

**THE IMPACT OF TOTAL QUALITY MANAGEMENT ON SUSTAINABLE  
TOURISM DEVELOPMENT IN THE CHENGDU-CHONGQING URBAN  
AGGLOMERATION**

**XIANGDONG KONG**

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF  
PHILOSOPHY PROGRAM IN BUSINESS ADMINISTRATION  
FACULTY OF BUSINESS ADMINISTRATION  
RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI  
ACADEMIC YEAR 2024  
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| <b>Dissertation Title</b>   | The Impact of Total Quality Management on Sustainable Tourism Development in the Chengdu-Chongqing Urban Agglomeration |
| <b>Name-Surname</b>         | Mrs. Xiangdong Kong                                                                                                    |
| <b>Program</b>              | Business Administration (Management)                                                                                   |
| <b>Dissertation Advisor</b> | Assistant Professor Sirinya Wiroonrath, Ph.D.                                                                          |
| <b>Academic Year</b>        | 2024                                                                                                                   |

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30 October 2024

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| <b>Academic Year</b>        | 2024                                                                                                                   |

### ABSTRACT

Sustainable Tourism Development (STD), a key element of the circular economy, has attracted significant attention from government agencies as well as the academic community. This study combines bibliometric analysis, interviews, and survey data to evaluate the impact of Total Quality Management (TQM) on STD using a multidimensional framework. Through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), the research focuses on developing and validating a comprehensive TQM-STD measurement scale.

The resulting framework encompasses four key dimensions: Total Quality Management (TQM), Perceived Tourism Quality (PTQ), Tourism Benefits (TB), and Sustainable Tourism Development (STD), comprising 39 items that assess these aspects. TQM is further broken down into three key variables: Full Participation (FP), Whole Process Management (WPM), and Comprehensive Management (CM). This system serves as an effective tool for measuring the factors that influence STD, while also offering practical recommendations for its implementation.

Using the Chongqing Urban Area (CUA) as a case study, a structural equation model (SEM) was developed to empirically investigate the impact of TQM on STD. The findings reveal that: 1) efficient data collection, both online and offline, produces high reliability and validity in the measurement scales, making them broadly applicable, 2) the SEM demonstrates a strong model fit, confirming the hypotheses and extending the applicability of TQM to STD and 3) TQM positively influences and supports the promotion of sustainable tourism development, offering valuable insights for managing sustainable tourism efforts.

**Keywords:** total quality management, tourism sustainability, structural equation model, Chengdu-Chongqing urban agglomeration, scale development

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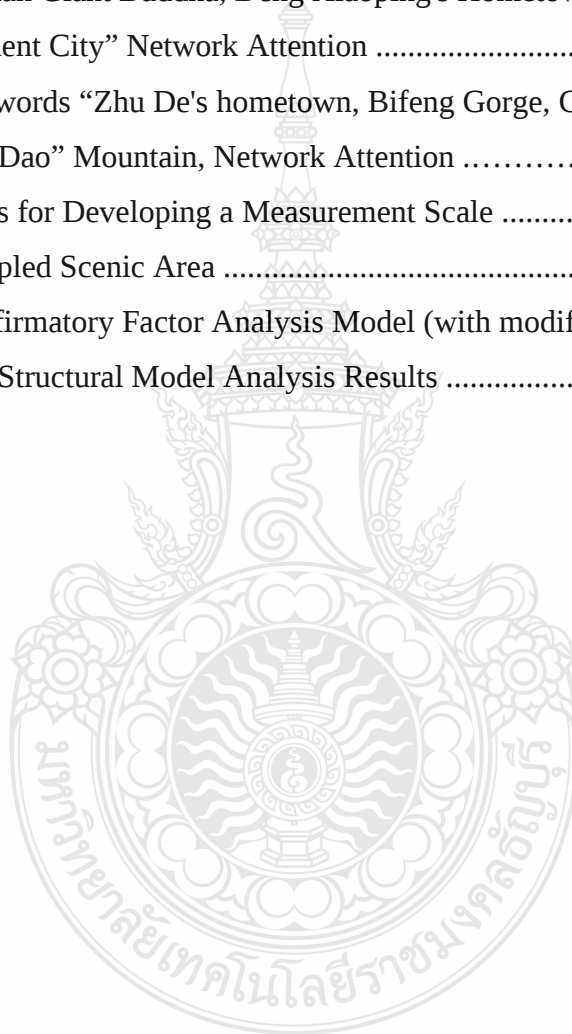
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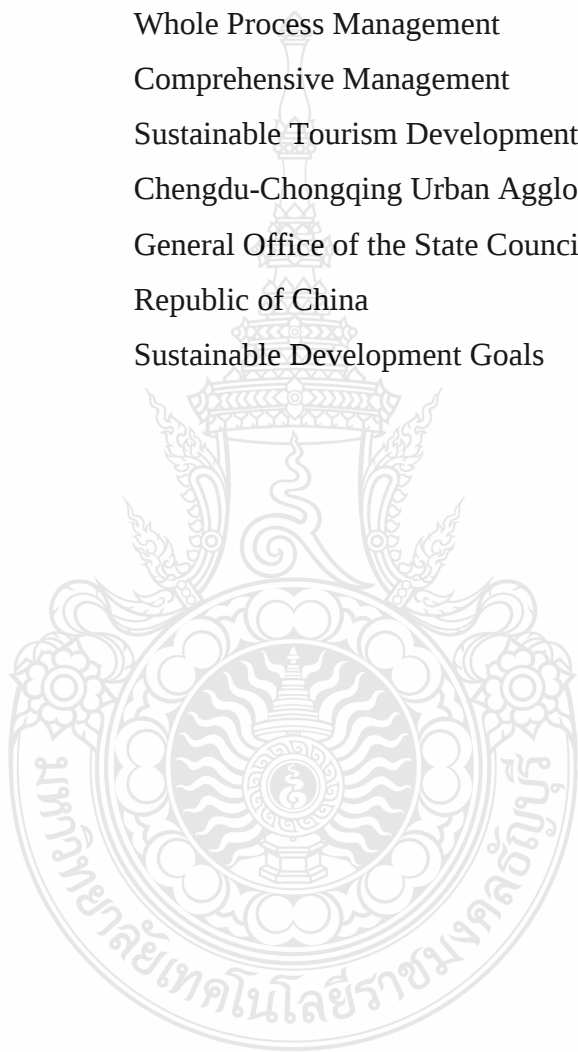
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### **List of Abbreviations**

|      |                                                                          |
|------|--------------------------------------------------------------------------|
| TQM  | Total Quality Management                                                 |
| PTQ  | Perceived Tourism Quality                                                |
| TB   | Tourism Benefits                                                         |
| FP   | Full Participation                                                       |
| WPM  | Whole Process Management                                                 |
| CM   | Comprehensive Management                                                 |
| STD  | Sustainable Tourism Development                                          |
| CCUA | Chengdu-Chongqing Urban Agglomeration                                    |
| GOSC | General Office of the State Council of the People's<br>Republic of China |
| SDGs | Sustainable Development Goals                                            |



## **CHAPTER 1**

### **INTRODUCTION**

The Chengdu-Chongqing urban agglomeration, known for its rich cultural heritage, scenic beauty, and rapid economic growth, is a prime area for tourism development. However, sustainable tourism practices are crucial to maintaining its appeal and preserving its resources. Total Quality Management (TQM) offers a strategic approach to achieving sustainable tourism by improving service quality, operational efficiency, and stakeholder satisfaction.

#### **1.1 Background and Statement of the Problem**

##### **1.1.1 Research Background**

The sustainable development of resources and the environment is a focal point and an important international issue for countries worldwide. In 1992, with the successful convening of the United Nations Conference on Environment and Development, China promptly responded by formulating the 'China Agenda 21—White Paper on Population, Environment, and Development for the 21st Century', marking the formal integration of the concept of sustainable development into the country's strategic planning General Office of the State Council of the People's Republic of China (GOSC). (2008, March). Notice on issuing the "Outline of China's Sustainable Development Action Plan for the Early 21st Century." The notice emphasizes mobilizing all national and societal forces in China to enhance awareness of and continuously improve and promote sustainable development (GOSC, 2003). Therefore, in 2021, China took the lead in proposing to establish 2025 an economic system of green and low-carbon circular development, to achieve practical results in the green transformation of economic and social development by 2030, reaching the peak of carbon emissions, and accomplishing carbon neutrality by 2060, outlining a sustainable development roadmap. These measures demonstrate China's high regard for the concept of sustainable development at the national level and its commitment to translating it into action.

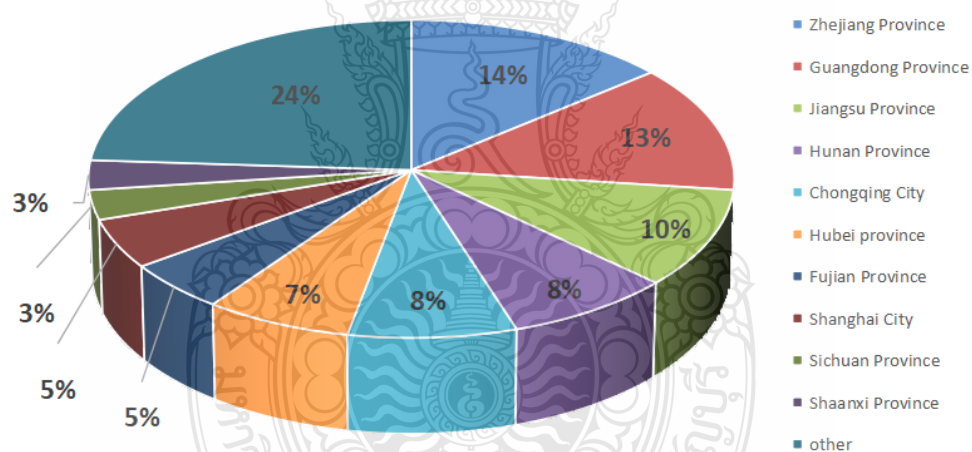
With the continuous increase in residents' incomes and the gradual elevation of human spiritual needs, tourism has become an important means of leisure and

entertainment for people. In December 2014, the State Council issued "Several Opinions on Promoting the Reform and Development of the Tourism Industry," which clearly stated that the tourism industry is an important component of the modern service industry and plays a crucial role in the future development of the Chinese economy (GOSC, 2014). The 2018 China Tourism Industry Report indicates that tourism has become the largest industry in China, gradually becoming a significant sector for boosting economic development and enhancing core competitiveness in most cities. Sustainable development of tourism involves various aspects of national economic and social development, including economic, ecological, environmental, and cultural sustainability. In November 2018, the Ministry of Culture and Tourism, in conjunction with other ministries, issued the "Guiding Opinions on Promoting the Sustainable Development of Rural Tourism," which stipulates that the development of rural tourism should adhere to basic principles such as prioritizing ecology, adapting to local conditions, and promoting green sharing. This underscores the importance of sustainability principles in the development planning of resource-based tourism. In December 2021, the State Council issued the "Notice on the Issuance of the 14th Five-Year Plan for the Development of the Tourism Industry," which clearly emphasizes the importance of promoting sustainable development in tourism. In 2021, the Development and Reform Commissions of Sichuan Province and Chongqing Municipality jointly issued the "Planning for the Construction of the Bashu Cultural Tourism Corridor," emphasizing the acceleration of co-building the Bashu Cultural Tourism Corridor, with a focus on promoting culture through tourism and showcasing tourism through culture.

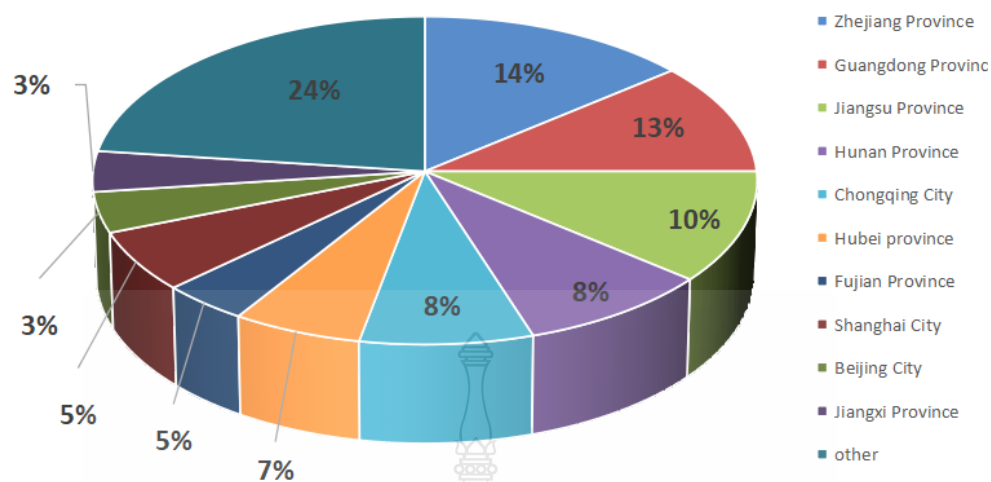
#### 1.1.1.1 Development of Tourism Industry in the Chengdu-Chongqing Urban Agglomeration

The Chengdu-Chongqing Urban Agglomeration (CCUA) is one of China's seven national-level Urban agglomerations and the largest Urban agglomeration in western China. It consists of two core areas: the Chengdu Metropolitan Area and the Chongqing Metropolitan Area, covering 15 cities in Sichuan Province and 27 districts in Chongqing Municipality, with a total area of approximately 185,000 square kilometers and a population of 95 million (as of 2020). Its GDP reached 8.58 trillion yuan in 2022, positioning it as a world-class Urban agglomeration. The CCUA plays a crucial role in

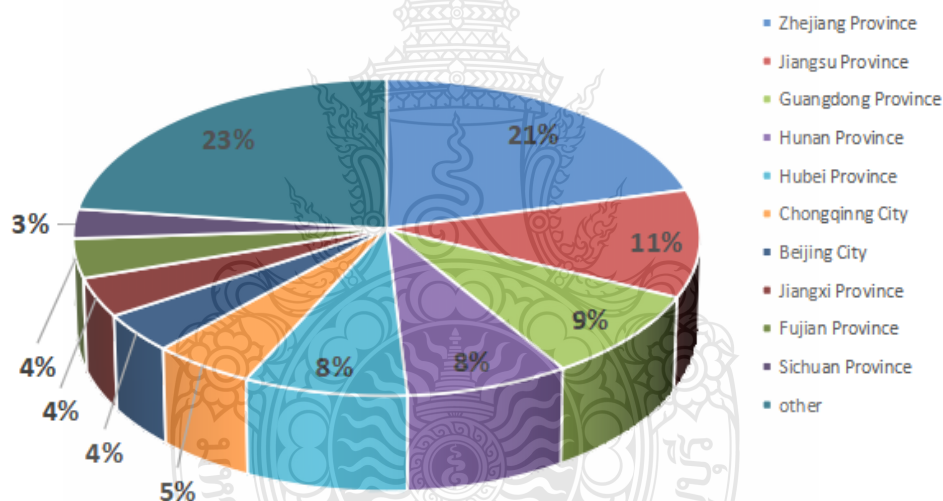
the development of China's Urban and transportation systems and was designated as the fourth pole of China's national three-dimensional transportation network in 2021 (Jia, 2023). In terms of domestic tourism organization by travel agencies, the top ten regions in terms of organized domestic tourism trips in 2020, ranked from highest to lowest, were Zhejiang Province, Guangdong Province, Jiangsu Province, Hunan Province, Chongqing Municipality, Hubei Province, Fujian Province, Shanghai Municipality, Sichuan Province, and Shaanxi Province (Figure 1.1). In 2021, the top ten regions for organized domestic tourism trips, ranked similarly, were Zhejiang Province, Jiangsu Province, Guangdong Province, Hunan Province, Chongqing Municipality, Shanghai Municipality, Hubei Province, Beijing Municipality, Jiangxi Province, and Fujian Province (Figure 1.2). In 2022, the top ten regions for domestic tourism reception by travel agencies, ranked from highest to lowest, were Zhejiang, Hubei, Jiangsu, Hunan, Yunnan, Guangdong, Anhui, Guizhou, Chongqing, Fujian, and Sichuan (Figure 1.3).



**Figure 1.1** Top 10 Regions for Domestic Tourism Organization Person-time Ranking in 2020



**Figure 1.2** Top 10 Regions for Domestic Tourism Organization Person-time Ranking in 2021



Data source: Ministry of Culture & Tourism of the People's Republic of China

**Figure 1.3** Top 10 Regions for Domestic Tourism Organization Person-time Ranking in 2022

The data presented above illustrates that Chongqing Municipality and Sichuan Province have consistently ranked among the top destinations for organized domestic tourism trips from 2020 to 2022. The tourism industry has become a significant engine for economic development in the Chengdu-Chongqing Urban Agglomeration (CCUA), driving the coordinated development of various industries. In addition, the 2022

Chongqing Tourism Bulletin reported that Chongqing received a total of 380 million tourists throughout the year, including 300 million domestic tourists and 9 million international tourists, generating a total tourism revenue of 573.9 billion yuan. Chongqing has become one of the most popular tourist destinations in China (Wang, 2022). Starting in 2019, Sichuan Province has taken the lead at the provincial level in convening conferences on cultural tourism development and has issued a series of important documents such as the "Opinions on Vigorously Developing Cultural Tourism Economy and Accelerating the Construction of a Province Strong in Culture and Tourism." These opinions have facilitated the rapid and sustained development of the tourism industry in Sichuan, contributing significantly to the provincial economy (Chen, 2020). With the introduction of national tourism support policies, people of all ages are increasingly seeking cultural and spiritual experiences, particularly through tourism. Zou (2018) analyzed the development of the Sichuan tourism industry from 1998 to 2008, indicating significant achievements in tourism reform and opening up over the past two decades. These achievements include the gradual determination of tourism development goals, clearer positioning of the tourism industry, expansion of tourism industry scale, innovation in tourism product system construction, optimization of tourism industry structure, and scientific and rational management of the tourism industry, all of which have made substantial contributions to local economic development. From the first time, Sichuan's tourism revenue surpassed 100 billion yuan in 2007 to break through the 1.16 trillion RMB mark in 2022, tourism revenue has grown elevenfold in just ten years. Concurrently, numerous tourism scholars have focused on researching the sustainable development of tourism in the Chengdu-Chongqing region. You et al. (2018) proposed that promoting the development of Sichuan's tourism industry requires identifying the entry points between Sichuan's tourism industry and the cultural and creative industries. Hong and Ge (2013) analyzed the development advantages and disadvantages of Yangren Street in Chongqing and proposed relevant sustainable development strategies from the perspective of stakeholders. The sudden outbreak of the COVID-19 pandemic at the end of 2019 dealt a severe blow to the tourism industry, posing significant challenges to its sustainable development. In response, Sichuan Province launched the "Night Tour of Jinjiang River" project in 2019. This project, one of the representative works of Sichuan

Tourism accelerates cultural and tourism integration, continuously innovates business formats and products, and achieves transformation and upgrading under the pressure of the COVID-19 pandemic (Li, 2019). In 2022, Sichuan Province, focusing on the new characteristics and demands of rural culture and tourism development in the new era, promoted the integrated development of red tourism, rural tourism, and ecotourism, spending a year to rebuild over 20 A-level rural tourism scenic spots. This move aims to enhance the sustainable development level of rural culture and tourism economy (Zhang & Zhang, 2023).

#### 1.1.1.2 Sustainable Tourism in the Chengdu-Chongqing Urban Agglomeration (CCUA)

In 1980, the International Union for Conservation of Nature (IUCN), the United Nations Environment Program (UNEP), and the World Wide Fund for Nature (WWF) jointly published the "World Conservation Strategy," which first explicitly introduced the concept of sustainable development (Cronin, 1990). In 1987, the World Commission on Environment and Development (WCED) published the "Our Common Future" report, which first elaborated on the meaning of sustainable development. Sustainable development is based on the mutual coordination and common development of society, economy, population, resources, and environment, satisfying the needs of the present generation without compromising the ability of future generations to meet their own needs. This definition gained widespread consensus and recognition at the United Nations Conference on Environment and Development (WCED, 1987). As the concept of "sustainable development" gradually gained attention worldwide, China began introducing the idea and theories of sustainable development as early as 1991. In 1994, the State Council of the People's Republic of China issued the "China Agenda 21." "Sustainable development" became a fundamental strategy for national economic development, covering the three major areas of economy, society, and environment. It attracted experts and scholars from various disciplines in China to participate in research and practices related to sustainable development. According to the literature review, the earliest documented use of the term "sustainable development" in Chinese literature was in an article titled "Review of Ecologically Sustainable Industrial Development" (Xian, 1993). However, early research on sustainable development in China remained at a

relatively shallow level, mainly focusing on introducing theories and practices of sustainable development from abroad. As the concept of sustainable development became increasingly clear, this ideology gradually extended to various industries and fields within China, particularly in cultural tourism. The academic journal "Journal of Sustainable Tourism," first published in 1993 in the UK, prompted scholars to extensively explore sustainable tourism development from both theoretical and practical perspectives (Yunis, 2001). In the study by Xie & Na (2019), the evolution of theoretical frameworks and roles in Chinese tourism research over the past 40 years was examined, leading to the gradual formation of sustainable development concepts and framework systems in the Chinese tourism industry. With the rise and flourishing development of sustainable tourism research in China, the scope of research has continuously expanded, covering various aspects such as carrying capacity management, resource development, and development evaluation. In April 2016, the "Chengdu-Chongqing Urban Agglomeration Development Plan" was officially promulgated, which provided important elucidations and strategic deployments for the sustainable development of the tourism industry within the Chengdu-Chongqing Urban Agglomeration (Yang, 2023). The Chengdu-Chongqing Urban Agglomeration is located in southwestern China and attracts millions of domestic and international tourists every year, making it one of the top tourist destinations in China on the foreign social media platform Instagram. Especially in the past five years, there has been a significant increase in the number of people choosing to visit the Chengdu-Chongqing region. Despite the Chengdu-Chongqing Urban Agglomeration still having a considerable gap in sustainable competitiveness compared to Urban agglomerations such as the Great Lakes Urban Agglomeration in North America and the Tokyo Bay Urban Agglomeration, according to the China Urban Agglomeration Sustainable Competitiveness Report (Xu & Ni, 2023), the tourism industry in the Chengdu-Chongqing region contributes around 11% of the region's GDP, holding a crucial position among tourism cities in China. In recent years, a significant number of scholars have begun to study tourism in the Chengdu-Chongqing Urban Agglomeration, with a particular emphasis on sustainable development in the tourism industry. Zhang et al. (2017) proposed approaches to optimize spatial structures, providing guidance and reference for the development of tourism in the Chengdu-Chongqing Urban

Agglomeration. This aims to promote the formation of a regional tourism economic growth pole and drive efficient and coordinated development of regional tourism. Cheng & Wang (2019) suggested that to enhance the socio-economic effects of the Chengdu-Chongqing Urban Agglomeration, concerted efforts from the government, tourism enterprises, and tourists are required to promote the coordinated development of holistic ecological tourism. Wang (2022) conducted an analysis of the spatial structure of tourist attractions in the Chengdu-Chongqing region based on Baidu Index and put forward suggestions on how to enhance the resilience of the tourism industry in the region and promote integrated regional tourism development.

#### 1.1.1.3 Total Quality Management in Tourism and Its Close Relationship with Sustainable Tourism Development

In 2020, China entered a comprehensively well-off society, characterized by a relatively solid living standard for the vast majority of the population, lying between meeting basic needs and achieving prosperity. The country achieved a good start in the "14th Five-Year Plan," transitioning its economy to a new stage of high-quality development, while social development entered a new normal. With the strengthening of national power, the living standards of the people significantly improved. Consequently, people increasingly prioritize spiritual well-being, and the imperative to build a sustainable development that is low-carbon, environmentally friendly, green, and harmonious between society and economy, as well as between humans and nature, has become urgent. There exists a close relationship between total quality management in tourism and sustainable development. Abbas et al. (2020) elaborated on the view that total quality management is an important guiding principle for sustainable development from two aspects. Firstly, they emphasized that the fundamental task of total quality management in the tourism industry is to meet the needs of tourists and provide high-quality tourism products and services. By managing the quality of tourism products and services, such as improving the standards of hotel accommodation and the rationality of tourism routes, it is possible to enhance customer satisfaction and experiences, which are crucial for sustainable development. Tourists' positive experiences with tourism products can enhance their loyalty to these products and lead them to recommend the destination or service to others, thereby promoting sustainable growth in tourism flows. Furthermore,

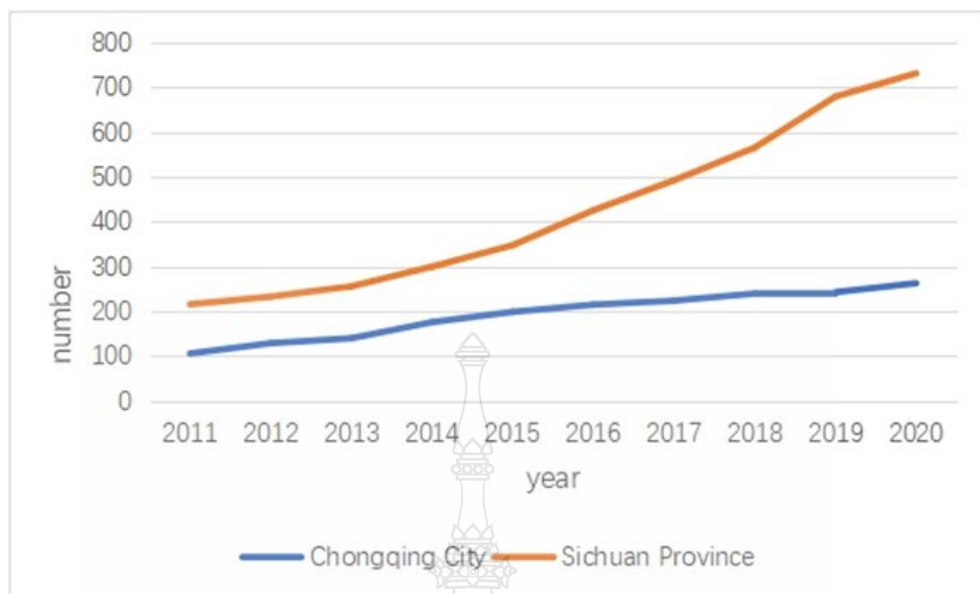
the premise of sustainable development in the tourism industry lies in the protection of the natural and ecological environment. total quality management in tourism can optimize the efficiency of resource utilization in tourism enterprises, reduce waste, and minimize the impact on the ecological environment (Zhang & Chen, 2023). For instance, measures such as energy management, water resource management, waste management, and carbon emission control can help mitigate negative environmental impacts and promote sustainable development. total quality management in tourism emphasizes the organization's social responsibility and social benefits. In the process of tourism development, it is essential to respect and protect local communities and cultural heritage. By cooperating with residents and communities, and preserving local cultures and traditions, local high-quality cultural resources can be effectively inherited and presented sustainably to the world. Effective quality control contributes to the sustainable development of the tourism industry, enabling it to have a positive impact on local communities and cultures, and promoting social harmony (Fehling et al., 2013).

