $p < 0.01$), tourism social empowerment ($r = 0.34$, $p < 0.01$), tourism political empowerment ($r = 0.34$, $p < 0.01$), and participation willingness ($r = 0.23$, $p < 0.01$). Hypotheses H3a, H3b, H3c, and H3d are preliminarily supported. According to the above results, the relevant hypotheses of this study have been initially validated.

Analysis of the Main Effect and Mediating Effect

According to the steps proposed by Baron and Kenny (1986), we examined whether participation willingness plays a mediating effect between tourism empowerment and participation behavior. The analysis results are shown in **Table 4**. First, taking participation willingness as the dependent variable, controlled variables (gender, age, education level, per capita annual income, and residence length) are included in the regression equation to build the model M1. On the basis of the model M1, independent variables (tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment) are successively entered the regression equation to build the models M2, M3, M4, and M5, so

as to test the relationships between tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, tourism political empowerment, and participation willingness. From the models M2, M3, M4, and M5, we can see that tourism economic empowerment (M2, $\beta = 0.23$, $p < 0.001$), tourism psychological empowerment (M3, $\beta = 0.49$, $p < 0.001$), tourism social empowerment (M4, $\beta = 0.46$, $p < 0.001$), and tourism political empowerment (M5, $\beta = 0.25$, $p < 0.001$) have significant positive effects on participation willingness.

Second, taking participation behavior as the dependent variable, controlled variables (gender, age, education level, per capita annual income, and residence length) are entered the regression equation to build the model M6. On the basis of the model M6, adding independent variables (tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment) in turn to construct the models M7, M8, M9, and M10, in order to examine the relationships between tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, tourism political empowerment, and participation behavior. From the models M7, M8, M9, and M10, it refers that tourism economic empowerment (M7, $\beta = 0.46$, $p < 0.001$), tourism psychological empowerment (M8, $\beta = 0.35$, $p < 0.001$), tourism social empowerment (M9, $\beta = 0.36$, $p < 0.001$), and tourism political empowerment (M10, $\beta = 0.61$, $p < 0.001$) have significant positive effects on participation behavior. Hypotheses H1a, H1b, H1c, and H1d are further supported. Third, using participation behavior as the dependent variable, controlled variables (gender, age, education level, per capita annual income, and residence length) and mediating variable (participation willingness) are simultaneously incorporated into the regression equation to build the model M11, and test the relationship between participation willingness and participation behavior. According to the model M11, participation willingness has a significant positive influence on participation behavior (M11, $\beta = 0.31$, $p < 0.001$).

TABLE 4 | Analysis results of the main effect and mediating effect.

Variable	Participation willingness								Participation behavior						
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Gender	0.06	0.08	0.03	0.01	0.05	−0.04	0.00	−0.06	−0.08	−0.74	−0.06	−0.02	−0.07	−0.08	−0.08
Age	0.17	0.14	0.12	0.17	0.15	0.09	0.03	0.05	0.09	0.03	0.03	0.00	0.03	0.06	0.01
Education	0.20	0.20	0.16	0.20	0.17	0.12	0.11	0.09	0.12	0.04	0.06	0.07	0.06	0.08	0.01
Income	0.20	0.15	0.13	0.11	0.14	0.25	0.16	0.20	0.18	0.10	0.19	0.13	0.18	0.16	0.08
Length	0.07	0.04	−0.02	0.07	0.04	−0.02	−0.07	−0.08	−0.02	−0.08	−0.04	−0.08	−0.08	−0.03	−0.09
ECE		0.23***					0.46***					0.41***			
PSE			0.49***					0.35***					0.26***		
SOE				0.46***					0.36***					0.28***	
POE					0.25***					0.61***					0.57***
PAW											0.31***	0.22***	0.18*	0.18*	0.17**
R ²	0.10	0.15	0.32	0.30	0.15	0.08	0.27	0.19	0.20	0.41	0.17	0.31	0.21	0.22	0.44
ΔR ²	—	0.05	0.23	0.20	0.06	—	0.19	0.11	0.12	0.33	0.09	0.23	0.14	0.15	0.36
F	5.07	6.64***	18.46***	16.35***	7.04***	3.96	14.37***	9.13***	9.65***	27.01***	7.74***	14.92***	8.95***	9.45***	25.56***

Mi (i = 1, 2, 3...) represents model i (i = 1, 2, 3...). *p < 0.05, **p < 0.01, ***p < 0.001.