The core of total quality management is continuous improvement. In the tourism industry, continuous innovation and improvement through total quality management are crucial to adapting to constantly changing market and tourist demands, which is essential for achieving sustainable development in tourism. Total quality management and sustainable development complement each other; total quality management can enhance the quality of tourism development, while sustainable development in tourism, in turn, enhances quality management methods. Therefore, we should use total quality management as a guide to scientifically and reasonably promote the sustainable development of the tourism industry (Noureddine E.R., 2023). Total quality management is an important means of controlling the entire process of products and services. In recent years, total quality management methods have been successfully applied in various industries. However, there is a lack of typical cases of the application of total quality management in the research on sustainable tourism development in the Chengdu-Chongqing Urban Agglomeration. Therefore, integrating total quality management into research on sustainable tourism development in the Chengdu-Chongqing region is of great practical significance for the sustainable development of the tourism industry in this area.

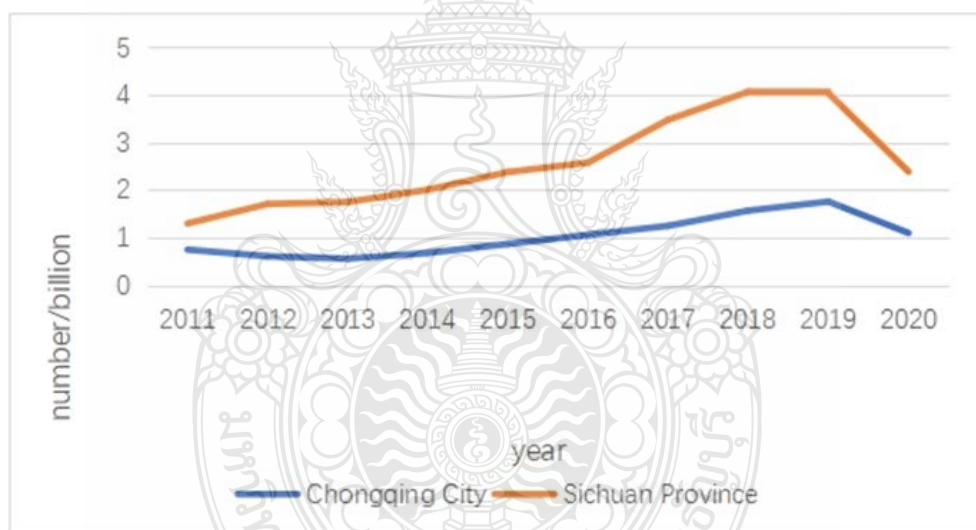
### 1.1.2 Presentation of Questions

The Chengdu-Chongqing urban agglomeration, known for its rich cultural heritage, scenic beauty, and rapid economic growth, is a prime area for tourism development. According to the data from the "China Tourism Statistical Yearbook," it is evident that from 2011 to 2020, over a decade, the total number of tourist attractions, visitor numbers, and revenue in both Sichuan Province and Chongqing Municipality has experienced rapid growth. Despite being significantly affected by COVID-19, the overall revenue trend has been upward. (Figure 1.4, Figure 1.5, Figure 1.6). Therefore, tourism in the Chengdu-Chongqing Urban Agglomeration has rapidly emerged as a prominent sector in China. Moreover, in the post-pandemic era, tourism has become one of the important ways for people to relax and entertain themselves. Strengthening tourism quality management is an essential task for achieving sustainable and high-quality development in the tourism industry. The Fourteenth Five-Year Plan Outline for National Economic and Social Development of the People's Republic of China has proposed that China has entered an era of high-quality development. The Outline clearly states that from 2020 to 2025, the tourism industry should highlight innovation in highlights and models, adhere to sustainability as a basic principle, cultivate new hot spots for mass tourism consumption, promote digitization in various scenarios such as tourism leisure and transportation, and accelerate the development of cultural and tourism services. Furthermore, as digital transformation penetrates various industries including tourism, big tourism data generated by the Internet can be used for the analysis of tourist attributes, behaviors, preferences, and other aspects, effectively promoting the intelligent development of tourist destinations and driving the transformation of tourism services, marketing, and management. After the comprehensive relaxation of the epidemic situation in China, during the New Year's Day and Spring Festival holidays in 2023, A-level scenic spots in Sichuan Province received over 5 million visitors; during the May Day holiday of the same year, China once again ushered in a "tourism boom" after the epidemic. Statistical data shows that both Chongqing and Chengdu are among the top ten popular tourist destinations during the national holidays. During the Dragon Boat Festival of the same year, the number of tourists in A-level scenic spots in Sichuan and Chongqing surged. As the tourism boom returns to the public eye, existing problems in the tourism

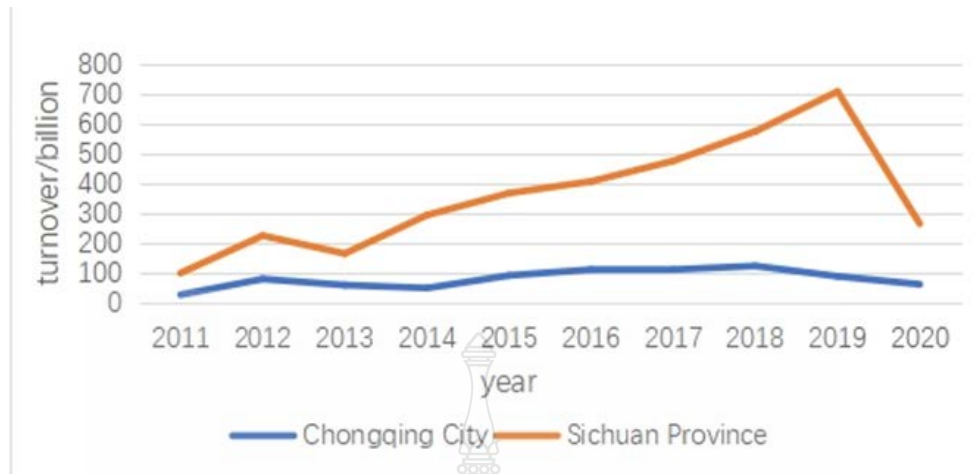
industry gradually emerge, such as repetitive development and construction, homogenization of scenic spots, and exacerbation of negative social effects. Therefore, how to achieve coordinated and high-quality development of tourism in Urban agglomerations? How to achieve sustainable and high-quality development of tourism in Urban agglomerations? These are all topics that tourism scholars need to face and deeply research. Total Quality Management is an advanced quality management concept and technical method developed based on Total Quality Management. Total Quality Management (TQM) offers a strategic approach to achieving sustainable tourism by improving service quality, operational efficiency, and stakeholder satisfaction. Sustainable tourism practices are crucial to maintaining its appeal and preserving its resources. However, the application of TQM in the tourism industry is not widespread, and cases of applying the Total Quality Management methodology to research on sustainable development of the tourism industry are even rarer. In addition, it is found in relevant literature that although qualitative research has its importance and value in tourism studies, the necessity of quantitative research methods should also be noted. Quantitative research can utilize mathematical models to conduct more objective trend analysis based on large sample data. Therefore, researchers can comprehensively use both qualitative and quantitative research methods to gain a more comprehensive and in-depth understanding of specific research questions and objectives. Building on previous research, this paper innovatively applies Total Quality Management (TQM) to the study of sustainable tourism development, systematically exploring the theoretical connotations and application scope of TQM. The paper constructs a scale for sustainable tourism development, establishes a Structural Equation Model (SEM) to analyze the relationships between dimensions, systematically elucidates the impact of TQM on sustainable development, and proposes policy recommendations for the sustainable development of tourism in the Chengdu-Chongqing Urban agglomeration.



**Figure 1.4** Statistical Chat of The Number of Tourist Attractions



**Figure 1.5** Statistical Chat of The Total Number of People Received in Tourist Attractions



Data source: China Tourism Statistical Yearbook, Sichuan Tourism Statistical Yearbook  
**Figure 1.6** Statistical Chart of The Total Revenue of Tourist Attractions

## 1.2 Purpose of the Research

The primary focus of this study is to uncover the impact of Total Quality Management (TQM) on sustainable tourism development. Within this research framework, the author endeavors to elucidate the application of TQM theory in the tourism industry. The aim is to explore how TQM, through the mediation of tourism benefits and perceived quality by tourists, influences sustainable tourism development. This analysis aims to generate valuable insights into sustainable tourism development in the Chengdu-Chongqing urban agglomeration. The general objective of this study was to determine the influence of selected Purposes and Objectives of the Study. The purposes of this study are as follows:

1. To analyze the causal relationship model of total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development in the Chengdu-Chongqing urban agglomeration.
2. To analyze the causal relationship model of total quality management on sustainable tourism development in Chengdu-Chongqing urban agglomeration mediated by tourism benefits.
3. To analyze the causal relationship model of total quality management on sustainable tourism development in Chengdu-Chongqing urban agglomeration mediated by perceived tourism quality.

## **1.3 Research Question and Hypothesis**

### **1.3.1 Research Question**

Research of the “Impact of Total Quality Management on Sustainable Tourism Development in the Chengdu-Chongqing Urban Agglomeration” is the study of the factors including total quality management, tourism benefits, and perceived tourism quality are aimed at becoming guiding models for the development of tourism in Chengdu-Chongqing urban agglomeration. Based on this, the present study will introduce the following research questions:

RQ 1. What is the relationship between total quality management, tourism benefits, perceived tourism quality and sustainable tourism development?

RQ 2. How does total quality management affect sustainable tourism development through tourism benefits?

RQ 3. How does total quality management affect sustainable tourism development through perceived tourism quality?

### **1.3.2 Hypothesis**

In addressing the aforementioned three issues and two mediating variables, and in alignment with the research objectives of this study, we propose the following 7 hypotheses:

Hypothesis 1: Total quality management has a positive effect on sustainable tourism development.

Hypothesis 2: Total quality management has a positive effect on tourism benefits.

Hypothesis 3: Tourism benefits have a positive effect on sustainable tourism development.

Hypothesis 4: Tourism benefits mediate the relationship between total quality management and sustainable tourism development.

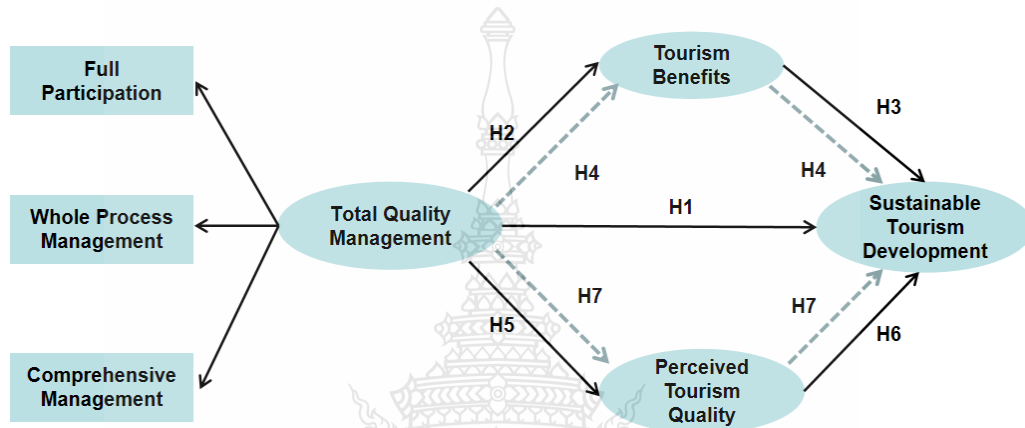
Hypothesis 5: Total quality management has a positive effect on perceived tourism quality.

Hypothesis 6: Perceived tourism quality has a positive effect on sustainable tourism development.

Hypothesis 7: Perceived tourism quality mediates the relationship between total quality management and sustainable tourism development.

## 1.4 Research Framework

TQM includes three dimensions: full participation (FP), whole process management (WPM), and comprehensive management (CM). The primary focus of this study is to investigate the impact of these three dimensions, along with the introduction of two mediating variables—tourism benefits (TB) and perceived tourism quality (PTQ)—on STD (Figure 1.7).



**Figure 1.7** Conceptual Framework of the Research Hypothesis

## 1.5 Definition of Terms

### 1.5.1 Tourism Development in the Chengdu-Chongqing Urban Agglomeration

#### Agglomeration

The tourism industry, internationally referred to as the tourism sector, is a comprehensive industry that relies on tourism resources and facilities to engage in soliciting and receiving tourists, providing them with transportation, sightseeing, accommodation, dining, shopping, entertainment, and other services. The tourism industry in the Chengdu-Chongqing Urban Agglomeration refers to the tourism sector within the Chengdu-Chongqing Urban Agglomeration area. It encompasses a wide range of activities. In this study, the tourism industry in the Chengdu-Chongqing Urban Agglomeration specifically refers to the 5A-level scenic spots within this area. This paper focuses on researching the sustainable development of 5A-level scenic spots in the Chengdu-Chongqing Urban Agglomeration.

### **1.5.2 Total Quality Management (TQM)**

Total Quality Management (TQM) is a management philosophy and methodology aimed at continuously improving the quality of various aspects within an organization through the involvement of all employees, continuous improvement, and customer orientation, to meet customer needs, enhance customer satisfaction, and improve competitiveness and sustainable development. In this paper, Total Quality Management for tourist attractions is defined as a management approach that focuses on customers, centers around quality, is based on the participation of all employees, and aims for continuous improvement throughout the process, ultimately achieving sustainable development of the tourism industry through customer satisfaction. TQM in this article mainly includes three factors: full participation, whole process management, and comprehensive management.

### **1.5.3 Tourism Benefits (TB)**

Tourism Benefit-TB refers to the positive impacts and benefits that tourism activities bring to the destination's society and economy. These benefits can manifest at different levels and dimensions, including economic benefits, social benefits, cultural benefits, and environmental benefits. Tourism benefits can promote regional economic growth, create employment opportunities, improve community infrastructure, preserve and inherit cultural heritage, and enhance residents' quality of life, thereby achieving sustainable tourism development.

### **1.5.4 Perceived Tourism Quality (PTQ)**

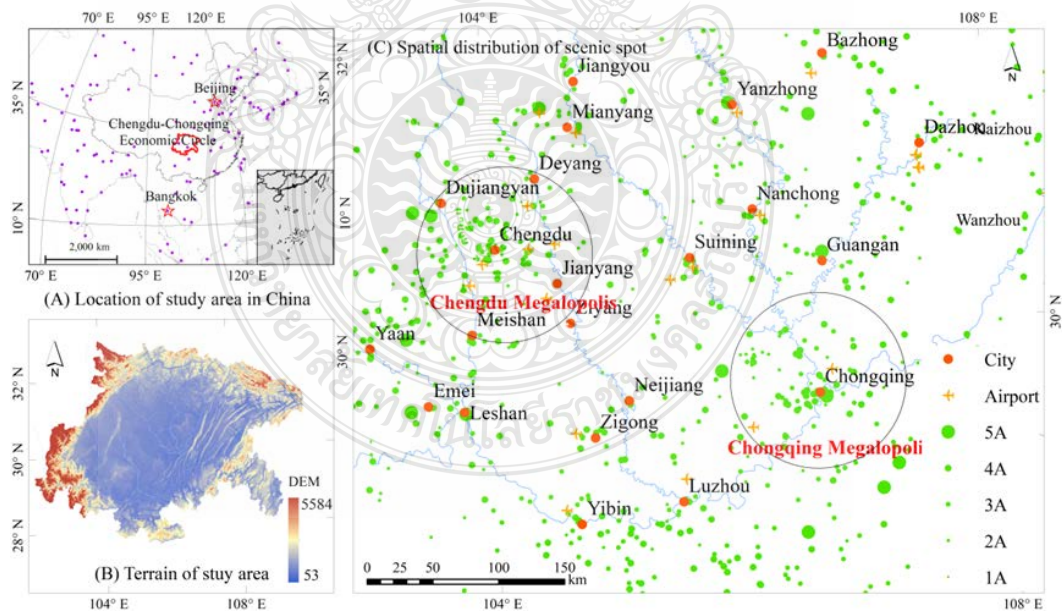
The perceived quality of tourists refers to the comprehensive evaluation of various aspects such as the natural environment, culture, and services at a destination, directly impacting their satisfaction and willingness to recommend. For example, tourists assess whether a place's natural scenery, historical culture, architectural style, etc., are attractive; their satisfaction with local services, transportation, accommodation, dining, etc., affects their overall perception; and whether they feel their time and money spent in this place are worthwhile. The overall perception of a place can be positive or negative, depending on tourists' individual experiences and expectations.

### 1.5.5 Sustainable Tourism Development (STD)

Sustainable development refers to meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. In essence, sustainable development aims for a balance and coordination between the economic, social, and environmental aspects to ensure the sustainability of both humanity and the planet. It ensures that both current and future generations have access to sufficient resources and opportunities, enabling them to enjoy a good quality of life.

### 1.6 Scope of the Study

The Chengdu-Chongqing Urban Agglomeration, centered around Chongqing and Chengdu, is an important platform for the large-scale development of western China. It serves as a strategic support for the Yangtze River Economic Belt and is also a key demonstration area for the country's promotion of new Urbanization. With a total area of 185,000 square kilometers (Wang, 2023), the Chengdu-Chongqing Urban Agglomeration boasts a total of 1,083 scenic spots rated at A-level or above, including 27 5A-level scenic spots (Figure 1.8).



**Figure 1.8** Location of The Study Area and The Spatial Distribution of The Scenic Spot

## **1.7 Organization of the Study**

This article mainly conducts an empirical study on the influencing factors of sustainable tourism development in the Chengdu-Chongqing Urban Agglomeration using structural equation modeling. Tourist data was obtained through questionnaires, allowing for the scientific quantification of variables related to sustainable tourism development to propose targeted applications and strategies for total quality management in tourism sustainable development.

The research content of this article is divided into Chapter One: Introduction. This chapter primarily presents the background and the formulation of the research questions. It specifically includes the background of the study, research objectives, theoretical and practical significance of the study, the hypothesis framework, conceptualization, as well as the scope and academic contributions of the research.

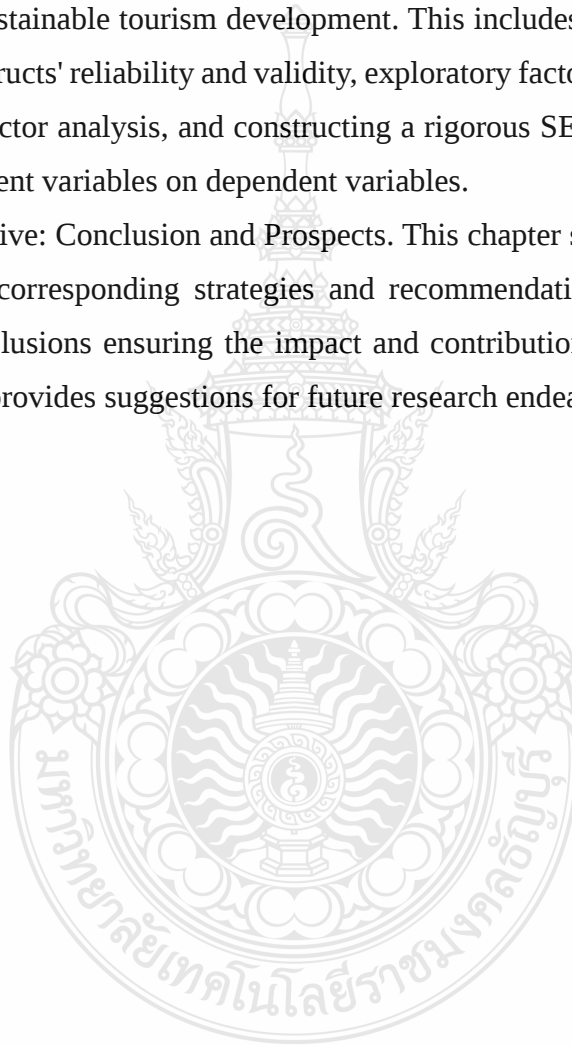
Chapter Two: Literature Review. This chapter lays the foundation for the study from both theoretical and empirical perspectives. It systematically summarizes the concepts, methods, and contents of Total Quality Management (TQM), delineates the concept and goals of sustainable tourism development, reviews the progress in research on sustainable tourism development, and employs quantitative analysis to explore the application of TQM in the tourism industry using the largest and most comprehensive databases in China, CNKI, and WOS. Furthermore, it examines the relevant theoretical foundations supporting the articles. Finally, it analyzes the current status and future development directions of tourism in the Chengdu-Chongqing Urban Agglomeration.

Chapter Three: Research Methodology. Based on the research questions, hypotheses, and literature review from Chapters One and Two, this chapter introduces the methods used in the research. It includes the construction of models for Total Quality Management and sustainable tourism development, scale development, questionnaire design, and pre-survey. This encompasses details on how the questionnaire was designed, interview design, and other research design aspects. Pre-survey activities are conducted to preliminarily test the rationality and feasibility of the research design based on the pre-survey data, ensuring the smooth conduct of subsequent formal surveys. This chapter also outlines the overall and sample sampling plans, determination of variables, survey methods, data analysis plans, and quantitative measurement. Particular attention is paid

to testing the validity and reliability of the research structure. Additionally, qualitative research will be conducted to validate the results of the quantitative research.

Chapter Four: Empirical Analysis. This chapter constitutes the empirical section of the research. It begins by introducing the methods used in empirical study and then proceeds to outline the contents of the empirical research. The primary focus is on employing structural equation modeling to analyze the impact of Total Quality Management on sustainable tourism development. This includes SPSS analysis, such as analyzing the constructs' reliability and validity, exploratory factor analysis, using AMOS for confirmatory factor analysis, and constructing a rigorous SEM model to analyze the effects of independent variables on dependent variables.

Chapter Five: Conclusion and Prospects. This chapter summarizes the research findings, presents corresponding strategies and recommendations based on empirical results, draws conclusions ensuring the impact and contribution to sustainable tourism development, and provides suggestions for future research endeavors.



## **CHAPTER 2**

### **REVIEW OF THE LITERATURE**

#### **Introduction**

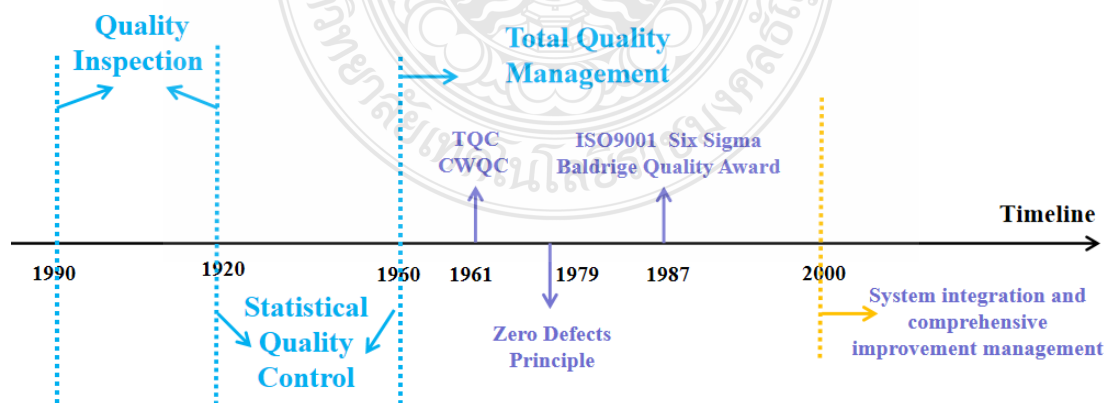
This chapter reviews literature relevant to the present study, focusing on Total Quality Management (TQM), sustainable tourism development, the tourism industry in the Chengdu-Chongqing Urban Agglomeration, and related theories. It includes the concepts, methods, and content of TQM, the concept and goals of sustainable tourism development, and the current state of the tourism industry in the Chengdu-Chongqing Urban Agglomeration. Using quantitative analysis, keyword searches were conducted in both the CNKI and WOS databases to explore the application and relationships of TQM in the tourism industry. Finally, theoretical support for constructing the hypothesis model is introduced.

#### **2.1 TQM**

##### **2.1.1 Concept of TQM**

Total Quality Management (TQM) evolved from quality management and comprehensive quality control, or it can be said that TQM is an advanced quality management method developed based on traditional quality management (Yang & Qiao, 2013). The development of quality management consists of three stages (Figure 2.1). Feigenbaum first proposed the concept of Total Quality Control, abbreviated as TQC. By the late 1980s, Total Quality Control gradually evolved into Total Quality Management, abbreviated as TQM. Research on TQM has evolved over time, manifesting in different forms of research, with an increasing number of international scholars beginning to study issues beyond the concept of TQM. Dale et al. (2016) examined different interpretations of the term "quality" and explored why quality has become increasingly important over the past few decades. From inspection, quality control, and quality assurance to Total Quality Management, they described the evolution of quality management. Kiran (2017) detailed new concepts and practices in quality management, suggesting that these new concepts and practices have been applied in industries worldwide and have changed the global economy. Alzoubi et al. (2019) believe that Total Quality Management is a quality-

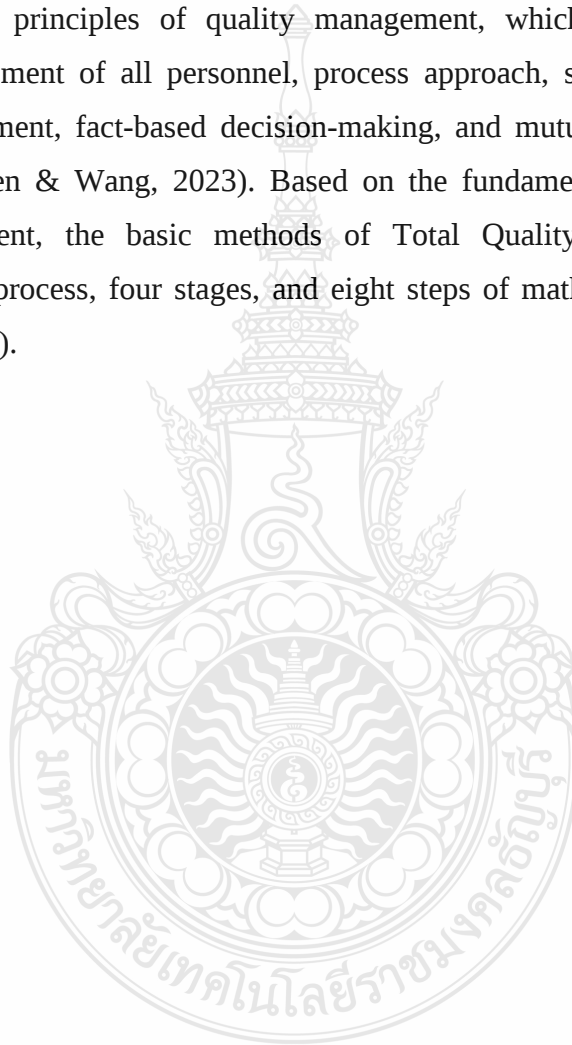
centered, all-inclusive, comprehensive, preventive, and scientific management method that aims not only at product quality or service quality but also at the overall quality of people, events, things, and the environment. Its purpose is to achieve long-term success by satisfying patients and benefiting all members of the organization and society. It encourages employees and managers to fulfill their responsibilities, with employees striving not to make mistakes and managers actively optimizing processes. Xu et al. (2024) view Total Quality Management as an organizational system that centers on quality, involves all members and aims to achieve long-term success by satisfying users and benefiting organization members. Chen (2020) proposed the concept of "Three Holes and One Diversity," which emphasizes the comprehensiveness of content and methods, the comprehensiveness of process control, the involvement of all employees in quality management, and accountability for product quality. In summary, the three main characteristics of TQM include comprehensive quality management in a specific field, meeting the requirements of whole-process quality management, all-employee quality management, comprehensive quality management, and diverse quality management methods. This paper takes the definition of Total Quality Management as its core, namely: an organization centered on quality, based on the participation of all employees, and aiming for long-term success through customer satisfaction and the benefit of all organization members. This definition clearly indicates the guiding ideology, implementation approach, and objectives of Total Quality Management, reflecting the latest developments in the concept of Total Quality Management.