Finally, using participation behavior as the dependent variable, controlled variables (gender, age, education level, per capita annual income, and residence length), independent variables (tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment), and mediating variable (participation willingness) are simultaneously entered the regression equation to build the models M12, M13, M14, and M15, the aim is testing the mediating role of participation willingness in the relationships between tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, tourism political empowerment, and participation behavior. From the model M12, it shows participation willingness still has a significant positive effect on participation behavior ($\beta = 0.22$, $p < 0.001$), while the influence of tourism economic empowerment on participation behavior is weakened ($\beta = 0.41$, $p < 0.001$), yet still maintains a remarkable level, this illustrates that participation willingness partially mediates the influence of tourism economic empowerment on participation behavior. Hypothesis H2a is further supported. Similarly, it can be concluded from the models M13, M14, and M15 that participation willingness plays a partial mediating role in the relationships between tourism psychological empowerment, tourism social empowerment, tourism political empowerment, and participation behavior. Hypotheses H2b, H2c, and H2d are further supported.

Regulating Effect Analysis

This study used hierarchical regression to test whether participation ability moderates the relationship between tourism empowerment and participation willingness. The specific results are shown in Table 5. In order to minimize the problem of multicollinearity among variables, independent variables, and moderating variable are respectively centralized before constructing the interaction terms of independent variables (tourism economic empowerment, tourism psychological

empowerment, tourism social empowerment, and tourism political empowerment) and moderating variable (participation ability). Taking participation willingness as the dependent variable, controlled variables (gender, age, education level, per capita annual income, and residence length), independent variables (tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment), moderating variable (participation ability) and the interaction terms of independent variables and moderating variable are simultaneously included in the regression equation. The models M20, M21, M22, and M23 are constructed to test the moderating effect of participation ability on the relationships between tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, tourism political empowerment, and participation willingness. From the models M20 and M21, the interaction terms of tourism economic empowerment (M20, $\beta = 0.14$, $p < 0.05$), tourism psychological empowerment (M21, $\beta = 0.13$, $p < 0.05$), and participation ability have significant positive effects on participation willingness, it suggests that participation ability can positively moderate the relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness. Hypotheses H3a and H3b are further supported. However, from the models M22 and M23, it can be seen that the interaction items of tourism social empowerment (M22, $\beta = 0.08$, $p > 0.05$), tourism political empowerment (M23, $\beta = 0.11$, $p > 0.05$), and participation ability has no significant influence on participation willingness, which indicates that participation ability has no moderating effect on the relationships between tourism social empowerment, tourism political empowerment, and participation willingness. Hypotheses H3c and H3d are not supported.

For further and intuitive observation of the moderating effect of participation ability on the relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness, we plotted the moderating effect

TABLE 5 | Analysis results of regulating effect.

Variable	Participation willingness							
	M16	M17	M18	M19	M20	M21	M22	M23
Gender	0.07	0.03	0.01	0.04	0.05	0.02	0.01	0.03
Age	0.13	0.12	0.17	0.14	0.13	0.10	0.15	0.12
Education	0.18	0.16	0.20	0.16	0.17	0.15	0.19	0.15
Income	0.14	0.13	0.10	0.13	0.14	0.11	0.10	0.12
Length	0.05	-0.02	0.07	0.05	0.04	-0.03	0.07	0.05
ECE	0.20**				0.19**			
PSE		0.49***				0.49***		
SOE			0.45***				0.44***	
POE				0.22**				0.19**
PAA	0.13	0.02	0.03	0.11	0.19**	0.06	0.06	0.14*
ECE × PAA					0.14*			
PSE × PAA						0.13*		
SOE × PAA							0.08	
POE × PAA								0.11
R ²	0.16	0.32	0.30	0.16	0.18	0.34	0.30	0.17
ΔR ²	0.06	0.23	0.20	0.07	0.08	0.24	0.21	0.08
F	6.31***	15.78***	14.00***	6.46***	6.17***	14.66***	12.49***	6.03***

Mi (i = 1, 2, 3...) represents model i (i = 1, 2, 3...). *p < 0.05, **p < 0.01, ***p < 0.001.

chart according to a standard deviation above or below the mean of participation ability according to the method recommended by Aiken and West (1991). As can be seen from **Figure 2**, there is a strong positive correlation between tourism economic empowerment and participation willingness when residents' participation ability is strong. The positive correlation between tourism economic empowerment and participation willingness is weak when residents' participation ability is low. It can be seen from **Figure 3** that there is a strong positive correlation between tourism psychological empowerment and participation willingness when residents' participation ability is high. The positive correlation between tourism psychological empowerment and participation willingness is weak when residents' participation ability is low.

DISCUSSION

In this study, the ability of ethnic village residents to participate in tourism poverty alleviation was introduced as a moderator variable, and a structural relationship model was established among tourism empowerment, residents' willingness to participate in tourism poverty alleviation and residents' participation behavior in tourism poverty alleviation. Through the reliability and validity analysis and correlation analysis of the questionnaire data, and the test of the basic hypothesis of this study, and then to explore the factors affecting the participation behavior of ethnic village residents in tourism poverty alleviation, the following three conclusions are drawn.

First, tourism empowerment has a significant impact on the formation of tourism poverty alleviation activities for ethnic village residents. This conclusion further expands the research

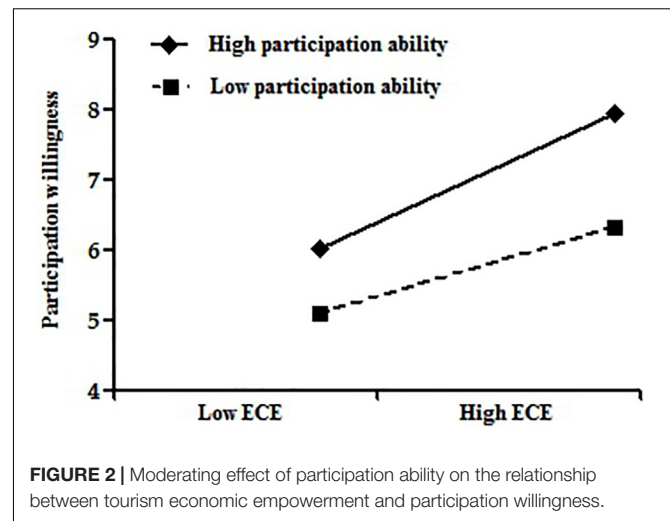


FIGURE 2 | Moderating effect of participation ability on the relationship between tourism economic empowerment and participation willingness.

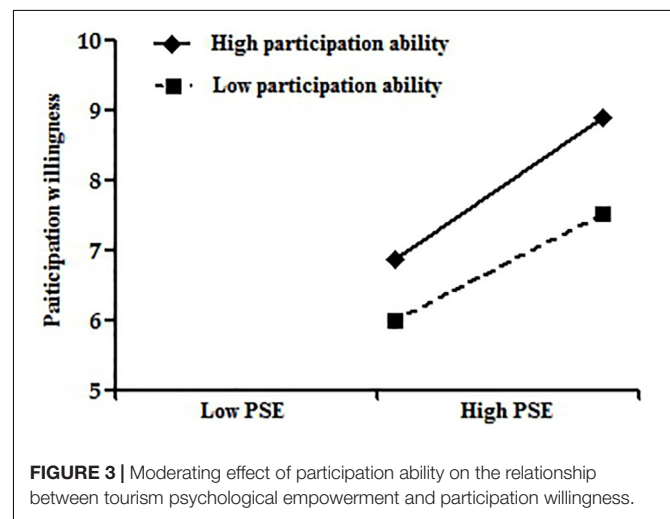


FIGURE 3 | Moderating effect of participation ability on the relationship between tourism psychological empowerment and participation willingness.

results of Lü (2012). Second, the willingness of ethnic village residents to participate in tourism poverty alleviation plays a part of the mediating role in the relationship between tourism empowerment and residents' participation behavior in tourism poverty alleviation. The conclusion of this study complements the existing studies (Stylidis et al., 2014; Almeida-García et al., 2016; Lin et al., 2017; Strzelecka et al., 2017). Thirdly, the ability of ethnic village residents to participate in tourism poverty alleviation positively regulates the relationship between tourism economic empowerment, tourism psychological empowerment and the residents' willingness to participate in tourism poverty alleviation. However, the ability of ethnic village residents to participate in tourism poverty alleviation does not play a moderating role between tourism social empowerment, tourism political empowerment and participation willingness.