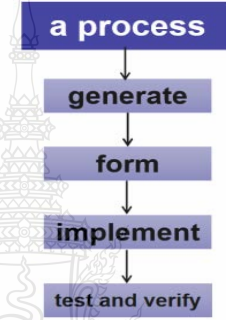
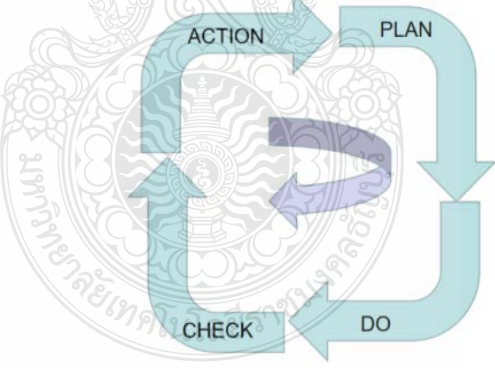
**Figure 2.1** Three Core Stages of Total Quality Management Development

### 2.1.2 Methods of TQM

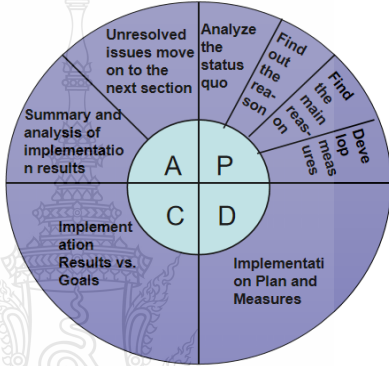
Total Quality Management integrates various management methods across multiple disciplines and fields, including management, mathematics, statistics, and information technology, among others. Total quality encompasses service quality, work quality, engineering quality, and more. The latest national standard GB/T-19000-2016 "Quality Management Systems - Fundamentals and Vocabulary" explicitly mentions eight fundamental principles of quality management, which are: customer focus, leadership, involvement of all personnel, process approach, systematic management, continual improvement, fact-based decision-making, and mutually beneficial supplier relationships (Jessen & Wang, 2023). Based on the fundamental principles of Total Quality Management, the basic methods of Total Quality Management can be summarized as: a process, four stages, and eight steps of mathematical and statistical methods (Table 2.1).



**Table 2.1** The Connection Between Total Quality Management Methods and Principles

| Basic Methods of Total Quality Management | Meaning                                                                                                                            | Graphic Meaning                                                                     | Principles of Total Quality Management                                                                                                                                                                                      |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A process                                 | Each organization's production and operation activities have a process of generation, formation, implementation, and verification. |  | Customer focus, leadership role, full staff participation, process approach, systematic management approach, continuous improvement, fact-based decision-making method, and mutually beneficial relationship with suppliers |
| Four stages                               | PDCA:<br>Plan<br>Do<br>Check<br>Action                                                                                             |  | Process method                                                                                                                                                                                                              |

**Table 2.1** The Connection Between Total Quality Management Methods and Principles (Cont.)

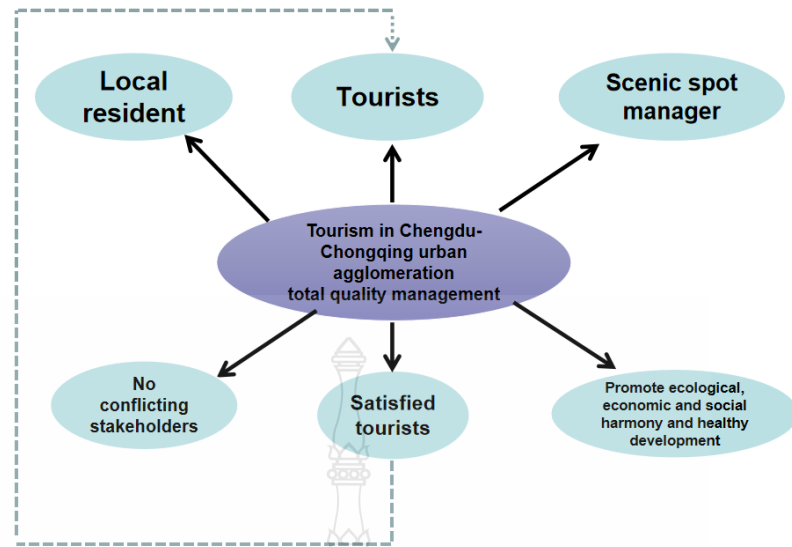
| Basic Methods of Total Quality Management | Meaning                                                                                                                                                                                                                                                                                                                                                    | Graphic Meaning                                                                     | Principles of Total Quality Management |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------|
| Eight steps                               | <p>The four stages of PDCA can be specifically divided into eight implementation steps, namely: analyze the status quo, find out the reason, find the main reason, develop measures, implementation plan and measures, implementation Results vs. Goals, summary and analysis of implementation results, unresolved issues move on to the next section</p> |  | Process method                         |

### **2.1.3 Content of Total Quality Management**

According to the concept of Total Quality Management, it can be divided into three core components: quality management involving full participation (FP), whole-process management (WPM), and comprehensive management (CM).

#### **2.1.3.1 Full Participation**

Full participation in quality management is a management concept that emphasizes the active involvement and contributions of every member within an organization to the quality management process. At the core of this concept lies the belief that quality management is not solely the responsibility of the quality department or professionals but rather the collective effort of all members. Establishing an integrated, holistic management process involving rural communities, tourists, and tourism enterprises prioritizes overarching goals such as tourist satisfaction and the achievement of mutually beneficial community outcomes, promoting the harmonious, healthy, and sustainable development of rural tourism destinations (Shen & Si Hui, 2018). Iqbal argues that community participation is a prerequisite for the sustainable development of tourism destinations (Iqbal et al., 2023), different tourism stakeholders and local residents have a significant impact on the sustainable development of tourism (Gautam et al., 2024), emphasizing stakeholder participation in tourism management to optimize the tourism experience (Roxas et al., 2020), and considering local governments, tourists, residents, and employees as stakeholders in the sustainable development of tourism (Liu et al., 2019). This paper defines "full participation" in the tourism industry of the Chengdu-Chongqing Urban Agglomeration as the collective involvement of stakeholders such as tourists, scenic area management personnel, local residents, and other relevant parties, to protect and promote the interests of all three parties through actions such as consciousness cultivation, responsibility allocation, and cooperative efforts. This approach facilitates the sustainable development of tourist destinations (Figure 2.2).



**Figure 2.2** Total Quality Management Process Diagram of Tourism in Chengdu-Chongqing Urban Agglomeration

#### 2.1.3.2 Whole Process Management

Whole process management involves comprehensive attention and control over the entire business or production process to achieve more efficient and higher-quality operations. This approach emphasizes a holistic perspective from start to finish, stressing coordination and optimization across the entire value chain rather than focusing solely on individual stages. In the study by Cheon & Chung (2019), the whole process of quality management in the tourism industry is divided into market research, product design, and tourism service management. Based on the concept of whole process management, Moore et al. (2005) revealed that the development of tourist areas conforms to the theory of the product life cycle. On another note, whole process management focuses more on managing the entire life cycle. Based on the theory of project life cycles, Liu (2015) explored the management of the Qingdao Tourism Experience Network project, starting from project initiation, requirement analysis, system analysis, website design, module function analysis, overall layout planning, and project cost control, proposing the construction of a comprehensive tourism destination network marketing system integrating tourism promotion, tourist guide services, tourism product reservations, tourism service guarantees, and tourist interactive experiences. Cai (2020) applied the

theory of the product life cycle to project management in overall tourism planning, examining the characteristics of tourism planning projects in different stages such as project initiation, planning, execution, and closure, and refining the project life cycle into four major phases according to the actual situation of tourism planning projects. Zhang et al. (2022) proposed a theoretical model of the tourism crisis management life cycle wheel composed of three stages and six steps based on a life cycle perspective. Combining the aforementioned viewpoints, this paper divides the whole process management of the tourism industry into stages such as planning management, training management, operation management, and supervision management to achieve full life cycle management.

#### 2.1.3.3 Comprehensive Management

In the study by Cheng & Liu (2017), comprehensive quality management is divided into quality management of the six elements of tourism and quality management of the assurance system. Liu (2023) proposed a comprehensive quality management system from the perspective of holistic tourism, comprising the taste and characteristics of rural tourism resources, the quality of rural tourism services, and the quality of rural tourism environments, to promote the high-quality development of rural tourism. Liu (2022) conducted empirical research and proposed the use of comprehensive quality management to enhance the quality of the tourism city service system. Combining the research content of this paper, comprehensive quality management of the tourism industry in the Chengdu-Chongqing Urban agglomeration is defined as targeting various aspects related to the overall quality of the tourism industry in the Chengdu-Chongqing Urban agglomeration. These aspects include the six elements of tourism, improving service quality, rational utilization of resources, and the quality of tourism ecological environments, to establish a quality management assurance system. Synthesizing the above viewpoints, a framework for comprehensive participation in the tourism industry in the Chengdu-Chongqing Urban agglomeration is formed (Figure 2.3).



**Figure 2.3** All-round Quality Management Objectives of Tourism in Chengdu-Chongqing Urban Agglomeration

## 2.2 Theory of Sustainable Tourism Development

### 2.2.1 Concept of Sustainable Tourism Development

Sustainable tourism is one of the important measures and contents for achieving the United Nations' Sustainable Development Goals in the tourism field, and it is crucial to accurately understand its concept and implications. Sustainable tourism development needs to meet the current needs of tourist destinations and tourists while also satisfying the future needs of tourist destinations and tourists (WTO, 1998). The United Nations (2001) defines sustainable tourism development as tourism developed and maintained in a specific area in a manner and scale that remains viable in the long term without causing environmental degradation or change that could hinder the successful development of other activities and processes. Experts from different fields have their interpretations of sustainable tourism development. Edgell (2019) suggests that the main concept of sustainable tourism is a new form of tourism promoted by authorities, environmental and social institutions, and international organizations. Zhou & Zhang (2023), in their article, systematically compare and reflect on the conceptual implications of sustainable tourism in both Western and Chinese contexts based on relevant literature and important international organizational documents. The study suggests that sustainable tourism was initially proposed as a form of activity to eliminate the negative impacts of tourism on the environment. With the advancement of sustainable development thinking, this activity

gradually evolved into a concept and model of tourism development. The West emphasizes the sustainable development of all stakeholders in tourism, especially vulnerable groups, while China emphasizes the sustainable development and spatially balanced development of core stakeholders in tourism. Xiang et al., (2020) point out that sustainable tourism development is a state of development where various stakeholders such as governments, enterprises, communities, and scenic spots achieve coordinated development, and the expected quality of life, environmental quality, and benefits for governments and enterprises can be sustained. Some scholars also consider sustainable tourism development as a way of conducting tourism activities. Tuan et al. (2019) and Chakraborty (2021) argue that most of the negative impacts or adverse reactions caused by tourism activities are due to mass tourism, and tourism guided by sustainable development theory is a small-scale solution. Combining with the actual development of tourism in China, scholars propose that sustainable tourism development is premised on tourism activities not destroying the resource environment, aiming for long-term development, requiring integration of tourism with the natural, cultural, and human living environment, and emphasizing the balance between natural, cultural, and human living environments.

### **2.2.2 Goals of Sustainable Tourism Development**

The tourism industry is considered one of the means to achieve the Sustainable Development Goals (SDGs) by 2030. Sustainable tourism requires the integration of tourism with the natural, cultural, and human living environment, aiming for the organic unity of economic, social, and ecological benefits of tourism. Spenceley et al. (2019) elucidate the response of the academic community in the tourism field to the 2030 SDGs, revealing the developmental trajectory and academic focal points, thus identifying potential knowledge gaps and inspiring future research directions. Zhou (2022) divides sustainable tourism development into five objectives: strengthening ecological awareness, promoting fair tourism development, improving the quality of life of residents in tourist destinations, providing high-quality tourism experiences to tourists, and maintaining environmental quality. In the context of this study, Sustainable Tourism Development (STD) is embodied in five objectives: firstly, strengthening ecological awareness. Du (2021) suggests that governments should encourage and support the

promotion of environmentally friendly green tourism development models through policy, as well as raising environmental awareness among tourism practitioners, tourists, and residents. Xu & Wu (2020) propose that Hainan Province should leverage its unique ecological tourism resources and regional advantages, disaggregate and layout ecological tourism into multiple elements; secondly, promote fair tourism development. Sustainable tourism development must balance the relationship between tourists, the environment, and local communities, requiring long-term planning and resource protection. It also necessitates broadening the scope of tourism management to accommodate stakeholders' needs (Um et al., 2021; Lee et al., 2020; Cheung et al., 2019). Three approaches—building a sound collaboration system, exploring community cultural connotations, and constructing harmonious neighborly relations—are proposed to address issues of fair tourism development: thirdly, improving the quality of life of residents. Eslami (2019) indicates that overall life satisfaction affects support for sustainable tourism development, with material and non-material aspects being two important determinants of overall life quality. Wu (2019) suggests that the "rural tourism strategy" accelerates Urban-rural integration, reduces the gap between rural and Urban areas, and improves villagers' quality of life. Du & Wang (2023) briefly describe the relationship between rural revitalization and rural tourism, the significance of sustainable rural tourism development, analyze the challenges faced by rural tourism development in the context of rural revitalization, and finally propose a realistic path for sustainable rural tourism development; fourthly, providing high-quality tourism experiences. The tourism experience process is a continuous system composed of a series of unique and special contexts, forming an alternative behavioral environment different from people's daily lives. Therefore, high-quality tourism experiences can provide tourists with a good experience. Scheyvens & Laeis (2022) studied experienced tourists to explore their expectations of immersive tourism experiences and whether these expectations contribute to sustainable travel patterns. The results indicate that experienced tourists are at the core of transitioning to a more sustainable tourism future and need to be better understood. López-Sanz et al. (2021) propose that tourism is an activity that directly and indirectly promotes the development of rural areas, and this development must be sustainable. In their research, they verify the impact of destination image components on the formation

of destination images and how destination image affects tourist satisfaction. Chamorro et al. (2023) assess the differences in attitudes and behaviors toward sustainable tourism between residents and tourists. In the case of high usage of accommodation-sharing platforms, they find that SUS-TAS can be used to measure the attitudes of residents and tourists towards sustainable tourism; fifthly, promoting coordinated development between the environment and tourism. Sang (2017) suggests that economic development is the foundation of ecologically sustainable tourism, while ecological tourism contributes to the sustainable development of the local economy. Purwanda & Achmad (2022) argue that there is a close connection between the tourism environment, sustainable tourism development, and social responsibility activities. Zhu et al. (2021) propose that environmental factors are important influencing factors for destination competitiveness and are positively correlated with the economic performance of developed destinations. Based on resource theory expanding from the enterprise level to the destination level, they theoretically contribute to sustainable tourism development.

### **2.2.3 Research Progress on Sustainable Tourism Development**

The concept of "sustainable tourism" can be traced back to 1990 (Permana et al., 2020). During the "International Conference on Sustainable Development" held in Vancouver, the Tourism Action Committee explicitly introduced the concept of "sustainable tourism" in the draft "Tourism Sustainable Development Action Strategy." In 1995, agenda 21 for the Travel and Tourism Industry jointly released by the United Nations World Tourism Organization (UNWTO) and the International Hotel & Restaurant Association (IH&RA) aimed to guide the development of the tourism industry to ensure its sustainability economically, socially, and environmentally (Camilleri, 2014). In the international literature consulted, scholars have used various English expressions for "tourism sustainable development," such as "Sustainable Tourism Development" and "Tourism Sustainability." The World Tourism Organization's official website employs "Sustainable Development of Tourism." Additionally, scholars have provided diverse perspectives on sustainability and sustainable development. For example, Polukhina et al. (2021) emphasized the increasing importance of the sustainable development concept in addressing local tourism system development issues. Facing the impact of the COVID-19 pandemic worldwide has led to a reevaluation of sustainable development principles,

particularly concerning the sustainability of rural tourism. In general, the connotation of sustainable tourism is consistent. The theoretical research on sustainable tourism involves four aspects (Table 2.2).

**Table 2.2** Theoretical Research on Sustainable Tourism

| <b>Theoretical<br/>Research on<br/>Sustainable<br/>Tourism Abroad</b> | <b>Research contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable<br>development model                                      | <p>Bolis et al. (2017) conducted a systematic literature review of 151 academic literature discussing the relationship between rationality and sustainable development. The article concludes: It proposes that more sustainable development decisions are needed to cultivate values related to sustainable development; to hold decision-makers accountable and to improve cooperation and collective action in discussions and decision-making processes, especially those affecting social areas and the environment decision-making; promote systemic changes in the current development model.</p> <p>Yang &amp; Wang (2020) developed a minimum description model of a social ecosystem based on tourism to study the sustainable development of ecological tourism.</p>                               |
| Sustainable<br>development<br>evaluation indicators                   | <p>Huang et al. (2023) developed an overall evaluation system for analyzing the sustainable development of rural tourism, which contains an indicator framework for the sustainable development of rural tourism and an improved model built using the improved DANP-mV model. Strategy analysis mechanism. Empirical cases are used to demonstrate the root causes of sustainability issues related to rural tourism and to propose strategies for improvement.</p> <p>Rasulov et al. (2022) divided destinations into two systems: the human system and the ecosystem, with a total of 8 subsystems. Relevant data and information were collected based on indicators, and the data was analyzed and processed to form a preliminary framework for evaluating regional tourism sustainable development.</p> |

**Table 2.2** Theoretical Research on Sustainable Tourism (Cont.)

| <b>Theoretical<br/>Research on<br/>Sustainable<br/>Tourism Abroad</b> | <b>Research contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Research on Sustainable Tourism in Different Disciplines              | <p>Nunkoo et al. (2023) explored research published in the Journal of Sustainable Tourism using references cited by journal articles across disciplines. Research suggests that the SDGs should be conceptualized as a network of goals to facilitate the integration of sustainable tourism outcomes with broader development goals.</p> <p>Salerno et al. (2013) conducted a comprehensive study on the sustainable development of tourism in nature reserves using multiple capacities.</p> |

## **2.3 The Relationship between STD and TQM**

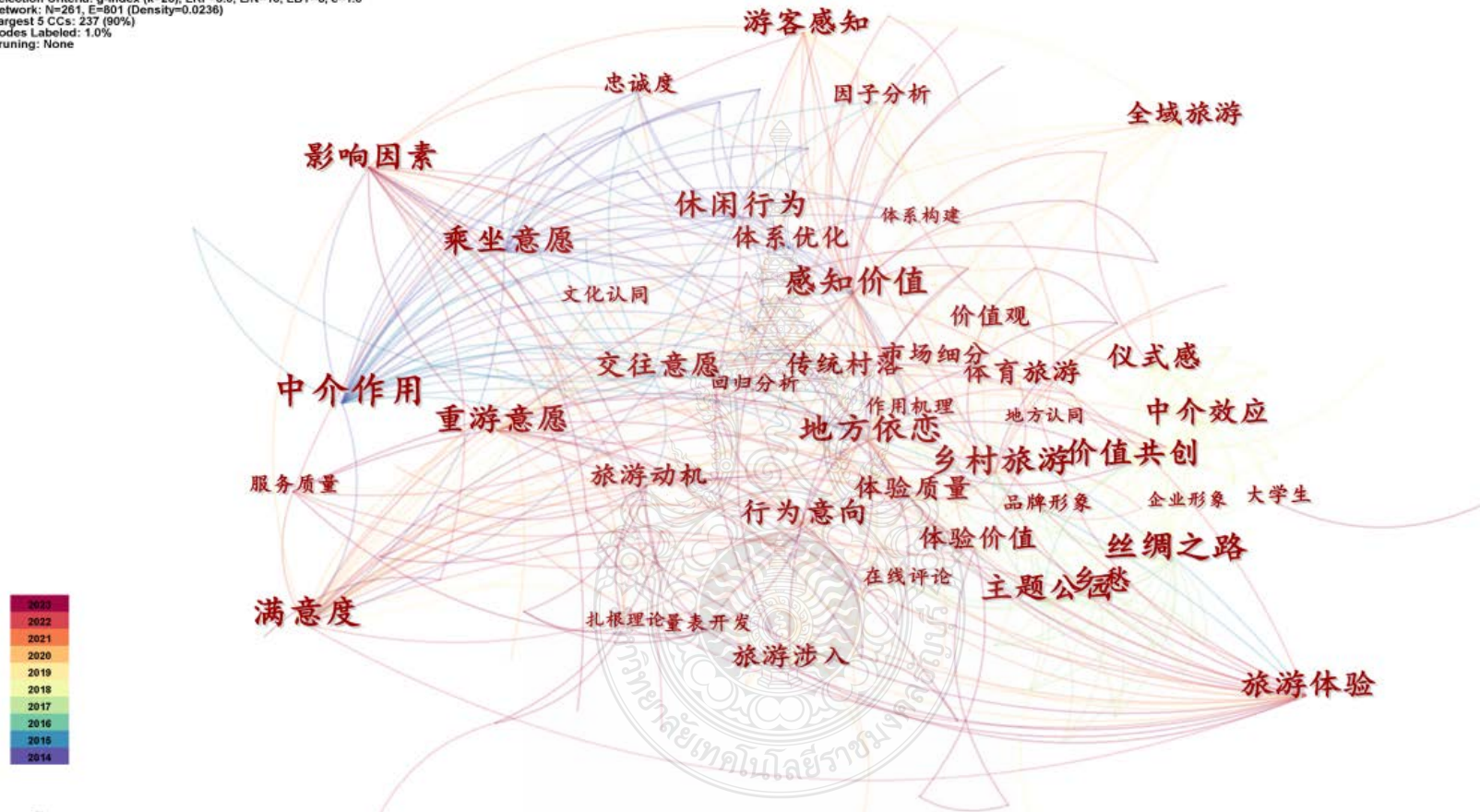
Through literature bibliometric analysis of the largest Chinese database CNKI (Figure 2.4) and the WOS database (Figure 2.5), we conducted a comprehensive review and analysis of key findings related to the connotation of sustainable tourism development (STD) and the impact mechanism of Total Quality Management (TQM) on STD. We focused on analyzing and summarizing the high-frequency occurrences of keywords.

### **2.3.1 CNKI Database**

Using the keywords "Total Quality Management" and "Sustainable Tourism" for retrieval in the CNKI database, a total of 63 documents were found, including 56 academic papers, 6 dissertations, and 1 conference paper. From the feedback of the retrieved articles, it can be observed that Total Quality Management has not yet been widely applied in sustainable tourism development. Although Total Quality Management differs from traditional management methods, it innovates and inherits based on traditional quality management. Therefore, the keywords were adjusted to "Quality Management" and "Sustainable Tourism." A total of 1,297 relevant documents were retrieved from CNKI, including 631 academic papers, 35 doctoral dissertations, 578

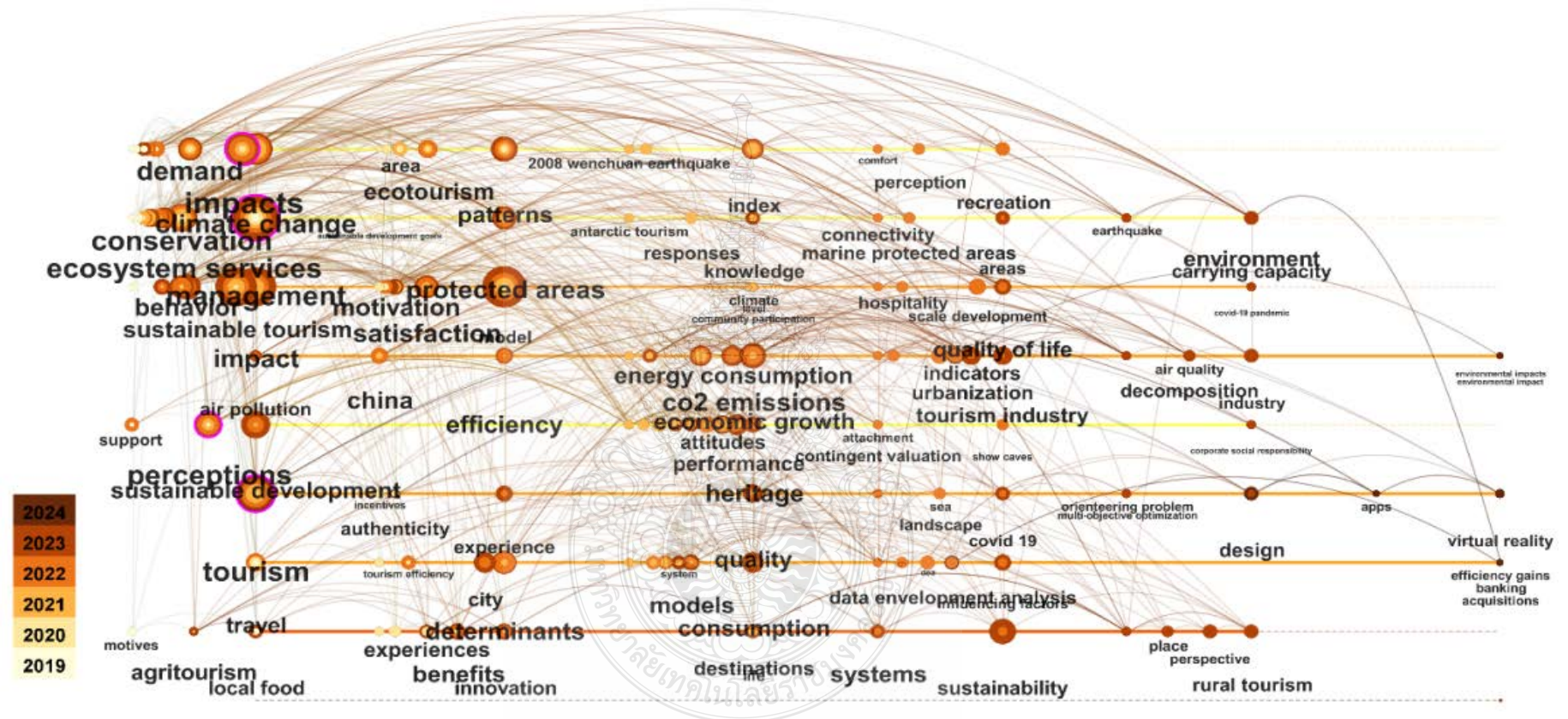
master's dissertations, 13 conference papers, 35 newspaper articles, and 5 books. As shown in Figure 2-5, the top 10 most researched topics among nearly 1,300 articles are service quality, travel agencies, quality assurance, tourist attractions, tourism service quality, hotel service quality, service quality management, service quality improvement, Total Quality Management, and tourist satisfaction. The ranking of themes related to "Total Quality Management" and "Tourism" is shown in Figure 2-5. In Zhang's (2017) study, it was mentioned that the way to sustainable development is quality management. Sustainable development is a global issue involving individuals, organizations, and nations, and its driving forces can be moral, legal, political, or commercial. There is mutual coordination and promotion between Total Quality Management and sustainable development. The United Nations proposed 17 Sustainable Development Goals in the "2030 Agenda for Sustainable Development" adopted in 2015, among which the 15th goal, "Protect, restore and promote sustainable use of terrestrial ecosystems," involves tourism resources (Xu & Yu, 2023). At the 2020 International Quality Innovation Forum and the Sino-foreign Entrepreneurs Forum, Bengalica De Silva, President of the Asia-Pacific Quality Organization, mentioned in his speech that human life is in an uncertain world, especially with the comprehensive impact brought by the global pandemic of COVID-19. Therefore, quality should be given top priority, and the sustainable development of any enterprise should be valued (Bengalica, 2020). The sustainable development of the tourism industry also relies on quality management. Under the impact of the three-year pandemic, social mobility has been greatly reduced, and the tourism industry has been basically at a standstill. With the adjustment of China's epidemic prevention policies and fine-grained management, the tourism industry has gradually recovered since the beginning of 2023, but there is still a significant gap in market vitality compared to before the pandemic. The focus of tourism enterprises should be on how to guide their development with quality, achieve core competitiveness enhancement in sustainable development practice through deployment or application of Total Quality Management, and ensure stable and progressive development in the process of high-quality development of the tourism industry, avoiding drastic fluctuations and making development more resilient and more focused on sustainability (Zhang, 2023)

C:\Users\wongxue\Desktop\data  
 Timespan: 2014-2023 (Slice Length=1)  
 Selection Criteria: g-index (k=25), LRF=3.0, L/N=10, LBY=5, e=1.0  
 Network: N=261, E=601 (Density=0.0236)  
 Largest 5 CCs: 237 (90%)  
 Nodes Labeled: 1.0%  
 Pruning: None



**Figure 2.4** Bibliometric Analysis of Literature on Sustainable Tourism Development and Related Field Scale Development in the Past 5 Years (CNKI)

### 2.3.2 WOS Database



**Figure 2.5** Bibliometric Analysis of Literature on Sustainable Tourism Development and Related Field Scale Development in the Past 5 Years (Web of Science)

We searched for literature using keywords such as 'quality management,' 'total quality management,' and 'sustainable tourism' on Google Scholar to explore the independent and dependent variables as well as the statistical methods used in the study and to summarize the application of total quality management in the tourism industry (Table 2.3). This serves as a reference basis for the author's writing.