In terms of tourism social empowerment, residents in ethnic villages compete for tourism development benefits in tourism activities, and residents with low participation ability may have negative emotions such as jealousy and hatred, thus reducing their perception of tourism social empowerment. However, in

ethnic villages, in addition to grassroots organizations such as village branch and village committee, there are also traditional community organizations such as village old organization (villagers call them “old people”) (Yang, 2017). As representatives of the villagers’ interests, the old village organizations will intervene in the disorderly competition. For example, residents of Zenlei Village used to sell various handicrafts to customers and quarrel with each other for competing for customers, which not only damaged the image and reputation of the ethnic village, but also hurt the feelings between residents of the village. Faced with this chaotic situation, the old organization of the village called a meeting of the villagers, and agreed that on the circle of the village collective performance venue, all the sales booths were uniformly designated number, a family, a fixed number, drawing to decide the seller of each handicraft. Such rules can restore the order of the village in time and effectively, but will not reduce the perception of power increase in tourism society of the residents with low participation ability. Therefore, the ability of ethnic village residents to participate in tourism poverty alleviation does not play a moderating role between tourism social empowerment and participation willingness.

Regarding to tourism political empowerment, as a result of ethnic village tourism poverty alleviation is a kind of “top-down” government behavior, at all levels of government organization attaches great importance to the impoverished residents of low participation ability, to each of the poor by inputting tent card, in-depth analysis of poverty causes, using “target support” “one to one support measures” help the poor residents whose participation ability is low. In the process of assisting, governments at all levels should first understand the basic demands of poor residents with low participation ability, and feed back to the higher authorities to ensure their political rights in the process of poverty alleviation through tourism. Therefore, the ability of ethnic village residents to participate in tourism poverty alleviation does not play a moderating role between tourism political empowerment and willingness to participate.

Theoretical Contributions

The theoretical contributions of this paper are mainly showing in the following three aspects. First, we demonstrated that tourism empowerment positively affects ethnic village residents’ behavior to participate in tourism poverty alleviation. Tourism empowerment promotes residents to genuinely participate in tourism poverty alleviation by not only increasing residents’ income but creating employment, not only enhancing residents’ self-confidence and pride, but promoting the coordinated development of ethnic village community governance, and ensuring residents’ opportunities to participate in tourism development affairs. At present, empowerment theory is mainly used in the field of sociology, pedagogy, and anthropology, its application in the tourism field is still in the initial stage, so it seems that there is extraordinarily necessary to conduct in-depth research on it (Wang, 2013). Furthermore, former literature discussed the effect of ecotourism cognition (Huang et al., 2014), perceived justice (Xu et al., 2015), participation opportunities (Zhang, 2015), individual characteristics (Simon, 2016), and attitudes to tourism impacts (Ribeiro et al., 2017)

on residents’ participatory tourism behavior. Nevertheless, fewer scholars paid attention to the relationship between tourism empowerment and residents’ participatory tourism behavior. We designed tourism empowerment as the independent variable and empirically examined the influence of tourism economic empowerment, tourism psychological empowerment, tourism social empowerment, and tourism political empowerment on participation behavior, which further expanded the research on the driving factors of participation behavior and supplementing related research on tourism empowerment.

Second, we found that participation willingness partially mediates the relationship between tourism empowerment and ethnic village residents’ behavior to participate in tourism poverty alleviation. When the benefits that tourism empowerment brings for residents are higher than the costs that residents pay to participate in tourism poverty alleviation, this will help stimulate residents’ willingness to participate in tourism poverty alleviation, and then enhance their participation behavior. Previous studies examined the relationship between tourism empowerment and participation willingness (Liu and Li, 2016), few of them also explored the effect of participation willingness on participation behavior (Simon, 2016), while fewer literature integrated these three variables into the same framework to study. Taking participation willingness as mediating variable, we uncovered the “black box” of the role of tourism empowerment in participation behavior and analyzed the transmission mechanism of tourism empowerment on participation behavior through participation willingness, this has further enriched the research on the influence mechanism of tourism empowerment and the mediating mechanism between tourism empowerment and participation behavior.

Third, we proved that participation ability plays a positive regulating role in the relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness. However, it would not affect the relationships between tourism social empowerment, tourism political empowerment, and participation willingness. When residents’ participation ability is high, they would get positive subjective feelings. The higher the economic or mental benefits they gain, the higher their enthusiasm to participate in tourism poverty alleviation. Although current studies have verified that tourism empowerment has a positive effect on residents satisfaction (Ma, 2014), support for tourism (Boley et al., 2014), residents fairness perception (Liu and Li, 2016), and community resilience (Guo et al., 2018), there is a lack of further discussion on the boundary conditions for the effectiveness of tourism empowerment. In this paper, we regarded participation ability as a moderating variable, revealing how participation ability impacts the relationship between tourism empowerment and participation willingness, especially clarifying the function boundary of tourism economic empowerment and tourism psychological empowerment on participation willingness.