**Table 2.3** Using Statistical Methods To Sort Out the Application of Total Quality Management in the Tourism Industry

| Researchers           | Data collection methods            | Independent Variables                                                                                                                                                                 | Dependent Variables                           | Analysis approach                                 |
|-----------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------|
| Zhu (2020)            | Questionnaire & In-depth Interview | Expected difference<br>Perceived quality<br>Perceived value<br>Tourism image                                                                                                          | Customer Satisfaction in the Tourism Industry | Qualitative Analysis, Quantitative Analysis & IPA |
| Alsrabi (2013)        | Survey                             | Whole process quality management<br>Continuous quality improvement for all processes<br>Leadership level involvement of people<br>System approach to management<br>Focus on customers | Tourism Companies                             | Qualitative Analysis, Quantitative Analysis       |
| Zurina et al., (2017) | Survey                             | Environmental attitude<br>Travel Motivation<br>Destination image<br>WOM (world of mouths)<br>Perceived service quality<br>Tourism knowledge                                           | Sustainable Development of Tourism            | Qualitative Analysis, Quantitative Analysis       |

**Table 2.3** Using Statistical Methods To Sort Out the Application of Total Quality Management in the Tourism Industry (Cont.)

| Researchers                 | Data collection methods | Independent Variables                                                                                                               | Dependent Variables | Analysis approach                              |
|-----------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------|
| AL-Hazmi & Alkhateeb (2020) | Survey                  | Administrative<br>Organizational<br>Leadership<br>Competitive<br>Culture & Social                                                   | Tourism Marketing   | Qualitative Analysis,<br>Quantitative Analysis |
| Zhang (2022)                | Access information      | Tourism product upgrade<br>Build a tourism support system<br>Keep improving<br>Innovate a tourism management<br>guarantee mechanism | Tourism             | Qualitative analysis                           |
| Ding (2014)                 | Access information      | Focus on tourists<br>Whole process quality<br>management<br>Full participation<br>Keep improving                                    | Countryside tour    | Qualitative analysis                           |
| Qazi & Gani (2018)          | Survey                  | Whole process tourism quality<br>management<br>All-round tourism quality<br>management<br>All-staff tourism quality<br>management   | Tourism industry    | Qualitative Analysis,<br>Quantitative Analysis |

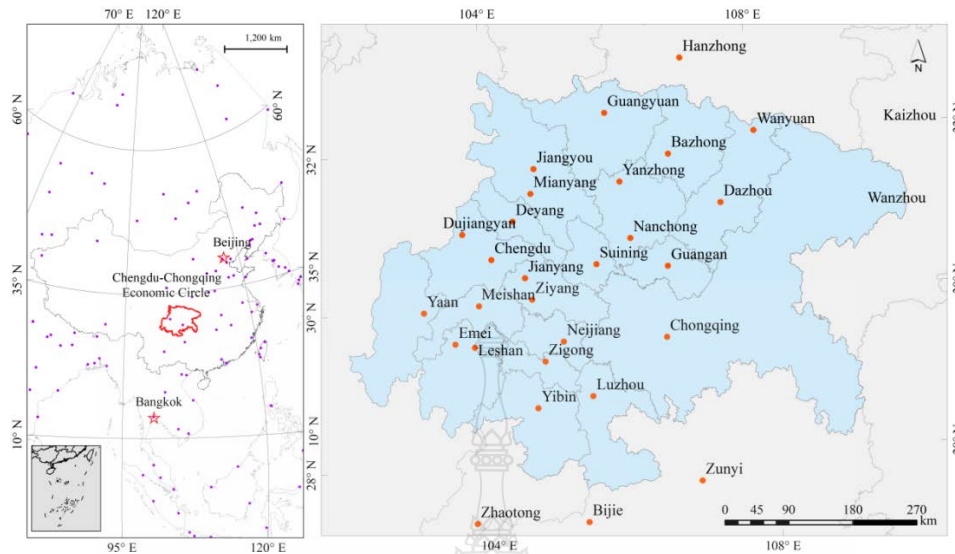
**Table 2.3** Using Statistical Methods To Sort Out the Application of Total Quality Management in the Tourism Industry (Cont.)

| <b>Researchers</b>      | <b>Data collection methods</b>                           | <b>Independent Variables</b>                                                                                                                     | <b>Dependent Variables</b> | <b>Analysis approach</b>                    |
|-------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------|
| Munanura et al., (2018) | Data collection                                          | Employee training<br>Benchmarking<br>Employee empowerment<br>Performance measurement<br>Adapting the TQM philosophy in the CEE's vision          | Tourism                    | Qualitative analysis                        |
| Zhu (2016)              | Questionnaire survey and tourist satisfaction evaluation | Total Quality Management Theory<br>Services marketing Theory of "Customer Centered"<br>Theory of Ecological Scenic Area Service Operation System | Ecotourism Scenic Spot     | Qualitative Analysis, Quantitative Analysis |

Through systematic and comprehensive management methods, TQM aims to ensure the high quality and sustainable development of tourism services through continuous improvement and full participation, laying a solid foundation for the long-term prosperity of tourism destinations and achieving high-quality services and products. As a highly nutritious and nutritious industry, TQM is required to improve service quality and sustainable development capabilities. First, audience satisfaction is improved through high-quality service provision and feedback improvement mechanisms. Secondly, through process optimization and resource management, operational efficiency is improved, waste is reduced, and sustainable utilization of resources is achieved. Furthermore, through training and development and employee motivation, it promotes employee participation and development and improves their service quality and job satisfaction. Finally, through firm decision-making and a shared vision, we strengthen cooperation among stakeholders and promote synergy in sustainable tourism development. To this end, total quality management plays a key role in the sustainable development of tourism, improving service quality and tourist satisfaction, and promoting the healthy and long-term development of the tourism industry.

#### **2.4 The Current Status of Tourism Development in the Chengdu-Chongqing Urban Agglomeration**

The Chengdu-Chongqing Urban Agglomeration (Figure 2.6) refers to a densely populated area formed between Chengdu and Chongqing, as well as their adjacent regions, characterized by high levels of economic development and Urbanization in Sichuan Province and Chongqing Municipality. It is the most densely populated and Urbanized area in western China, and also one of the regions with higher economic development levels in the western region (Liu, 2023).



**Figure 2.6** Schematic Diagram of the Location of the CCUA

#### 2.4.1 Tourism Infrastructure

In terms of specific scale, the importance of the Chengdu-Chongqing cooperation and development is highlighted, with both cities showing favorable economic development trends and increasingly close ties in the tourism economy (Yang & Hu, 2021). As of July 2023, according to data from the National Bureau of Statistics, the top fifteen provinces in terms of international tourism foreign exchange income and international tourist arrivals up to 2019 are Guangdong Province, Shanghai Municipality, Beijing Municipality, Yunnan Province, Jiangsu Province, Guangxi Zhuang Autonomous Region, Shandong Province, Fujian Province, Anhui Province, Shaanxi Province, Zhejiang Province, Hubei Province, Chongqing Municipality, Hunan Province, and Sichuan Province (Table 2.4). Among these fifteen provinces, both Chongqing Municipality and Sichuan Province are listed.

**Table 2.4** Top 15 List of International Tourism Foreign Exchange

| <b>Ranking</b> | <b>Province/City</b> | <b>International tourism foreign exchange income (million US dollars)</b> |
|----------------|----------------------|---------------------------------------------------------------------------|
| 1              | Guangdong Province   | 20521.31                                                                  |
| 2              | Shanghai City        | 8243.51                                                                   |
| 3              | Beijing City         | 5192.47                                                                   |
| 4              | Yunnan Province      | 5147.36                                                                   |
| 5              | Jiangsu Province     | 4743.56                                                                   |
| 6              | Guangxi Province     | 3511.28                                                                   |
| 7              | Shandong Province    | 3413.14                                                                   |
| 8              | Fujian Province      | 3398.45                                                                   |
| 9              | Anhui Province       | 3387.69                                                                   |
| 10             | Shanxi Province      | 3367.65                                                                   |
| 11             | Zhejiang Province    | 2668.24                                                                   |
| 12             | Hebei Province       | 2654.16                                                                   |
| 13             | Chongqing city       | 2524.83                                                                   |
| 14             | Hunan Province       | 2250.87                                                                   |
| 15             | Sichuan Province     | 2023.79                                                                   |

Data source: National Bureau of Statistics

According to data collected from various sources such as the China Tourism Statistical Yearbook, Chongqing Tourism Bureau, Chengdu Tourism Bureau, and others, as of the end of 2022, Sichuan Province had a total of 817 Class A tourist attractions, including 16 Class 5A attractions, 322 Class 4A attractions, 385 Class 3A attractions, and 92 Class 2A attractions. Additionally, there were 33 five-star hotels and 109 four-star hotels in Sichuan Province. As of July 2022, Chongqing Municipality had a total of 270 Class A tourist attractions, including 11 Class 5A attractions and 85 Class 4A attractions. There were also 28 five-star hotels and 54 four-star hotels in Chongqing (Table 2.5).

**Table 2.5** The 5A-level tourist attractions of Sichuan Province

| ID | Attraction                                          | Location       |
|----|-----------------------------------------------------|----------------|
| 1  | Qingcheng Mountain - Dujiangyan Tourist Scenic Spot | Chengdu City   |
| 2  | Mount Emei Scenic Area                              | Leshan City    |
| 3  | Jiuzhaigou Scenic Area                              | Aba            |
| 4  | Leshan Giant Buddha Scenic Area                     | Leshan City    |
| 5  | Huanglong National Scenic Area                      | Aba            |
| 6  | Wenchuan Special Tourist Area                       | Aba            |
| 7  | Beichuan Qiangcheng Tourist Area                    | Mianyang City  |
| 8  | Deng Xiaoping's hometown tourist area               | Guangan City   |
| 9  | Langzhong Ancient City                              | Nanchong City  |
| 10 | Jianmen Shu Dao Jianmen pass tourist scenic spot    | Guangyuan City |
| 11 | Zhu De's hometown scenic spot                       | Nanchong City  |
| 12 | Luding Hailuoguo Glacier Forest Park                | Ganzi          |
| 13 | Bifeng Gorge Tourist Scenic Spot                    | Yaan City      |
| 14 | Guangwu Mountain Scenic Area of Bazhong City        | Bazhong City   |
| 15 | Ganzi Prefecture Daocheng Aden Scenic Area          | Ganzi          |
| 16 | Anren Ancient Town Scenic Area                      | Chengdu City   |

Data source: China Tourism Statistical Yearbook, Chongqing Tourism Bureau, Chengdu Tourism Bureau

#### 2.4.2 High Degree of Correlation

Against the backdrop of strong support from the national government for the development of the western region, Chongqing and Chengdu have cooperated multiple times. As of 2022, within the framework of cooperation between the two cities, Chongqing and Chengdu have played central roles as core cities and have signed more than 130 cooperation agreements, actively promoting pragmatic cooperation in various fields. In December 2021, the Chongqing Municipal Commission of Culture and Tourism and the Chengdu Municipal Bureau of Culture, Radio, Television, and Tourism signed a strategic cooperation agreement on promoting the construction of the Chengdu-Chongqing Economic Circle, focusing on the development of the Bashu Cultural Tourism Corridor. Both parties aim to vigorously develop cultural undertakings and promote cooperation in the cultural tourism industry. Zhang (2020) discovered through calculations of industrial relevance and the intensity of industrial export functions that the

tourism industries of Chengdu and Chongqing are highly correlated, with a significant symbiotic relationship between the two tourism sectors. Chengdu and Chongqing are adjacent to each other, forming a metropolitan area backed by two major Urban circles, essentially achieving a one-hour work and living circle. As the core cities of the Chengdu-Chongqing Urban agglomeration, Chongqing and Chengdu play an important role in driving the development of the tourism industry in surrounding cities. Multi-dimensional transportation is one of the important "engines" of regional economic development. Under the connection of the Chengdu-Chongqing high-speed rail network, the interaction between the tourism industries of the Chengdu-Chongqing Urban agglomeration becomes more apparent. Liu et al. (2020) demonstrated that the tourism flow within the Chengdu-Chongqing Urban agglomeration presents a "hub-and-spoke" spatial organization pattern with Chongqing and Chengdu as the core cities, showing a clear hierarchical structure in tourism. The flow of people within the Chengdu-Chongqing Urban agglomeration has strengthened the connection of tourism flows along the high-speed rail lines. Taking the Chengdu-Chongqing Urban agglomeration as an example, Xing (2022) analyzed the impact of accessibility, economic linkage intensity, and spatial reconstruction on the regional economy of the Chengdu-Chongqing Urban agglomeration and proposed several policy suggestions. Yin (2017) conducted a comparative analysis of the network evolution, coupling coordination between high-speed rail and tourism, and the impact on tourism before and after the opening of the high-speed rail in the Chengdu-Chongqing Urban agglomeration. Through a study of tourism efficiency before and after the opening of the high-speed rail, development strategies to improve tourism efficiency were proposed. The research proved that the opening of the Chengdu-Chongqing high-speed rail has brought significant changes to the tourism industry, driving economic development in surrounding areas. In Zou's study (2021), three types of indicators were selected from 15 major cities in the Chengdu-Chongqing Urban agglomeration, including weighted average travel time and accessibility coefficient, Herfindahl-Hirschman Index, and concentration index. Based on the gravity model, the spatial pattern and connections of the Chengdu-Chongqing Urban agglomeration were analyzed. The research showed that the spatial connection of the Chengdu-Chongqing Urban agglomeration initially presented a network pattern, but the equilibrium of the network was not high, showing a

polarized state centered on Chengdu and Chongqing. In Cao's study (2021), focusing on the high-speed rail and tourism industry of the Chengdu-Chongqing Urban agglomeration, a model for evaluating the traffic advantages of rapid transportation and the spatial pattern of tourists under a comprehensive transportation network was established, proposing a spatial structure optimization and coordinated development model for comprehensive transportation tourism areas.

#### **2.4.3 Future Development**

The Chengdu-Chongqing Urban agglomeration, as the most economically dynamic and promising city Agglomeration in the central and western regions of China, occupies a significant position in the regional economic development landscape. However, due to differences in administrative divisions and management systems, there are disparities and imbalances in development among the core cities within the Urban agglomeration, leading to a prominent issue known as the "central collapse." In Chen's (2010) study, the concept of "inter-city tourism" was introduced as a novel model for tourism development. Research indicates that by promoting inter-city tourism, Chengdu and Chongqing can not only achieve mutual benefits and win-win outcomes in the current era of booming tourism but also exert strong radiating effects on the economy of the Chengdu-Chongqing Economic Zone and even the entire western region. To address the issue of the prominent "bulging" phenomenon in the central areas of the Chengdu-Chongqing Urban agglomeration, He (2018) proposed the need to promote coordinated development among large, medium, and small cities as well as small towns, establish collaborative efforts for development in the central region of the Chengdu-Chongqing Urban agglomeration, build a modern transportation network with comprehensive connectivity, advance the development of agriculture and tourism, and expand sustainable economic growth in the region. Xiong (2023) pointed out that, based on the strong development foundation and absorptive capacity of the two major cities of Chongqing and Chengdu, the phenomenon of "dual-core dominance" has emerged, with underdeveloped sub-central cities and a relatively small number of large cities with populations exceeding one million in Urban areas. Therefore, in studying the current situation of tourism in the Chengdu-Chongqing Urban agglomeration, many scholars have proposed solutions to promote coordinated tourism development in the region,

facilitate integrated tourism development between the two cities, avoid significant regional development gradients, and prevent the formation of a "dumbbell-shaped" development structure characterized by "large ends and small middle." Tang (2022) utilized methods such as entropy, coupling coordination, and grey relational analysis, combined with relevant data from the 16 cities in the Chengdu-Chongqing Economic Zone, to analyze and study the level of coordinated development between the tourism industry and regional economy in the Chengdu-Chongqing Economic Zone. Suggestions for promoting the coordinated development of the tourism industry and regional economy in the Chengdu-Chongqing Economic Zone were proposed. Zhang (2021) took Leshan City in Sichuan Province as the research object, integrated it into the construction of the Chengdu-Chongqing Economic Zone's integrated tourism, established the "Chengdu-Chongqing-Leshan" tourism golden triangle pattern, and constructed the "Ba-Shu Cultural Tourism Corridor" as a world-renowned tourism destination, bringing new opportunities for the tourism development of surrounding cities in the Chengdu-Chongqing region and providing new insights for the sustainable development of the tourism industry in the Chengdu-Chongqing Urban agglomeration.

With the successful convening of events such as the World Tourism Organization Congress, the Belt and Road Tourism Community Conference, and the Chengdu International Tourism Exhibition, Chengdu has taken another solid step forward in the construction of an international tourism city. Efforts to intensify the development of sub-urban tourism and establish a new model for the development of sub-urban tourism between Chengdu and Chongqing are underway. However, how to alleviate the pressure of the Urban tourism population and promote the balanced and sustainable development of the regional economy is a new challenge that the tourism industry in the Chengdu-Chongqing Urban agglomeration must inevitably face. The integrated and coordinated development of the Chengdu-Chongqing Urban agglomeration is the foundation for promoting the sustainable development of the tourism industry in the region. Therefore, the coordinated development of the tourism industry in the Chengdu-Chongqing Urban agglomeration will be a key focus of future research.

## **2.5 Theoretical Foundations**

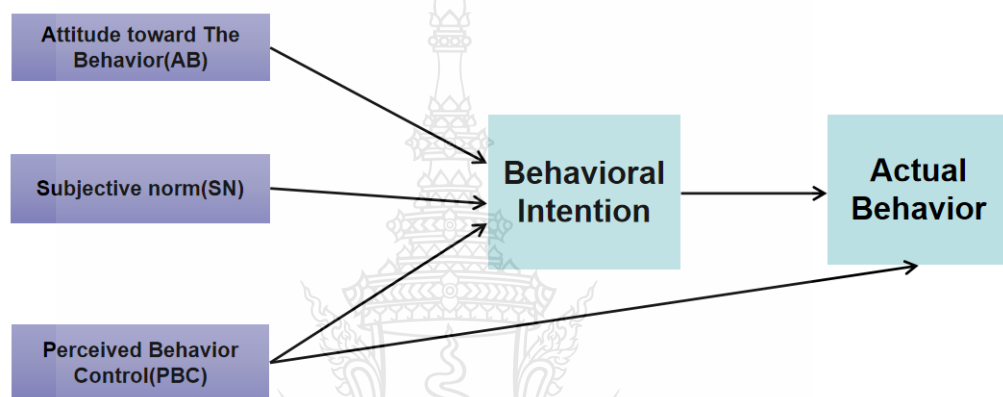
### **2.5.1 Tourism Benefit Evaluation**

Comprehensive development benefits include economic, ecological, and social benefits, which is a common understanding formed in the current theoretical research on sustainable development (He & Loo, 2021). In this research context, it refers to the application of Total Quality Management in the tourism industry practice, thereby achieving economic, social, and ecological benefits of tourism. Zheng (2016) in his research on sustainable tourism investment evaluation methods, not only considers economic benefits but also considers the impact of tourism investment on the local cultural environment and lifestyle, incorporating economic, ecological, and social benefits into the tourism benefit evaluation system to achieve healthy and sustainable development of tourism investment. Zhou (2023) investigates the comprehensive benefits of the tourism industry in ethnic minority villages, using the Analytic Hierarchy Process and Fuzzy Comprehensive Evaluation method, and divides tourism benefits into three aspects: social, economic, and ecological benefits, ultimately determining 15 secondary indicators for analysis. Saarinen (2019) integrates sustainable tourism into community development and explores the impact of communities on Sustainable tourism.

### **2.5.2 Theory of Planned Behavior**

The Theory of Planned Behavior (TPB) (Figure 2.7) originated from the Theory of Reasoned Action proposed by Fishbein and Ajzen (Ajzen, 1991) and aims to help people understand how they change their behavior. It is essentially a branch of psychological research. The TPB model indicates that behavioral intention is the most direct factor influencing behavior, while perceived behavioral control, subjective norms, and attitudes influence behavioral intentions. Conner & Armitage (1998) describe and review the Theory of Planned Behavior (TPB), with a focus on supporting evidence to further extend the TPB in various ways. They reviewed empirical and theoretical evidence supporting the addition of six variables to the TPB: belief significance measurement, past behavior/habit, perceived behavioral control (PBC) and self-efficacy, moral norms, self-identity, and affective beliefs. In recent years, the Theory of Planned Behavior has been widely applied to study people's tourist behavior activities, becoming a classic theory commonly used in tourism behavior. Han et al., (2020), Keshavarzian & Wu (2017), and

e Silva & Lucchesi (2020) respectively analyzed the destination selection behavior of tourists from the United States, Australia, and São Paulo. Qiu (2017) studied Chinese outbound tourists and constructed a model of the impact mechanism of outbound tourists' civilized tourism intentions based on the Theory of Planned Behavior. Song et al. (2016) researched individual differences in the choice of outbound tourism destinations for Chinese residents. Domestic and foreign research results indicate that the Theory of Planned Behavior has good predictive power for people's travel intentions and destination choices.



**Figure 2.7** Theory of Planned Behavior Model

As ultimate consumers of tourism products, tourists' perceptions and satisfaction directly influence the success or failure of the tourism industry. In addition to "value for money," tourists have become more experienced and quality-conscious, continuously demanding improvements in the quality of tourism to achieve better travel experiences. Therefore, the determiner of evaluating the quality of tourism products is the tourists themselves. To a large extent, tourists form a "subjective judgment" or "comprehensive perception of quality" to discern tourism quality. Comprehensive perception of quality encompasses two aspects: one is the measurement of the technical quality of outputs, namely, the content that tourists can accept; the other is the measurement of the functional quality of processes, namely, what tourists feel. Both aspects complement each other. If the tourism industry wants to improve the quality of tourism products, it must enhance both the technical quality and the functional quality of tourism products.

### **2.5.3 Stakeholder Theory**

Stakeholder Theory clarifies its theoretical connotation and emphasizes its necessity for the survival of organizations. He points out that business operators need to clarify and coordinate the relationships among various stakeholders to avoid conflicts, which is conducive to enterprise management (Freeman, 2015). In Total Quality Management, stakeholders consist of five aspects: shareholders, employees, suppliers, partners, customers, and society. Sustainable tourism development is the result of various stakeholders interacting in a complex and open system. Therefore, when formulating relevant policies and plans, stakeholders must be considered (Lu & Zhou, 2015). Consequently, sustainable development analysis based on stakeholder theory has become a hot topic of research in recent years. Song & Fong (2021) explore residents' perceptions of sustainable tourism development based on stakeholder theory. Hardy & Pearson (2018) argue that when considering the development of sustainable tourism, stakeholders' attitudes do not always align with their stakeholder groups, and responsive measures are needed to ensure stakeholders' full participation. Beck & Storopoli (2021) suggested that Urban environments and Urban stakeholders are crucial for policymakers to formulate sustainable Urban strategies, effective Urban marketing and branding, and improve Urban network relationships. Hadian et al. (2021) believed that community participation is beneficial for local tourism. However, tourism practitioners should provide moderate ecological compensation to local communities to benefit all parties, including maintaining the geographical diversity and ecological sustainability of tourist areas.

### **2.5.4 Classical Test Theory**

Classical Test Theory, Item Response Theory, and Generalizability Theory form the foundation of psychometric measurement theory (Yu, 2012). Each of these three theoretical models has its advantages and disadvantages, and all have been extensively applied in the development of questionnaires and scales in education and psychology, complementing and cross-validating each other. In the process of scale development, the Classical Test Theory model is widely used due to its simplicity and practicality, while the other two theoretical models are relatively complex and specialized, with fewer users (Zhang & Shang, 2019). Classical Test Theory, also known as true score theory, was proposed by American psychologist C. Spearman and refined by scholars such as F. M. Lord and M. R. Novick (Rozeboom et al., 1969). Its mathematical model is  $x = \theta + \epsilon$ , where  $x$  is the test score,

$\theta$  is the true score, and  $\varepsilon$  is the random error. To reduce measurement error, the simplest method is to use multiple indicators to measure constructs. This theory proposes various methods for estimating measurement precision, such as test-retest reliability, parallel forms reliability, internal consistency reliability, and inter-rater reliability, as well as a series of methods for estimating measurement validity, such as content validity, construct validity, and criterion-related validity. At the same time, Classical Test Theory can use difficulty and discrimination as indicators to analyze the quality of test items and apply norms to interpret and compare test scores, thus laying a solid foundation for psychometric measurement.

## **2.6 Hypothesis Research**

### **2.6.1 The Hypothesis on the Impact Relationship between Total Quality Management and Sustainable Tourism Development**

Sustainable development is inseparable from management. In the study by Isaksson et al. (2023), the concept of sustainable development is understood, defined, and measured from an outward-in perspective, hoping to redefine sustainable development from the organization's standpoint. Ramanathan & Isaksson (2023) explore potential approaches of quality science and quality management in addressing challenges of Corporate Social Responsibility (CSR) for sustainable development, by establishing a common understanding of sustainability and sustainable development. In the tourism sector, how Total Quality Management improves the quality of tourism services (Razak et al., 2023), adjusts tourism planning (Wang, 2022), promotes employee training and development (Albloushi et al., 2023), and drives companies toward greater environmental and social responsibility (Jum'a et al., 2023) are all closely related to sustainable tourism development. Based on literature and theoretical analysis, the following hypotheses are proposed:

H1: Total quality management has a positive effect on sustainable tourism development.

### **2.6.2 The Hypothesis on the Impact Relationship between Total Quality Management and Tourism Benefits**

The promotion of tourism economic benefits by Total Quality Management (TQM) in the tourism industry mainly involves two aspects: Firstly, the core of Total Quality Management is to focus on customer satisfaction as the ultimate goal. By implementing

quality assurance in tourism products, customer satisfaction can be guaranteed, leading to the gradual manifestation of economic benefits in competitive tourism destinations. Secondly, the primary task of Total Quality Management is to involve all employees. With full participation, quality issues can be identified at the micro-level and improvements can be made through management, thus enhancing quality and promoting economic benefits. Matarrita-Cascante et al. (2010) argue that community development is the foundation of sustainable tourism development because it benefits local residents and reduces the negative impacts of tourism development. Residents' sense of belonging and participation are two important factors affecting residents' support for sustainable tourism development (Lee, 2013). Moreover, Total Quality Management in the tourism industry also facilitates the realization of social benefits. The social benefits of tourism involve various aspects and take time to manifest, especially for heritage sites where social benefits are crucial. Li et al. (2020) explored the relationship between community, perceived social benefits of tourism, and perceived environmental benefits. Yu et al. (2020) proposed strategies such as accelerating the reform of the tourism industry management system and enhancing community participation to enhance the forest tourism benefits in Yichun City, Heilongjiang Province. Lastly, ecological benefits primarily focus on the protection of the natural environment and cultural heritage. Zhang & Yang (2022) proposed that high-quality tourism development must ultimately aim for comprehensive human development and adhere to the three bottom lines of economic, socio-cultural, and environmental development. This imposes higher requirements on tourism industry management, making Total Quality Management the best choice to promote sustainable tourism development.

In the context of this study, TQM refers to three latent variables: full employee participation, full-process participation and comprehensive participation. Based on literature review and theoretical analysis, the following hypotheses are proposed:

Hypothesis 2: Total Quality Management has a positive effect on tourism benefits.

### **2.6.3 The Hypothesis on the Impact Relationship between Tourism Benefits and Sustainable Tourism Development**

In the context of this study, tourism benefits refer to the economic, social, and environmental effects brought about by the tourism industry. Numerous studies have confirmed that tourism benefits are important indicators of sustainable tourism development.

Yan (2007) constructed an evaluation index system for sustainable development of ecotourism from the perspectives of environment, economy, and society. Han (2015) argued that for regional tourism cooperation to achieve sustainable development, the tourism industry itself must have long-term benefits, thus facilitating better development of regional tourism cooperation. Xiao (2020) considered rural tourism sustainable development as the dependent variable and government ecological management as the independent variable. Sustainable development in rural tourism was divided into four measurement dimensions: tourism resources, tourism benefits, tourism operations, and tourism security system. From the perspective of government ecological management, strategies and suggestions for sustainable development for rural tourism were proposed. Zhou & Yuan (2023) explored the comprehensive benefits of the tourism industry, dividing social, economic, and ecological benefits into 15 indicators. They suggested that the ability to attract tourists is a key factor in enhancing the economic benefits of tourism, while the balance of ruralness index is crucial for the sustainable development of ecotourism. Zhang (2023) studied the coupling relationship among the three aspects of forest tourism benefits, promoting the sustainable development of forest tourism. Therefore, based on a comprehensive review of the literature on the impact of tourism benefits on sustainable tourism development, the following hypotheses are proposed:

Hypothesis 3: Tourism benefits have a positive effect on sustainable tourism development.

#### **2.6.4 The Hypothesis on the Impact Relationship between Total Quality Management and Perceived Tourism Quality**

Wu (2023) established the relationship between tourists' perception dimensions of tourism quality and overall satisfaction, proposing relevant strategies for enhancing tourism quality. Ma (2010) conducted an exploratory study by reviewing the concepts, characteristics, components, and evaluation methods of scenic spot service quality. Utilizing methods such as focus groups and expert interviews, they ultimately developed an evaluation scale for tourists' perception of scenic spot service quality, providing decision-making support for improving service quality at scenic spots. Yan (2023) pointed out that the overall perception assessment of tourism public services would affect tourists' willingness perception, and strengthening service quality management could promote tourists' perceived demand.

Vethirajan & Ganapathi (2021) explored the perception of hotel service quality among tourists and proposed relevant strategies. In the Wijayanti et al. (2017) study, empirical cases were used as examples to explore tourists' perception of tourism service quality. Nwokorie & Adeniyi (2021) explored tourists' views on ecotourism, serving as a theoretical basis for studying the impact of tourists' perceptions and proposing important factors that affect tourists' perceptions. The purpose of the paper is to identify medical tourists' perception of service quality based on the three elements of the core product, physical environment, and interaction (Nazem & Mohamed, 2016). Research has shown that factors such as communication, employees, hospital facilities, and services affect positive perceptions. Based on literature and theoretical analysis, the following hypotheses are proposed:

Hypothesis 5: Total Quality Management has a positive effect on perceived quality.

#### **2.6.5 The Hypothesis on the Impact Relationship between Perceived Tourism Quality and Sustainable Tourism development**

Tourists' quality perception directly influences their satisfaction, loyalty, and the word-of-mouth reputation of tourism products. Li & Yuan (2023) argue that pro-tourism behavior is a prerequisite for sustainable tourism, exploring the mediating role of perceived tourism benefits in the relationship between tourist perception and pro-tourism behavior, and providing empirical support. The results indicate that perceived tourism benefits have a promoting effect on the sustainable development of film tourism. Liang (2023) analyzes the impact of tourist perception on the development of ecotourism in Yunhe County, providing insights and references for the sustainable development of ecotourism in Yunhe County. Feng (2022) suggests that clarifying tourist perceptions can help rural tourism gain competitive advantages and promote the development of rural tourism in Bozhou City. Peters et al. (2018) emphasizes the importance of residents' perceptions of the tourism destination, as it can determine their level of support for tourism development. Stylidis et al. (2014) proposed that residents' place image influences their perceptions of tourism impacts and subsequently their support for tourism development. Based on the literature above and the research content of this paper, the following hypothesis is proposed.

Hypothesis 6: Perceived tourism quality has a positive effect on sustainable tourism development.

### **2.6.6 The Hypotheses on the Relationship between Tourism Benefits and Perceived Tourism Quality as Mediators of Total Quality Management on Tourism Sustainable Development**

Ming (2022) constructed a rural tourism development benefits evaluation system from the perspective of villagers' perceptions, comprising ecological benefits, economic benefits, and socio-cultural benefits. The study provided theoretical support for the development of rural tourism, with ecological benefits being assigned the highest weight and thus becoming the focal point of rural tourism development benefits. Yi et al. (2023) established a development benefits evaluation system for the Giant Panda National Park, exploring issues in the direction of ecotourism development and fostering sustainable ecotourism in the park through relevant measures. Çelik & Rasoolimanesh (2023) investigated the impact of residents' attitudes on tourism costs, indicating that the attitude toward cost-benefit mediation plays a role in residents' attitudes and support for the tourism industry. In Vidal Rua's (2020) study, emphasis was placed on the socio-cultural aspects of the tourism industry, aiming to generate knowledge about residents' perceptions of the tourism industry to promote economic development in tourist destinations, thereby influencing their environment, society, and culture.

H4: Tourism benefits mediate the relationship between total quality management and sustainable tourism development.

H7: Perceived tourism quality mediates the relationship between total quality management and sustainable tourism development.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **Introduction**

This chapter is based on the theories of Total Quality Management (TQM) and Sustainable Tourism Development (STD). It analyzes the application of TQM in STD and constructs a theoretical model of factors influencing sustainable development in the tourism industry. Supported by relevant literature and considering the practical context discussed in the text, a questionnaire for assessing sustainable tourism development was developed. To ensure the authenticity, validity, and feasibility of the questionnaire, an Item-Objective Congruence (IOC) test was conducted, resulting in the finalization of the survey instrument. In the process of validating the questionnaire, a pre-survey was conducted, and collected data underwent tests for reliability, validity, and exploratory factor analysis. This led to the formulation of a questionnaire for measuring sustainable tourism development, which was finalized for implementation.

#### **3.1 Construction of Theoretical Model**

In constructing the model of factors influencing the sustainable development of the tourism industry by Total Quality Management (TQM), this study drew on relevant research. Through analyzing the theory of Total Quality Management (TQM), the knowledge framework of tourism benefit evaluation indicators, and examining the viewpoints on the impact of Total Quality Management on tourism benefits, the study delineated the theoretical framework of sustainable tourism development, sustainable development goals, and stakeholders' theory to conceptualize five latent variables in the model: Full Participation (FP), Whole Process Management (WPM), Comprehensive Management (CM), Tourism Benefits (TB), and Sustainable Tourism Development (STD). Meanwhile, Al (2015) examined the sufficiency and application of the Theory of Planned Behavior (TPB) in the Jordanian tourism industry by investigating the antecedents of revisitation intention/actual visit behavior and the mediating role of revisitation intention among perceptions. The study focused on Behavior Control (PBC) and Actual Visit Behavior (ACT). Wang et al. (2022) aimed to understand tourists' travel

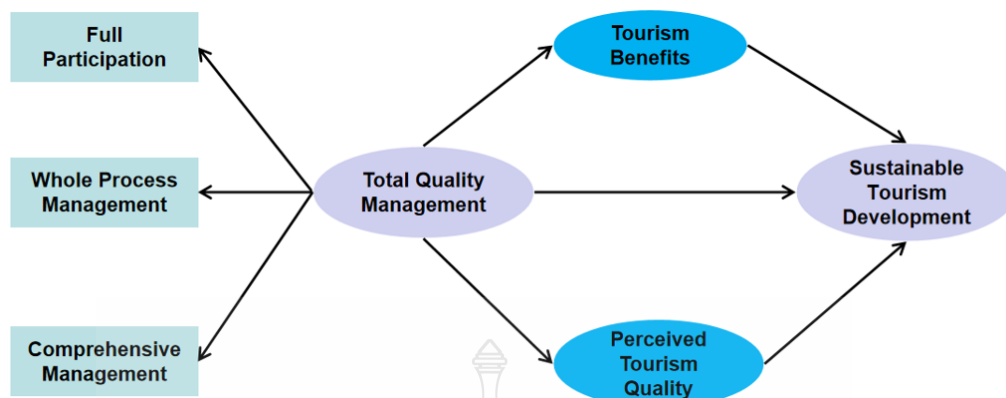
intentions during the COVID-19 pandemic by using the Theory of Planned Behavior (TPB) along with additional causal links and moderating factors. Wen (2018) conducted an empirical study by adding basic variables of sustainable tourism development to the Theory of Planned Behavior (TPB) model to promote sustainable development in the Thai tourism industry. Therefore, this study innovatively proposes the concept of Perceived Tourism Quality (PTQ) as the sixth latent variable in the research model."

In summary, based on the hypotheses from relevant theoretical models and previous empirical studies, this study constructed six variables, namely: FP, WPM, CM, PTQ, TB, and STD. The proposed hypothetical structural model was developed based on the research framework and assumptions mentioned in the previous chapter (Figure 3.1).

## **3.2 Population and Sample**

### **3.2.1 Population**

Sichuan Province and Chongqing Municipality are both major tourist destinations in China, with 869 and 214 A-level scenic spots respectively. In terms of the quantity and grade of tourism resources, they both rank among the top in the country, with their tourism economies ranking prominently nationwide. China's tourism scenic spots are classified into 5 levels, with the AAAAA (5A) grade representing the highest level of scenic spots in China, symbolizing the premium tourism scenic spot grade in China (Zhang, 2022). As of 2022, Sichuan Province has 16 national-level 5A scenic spots, ranking third in the country in terms of quantity, behind only Jiangsu Province and Zhejiang Province (Figure 3.2), while Chongqing Municipality has 11 5A-level scenic spots. Due to the large number of scenic spots, researching all of them poses a huge challenge. 1A and 2A level scenic spots may only be a street in the city, while 5A level scenic spots are large in scale, rich in resources, and have significant cultural value, making them conducive to scholarly research. Additionally, 5A-level scenic spots generally adopt the most advanced scenic spot quality management methods domestically. Therefore, research on 5A-level scenic spots can delve deeper into existing management methods, identify issues, address shortcomings, and enhance the management level of tourism scenic spots in China and international tourism competitiveness, thereby promoting sustainable tourism development.



**Figure 3.1** The Global Model of Conceptual Framework



Data Sources: Ministry of Culture and Tourism of the People's Republic of China

**Figure 3.2** The Number of 5A Scenic Spots of Provinces or Cities in China

Based on the administrative division of the Chengdu-Chongqing Urban Agglomeration, a few 5A-level scenic spots are located outside the Chengdu-Chongqing Urban Agglomeration area. Therefore, the author screened the 5A-level scenic spots in Sichuan Province and Chongqing Municipality. Twenty-two 5A-level scenic spots within the Chengdu-Chongqing Urban Agglomeration were identified (Table 3.1).

**Table 3.1** The 5A-level scenic spots within the Chengdu-Chongqing Urban Agglomeration

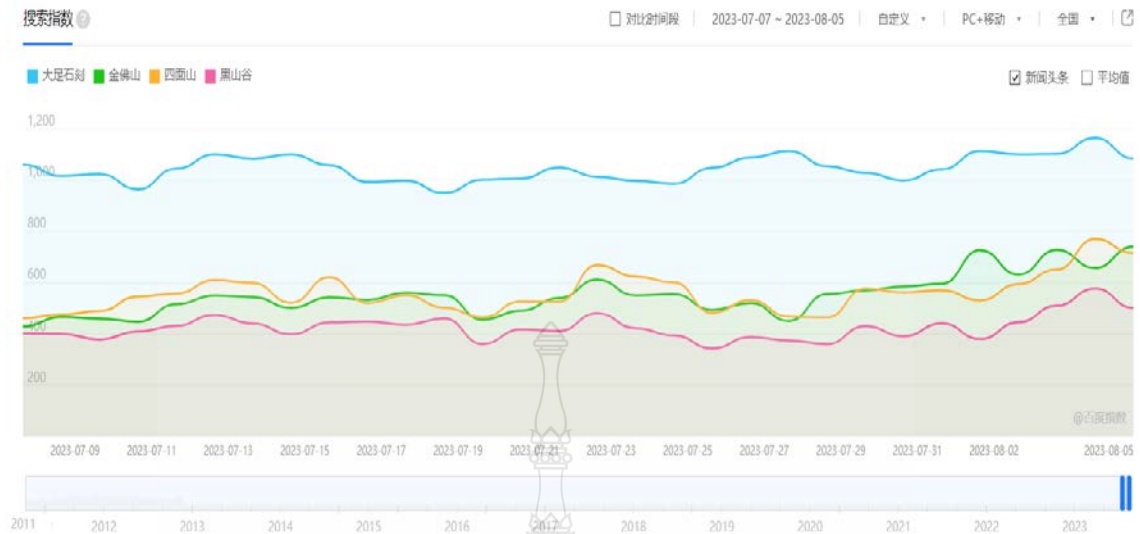
| No. | Attraction                        | Location                                 | Level | Year of evaluation |
|-----|-----------------------------------|------------------------------------------|-------|--------------------|
| 1   | Golden Buddha Mountain            | Nanchuan District                        | 5A    | 2013               |
| 2   | Wulong Karst                      | Wulong District                          | 5A    | 2011               |
| 3   | Dazu Stone Carving                | Dazu District                            | 5A    | 2007               |
| 4   | Unitary Yang Peach Blossom Source | Youyang Tujia and Miao Autonomous Region | 5A    | 2012               |
| 5   | Wushan Small Three Gorges         | Wushan County                            | 5A    | 2007               |
| 6   | Yunyang Dragon Tank               | Yunyang County                           | 5A    | 2017               |
| 7   | Four-sided mountain               | Jiangjin District                        | 5A    | 2015               |
| 8   | Ayi River                         | Pengshui Town                            | 5A    | 2016               |
| 9   | Black Valley                      | Qijiang District                         | 5A    | 2012               |
| 10  | Zhuoshui Scenic Spot              | Qianjiang District                       | 5A    | 2020               |
| 11  | Baidicheng Qutang Gorge           | Fengjie Town                             | 5A    | 2022               |
| 12  | Qingcheng Mountain & Du Jiangyan  | Chengdu City                             | 5A    | 2007               |
| 13  | Emei mountain                     | Leshan City                              | 5A    | 2007               |
| 14  | Leshan Giant Buddha               | Leshan City                              | 5A    | 2011               |
| 15  | Beichuan Qian                     | Mianyang City                            | 5A    | 2013               |
| 16  | Deng Xiaoping's Hometown          | Guangan City                             | 5A    | 2013               |
| 17  | Langzhong Ancient City            | Nanchong City                            | 5A    | 2013               |
| 18  | Jianmen Shu Dao                   | Guangyuan City                           | 5A    | 2015               |
| 19  | Zhu De's hometown                 | Nanchong City                            | 5A    | 2016               |
| 20  | Bifeng Gorge                      | Yaan City                                | 5A    | 2019               |
| 21  | Guangwu Mountain                  | Bazhong City                             | 5A    | 2020               |
| 22  | Anren Ancient Town                | Chengdu City                             | 5A    | 2022               |

### 3.2.2 Principles of Sample Selection

In this study, the selection of the sample followed four basic principles: representativeness of the samples, high visitor volume of the sampled attractions, as well as a relatively uniform distribution of sample locations, covering both natural and cultural attractions. Samples were selected using a stratified sampling method.

#### 3.2.2.1 Principle of High Attention to Samples

Baidu, China's largest AI company, boasts notable products such as Baidu Map and Baidu Search Engine, with a user base of 622 million. Baidu Index is a popularity index released utilizing Baidu search frequency combined with a mathematical model, representing the current level of attention for a particular keyword, including hot events and tourist destinations. If a tourist attraction has a high search frequency, it indicates its potential as a highly regarded tourist destination (Wang & Zhang, 2024). Based on the Baidu Index (providing daily search volume data for keywords since 2011), this paper defines the sum of mobile and PC search indexes for tourist attractions as "online attention", reflecting tourists' interest in the 5A-level tourist attractions in the Chengdu-Chongqing city Agglomeration (Feng & Fan, 2022). A search was conducted for representative keywords of 22 5A-level attractions in the Chengdu-Chongqing city Agglomeration, with the results showing (Figure 3.3, Figure 3.4, Figure 3.5) that attractions such as Dazu Rock Carvings, Jinfo Mountain, Simianshan, and Heishangu in Chongqing have a higher level of attention. Similarly, attractions such as Mount Qingcheng-Dujiangyan, Mount Emei, Leshan Giant Buddha, Deng Xiaoping's hometown, Langzhong Ancient City, Zhu De's hometown, Bifengxia, Guangwushan in Bazhong, and Jianmen Pass in Sichuan have a high level of attention. The remaining attractions did not appear in Baidu Index searches for their keywords, indicating lower online attention for this attraction.



**Figure 3.3** Keywords “Dazu Stone Carving, Golden Buddha Mountain, Four-sided mountain, Black Valley” Network Attention



**Figure 3.4** Keywords “Qingcheng Mountain & Du Jiangyan, Emei mountain, Leshan Giant Buddha, Deng Xiaoping's Hometown, Langzhong Ancient City” Network attention



**Figure 3.5** Keywords “Zhu De's hometown, Bifeng Gorge, Guangwu Mountain, Jianmen Shu Dao” Network Attention

### 3.2.2.2 Principle of Uniform Distribution of Samples

In the Chengdu-Chongqing city Agglomeration, there are 11 5A-level tourist attractions in Chongqing and 11 in Sichuan. The distribution of 5A-level tourist attractions in Chongqing is relatively concentrated, while those in Sichuan are mainly located in the central and northwestern parts of the province. The southeastern part of Sichuan lacks 5A-level tourist attractions (Table 3.2).

**Table 3.2** Distribution of 5A-level Tourist Attractions in the Chengdu-Chongqing City Agglomeration

| Location                      |      | City           | No. | Scene                                                                                                                                                                                                                                            |
|-------------------------------|------|----------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chongqing                     | City | Chongqing City | 11  | Golden Buddha Mountain<br>Wulong Karst<br>Dazu Stone Carving<br>Unitary Yang Peach Blossom Source<br>Wushan Small Three Gorges<br>Yunyang Dragon Tank<br>Four-sided mountain<br>Ayi River<br>Black Valley<br>Zhuoshui<br>Baidicheng Qutang Gorge |
| Middle of Sichuan Province    |      | Chengdu City   | 2   | Qingcheng Mountain - Du Jiangyan<br>Anren Ancient Town                                                                                                                                                                                           |
| South of Sichuan Province     |      | Leshan City    | 2   | Emei mountain<br>Leshan Giant Buddha                                                                                                                                                                                                             |
| East of Sichuan Province      |      | Guangan City   | 1   | Deng Xiaoping's Hometown                                                                                                                                                                                                                         |
| Northeast of Sichuan Province |      | Nanchong City  | 2   | Langzhong Ancient<br>Zhu De's Hometown                                                                                                                                                                                                           |
| Southwest of Sichuan Province |      | Yaan City      | 1   | Bifeng Gorge                                                                                                                                                                                                                                     |
| Northeast of Sichuan Province |      | Bazhong City   | 1   | Guangwu Mountain                                                                                                                                                                                                                                 |
| East of Sichuan Province      |      | Guangyuan City | 1   | Jianmen Shu Dao                                                                                                                                                                                                                                  |
| North of Sichuan Province     |      | Mianyang City  | 1   | Beichuan Qiangcheng                                                                                                                                                                                                                              |

### 3.2.2.3 Principle of Sample Coverage of Natural and Cultural Landscapes

The types of tourist attractions are categorized into natural landscapes and cultural landscapes. In the Chengdu-Chongqing city Agglomeration, there are 11

attractions primarily focused on natural landscapes and 11 attractions primarily focused on cultural landscapes. In Chongqing, there are 2 attractions primarily focused on cultural landscapes and 9 attractions primarily focused on natural landscapes. In Sichuan Province, there are 6 attractions primarily focused on cultural landscapes and 5 attractions primarily focused on natural landscapes (Table 3.3).

**Table 3.3** List of 5A-level Tourist Attraction Types in the Chengdu-Chongqing City Agglomeration

| No. | Scenic                           | Location                                 | Scenic Area Type             |
|-----|----------------------------------|------------------------------------------|------------------------------|
| 1   | Golden Buddha Mountain           | Nanchuan District                        | Cultural landscape           |
| 2   | Wulong Karst                     | Wulong District                          | Natural                      |
| 3   | Dazu Stone Carving               | Dazu District                            | Cultural landscape           |
| 4   | Unitary Yang Peach Blossom       | Youyang Tujia and Miao Autonomous Region | Natural                      |
| 5   | Wushan Small Three Gorges        | Wushan County                            | Natural                      |
| 6   | Yunyang Dragon Tank              | Yunyang County                           | Natural                      |
| 7   | Four-sided mountain              | Jiangjin District                        | Natural                      |
| 8   | Ayi River                        | Pengshui Town                            | Natural                      |
| 9   | Black Valley                     | Qijiang District                         | Natural                      |
| 10  | Zhuoshui                         | Qianjiang District                       | Natural                      |
| 11  | Baidicheng Qutang Gorge          | Fengjie Town                             | Natural                      |
| 12  | Qingcheng Mountain - Du Jiangyan | Chengdu City                             | Cultural Landscape & Natural |
| 13  | Emei mountain                    | Leshan City                              | Cultural Landscape & Natural |
| 14  | Leshan Giant Buddha              | Leshan City                              | Cultural landscape           |
| 15  | Beichuan Qiangcheng              | Mianyang City                            | Cultural Landscape & Natural |
| 16  | Deng Xiaoping's Hometown         | Guangan City                             | Cultural landscape           |
| 17  | Langzhong                        | Nanchong City                            | Cultural landscape           |
| 18  | Jianmen Shu Dao                  | Guangyuan City                           | Cultural Landscape & Natural |

**Table 3.3** List of 5A-level Tourist Attraction Types in the Chengdu-Chongqing City Agglomeration (Cont.)

| No. | Scenic            | Location      | Scenic Area Type   |
|-----|-------------------|---------------|--------------------|
| 19  | Zhu De's hometown | Nanchong City | Cultural landscape |
| 20  | Bifeng Gorge      | Yaan City     | Natural            |
| 21  | Guangwu Mountain  | Bazhong City  | Natural            |
| 22  | Anren Ancient     | Chengdu City  | Cultural           |

### 3.2.3 Sample

Integrating the above principles, the samples to be determined were systematically analyzed, yielding the following results: In the Chengdu-Chongqing city Agglomeration, multiple cities have 2 or more 5A-level tourist attractions. To make the samples more representative, redundant 5A-level attractions within the same city were removed based on the Baidu Index platform combined with the level of tourism attention. Additionally, the attractions cover both cultural and natural landscapes. The survey samples were preliminarily determined (Table 3.4).