Management Implications

The conclusions obtained in this study provide a basis for inspiring ethnic village residents to participate in tourism poverty alleviation and improving the quality and effectiveness

of tourism poverty alleviation. They have vital implications for the management practice of tourism poverty alleviation in ethnic villages, which is manifested in the following three aspects.

First of all, if tourism empowerment has a positive significant influence on residents' behavior to participate in tourism poverty alleviation, ethnic villages can take the following measures to boost residents' participation behavior: (a) We should further improve the construction of tourism infrastructure, enrich the content of tourism products, strengthen the development of tourism market, improve the quality of tourism services, and localize the tourism industry chain as much as possible, so as to extend the tourists' traveling, increase the amount of tourism consumption and expand tourism revenue. We will establish projects to help alleviate poverty through investment and joint venture and cooperation, implement the policy of investing in land management rights and housing property rights, and open up new channels for residents to increase their incomes.

(b) Adequately exploiting, developing, and protecting natural, historical, and cultural resources; developing ethnic cultural tourism with regional characteristics; allowing residents to participate in the performances and activities to display traditional culture, so as to improve their self-confidence of the local culture and enhance the consciousness of inheriting intangible cultural heritage. Attention should be paid to the inter-generational transmission of traditional ethnic culture in villages, and young people should be encouraged to learn their own culture and traditional art, so as to achieve the goal of cultural inheritance.

(c) Social organizations such as tourism associations and tourism coordination groups of tourism chambers of commerce should be established in ethnic villages to increase the social capital of tourism participation of community residents and improve the degree of organization of villagers, so as to reduce the cost of community governance in ethnic villages and improve the capacity building of community participation. Establish village tourism cooperatives, develop village collective economy, and strengthen the residents' collectivism concept.

(d) Improving stable strategies to participate in tourism decision-making, in order to safeguard the rights of residents, enhance residents' awareness of their rights, and make residents realize their important roles in tourism development. In formulating relevant tourism policies, the government should reflect the will of the community and widely listen to the opinions and suggestions of villagers. Give the villagers or their representatives an opportunity to state their views before deciding on a community tourism development plan. In the process of tourism development, community residents have channels to express their demands. In the process of project construction, timely inform the villagers of the situation, so that the villagers know the progress of tourism development.

In the next place, tourism empowerment affects residents' behavior to participate in tourism poverty alleviation through the partial mediating role of participation willingness. This informs that ethnic village can pay special attention to whether tourism empowerment generates residents' participation willingness. If residents have a positive willingness toward participating in tourism poverty alleviation, tourism empowerment might effectively motivate their participation behavior. Due to the

relatively closed ethnic villages, local residents have little understanding of poverty alleviation through tourism, and do not realize the role of tourism in poverty alleviation, so they have a weak sense of participation. Relevant competent departments can deeply understand residents' willingness of participating in local tourism poverty alleviation through in-depth interviews, complaint cases, and network public opinions. Moreover, they also can increase residents' participation willingness by strengthening publicity, explaining local tourism poverty alleviation plans, and introducing successful cases and experiences, aiming to reinforce residents' cognition of tourism poverty alleviation.

On this basis, ethnic villages need to build a reasonable mechanism to turn villagers' strong desire to participate in tourism poverty alleviation into positive behaviors, so as to ensure villagers' passionate participation in tourism poverty alleviation. For example, a benefit-sharing mechanism should be established to effectively protect the tourism income of village residents. The construction of the resource compensation mechanism, that is, any land expropriation, land reversal, resource utilization and other actions, must obtain the consent of village residents according to law and regulations, and can only be implemented after the relevant compensation agreement is signed through consultation. We will build a democratic decision-making mechanism that is convened by village committees, deliberated by decision-making committees, and extensively participated by all stakeholders.