**Table 3.4** List of Preliminarily Selected Sample Tourist Attractions

| No. | Scenic                          | Location                                 | Level | Network Attention | Scenic Area Type             | Sample (√) |
|-----|---------------------------------|------------------------------------------|-------|-------------------|------------------------------|------------|
| 1   | Golden Buddha Mountain          | Nanchuan District                        | 5A    | High              | Cultural landscape           | √          |
| 2   | Wulong Karst                    | Wulong District                          | 5A    | Low               | Natural                      |            |
| 3   | Dazu Stone Carving              | Dazu District                            | 5A    | High              | Cultural landscape           | √          |
| 4   | Unitary Yang Peach Blossom      | Youyang Tujia and Miao Autonomous Region | 5A    | Low               | Natural                      |            |
| 5   | Wushan Small Three Gorges       | Wushan County                            | 5A    | Low               | Natural                      |            |
| 6   | Yunyang Dragon Tank             | Yunyang County                           | 5A    | Low               | Natural                      |            |
| 7   | Four-sided mountain             | Jiangjin District                        | 5A    | High              | Natural                      | √          |
| 8   | Ayi River                       | Pengshui Town                            | 5A    | Low               | Natural                      |            |
| 9   | Black Valley                    | Qijiang District                         | 5A    | High              | Natural                      | √          |
| 10  | Zhuoshui                        | Qianjiang District                       | 5A    | Low               | Natural                      |            |
| 11  | Baidicheng Qutang Gorge         | Fengjie Town                             | 5A    | Low               | Natural                      |            |
| 12  | Qingcheng Mountain - Dujiangyan | Chengdu City                             | 5A    | High              | Cultural Landscape & Natural | √          |
| 13  | Mount Emei                      | Leshan City                              | 5A    | High              | Cultural Landscape & Natural | √          |
| 14  | Leshan Giant Buddha             | Leshan City                              | 5A    | High              | Cultural landscape           |            |
| 15  | Beichuan Qiangcheng             | Mianyang City                            | 5A    | Low               | Cultural Landscape & Natural | √          |

**Table 3.4** List of Preliminarily Selected Sample Tourist Attractions (Cont.)

| No. | Scenic                   | Location       | Level | Network Attention | Scenic Area Type             | Sample (√) |
|-----|--------------------------|----------------|-------|-------------------|------------------------------|------------|
| 16  | Deng Xiaoping's hometown | Guangan City   | 5A    | High              | Cultural landscape           | √          |
| 17  | Langzhong Ancient City   | Nanchong City  | 5A    | High              | Cultural landscape           | √          |
| 18  | Jianmen Shu Dao          | Guangyuan City | 5A    | High              | Cultural Landscape & Natural | √          |
| 19  | Zhu De's hometown        | Nanchong City  | 5A    | High              | Cultural landscape           |            |
| 20  | Bifeng Gorge             | Yaan City      | 5A    | High              | Natural                      | √          |
| 21  | Guangwu Mountain         | Bazhong City   | 5A    | High              | Natural                      | √          |
| 22  | Anren Ancient Town       | Chengdu City   | 5A    | Low               | Cultural landscape           |            |

However, during the process of organizing the 5A-level tourist attractions in the Chengdu-Chongqing city Agglomeration, it was found that Yibin City, Luzhou City, and Zigong City do not have 5A-level tourist attractions, resulting in a lack of samples in the southern part of Sichuan Province. Yibin City is an important economic sub-center in the southern part of Sichuan Province and serves as a crucial node city for China's new land-sea corridor to Southeast Asia. It has several 4A-level tourist attractions that attract a large number of tourists from the Yun-Gui-Chuan region every year. To ensure the samples are evenly distributed spatially, one 4A-level tourist attraction from Yibin City is added to the southern region of the city Agglomeration. In summary, the author has determined the samples in the Chengdu-Chongqing city Agglomeration to be 13 tourist attractions (Table 3.5).



**Table 3.5** Survey Sample Information in the Study Area

| ID | Name                   | Level | Location  | Sample type      | Panoramic View                                                                        |
|----|------------------------|-------|-----------|------------------|---------------------------------------------------------------------------------------|
| 1  | Golden Buddha Mountain | 5A    | Chongqing | Culture & Nature |    |
| 2  | Dazu Stone Carving     | 5A    |           | Culture          |    |
| 3  | Four-sided mountain    | 5A    |           | Nature           |    |
| 4  | Black Valley           | 5A    |           | Nature           |    |
| 5  | Qingcheng Mountain     | 5A    | Chengdu   | Culture & Nature |   |
| 6  | Emei mountain          | 5A    | Leshan    | Culture & Nature |  |
| 7  | Beichuan Qian          | 5A    | Mianyang  | Culture          |  |

**Table 3.5** Survey Sample Information in the Study Area (Cont.)

| ID | Name                     | Level | Location  | Sample type        | Panoramic View                                                                        |
|----|--------------------------|-------|-----------|--------------------|---------------------------------------------------------------------------------------|
| 8  | Deng Xiaoping's hometown | 5A    | Gungan    | Culture            |    |
| 9  | Langzhong Ancient City   | 5A    | Nanchong  | Cultural landscape |    |
| 10 | Jianmen Shu Dao          | 5A    | Guangyuan | Cultural& Natural  |    |
| 11 | Bifeng Gorge             | 5A    | Yaan      | Natural            |    |
| 12 | Guangwu Mountain         | 5A    | Bazhong   | Natural            |  |
| 13 | Lizhuang Ancient Town    | 4A    | Yibin     | Cultural           |  |

### 3.3 Development of Measurement Scales

The methods for developing measurement scales are categorized into deductive, inductive, homogeneous, and synthesis methods (Yang, 2016). This study adopts a synthesis method for scale development, which, as the name suggests, is not a singular approach but rather integrates the advantages of various methods based on the actual circumstances of the project. Therefore, the scale development is divided into three parts (Figure 3.6). The first part is the project development stage, where a project pool is constructed using qualitative analysis (Kvale et al., 2009), content-goal consistency analysis (Worthen et al., 2014), and project collinearity diagnosis (Shrestha et al., 2020) based on existing literature metrics and interview records. The second part involves distinguishing power coefficient, reliability analysis, and Exploratory Factor Analysis (EFA) (Kyriazos, 2018) using both the project pool and pilot test data to initialize the scale. The third part entails evaluating the scale's validity using Confirmatory Factor Analysis (CFA) (Marsh, 2020) with formal survey data.

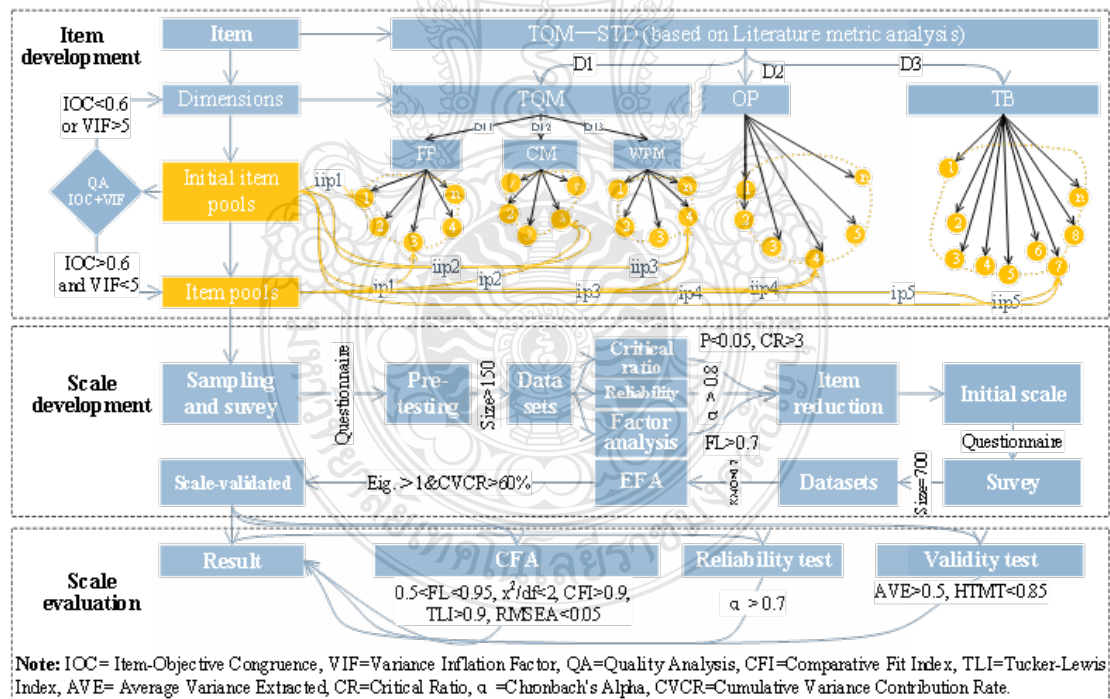


Figure 3.6 Steps for Developing a Measurement Scale

### 3.3.1 IOC

To assess the consistency between test items and objectives, we invited 6 internal experts from Thailand specializing in management and tourism (Ismail et al., 2022), to conduct an IOC examination.

$$IOC = \frac{\sum R}{N} \quad (\text{Formula 3-1})$$

Where: R is the expert's assessment score; N is the number of subject-matter experts.

The items of the questionnaire based on the score range from -1 to +1 as follows: +1= the question is congruent with the objectives; 0= the question is uncertain to be congruent with the objectives; -1= means the question is not congruent with the objectives.

### 3.3.2 Pre-research

Adhering to the principle of simple random sampling, the data collection area is the Chengdu-Chongqing Economic Zone, specifically the Leshan Giant Buddha and Lizhuang Ancient Town scenic areas (Figure 3.7). Data collection was carried out in collaboration with the scenic area management departments, using a combination of online and offline methods. A total of 180 questionnaires were distributed to meet the sample size requirements for exploratory factor analysis as mentioned by Wu (2012).



**Figure 3.7** Sampled Scenic Area

(A) Leshan Giant Buddha, situated in Leshan City, Sichuan Province, is a National 5A-level scenic area. Carved in the Tang Dynasty (713 AD), it stands at a height of 71 meters, depicting a seated Maitreya Buddha and ranking as China's largest cliff-carved stone sculpture.

(B) Li Zhuang Ancient Town, located in Yibin City, Sichuan Province, is a National 4A-level scenic area. Established during the Southern Liang Dynasty (540 AD), it retains the layout and appearance of ancient towns from the Ming and Qing dynasties.

### 3.3.3 Exploratory factor analysis

EFA is designed for situations where the relationships between observed variables and latent factors are unknown or uncertain. The analysis is conducted in an exploratory mode to determine how observed variables are related to latent factors and to what extent. For effective exploratory factor analysis, it is recommended to have a sample size of at least 150 (Wu, 2012). The basic idea of EFA is that observed variables can be explained by some underlying common factors that are not directly observable.

Mathematically, the model of EFA can be represented as follows:

$$X = \Lambda F + \Psi + \varepsilon \quad (\text{Formula 3-2})$$

Where:  $X$  is the observed variable matrix;  $\Lambda$  is the factor loading matrix, representing the influence of latent factors on observed variables;  $F$  is the latent factor matrix;  $\Psi$  is the unique factors matrix, representing the portion that cannot be explained by common factors;  $\varepsilon$  is the error matrix.

### 3.3.3.1 Principal Component Analysis

Principal Component Analysis (PCA) is a dimensionality reduction technique aimed at reducing the dimensions of data by identifying the main components in the data. It achieves this by representing linear combinations of the original variables as new variables called principal components. We primarily use Principal Component Analysis (PCA) to extract factors and obtain the variance explanation of each component. The specific criteria are as follows: in the natural sciences field, the cumulative variance should reach at least 95%. In the social sciences field, a cumulative variance of over 60% indicates reliable common factors (Hair, 2021). Subsequently, the component matrix is rotated to observe factor loadings. Factor loadings greater than 0.5 are typically considered meaningful (Hair, 2021). Finally, the extracted factors are determined.

### 3.3.3.2 KMO and Bartlett's Sphericity Test

KMO (Kaiser-Meyer-Olkin) is a statistic used to measure the suitability of factor analysis, including common factor analysis. KMO measures whether the correlations between observed variables are suitable for factor analysis. The value of this statistic ranges from 0 to 1, with values closer to 1 indicating that the relationships between variables are more suitable for factor analysis. KMO is calculated based on the covariance matrix between observed variables and the elements on the diagonal of the covariance matrix. A higher KMO value indicates a higher commonality among observed variables (Figure 3.8), making factor analysis more appropriate (Shrestha, 2021).

Bartlett's test of sphericity is a statistical test used to determine whether the correlation matrix between observed variables is an identity matrix (i.e., spherical). This test is commonly used in conjunction with factor analysis to ascertain the presence of common factors, indicating whether there is sufficient commonality among observed variables. If the p-value is less than the significance level (typically set at 0.05), the null

hypothesis can be rejected, suggesting that the correlation matrix between observed variables is not an identity matrix and supporting the conduct of factor analysis. Conversely, if the p-value is large, the null hypothesis cannot be rejected, indicating that factor analysis may not be appropriate.

**Table 3.6** Criteria for Judging KMO and Bartlett's Test of Sphericity

| Category           | Range of values            | Reference standard |
|--------------------|----------------------------|--------------------|
| KMO                | $.9 \leq \text{KMO} < 1.0$ | marvelous          |
|                    | $.8 \leq \text{KMO} < .9$  | meritorious        |
|                    | $.7 \leq \text{KMO} < .8$  | middling           |
|                    | $.6 \leq \text{KMO} < .7$  | mediocre           |
|                    | $.5 \leq \text{KMO} < .6$  | miserable          |
|                    | $\text{KMO} < .5$          | unacceptable       |
| Bartlett (P value) | $P < .05$                  | acceptable         |

### 3.4 Questionnaire Design

#### 3.4.1 Questionnaire Design Principles

The core objective of questionnaire design is to collect genuine and effective primary data, meeting the basic requirements of the research. In statistical research, questionnaire design is a prerequisite for subsequent scientifically effective surveys and must ensure the reliability and validity of the questionnaire. To ensure that the questionnaire designed for the study meets empirical requirements, the principles followed in this questionnaire design are as follows:

##### 3.4.1.1 Reasonableness

The purpose of designing the questionnaire is to investigate elements relevant to the research topic and obtain research data on these elements. Therefore, the questions included in the questionnaire must be closely related to the research topic and

have research relevance.

#### 3.4.1.2 Logicality

The questionnaire design needs to have an overall view, ensuring that each independent question does not contain logical errors and that there is logical coherence between independent questions. The content of the questionnaire items should be closely related to better obtain complete information on the research elements.

#### 3.4.1.3 Clarity

The questionnaire items must be clearly understood, avoiding the use of unfamiliar vocabulary so that respondents can quickly grasp the meaning of the question stem and respond quickly, thereby improving the accuracy of the survey questionnaire and the efficiency of answering questions.

#### 3.4.1.4 Conciseness

The content of the questionnaire should not be too lengthy, as this may cause respondents to become impatient, reducing their interest in participating in the survey and affecting the effectiveness of data collection. Therefore, while ensuring that the questionnaire accurately expresses the required content, it should be kept as short and effective as possible. Avoid setting irrelevant questions to ensure overall conciseness.

#### 3.4.1.5 Manageability

Designing a survey questionnaire is to collect data closely related to the survey topic for subsequent data analysis and empirical use. Therefore, consideration should be given to the organization and analysis of the questionnaire data after the survey collection to ensure that the questionnaire data can be processed effectively in subsequent stages.

### 3.4.2 Questionnaire Design Content

Based on the comprehensive quality management theory, the theoretical framework of tourism benefits, the overall perception theory system, and the theory of sustainable tourism development, we thoroughly understand the current situation of comprehensive quality management in the tourism industry of the Chengdu-Chongqing Economic Zone, as well as the economic, social, and ecological benefits generated by the tourism industry in the local area. We adjusted the questionnaire items according to the actual situation of 5A-level scenic spots in the Chengdu-Chongqing Economic Zone and

consulted relevant experts for suggestions. We further optimized and improved the questionnaire survey project and designed a set of survey questionnaires on "Comprehensive Quality Management of the Chengdu-Chongqing Economic Zone for Sustainable Tourism Development" (see Appendix A).

#### Module 1: Basic Information of Respondents

1) Drawing on existing research findings (Jiao, 2023), demographic characteristics of the questionnaire survey respondents were established.

2) Basic information of the questionnaire respondents includes gender, age, occupation, level of education, average monthly household income, place of residence, and number of visits to the Chengdu-Chongqing region, totaling 7 items.

#### Module 2: The Impact of Comprehensive Quality Management on Sustainable Tourism Development

1) The research subjects are tourists.

2) The questionnaire is divided into six main sections, namely: total employee involvement, total process management, total quality management, tourism benefits, overall perception of tourists, and sustainable tourism development.

3) Each measurement item uses a 5-point Likert scale (Memmedova et al., 2024). Option 1 indicates strong disagreement, Option 2 indicates disagreement, Option 3 indicates neutrality, Option 4 indicates agreement and Option 5 indicates strong agreement.

### 3.5 Formal Survey

#### 3.5.1 Distribution of Questionnaires

Due to the Chengdu-Chongqing Economic Zone's 5A-level scenic spots being distributed across Sichuan Province and Chongqing Municipality, conducting the survey will require a significant amount of time. The formal questionnaire survey will be conducted from September 1, 2023, to June 31, 2024. The questionnaires will primarily be distributed and collected at travel agencies, tourist attractions, tourism colleges, and tourism regulatory authorities, such as Sichuan China Travel Service, Chongqing China Travel Service, Sichuan Tourism Institute, and various tourist attractions. A total of 700 questionnaires will be distributed in this survey, with the distribution quantity allocated

according to the 5A-level scenic spots in the Chengdu-Chongqing Economic Zone as determined in Table 3.7.

**Table 3.7** Sample Area Questionnaire Distribution Quantity Allocation Table

| <b>Geographical<br/>Locations of Scenic<br/>Spots</b> | <b>Number of<br/>Scenic Spots</b> | <b>Percentage of<br/>Scenic Spots</b> | <b>Number of<br/>Questionnaires<br/>Distributed</b> |
|-------------------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------------------|
| Chongqing City                                        | 4                                 | 30.7                                  | 214                                                 |
| Chengdu City                                          | 1                                 | 7.7                                   | 54                                                  |
| Mianyang City                                         | 1                                 | 7.7                                   | 54                                                  |
| Guangan City                                          | 1                                 | 7.7                                   | 54                                                  |
| Nanchong City                                         | 1                                 | 7.7                                   | 54                                                  |
| Guangyuan City                                        | 1                                 | 7.7                                   | 54                                                  |
| Yaan City                                             | 1                                 | 7.7                                   | 54                                                  |
| Bazhong City                                          | 1                                 | 7.7                                   | 54                                                  |
| Yibin City                                            | 1                                 | 7.7                                   | 54                                                  |
| Leshan City                                           | 1                                 | 7.7                                   | 54                                                  |
| Total                                                 | 13                                | 100                                   | 700                                                 |

### 3.5.2 Descriptive Statistics Analysis

Descriptive statistical analysis is a scientific method that utilizes tabulation and classification, along with graphical representations and calculations, to describe various characteristics of data. It primarily involves analyzing data frequencies, central tendencies, and dispersions, and generating relevant descriptive statistics. In the SPSS statistical software, descriptive statistics typically include measures such as mean, variance, and standard deviation, which aid in studying the individual and organizational characteristics of evaluation indicator variables and uncovering relationships between data. This study conducted a descriptive statistical analysis of the research scale using SPSS 26.0 software. The indicators of mean and standard deviation primarily reflect the specific conditions of the scale data, while skewness and kurtosis are used to test the normal distribution of the data. Generally, data are considered to follow a normal distribution when the absolute values of skewness are below 2 and kurtosis is below 5 (Nunnally, 1975).

### 3.5.3 Reliability Analysis

Reliability refers to the stability of measurement results, reflecting the magnitude of random measurement errors. Since there are various ways or sources of random measurement errors, there are also various methods for estimating reliability. These methods typically include internal consistency reliability, split-half reliability, test-retest reliability, and parallel forms reliability. In our study, we will use internal consistency reliability to assess the consistency among all items within the measurement. This is usually evaluated using Cronbach's  $\alpha$  coefficient, with the criteria for evaluating Cronbach's  $\alpha$  values shown in Table 3.8 (Hair, 2010).

**Table 3.8** Criteria for Cronbach's Alpha Values

| Range of values                           | Reference standards                       |
|-------------------------------------------|-------------------------------------------|
| Cronbach's $\alpha \geq .9$               | The reliability is very high, trustworthy |
| $.9 > \text{Cronbach's } \alpha \geq .7$  | High reliability, reliable                |
| $.7 > \text{Cronbach's } \alpha \geq .35$ | Moderate reliability, reliable            |
| $.35 \geq \text{Cronbach's } \alpha$      | Low reliability, not reliable             |

### 3.5.4 Validity analysis

Validity refers to the extent to which a test or scale actually measures the psychological traits it is intended to measure. The assessment of validity largely depends on people's interpretation of the measurement purpose. Currently, there are three common perspectives for interpretation: first is to use the content of the measurement to illustrate the purpose, typically divided into face validity and content validity. Second is construct validity, which evaluates whether the structure of the scale is consistent with the theoretical conception of the scale. Third is criterion-related validity, which refers to the predictive ability of the test for actual behavior. The survey questionnaire in this study refers to mature scales and summarizes measurement items for six latent variables. Most of them are adapted from mature scales in previous studies, while some measurement items are designed and formulated based on thorough deliberation by the expert panel during questionnaire development. Therefore, it can be said that the measurement items used in this study can elucidate the latent variables to be measured, indicating that the survey questionnaire and measurement model have good content validity.

### 3.5.5 Confirmatory Factor Analysis (CFA)

#### 3.5.5.1 Convergent Validity Test

Convergent validity, also known as aggregation validity, refers to the degree of correlation between indicator variables that measure the same latent trait or construct. The higher the correlation between these indicator variables, the higher the factor loading of the indicator variables on that factor, indicating better convergent validity of the latent construct reflected by these indicator variables. Evaluating convergent validity relies on calculating statistics such as factor loadings from CFA models. Specifically, there are several indicators for assessing convergent validity:

##### 1) Factor loading

The square of the factor loading represents the commonality of the measurement items, indicating the extent to which the measurement items can be explained by the latent factor. Communality, also known as the variance extracted, measures the amount of variance in the measurement items that is accounted for by the extracted factor. When the factor loading is above .71, the latent common factor can explain more than 50.0% of the variance in the measurement variables. Therefore, when the standardized path coefficient of the latent variable to the measurement variable is higher than .71, it indicates good convergent validity of the factor. The evaluation criteria for factor loadings are that they should all be statistically significant and have values higher than .50, with an ideal scenario being above .70 (Sneed et al., 2023).

##### 2) AVE (average variance extracted)

AVE (Average Variance Extracted) is a measure of convergent validity, representing the ratio of the variance explained by the latent variables to the total variance of the indicators. A higher AVE value indicates that the measurement items more effectively reflect the latent traits of the common factor. Carlone et al. (2023) proposed a general criterion that AVE should be greater than .50. AVE is calculated as the average of the squared standardized factor loadings. If the AVE value is less than .50, it suggests that the latent variables in the measurement model explain less variance in the indicators than the error terms, indicating poor convergent validity of the common factor. The formula for calculating AVE is:

$$AVE = \frac{\sum \lambda^2}{n} \quad (\text{Formula 3-3})$$

Where  $\lambda$  is the standard loading and  $n$  is the number of items.

#### 3.5.5.2 Discriminant validity text

CR is one of the index values of convergent validity. The reliability of the CFA model is constructed reliability, also known as comprehensive reliability. Construct reliability is the criterion for judging the intrinsic quality of the measurement model. If one of the combined reliability values of the latent variables is between 0.60 and 0.70, it means that the construct reliability of the measurement model is good; if the combined reliability value is above 0.70, it means that the construct reliability of the measurement model is good (Hu, 1999). Construct reliability represents the degree of consistency of a set of measurement index variables. If the constructing reliability value is enhanced, it means that the correlation between this set of measurement indexes is greater, that is, the underlying construct or factor construct measured by the measurement index. There is a lot of consistency in the underlying constructions measured by the items. The formula for calculating construct reliability is as follows:

$$CR = \frac{(\sum \lambda)^2}{(\sum \lambda)^2 + \sum \theta'} \quad (\text{Formula 3-4})$$

Where  $\lambda$  represents the standardized factor loading, and  $\theta$  is the number of items.  $\theta = 1 - \lambda^2$

#### 3.5.5.3 Discriminant Validity Text

Discriminant validity means that there is a low correlation or significant difference between the latent traits represented by a factor or construct and the latent traits represented by other factors or constructs. The most commonly used testing methods for discriminant validity are the comparison method between the square root of AVE and the correlation coefficient between variables (Cheung et al., 2023) and (Muzi et al., 2023). If the value after opening is the highest among the correlation coefficients value indicates good discriminant validity.

HTMT, or Heterotrait-Monotrait Ratio of Correlations, is the ratio of inter-construct correlations to intra-construct correlations. It represents the mean correlation between indicators of different constructs relative to the mean correlation between indicators of the same construct. When using this method, refer to the study by Diotaiuti et al. (2023). According to this study, an HTMT value below .85 is considered to indicate discriminant validity.

### 3.6 Structural Equation Modeling (SEM)

Structural Equation Model (SEM) is a statistical method used to establish, estimate, and test causal relationships based on the covariance matrix of variables. It is also known as the Covariance Structure Model (CSM), Linear Structural Relationship Model (LISREL), and Latent Variable Model (LVM). SEM can be used not only to study the internal structure of measurement items but also to investigate relationships between latent variables, making it an important tool for multivariate data analysis.

#### 3.6.1 The two types of models

##### 3.6.1.1 The measurement model equation

The measurement model consists of latent variables, observed variables, and error terms, representing the relationship between latent variables and observed variables. Observed variables are sometimes referred to as manifest variables, measured indicators, or indicators. The equation of the measurement model reflects the relationship between latent variables and observed variables and is expressed as follows:

$$x = \Lambda_x \xi + \delta \quad \text{Formula 3-4)}$$

$$y = \Lambda_y \eta + \varepsilon \quad \text{Formula 3-5)}$$

where  $x$  is the indicator variable for the independent variable,  $\Lambda_x$  is the factor loading, and  $\delta$  is the measurement error.  $y$  is the indicator variable for the dependent variable,  $\Lambda_y$  is the factor loading, and  $\varepsilon$  is the measurement error.

##### 3.6.1.2 Structural Equation Modeling

The structural model represents the causal structural relationships between latent variables. The equation is expressed as follows:

$$\eta = B\eta + \Gamma\xi + \zeta \quad \text{(Formula 3-6)}$$

where  $\eta$  is the dependent variable,  $\xi$  is the independent variable,  $n$  is the number of independent variables,  $B$  is the coefficient matrix reflecting the relationships between dependent variables,  $\Gamma$  is the coefficient matrix reflecting the relationships between independent and dependent variables, and  $\zeta$  is the estimation error representing the part of the dependent variable that cannot be explained by the independent variables.

### **3.6.2 Structural Equation Model Fitting Steps**

#### **3.6.2.1 Model Construction**

First, it is necessary to consult relevant research materials to fully understand the development of the research content. Based on theoretical knowledge in the research field and empirical evidence, determine the specific relationships between variables and related variables in this study. This includes latent variables, relationships between latent variables, and observed variables, to establish the measurement model and structural model. Clarify these relationships to form the structural equation model for this study.

#### **3.6.2.2 Model fitting**

Estimating and fitting the model involves computing estimates of the parameters in the constructed model using the data obtained from the actual research. It entails assessing the difference between the covariance matrices of the sample data and the model. After comprehensive consideration, this study employs maximum likelihood estimation for model fitting.

#### **3.6.2.3 Model evaluation**

Model evaluation is used to assess whether the collected sample data matches the established model. By determining whether various fit indices fall within appropriate ranges, the overall model fit is evaluated. The specific fit indices selected in this study and their criteria are shown in Table 3.9.

**Table 3.9** Model Fit Analysis Criteria

| Model Fit Criteria | Acceptable level |
|--------------------|------------------|
| Chi-square         | -                |
| Degree of freedom  | -                |
| Chi-square/df      | < 2              |
| p-value            | > .05            |
| GFI                | ≥.90             |
| AGFI               | ≥.80             |
| RMSEA              | < .06            |
| NFI                | > .90            |
| CFI                | > .90            |

#### 3.6.2.4 Model adjustment

After evaluating the model, if the values of various fitting indicators do not meet the adaptation standards, it indicates that the model has certain issues, and corrective actions are required. The correction methods include removing relevant items, modifying pathways, etc. Furthermore, during the process of model correction, there should be a scientifically sound explanation. The purpose is to ensure that the final modified model passes all tests and meets the required criteria.

In summary, to verify whether the assumptions of the constructed model on the influence factors of comprehensive quality management and sustainable development in the Chengdu-Chongqing Urban agglomeration tourism industry hold, this study will employ the Structural Equation Modeling (SEM) method to validate the hypothesized relationships among latent variables in the theoretical model. Structural Equation Modeling is a statistical method that combines factor analysis with path analysis, allowing for the analysis and treatment of unobservable variables and their causal relationships. Since the latent variables in the model cannot be directly measured, they need to be operationalized, and the required sample data will be obtained using directly measurable items.

## **CHAPTER 4**

### **RESEARCH RESULTS**

This chapter mainly conducts a detailed analysis of the collected data, explores the impact of total quality management (full participation, whole process management, comprehensive management) on sustainable tourism development, and also explores the intermediary role of tourism benefits and perceived tourism quality. The analysis focuses on the following four parts: 1. Scale development, including item development, scale development, and EFA. 2. Characteristics of respondents and data preparation, including demographic features and sample characteristics. Basic statistical methods are employed to analyze general data of respondents, including frequency distribution, percentages, arithmetic mean, standard deviation, etc. 3. Reliability and validity testing. 4. Confirmatory Factor Analysis (CFA) is conducted to assess the development and validity of the models for Total Quality Management, Tourism Benefits, Perceived Tourism Quality, and Sustainable Tourism Development. 5. Structural Equation Modeling (SEM) is employed to analyze the causal relationship models of the impact of Total Quality Management and Sustainable Tourism Development in the Chengdu-Chongqing urban agglomeration.

#### **4.1 Scale Development**

##### **4.1.1 Item Development**

We developed a scale based on the hypothetical model and literature knowledge, establishing 6 dimensions, 7 hypotheses, and 45 items for the impact of TQM on STD. After conducting an Item-Objective Congruence (IOC) test (see Table 4.1), items with IOC values are all greater than 0.6. The IOC test results characterize the items that each dimension (variable) contains to represent this variable. However, it was uncertain whether there was multicollinearity among the items (Shrestha et al., 2020). Therefore, we used SPSS software to diagnose multicollinearity among the items within the same variable. The results showed  $VIF > 5$  of all variables.

**Table 4.1** IOC Test

| Variable                       | Item | Subject-Matter Expert |      |      |      |      |      | Item Average Score | Variable's Average Score |
|--------------------------------|------|-----------------------|------|------|------|------|------|--------------------|--------------------------|
|                                |      | NO.1                  | NO.2 | NO.3 | NO.4 | NO.5 | NO.6 |                    |                          |
| Full Participation (FP)        | FP1  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  | 0.898                    |
|                                | FP2  | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|                                | FP3  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                | FP4  | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|                                | FP5  | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|                                | FP6  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
| Whole Process Management (WPM) | WPM1 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  | 0.904                    |
|                                | WPM2 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                | WPM3 | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|                                | WPM4 | +1                    | -1   | +1   | +1   | +1   | +1   | 0.67               |                          |
|                                | WPM5 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                | WPM6 | +1                    | +1   | 0    | +1   | +1   | +1   | 0.83               |                          |
|                                | WPM7 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
| Comprehensive Management (CM)  | CM1  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  | 0.966                    |
|                                | CM2  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                | CM3  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                | CM4  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                | CM5  | +1                    | +1   | 0    | +1   | +1   | +1   | 0.83               |                          |
| Tourism Benefits (TB)          | TB1  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  | 0.834                    |
|                                | TB2  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |

**Table 4.1** IOC Test (Cont.)

| Variable                              | Item | Subject-Matter Expert |      |      |      |      |      | Item Average Score | Variable's Average Score |
|---------------------------------------|------|-----------------------|------|------|------|------|------|--------------------|--------------------------|
|                                       |      | NO.1                  | NO.2 | NO.3 | NO.4 | NO.5 | NO.6 |                    |                          |
| Perceived tourism quality (PTQ)       | TB3  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  | 1.000                    |
|                                       | TB4  | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | TB5  | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|                                       | TB6  | +1                    | -1   | +1   | +1   | +1   | +1   | 0.67               |                          |
|                                       | TB7  | +1                    | -1   | +1   | +1   | +1   | +1   | 0.67               |                          |
|                                       | TB8  | +1                    | -1   | +1   | +1   | +1   | +1   | 0.67               |                          |
|                                       | TB9  | +1                    | -1   | +1   | +1   | +1   | +1   | 0.67               |                          |
|                                       | PTQ1 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ2 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ3 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ4 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ5 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ6 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ7 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | PTQ8 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
| Sustainable Tourism Development (STD) | PTQ9 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  | 0.889                    |
|                                       | STD1 | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|                                       | STD2 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | STD3 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|                                       | STD4 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |

**Table 4.1** IOC Test (Cont.)

| Variable | Item | Subject-Matter Expert |      |      |      |      |      | Item Average Score | Variable's Average Score |
|----------|------|-----------------------|------|------|------|------|------|--------------------|--------------------------|
|          |      | NO.1                  | NO.2 | NO.3 | NO.4 | NO.5 | NO.6 |                    |                          |
|          | STD5 | +1                    | 0    | +1   | +1   | +1   | +1   | 0.67               |                          |
|          | STD6 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|          | STD7 | +1                    | +1   | +1   | +1   | +1   | +1   | 1                  |                          |
|          | STD8 | +1                    | 0    | +1   | +1   | +1   | +1   | 0.83               |                          |
|          | STD9 | +1                    | 0    | 0    | +1   | +1   | +1   | 0.67               |                          |



#### 4.1.2 Item Analysis

Item development involves constructing and selecting items through IOC and collinearity diagnosis. To ensure the scientific rationale of item selection and quantity, we need to conduct item analysis using questionnaire data based on the item pool and questionnaire. Subsequently, we reassessed whether the items needed to be trimmed. Between August 30th and September 30th, 2023, a pilot test questionnaire was distributed, with 180 questionnaires distributed and 15 invalid questionnaires removed, resulting in 165 valid questionnaires, yielding an effective rate of 91.7%.

The 165 questionnaires were sorted based on the total mean scores for different variables, with the top 27% considered as the high-score group and the bottom 27% as the low-score group. The mean scores of the high and low-score groups for each variable were calculated, and the difference between the mean scores represents the discriminant coefficient of the variable (see Table 4.2), where a larger absolute value indicates higher item discriminant power. Independent sample t-tests revealed that the t-values for WPM3, PTQ3, and PTQ9 were all less than 3 and not significant ( $p > 0.05$ ), indicating poor discriminant power for these items. Consequently, they were deleted, leaving a final item pool of 42 items.

**Table 4.2** The Analysis Results of the Discriminant Coefficient Method and Critical Ratio Method

| Items  | Average value   |                  | Discrimination coefficient | t-value | p    |
|--------|-----------------|------------------|----------------------------|---------|------|
|        | low-score group | high-score group |                            |         |      |
| FP1    | 2.66            | 3.38             | .72                        | 3.512   | .010 |
| FP2    | 2.47            | 4.38             | 1.91                       | 11.058  | .000 |
| FP3    | 3.09            | 4.55             | 1.46                       | 8.271   | .000 |
| FP4    | 2.88            | 4.59             | 1.71                       | 11.313  | .000 |
| FP5    | 2.72            | 4.62             | 1.9                        | 14.569  | .000 |
| FP6    | 2.94            | 4.62             | 1.68                       | 10.584  | .000 |
| WPM1   | 3.19            | 4.75             | 1.56                       | 10.056  | .000 |
| WPM2   | 2.71            | 4.43             | 1.72                       | 10.799  | .000 |
| △ WPM3 | 2.61            | 2.82             | .21                        | 1.805   | .076 |
| WPM4   | 3.39            | 4.82             | 1.43                       | 12.418  | .000 |
| WPM5   | 1.97            | 3.04             | 1.07                       | 3.752   | .000 |

**Table 4.2** The Analysis Results of the Discriminant Coefficient Method and Critical Ratio Method (Cont.)

| Items  | Average value   |                  | Discrimination coefficient | t-value | p    |
|--------|-----------------|------------------|----------------------------|---------|------|
|        | low-score group | high-score group |                            |         |      |
| WPM6   | 2.84            | 4.50             | 1.66                       | 11.602  | .000 |
| WPM7   | 2.97            | 4.71             | 1.74                       | 13.2    | .000 |
| CM1    | 3.04            | 4.64             | 1.60                       | 10.065  | .000 |
| CM2    | 2.64            | 4.36             | 1.72                       | 10.951  | .000 |
| CM3    | 2.93            | 4.85             | 1.92                       | 15.285  | .000 |
| CM4    | 2.82            | 4.48             | 1.66                       | 10.519  | .000 |
| CM5    | 2.79            | 4.67             | 1.88                       | 14.037  | .000 |
| TB1    | 2.72            | 4.55             | 1.83                       | 13.673  | .000 |
| TB2    | 2.9             | 4.52             | 1.62                       | 9.659   | .000 |
| TB3    | 2.52            | 4.52             | 2.00                       | 12.291  | .000 |
| TB4    | 2.93            | 4.55             | 1.62                       | 9.434   | .000 |
| TB5    | 2.9             | 4.58             | 1.68                       | 10.084  | .000 |
| TB6    | 2.55            | 4.32             | 1.77                       | 12.323  | .000 |
| TB7    | 2.86            | 4.48             | 1.62                       | 8.849   | .000 |
| TB8    | 2.62            | 4.55             | 1.93                       | 13.988  | .000 |
| TB9    | 2.79            | 4.71             | 1.92                       | 12.912  | .000 |
| PTQ1   | 3.29            | 4.71             | 1.42                       | 8.399   | .000 |
| PTQ2   | 3.14            | 4.52             | 1.38                       | 6.905   | .000 |
| △PTQ3  | 2.75            | 3.26             | .51                        | 2.884   | .070 |
| PTQ4   | 2.79            | 4.58             | 1.79                       | 10.143  | .000 |
| PTQ5   | 3.11            | 4.74             | 1.63                       | 10.178  | .000 |
| PTQ6   | 2.36            | 4.03             | 1.67                       | 3.891   | .000 |
| PTQ7   | 2.61            | 4.23             | 1.62                       | 9.175   | .000 |
| PTQ8   | 2.89            | 4.35             | 1.46                       | 9.073   | .000 |
| △ PTQ9 | 2.64            | 2.55             | .09                        | -0.468  | .640 |
| STD1   | 2.75            | 4.65             | 1.90                       | 14.86   | .000 |
| STD2   | 2.57            | 4.32             | 1.75                       | 11.81   | .000 |
| STD3   | 2.75            | 4.53             | 1.78                       | 12.83   | .000 |
| STD4   | 2.60            | 4.56             | 1.95                       | 11.83   | .000 |
| STD5   | 2.68            | 4.68             | 1.99                       | 15.38   | .000 |
| STD6   | 2.86            | 4.64             | 1.79                       | 11.80   | .000 |
| STD7   | 2.93            | 4.53             | 1.60                       | 10.28   | .000 |

**Table 4.2** The Analysis Results of the Discriminant Coefficient Method and Critical Ratio Method (Cont.)

| Items | Average value   |                  | Discrimination coefficient | t-value | p    |
|-------|-----------------|------------------|----------------------------|---------|------|
|       | low-score group | high-score group |                            |         |      |
| STD8  | 2.96            | 4.76             | 1.80                       | 12.51   | .000 |
| STD9  | 2.93            | 4.62             | 1.69                       | 10.49   | .000 |

Notes: The triangle symbol indicates that this variable needs to be deleted.

#### 4.1.3 Reliability Analysis

Reliability analysis was conducted based on the item discriminant analysis (Table 4.3). As shown in Table 8, removing the three items FP1, WPM5, and PTQ6 would increase the Cronbach's  $\alpha$  coefficients of the FP, WPM, and PTQ scales to .881, .875, and .892, respectively, all exceeding .80. This represents a significant improvement compared to the original Cronbach's  $\alpha$  coefficients of .813, .778, and .773 for the respective scales. Conversely, removing the remaining 39 items would notably decrease the Cronbach's  $\alpha$  coefficients of their corresponding scales. Therefore, removing FP1, WPM5, and PTQ6 items was deemed necessary to further optimize each scale. After removal, the Cronbach's  $\alpha$  coefficients for each scale exceeded .8, indicating excellent internal consistency of the scales. These results suggest strong correlations among the factors in this study, indicating high internal consistency. Consequently, the items in each dimension of the scale are reliable.

**Table 4.3** Cronbach's Alpha Reliability Analysis

| Dimensions               | Item code | Cronbach's alpha after deletion of the item |
|--------------------------|-----------|---------------------------------------------|
| Full Participation       | △FP1      | .881                                        |
|                          | FP2       | .755                                        |
|                          | FP3       | .775                                        |
|                          | FP4       | .763                                        |
|                          | FP5       | .739                                        |
|                          | FP6       | .757                                        |
| Whole Process Management | WPM1      | .720                                        |
|                          | WPM2      | .714                                        |

**Table 4.3** Cronbach's Alpha Reliability Analysis (Cont.)

| Dimensions                      | Item code | Cronbach's alpha after deletion of the item |
|---------------------------------|-----------|---------------------------------------------|
| Comprehensive Management        | WPM4      | .720                                        |
|                                 | △WPM5     | .875                                        |
|                                 | WPM6      | .707                                        |
|                                 | WPM7      | .710                                        |
|                                 | CM1       | .854                                        |
|                                 | CM2       | .864                                        |
|                                 | CM3       | .834                                        |
| Tourism Benefits                | CM4       | .849                                        |
|                                 | CM5       | .850                                        |
|                                 | TB1       | .916                                        |
|                                 | TB2       | .920                                        |
|                                 | TB3       | .921                                        |
|                                 | TB4       | .923                                        |
|                                 | TB5       | .919                                        |
| Perceived Tourism Quality       | TB6       | .918                                        |
|                                 | TB7       | .924                                        |
|                                 | TB8       | .913                                        |
|                                 | TB9       | .913                                        |
|                                 | PQ1       | .674                                        |
|                                 | PQ2       | .674                                        |
|                                 | PQ4       | .655                                        |
| Sustainable Tourism Development | PQ5       | .661                                        |
|                                 | △PQ6      | .892                                        |
|                                 | PQ7       | .667                                        |
|                                 | PQ8       | .663                                        |
|                                 | STD1      | .93                                         |
|                                 | STD2      | .933                                        |
|                                 | STD3      | .933                                        |
|                                 | STD4      | .930                                        |
|                                 | STD5      | .927                                        |
|                                 | STD6      | .930                                        |
|                                 | STD7      | .930                                        |
|                                 | STD8      | .931                                        |
|                                 | STD9      | .932                                        |

Notes: The triangle symbol indicates that this variable needs to be deleted.

#### 4.1.4 Factor Analysis

KMO (Kaiser-Meyer Olkin) is one of the statistics used to assess the suitability of a factor analysis model. It is employed to investigate the underlying structure among multiple observed variables, with the main objective being to explore and discover latent factor structures present in the data (Schreiber, 2021). According to Wu(2010), the adequacy of the data for factor analysis can be assessed based on the Kaiser-Meyer Olkin (KMO) value for sampling adequacy and Bartlett's Test of Sphericity, which determines whether there is a correlation among the original variables. After conducting statistical analysis on 165 sets of data, the results indicate a KMO value of .888 and a chi-square value of 2879.752 for Bartlett's Test of Sphericity ( $p < .001$ ), with degrees of freedom (df) equal to 741 (Table 4.4). This suggests that there is some degree of correlation among the items, indicating the potential presence of underlying common factors, making the research data highly suitable for factor analysis.

**Table 4.4** Assessment of KMO Index Value

| KMO Sampling Adequacy Measure |            | .888     |
|-------------------------------|------------|----------|
| Bartlett's Test of Sphericity | Chi-Square | 2879.752 |
|                               | df         | 741      |
|                               | Sig.       | .000     |

#### 4.1.5 EFA

The Cumulative Percentage of Variance (CPV) is utilized to determine the number of common factors. Hair et al. (2013) proposed that in the social sciences field, a cumulative variance of at least 60% or higher indicates reliable common factors. Additionally, principal component analysis was employed for factor extraction (see Table 4.5), where the initial eigenvalue (Kaiser's eigenvalue = 2.053)  $> 1$ , suggesting that six factors can be extracted. Furthermore, the cumulative variant contribution of the six factors, which is 68.125%  $> 60\%$ , further validates the aforementioned conclusion. Therefore, six factors were extracted.

**Table 4.5** Variance Explained by Each Component (N=165)

| Component | Initial Eigenvalues |                        |              | Extraction Sums of Squared Loadings |                        |              | Rotated Sums of Squared Loadings |                        |              |
|-----------|---------------------|------------------------|--------------|-------------------------------------|------------------------|--------------|----------------------------------|------------------------|--------------|
|           | Total               | Percentage of Variance | Cumulative % | Total                               | Loadings               |              | Total                            | Percentage of Variance | Cumulative % |
|           |                     |                        |              |                                     | Percentage of Variance | Cumulative % |                                  |                        |              |
| 1         | 12.161              | 31.183                 | 31.183       | 12.161                              | 31.183                 | 31.183       | 6.072                            | 15.569                 | 15.569       |
| 2         | 4.017               | 10.301                 | 41.484       | 4.017                               | 10.301                 | 41.484       | 5.774                            | 14.806                 | 30.374       |
| 3         | 3.337               | 8.556                  | 50.039       | 3.337                               | 8.556                  | 50.039       | 4.117                            | 10.557                 | 40.932       |
| 4         | 2.597               | 6.659                  | 56.698       | 2.597                               | 6.659                  | 56.698       | 3.563                            | 9.136                  | 50.068       |
| 5         | 2.404               | 6.164                  | 62.862       | 2.404                               | 6.164                  | 62.862       | 3.555                            | 9.116                  | 59.184       |
| 6         | 2.053               | 5.263                  | 68.125       | 2.053                               | 5.263                  | 68.125       | 3.487                            | 8.941                  | 68.125       |

Table 4.6 presents the rotated component matrix, with all variables grouped into 6 major factors. As shown in Table 4.6, it is evident that each factor aligns with the questionnaire design categories mentioned earlier, and each factor loading is above 0.7, indicating good validity.

**Table 4.6** Rotated Component Matrix (N=165)

| <b>Rotated Component Matrix <sup>a</sup></b> |           |             |             |             |             |             |
|----------------------------------------------|-----------|-------------|-------------|-------------|-------------|-------------|
|                                              | Component |             |             |             |             |             |
|                                              | 1         | 2           | 3           | 4           | 5           | 6           |
| FP2                                          | .224      | .118        | .134        | <b>.801</b> | .079        | .036        |
| FP3                                          | .168      | .208        | .096        | <b>.706</b> | .127        | .048        |
| FP4                                          | .038      | .177        | .042        | <b>.821</b> | .031        | .057        |
| FP5                                          | .158      | .218        | .183        | <b>.777</b> | .077        | .004        |
| FP6                                          | .088      | .154        | .266        | <b>.746</b> | .054        | .071        |
| WPM1                                         | .228      | .104        | .232        | .014        | .163        | <b>.694</b> |
| WPM2                                         | .075      | .188        | .057        | -.052       | .145        | <b>.784</b> |
| WPM4                                         | .175      | .155        | .077        | .042        | -.010       | <b>.773</b> |
| WPM6                                         | .131      | .159        | .058        | .152        | .071        | <b>.804</b> |
| WPM7                                         | .238      | .021        | .152        | .070        | .079        | <b>.806</b> |
| CM1                                          | .050      | .004        | .139        | .045        | <b>.765</b> | .222        |
| CM2                                          | -.011     | .046        | .258        | .162        | <b>.754</b> | -.078       |
| CM3                                          | .108      | .089        | .032        | .017        | <b>.854</b> | .061        |
| CM4                                          | .157      | .045        | .107        | .093        | <b>.779</b> | .154        |
| CM5                                          | .225      | .065        | .055        | .040        | <b>.804</b> | .054        |
| TB1                                          | .311      | <b>.755</b> | .137        | .139        | -.033       | .045        |
| TB2                                          | .071      | <b>.708</b> | .091        | .319        | -.011       | .177        |
| TB3                                          | .265      | <b>.707</b> | .116        | .094        | .054        | .028        |
| TB4                                          | .206      | <b>.697</b> | -.026       | .070        | .038        | .219        |
| TB5                                          | .231      | <b>.760</b> | .067        | -.055       | .246        | .055        |
| TB6                                          | .288      | <b>.697</b> | .110        | .294        | .087        | .105        |
| TB7                                          | .134      | <b>.681</b> | .086        | .193        | -.020       | .056        |
| TB8                                          | .229      | <b>.811</b> | .038        | .089        | .111        | .126        |
| TB9                                          | .148      | <b>.831</b> | .181        | .146        | -.035       | .079        |
| PTQ1                                         | .059      | .189        | <b>.663</b> | .117        | .231        | .104        |
| PTQ2                                         | .049      | .012        | <b>.778</b> | .172        | .087        | -.009       |
| PTQ4                                         | .048      | .125        | <b>.824</b> | .013        | .064        | .110        |
| PTQ5                                         | .041      | .113        | <b>.788</b> | .148        | .011        | .084        |

**Table 4.6** Rotated Component matrix (N=165) (Cont.)

| <b>Rotated Component Matrix <sup>a</sup></b> |           |      |             |      |       |      |
|----------------------------------------------|-----------|------|-------------|------|-------|------|
|                                              | Component |      |             |      |       |      |
|                                              | 1         | 2    | 3           | 4    | 5     | 6    |
| PTQ7                                         | .087      | .029 | <b>.743</b> | .217 | .225  | .196 |
| PTQ8                                         | .099      | .121 | <b>.836</b> | .058 | .049  | .108 |
| STD1                                         | .741      | .160 | .207        | .156 | .097  | .280 |
| STD2                                         | .668      | .390 | .086        | .083 | .016  | .153 |
| STD3                                         | .743      | .245 | -.045       | .034 | .142  | .080 |
| STD4                                         | .761      | .190 | .041        | .161 | .203  | .157 |
| STD5                                         | .830      | .135 | .061        | .137 | .060  | .187 |
| STD6                                         | .791      | .231 | -.054       | .089 | .130  | .070 |
| STD7                                         | .755      | .300 | .051        | .058 | .172  | .076 |
| STD8                                         | .805      | .103 | .177        | .122 | -.044 | .122 |
| STD9                                         | .761      | .208 | .055        | .085 | .027  | .071 |

Extraction Method: Principal Component Analysis

PCA analysis reveals that FP2, FP3, FP4, FP5, and FP6 load heavily on the fourth factor, labeled as "Full Participation (FP)"; WPM1, WPM2, WPM4, WPM6, and WPM7 show high loadings on the sixth factor, designated as "Whole Process Management (WPM)"; CM1, CM2, CM3, CM4, and CM5 demonstrate high loadings on the fifth factor, termed as "Comprehensive Management (CM)"; TB1, TB2, TB3, TB4, TB5, TB6, TB7, TB8, and TB9 exhibit high loadings on the second factor, labeled as "Tourism Benefits (TB)"; PTQ1, PTQ2, PTQ4, PTQ5, PTQ7, and PTQ8 load heavily on the third factor, named as "Perceived Tourism Quality (PTQ)"; STD1, STD2, STD3, STD4, STD5, STD6, STD7, STD8, and STD9 load significantly on the first factor, named as "Sustainable Tourism Development (STD)", consistent with the expected dimension, demonstrating good validity. Thus, the formal scale is established (Table 4.7).

**Table 4.7** TQM - STD Scale and Codes

| Constructs | Question setting principles                                                                                                                                                                    | Question Code                             | Scale Source                                                                                        |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------|
| FP         | The requirement is for all staff in the scenic area to participate, collect opinions and suggestions from all staff, and encourage employee involvement in decision-making.                    | FP2 FP3<br>FP4 FP5<br>FP6                 | Combining the scale from Tarí et al. (2020) and Ababneh (2021), with some modifications.            |
| WPM        | The enhancement of the operational effectiveness of the scenic area is significant, with issues being effectively resolved and continuous improvement in the management of the area.           | WPM1 WPM2<br>WPM4 WPM6<br>WPM7            | Drawing from the scale developed by Tarí et al. (2020) and Ababneh (2021), with some modifications. |
| CM         | The requirement includes maintaining cleanliness in the scenic area, highlighting distinctive tourism products, ensuring clear thematic elements, and providing high-quality tourism services. | CM1 CM2 CM3<br>CM4 CM5                    | Drawing from the scale developed by Tarí et al. (2020) and Ababneh (2021), with some modifications. |
| PTQ        | Attaining a favorable tourist experience, enhancing tourist satisfaction, and fostering spontaneous tourism promotion.                                                                         | PTQ1 PTQ2<br>PTQ4 PTQ5<br>PTQ7 PTQ8       | Combined with Zheng's (2021) scale, partially modified                                              |
| TB         | Adhering to ecological, social, and environmental benefits.                                                                                                                                    | TB1 TB2 TB3<br>TB4 TB5 TB6<br>TB7 TB8 TB9 | Combined with Godovykh. (2023) scale, partially modified                                            |

**Table 4.7** TQM - STD Scale and Codes (Cont.)

| Constructs | Question setting principles                                                                                                                                | Question Code                                            | Scale Source                                                                                                       |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| STD        | Realizing equitable development, improving the quality of life for local residents, and ensuring sustainable utilization of resources and the environment. | STD1 STD2<br>STD3 STD4<br>STD5 STD6<br>STD7 STD8<br>STD9 | Integrating the scale from Huang (2023) & VU (2023), along with modifications based on Poudel (2016) & Hsu (2020). |

## 4.2 Data Preparation

### 4.2.1 Data Screening and Editing

Using statistical analysis, all data from the survey were preprocessed to select relevant data for empirical research. The most crucial step in data preprocessing is removing invalid questionnaires. The exclusion of invalid questionnaires primarily relies on two methods. The first method involves removing questionnaires with excessively short completion times. Based on the questionnaire's content, the completion times of five individuals were sampled: 135 seconds, 140 seconds, 137 seconds, 142 seconds, and 138 seconds. The shortest completion time among the five individuals, 135 seconds, was used as the reference standard for estimating the fastest time to complete the questionnaire, which is 135 seconds. Therefore, any completion time below 135 seconds was considered an invalid questionnaire. The second method involves excluding questionnaires where all responses to the scale questions are identical. In this survey, a total of 700 questionnaires were distributed, with 643 questionnaires collected. After removing 11 questionnaires with excessively short completion times or identical responses, 632 valid questionnaires remained, resulting in an effective rate of 90.2%. Among them, there were 6 items on the scale measuring the relationship between overall tourist perception and sustainable tourism development, and 33 items on the scale assessing the impact of total quality management on sustainable tourism development. The number of valid questionnaires exceeded ten times the largest number of items on the scale, and the sample size exceeded 500, thus meeting the requirements for factor analysis (Corsuch, 1990).