Third, the higher the participation ability of residents, the greater the influence of tourism economic empowerment and tourism psychological empowerment on participation willingness. It refers that ethnic villages can enhance residents' participation ability through providing them skills training to participate in tourism services. Many residents engaged in the tourism industry have begun to awaken their commodity awareness, but sometimes they will inevitably deviate from the direction in understanding the problems. For example, in the construction of family hotels, residents are told that they should try their best to keep the characteristics of traditional dwellings, which can be transformed from old houses. The maintenance of such traditional features often wins the favor of tourists. It is also necessary to train the reception staff and village guides. By broadening the financing channels for poverty alleviation and development, improving the tourism infrastructure and social security system, the residents' participation ability can be enhanced and the obstacles for the poor with low participation ability can be reduced. With the improvement of participation ability, the space of community participation in tourism will be expanded.

Under the guidance and help of the government, consulting institutions, enterprises, the community plays multiple roles such as adviser, planner, executor, manager, supervisor, and beneficiary. They will be fully aware of the value of their own national culture, have an understanding of the development mechanism of tourism, stimulate their own participation potential, and realize the diversified economic, social and cultural development of the community. In addition, according to the specific situation of the residents, we should also set up a card file, treat residents with different participation ability differently, and

implement targeted support and guidance measures to ensure household policies. For example, for residents who are far away from the scenic spot, factories for processing tourist commodities such as ethnic costumes and accessories may be built. For young people who can sing and dance, national cultural song and dance teams can be formed. Through effective anti-poverty assistance mechanism and green participation channel, the disadvantaged groups are ensured to have more opportunities to participate and share the tourism revenue.

The participation ability of village residents in tourism poverty alleviation does not play a moderating role between tourism social empowerment and the willingness to participate, indicating that traditional community organizations such as the old village organizations still play an important role in the process of poverty alleviation through tourism in ethnic villages. Although traditional community organizations are independent of administrative power, to some extent, they can play an irreplaceable role in solving the governance crisis of ethnic villages. They have a strong binding force on villagers, and they are indispensable to mediate when villagers encounter problems or disputes in production and life. In the process of tourism poverty alleviation, traditional community organizations should be endowed with some new functions and play their organizing and coordinating role in the process of tourism poverty alleviation. Traditional community organizations can coordinate to establish ethnic village tourism.

The participation ability of villagers in tourism poverty alleviation does not play a regulating role between tourism political empowerment and the willingness to participate, which indicates that under the background of targeted poverty alleviation, the administrative execution ability of grassroots organizations such as ethnic villages' village committees has been enhanced. Village committees are an extension of grassroots government organizations. They should play a greater role in tourism poverty alleviation. They should also take the guidance of tourism poverty alleviation as an opportunity to conduct extensive operation and management mobilization, which will not only promote the effect of tourism poverty alleviation, but also enhance the cohesion of grassroots organizations and improve the credibility of the government.

Limitations and Future Research

There are some limitations to this study. To begin with, although this study follows strict requirements, whether the conclusions drawn from this study that only takes Zenlei Village as a case are applicable to other ethnic villages remains to be further studied. The following scholars can select other ethnic villages to test the external validity of the findings. Moreover, this study proves that ethnic village residents' participation willingness plays a partial mediating role between tourism empowerment and their participation behavior, there might be other mediating mechanisms between them, subsequent research can adopt other theories to further explore the transmission mechanism. Finally, this study confirms that tourism empowerment can promote ethnic village residents' participation behavior, yet whether the negative effects of tourism poverty alleviation (e.g., the peaceful lifestyle is disturbed, local traditional notions are changed or even

distorted, and so forth) might hinder their participation behavior. If it can, the mediating mechanism and boundary conditions are still unclear, need to be further verified.

CONCLUSION

Drawing on planned behavior theory and capacity approach theory, we took Zenlei Village as an example and investigated whether and how tourism empowerment affects ethnic village residents' behavior to participate in tourism poverty alleviation. The following conclusions are drawn. First, tourism empowerment has a remarkable positive influence on ethnic village residents' behavior to participate in tourism poverty alleviation. Second, the influence of tourism empowerment on ethnic village residents' behavior to participate in tourism poverty alleviation could be achieved through the partial mediation of participation willingness. Last, participation ability positively moderate the relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness. That is, the positive relationships between tourism economic empowerment, tourism psychological empowerment, and participation willingness would be stronger when village residents' participation ability is higher, yet the relationships between tourism social empowerment, tourism political empowerment, and participation willingness are not affected by participation ability.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Academic Committee of Guizhou University of Finance and Economics. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

JY conceived the study and wrote the manuscript. JW wrote and revised the manuscript. LZ analyzed the data. XX conceived the study and revised the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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