#### 4.2.2 Data Coding and Entry

The variables in this study had been encoded to simplify the data processing and interpretation process. The abbreviation used for variables is shown in table 4.8. IBM's statistical software packages were used for data analysis. SPSS Statistics version 26 was used for descriptive statistics and SPSS AMOS version 24 was used for Structural Equation Model (SEM) analysis.

**Table 4.8** Abbreviation of Constructs and Observed Variables

| Construct Group | Observed variable | Type of variable     |
|-----------------|-------------------|----------------------|
| TQM             | FP<br>WPM<br>CM   | Independent Variable |
| TB<br>PTQ       | /                 | Mediating Variable   |
| STD             | /                 | Dependent Variable   |

#### 4.3 Questionnaire Analysis

According to the summary results from Table 4.9, regarding gender proportion, there were a total of 401 females, accounting for 63.4%, and 231 males, accounting for 36.6%. The difference in proportion between the two genders is not significant. In terms of age groups, the largest proportion was observed among young people aged 18-30, accounting for 54.4%. People under 18 and above 50 accounted for a smaller proportion, at 7.3% and 3.3% respectively. Observing the education level of the respondents, individuals with associate degrees, bachelor's degrees, master's degrees, and above accounted for 77.8% of the total surveyed population. In summary, the survey primarily targeted young adults with relatively high levels of education, indicating a clearer understanding and discernment ability among respondents. This contributes to the quality assurance of the data. Regarding economic income, the highest proportion was found in the family monthly income range of 5000-10000 RMB, accounting for 24.7%, followed by the range of 10000-20000 RMB, accounting for 24.1%. This suggests that the surveyed individuals possess a certain level of tourism consumption capacity. Regarding the respondents' place of residence and frequency of visiting the Chengdu-Chongqing region,

the majority of respondents were from the local area (Sichuan Province and Chongqing Municipality), and they visited the region three times or more. Therefore, to maintain the current status and sustain tourism development in the Chengdu-Chongqing Urban Agglomeration, efforts should be made across various aspects to enhance tourist satisfaction and attract visitors from around the world to the scenic spots in the Chengdu-Chongqing Urban Agglomeration.

**Table 4.9** Respondents' Demographic Profile

| Basic-info                        | Sub-basic-info                     | Frequency | %    |
|-----------------------------------|------------------------------------|-----------|------|
| Gender                            | Male                               | 231       | 36.6 |
|                                   | Female                             | 401       | 63.4 |
| Age                               | Under 18 years                     | 46        | 7.3  |
|                                   | 18-30 years                        | 344       | 54.4 |
|                                   | 31-40 years                        | 118       | 18.7 |
|                                   | 41-50 years                        | 103       | 16.3 |
|                                   | More than 50 years                 | 21        | 3.3  |
|                                   |                                    |           |      |
| Respondents' identities           | Residents                          | 30        | 4.7  |
|                                   | Tourists                           | 343       | 54.3 |
|                                   | Scenic spot manager                | 129       | 20.4 |
|                                   | Scenic area staff                  | 90        | 14.2 |
|                                   | Government management staff        | 40        | 6.3  |
| Education level                   | High school students and below     | 140       | 22.2 |
|                                   | Junior college students            | 315       | 49.8 |
|                                   | Undergraduate                      | 146       | 23.1 |
|                                   | Master's degree students and above | 31        | 4.9  |
| Per capita household income/month | 2,000 RMB and below                | 109       | 17.2 |
|                                   | 2,000-5,000 RMB                    | 134       | 21.2 |
|                                   | 5,000-10,000 RMB                   | 156       | 24.7 |
|                                   | 10,000-20,000 RMB                  | 152       | 24.1 |
|                                   | More than 20,000 RMB               | 81        | 12.8 |
| Place of residence                | Sichuan Province                   | 303       | 47.9 |
|                                   | Chongqing                          | 295       | 46.7 |
|                                   | other                              | 34        | 5.4  |
| Number of times you have traveled | 1                                  | 27        | 4.3  |
|                                   | 2                                  | 23        | 3.6  |
|                                   | 3                                  | 225       | 35.6 |
|                                   | more than 3 times                  | 357       | 56.5 |

#### 4.4 Descriptive Statistics

The following section summarizes the characteristics of the data collected for the study and presents them quantitatively and comparably. The data characteristics summarize the attributes of the impact of total quality management, on the sustainable tourism development in Chengdu-Chongqing urban agglomeration, with tourism benefits and perceived tourism quality as the mediating variable. The statistical analysis includes minimum and maximum scores, mean, and standard deviation values, as shown in Table 4.10.

**Table 4.10** Descriptive Statistics of Overall Data Characteristics

| Overall features of data        | Number of Items | Min | Max | Mean | S.D |
|---------------------------------|-----------------|-----|-----|------|-----|
| Full Participation              | 5               | 1   | 5   | 3.75 | .88 |
| Whole Process Management        | 5               | 1   | 5   | 3.69 | .87 |
| Comprehensive Management        | 5               | 1   | 5   | 3.79 | .87 |
| Tourism Benefits                | 9               | 1   | 5   | 3.67 | .89 |
| Perceived Tourism Quality       | 6               | 1   | 5   | 3.76 | .89 |
| Sustainable Tourism Development | 9               | 1   | 5   | 3.73 | .87 |
| Average                         | /               | 1   | 5   | 3.73 | .88 |

Table 4.10 provides an assessment of the overall variables, showing an average score of 3.73 and a standard deviation of .88, indicating a relatively high level. This article conducted a descriptive statistical analysis of the research scale using SPSS 26.0 software. The average scores of respondents ranged from 3.67 to 3.79, indicating the diversity of responses and also demonstrating significant differences (Akca et al., 2024).

The mean and standard deviation primarily reflect the specific characteristics of the scale data, while skewness and kurtosis are used to examine the normal distribution of the data. In statistics, measures such as skewness and kurtosis are commonly used to assess normal distribution. When the absolute value of skewness for observed indicators is less than 3, and kurtosis values for experimental data are less than 10, it indicates relative consistency in the measurement data, and the fluctuations are considered acceptable. Although it is not a strict normal distribution, the sample can be considered approximately normal (Kline, 2023).

The mean represents the average agreement of surveyed users with the observed variables of latent variables, and the standard deviation reflects the degree of dispersion of the core values of observed variables from the mean. Statistical analysis of these observed variables includes minimum and maximum scores, mean and standard deviation values, skewness, and kurtosis.

#### 4.4.1 Descriptive statistical analysis of Total Quality Management

The attribute of total quality management construct was measured by three dimensions, which are full participation including FP2, FP3, FP4, FP5, FP6; whole process management including WPM1, WPM2, WPM4, WPM6, WPM7; comprehensive management including CM1 to CM5. The statistical analysis of the minimum and maximum score, mean value, and standard deviation value. Table 4.11 presents the output results of the various indicators of total quality management after SPSS analysis. Statistical analysis of these observed variables includes minimum and maximum scores, mean and standard deviation values, skewness, and kurtosis.

**Table 4.11** Descriptive Statistics for Total Quality Management

| Variable | Dimensions | Items | Min | Max | Mean | S.D  | Skewness | Kurtosis |
|----------|------------|-------|-----|-----|------|------|----------|----------|
| TQM      | FFP        | FP2   | 1   | 5   | 3.59 | .868 | -0.213   | -0.270   |
|          |            | FP3   | 1   | 5   | 3.76 | .897 | -0.403   | -0.183   |
|          |            | FP4   | 1   | 5   | 3.79 | .862 | -0.255   | -0.406   |
|          |            | FP5   | 1   | 5   | 3.69 | .910 | -0.267   | -0.425   |
|          |            | FP6   | 1   | 5   | 3.94 | .870 | -0.428   | -0.422   |
|          | WPM        | WPM1  | 1   | 5   | 3.94 | .850 | -0.361   | -0.608   |
|          |            | WPM2  | 1   | 5   | 3.53 | .873 | -0.102   | -0.473   |
|          |            | WPM4  | 1   | 5   | 3.80 | .865 | -0.373   | -0.270   |
|          |            | WPM6  | 1   | 5   | 3.61 | .888 | -0.184   | -0.311   |
|          |            | WPM7  | 1   | 5   | 3.59 | .891 | -0.237   | -0.368   |
|          | CM         | CM1   | 1   | 5   | 3.78 | .860 | -0.172   | -0.707   |
|          |            | CM2   | 1   | 5   | 3.71 | .884 | -0.134   | -0.628   |
|          |            | CM3   | 1   | 5   | 3.99 | .837 | -0.454   | -0.381   |
|          |            | CM4   | 1   | 5   | 3.63 | .875 | -0.074   | -0.510   |
|          |            | CM5   | 1   | 5   | 3.84 | .875 | -0.292   | -0.539   |

Table 4.11, it can be observed that the absolute values of skewness for each variable of full participation, whole process management, and comprehensive management are less than 3, and the absolute values of kurtosis are less than 10. This indicates that the measured data is relatively consistent, and the fluctuations are acceptable. Therefore, it can be considered that the measurement data for each indicator follows a normal distribution. The overall mean value of total quality management is between 3.53 to 3.99, indicating a relatively high average level of agreement for each observed variable. The standard deviation is between .837 and .910, indicating that there are no outliers or systematic errors in the survey data.

#### 4.4.2 Descriptive Statistical Analysis of Tourism Benefits

The attribute of the tourism benefits construct was measured by nine items, which are TB1 to TB9. The statistical analysis of the minimum and maximum score, mean value, and standard deviation value. Table 4.12 presents the output results of the various indicators of total quality management after SPSS analysis. Statistical analysis of these observed variables includes minimum and maximum scores, mean and standard deviation values, skewness, and kurtosis.

**Table 4.12** Descriptive Statistics for Tourism Benefits

| Variable | Items | Min | Max | Mean | S.D  | Skewness | Kurtosis |
|----------|-------|-----|-----|------|------|----------|----------|
| TB       | TB1   | 1   | 5   | 3.56 | .920 | -0.268   | -0.290   |
|          | TB2   | 1   | 5   | 3.71 | .906 | -0.222   | -0.625   |
|          | TB3   | 1   | 5   | 3.50 | .903 | -0.204   | -0.307   |
|          | TB4   | 1   | 5   | 3.65 | .912 | -0.303   | -0.294   |
|          | TB5   | 1   | 5   | 3.93 | .863 | -0.451   | -0.184   |
|          | TB6   | 1   | 5   | 3.68 | .912 | -0.435   | -0.021   |
|          | TB7   | 1   | 5   | 3.70 | .876 | -0.334   | -0.139   |
|          | TB8   | 1   | 5   | 3.53 | .895 | -0.264   | -0.119   |
|          | TB9   | 1   | 5   | 3.80 | .865 | -0.270   | -0.477   |

From Table 4.12, it can be observed that the absolute values of skewness for each variable of tourism benefits are less than 3, and the absolute values of kurtosis are less than 10. This indicates that the measured data is relatively consistent, and the fluctuations are acceptable. Therefore, it can be considered that the measurement data for

each indicator follows a normal distribution. The overall mean value of tourism benefits is between 3.50 to 3.93, indicating a relatively high average level of agreement for each observed variable. The standard deviation is between .863 and .920, indicating that there are no outliers or systematic errors in the survey data.

#### 4.4.3 Descriptive Statistical Analysis of Perceived Tourism Quality

The attribute of perceived tourism quality construct was measured by six items, which are PTQ1, PTQ2, PTQ4, PTQ5, PTQ7, PTQ8. The statistical analysis of the minimum and maximum score, mean value, and standard deviation value. Table 4.13 presents the output results of the various indicators of total quality management after SPSS analysis. Statistical analysis of these observed variables includes minimum and maximum scores, mean and standard deviation values, skewness, and kurtosis.

**Table 4.13** Descriptive Statistics for Perceived Tourism Quality

| Variable | Items | Min | Max | Mean | S.D  | Skewness | Kurtosis |
|----------|-------|-----|-----|------|------|----------|----------|
| PTQ      | PTQ1  | 1   | 5   | 3.93 | .868 | -0.488   | -0.214   |
|          | PTQ2  | 1   | 5   | 3.81 | .867 | -0.353   | -0.309   |
|          | PTQ4  | 1   | 5   | 3.64 | .902 | -0.200   | -0.430   |
|          | PTQ5  | 1   | 5   | 3.97 | .835 | -0.428   | -0.382   |
|          | PTQ7  | 1   | 5   | 3.56 | .930 | -0.239   | -0.350   |
|          | PTQ8  | 1   | 5   | 3.62 | .909 | -0.297   | -0.292   |

From Table 4.13, it can be observed that the absolute values of skewness for each variable of perceived tourism quality are less than 3, and the absolute values of kurtosis are less than 10. This indicates that the measured data is relatively consistent, and the fluctuations are acceptable. Therefore, it can be considered that the measurement data for each indicator follows a normal distribution. The overall mean value of perceived tourism quality is between 3.56 to 3.97, indicating a relatively high average level of agreement for each observed variable. The standard deviation is between .835 and .930, indicating that there are no outliers or systematic errors in the survey data.

#### 4.4.4 Descriptive Statistical Analysis of Sustainable Tourism Development

The attribute of sustainable tourism development construct was measured by nine items, which are STD1 to STD9. The statistical analysis of the minimum and

maximum score, mean value, and standard deviation value. Table 4.14 presents the output results of the various indicators of total quality management after SPSS analysis. Statistical analysis of these observed variables includes minimum and maximum scores, mean and standard deviation values, skewness, and kurtosis.

**Table 4.14** Descriptive Statistics for Sustainable Tourism Development

|     | Variable | Min | Max | Mean | S.D  | Skewness | Kurtosis |
|-----|----------|-----|-----|------|------|----------|----------|
| STD | STD1     | 1   | 5   | 3.72 | .869 | -0.392   | -0.178   |
|     | STD2     | 1   | 5   | 3.57 | .911 | -0.248   | -0.238   |
|     | STD3     | 1   | 5   | 3.91 | .845 | -0.425   | -0.261   |
|     | STD4     | 1   | 5   | 3.53 | .870 | -0.267   | -0.096   |
|     | STD5     | 1   | 5   | 3.72 | .881 | -0.177   | -0.579   |
|     | STD6     | 1   | 5   | 3.78 | .857 | -0.317   | -0.432   |
|     | STD7     | 1   | 5   | 3.72 | .866 | -0.268   | -0.291   |
|     | STD8     | 1   | 5   | 3.88 | .840 | -0.350   | -0.412   |
|     | STD9     | 1   | 5   | 3.76 | .898 | -0.505   | -0.007   |

From Table 4.14, it can be observed that the absolute values of skewness for each variable of sustainable tourism development are less than 3, and the absolute values of kurtosis are less than 10. This indicates that the measured data is relatively consistent, and the fluctuations are acceptable. Therefore, it can be considered that the measurement data for each indicator follows a normal distribution. The overall mean value of sustainable tourism development is between 3.53 to 3.91, indicating a relatively high average level of agreement for each observed variable. The standard deviation is between .840 and .911, indicating that there are no outliers or systematic errors in the survey data.

#### 4.5 Reliability Test

In the formal research, internal consistency reliability analysis was conducted using Cronbach's alpha coefficient to assess the reliability of the data. The corrected item-total correlations for each item were all greater than .4 (Table 4.15), and the Cronbach's alpha coefficients after deleting items corresponding to each dimension were all smaller

than the Cronbach's alpha of their respective dimensions. For a reliable scale or questionnaire, Cronbach's alpha should be above .80, acceptable between .70 and .80; for subscales, above .70, and acceptable between .60 and .70. In the formal survey questionnaire of this study, the Cronbach's alpha coefficients of the scales representing each factor were all above .8. According to the above standards and the reliability coefficient table, it can be concluded that the questionnaire has excellent reliability.

**Table 4.15** Reliability Analysis of the Scale

| Dimension |     | Items | Cronbach's Alpha after<br>item deletion | $\alpha$ |
|-----------|-----|-------|-----------------------------------------|----------|
| TQM       | FP  | FP2   | .864                                    | .883     |
|           |     | FP3   | .863                                    |          |
|           |     | FP4   | .854                                    |          |
|           |     | FP5   | .850                                    |          |
|           |     | FP6   | .858                                    |          |
|           |     |       |                                         |          |
|           | WPM | WPM1  | .849                                    | .873     |
|           |     | WPM2  | .847                                    |          |
|           |     | WPM4  | .848                                    |          |
|           |     | WPM6  | .843                                    |          |
|           |     | WPM7  | .841                                    |          |
|           | CM  | CM1   | .852                                    | .875     |
|           |     | CM2   | .850                                    |          |
|           |     | CM3   | .843                                    |          |
|           |     | CM4   | .848                                    |          |
|           |     | CM5   | .852                                    |          |
|           | TB  | TB1   | .911                                    | .918     |
|           |     | TB2   | .909                                    |          |
|           |     | TB3   | .910                                    |          |
|           |     | TB4   | .909                                    |          |
|           |     | TB5   | .910                                    |          |
|           |     | TB6   | .912                                    |          |
|           |     | TB7   | .913                                    |          |
|           |     | TB8   | .905                                    |          |
|           |     | TB9   | .904                                    |          |
|           | PTQ | PTQ1  | .874                                    | .891     |
|           |     | PTQ2  | .878                                    |          |
|           |     | PTQ4  | .875                                    |          |

**Table 4.15** Reliability Analysis of the Scale (Cont.)

| Dimension | Items | Cronbach's Alpha after<br>item deletion | $\alpha$ |
|-----------|-------|-----------------------------------------|----------|
| STD       | PTQ5  | .878                                    | .913     |
|           | PTQ7  | .864                                    |          |
|           | PTQ8  | .861                                    |          |
|           | STD1  | .907                                    |          |
|           | STD2  | .907                                    |          |
|           | STD3  | .906                                    |          |
|           | STD4  | .902                                    |          |
|           | STD5  | .902                                    |          |
|           | STD6  | .901                                    |          |
|           | STD7  | .902                                    |          |
|           | STD8  | .904                                    |          |
|           | STD9  | .901                                    |          |

#### 4.6 Effectiveness test

This study employed SPSS software to conduct the KMO and Bartlett Test of Sphericity on the formal survey sample data (Table 4.16). The KMO value was .952, exceeding .8, and the p-value was .000, less than .05, indicating significance. This suggests that the preliminary survey data meets the criteria for factor analysis, indicating its suitability for further analysis.

**Table 4.16** KMO and Bartlett Test of Sphericity

|                            |                        |             |
|----------------------------|------------------------|-------------|
| <b>KMO</b>                 |                        | <b>.952</b> |
| Bartlett's Sphericity test | Approximate chi-square | 14012.765   |
|                            | df                     | 741         |
|                            | Sig.                   | .000        |

#### 4.7 Exploratory Factor Analysis

According to the KMO and Bartlett Test of Sphericity mentioned above, it indicates that the data are suitable for further analysis. Continuing with SPSS, exploratory factor analysis was conducted on the data. Table 4.17 presents the results of the principal component analysis for extracting the main factors. As shown in the table, there are a total

of 6 factor eigenvalues greater than 1, indicating that 6 common factors can be extracted. The cumulative variance contribution rate of these 6 common factors is 63.805%, indicating that these 6 common factors can explain 63.805% of the variability in all variables, which is greater than 60% and thus considered good.



**Table 4.17** The Variance Explained by Each Component of the Formal Research Data (N=632)

| <b>Total variance explained</b> |                            |                               |                     |                                          |                               |                     |
|---------------------------------|----------------------------|-------------------------------|---------------------|------------------------------------------|-------------------------------|---------------------|
| <b>component</b>                | <b>Initial eigenvalues</b> |                               |                     | <b>Extracted Loadings Sum of Squares</b> |                               |                     |
|                                 | <b>total</b>               | <b>Percentage of Variance</b> | <b>Cumulative %</b> | <b>total</b>                             | <b>Percentage of Variance</b> | <b>Cumulative %</b> |
| 1                               | 12.374                     | 31.729                        | 31.729              | 12.374                                   | 31.729                        | 31.729              |
| 2                               | 4.125                      | 10.577                        | 42.306              | 4.125                                    | 10.577                        | 42.306              |
| 3                               | 3.268                      | 8.379                         | 50.685              | 3.268                                    | 8.379                         | 50.685              |
| 4                               | 2.169                      | 5.561                         | 56.246              | 2.169                                    | 5.561                         | 56.246              |
| 5                               | 1.511                      | 3.875                         | 60.121              | 1.511                                    | 3.875                         | 60.121              |
| 6                               | 1.437                      | 3.681                         | 63.805              | 1.437                                    | 3.681                         | 63.805              |



Further examination of Table 4.18, which presents the rotated component matrix, reveals that all variables are grouped into 6 major factors. It can be effectively determined which specific items are contained in each factor. The factor loadings for each item corresponding to the 6 latent variables are all greater than .6.

**Table 4.18** Rotated Component Matrix of the Data (N=632)

| <b>The rotated component matrix <sup>a</sup></b> |                  |          |             |             |             |             |
|--------------------------------------------------|------------------|----------|-------------|-------------|-------------|-------------|
|                                                  | <b>Component</b> |          |             |             |             |             |
|                                                  | <b>1</b>         | <b>2</b> | <b>3</b>    | <b>4</b>    | <b>5</b>    | <b>6</b>    |
| FP2                                              | .089             | .125     | .131        | .160        | <b>.767</b> | .138        |
| FP3                                              | .135             | .142     | .122        | .273        | <b>.713</b> | .139        |
| FP4                                              | .094             | .176     | .101        | .169        | <b>.747</b> | .254        |
| FP5                                              | .091             | .186     | .065        | .229        | <b>.744</b> | .247        |
| FP6                                              | .092             | .111     | .065        | .194        | <b>.761</b> | .209        |
| WPM1                                             | .130             | .139     | .155        | .247        | .180        | <b>.693</b> |
| WPM2                                             | .126             | .070     | .100        | .131        | .177        | <b>.778</b> |
| WPM4                                             | .131             | .117     | .172        | .218        | .207        | <b>.701</b> |
| WPM6                                             | .112             | .102     | .100        | .213        | .206        | <b>.747</b> |
| WPM7                                             | .142             | .120     | .167        | .193        | .198        | <b>.737</b> |
| CM1                                              | .104             | .127     | .096        | <b>.727</b> | .215        | .200        |
| CM2                                              | .165             | .079     | .160        | <b>.730</b> | .222        | .156        |
| CM3                                              | .127             | .114     | .073        | <b>.775</b> | .194        | .186        |
| CM4                                              | .095             | .100     | .122        | <b>.760</b> | .177        | .181        |
| CM5                                              | .142             | .092     | .110        | <b>.727</b> | .165        | .227        |
| TB1                                              | <b>.705</b>      | .205     | .062        | .088        | .062        | .113        |
| TB2                                              | <b>.719</b>      | .212     | .105        | .131        | .012        | .149        |
| TB3                                              | <b>.718</b>      | .225     | .008        | .048        | .060        | .121        |
| TB4                                              | <b>.754</b>      | .179     | .041        | .108        | .077        | .052        |
| TB5                                              | <b>.722</b>      | .200     | .099        | .073        | .108        | 0.10        |
| TB6                                              | <b>.712</b>      | .210     | .013        | .055        | .092        | .037        |
| TB7                                              | <b>.701</b>      | .140     | .100        | .093        | .093        | .047        |
| TB8                                              | <b>.829</b>      | .117     | .081        | .067        | .018        | .050        |
| TB9                                              | <b>.800</b>      | .199     | .044        | .087        | .070        | .085        |
| PTQ1                                             | .077             | .186     | <b>.748</b> | .097        | .101        | .088        |
| PTQ2                                             | .088             | .198     | <b>.726</b> | .120        | .032        | .089        |
| PTQ4                                             | .016             | .193     | <b>.749</b> | .071        | .084        | .122        |
| PTQ5                                             | .105             | .182     | <b>.723</b> | .089        | .057        | .136        |
| PTQ7                                             | .081             | .198     | <b>.799</b> | .065        | .085        | .096        |
| PTQ8                                             | .068             | .151     | <b>.827</b> | .098        | .107        | .099        |

**Table 4.18** Rotated Component Matrix of the Data (N=632) (Cont.)

| <b>The rotated component matrix <sup>a</sup></b> |                  |             |          |          |          |          |
|--------------------------------------------------|------------------|-------------|----------|----------|----------|----------|
|                                                  | <b>Component</b> |             |          |          |          |          |
|                                                  | <b>1</b>         | <b>2</b>    | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> |
| STD1                                             | .251             | <b>.615</b> | .242     | .098     | .051     | .105     |
| STD2                                             | .246             | <b>.629</b> | .178     | .098     | .097     | .077     |
| STD3                                             | .207             | <b>.674</b> | .173     | .073     | .098     | .044     |
| STD4                                             | .227             | <b>.746</b> | .123     | .108     | .044     | .072     |
| STD5                                             | .193             | <b>.718</b> | .199     | .094     | .079     | .099     |
| STD6                                             | .155             | <b>.771</b> | .109     | .065     | .107     | .106     |
| STD7                                             | .195             | <b>.737</b> | .156     | .063     | .107     | .073     |
| STD8                                             | .183             | <b>.727</b> | .134     | .058     | .128     | .020     |
| STD9                                             | .183             | <b>.755</b> | .124     | .028     | .166     | 0.106    |

Notes: Extraction method: Principal Component Analysis (PCA).

#### 4.8 Confirmatory Factor Analysis

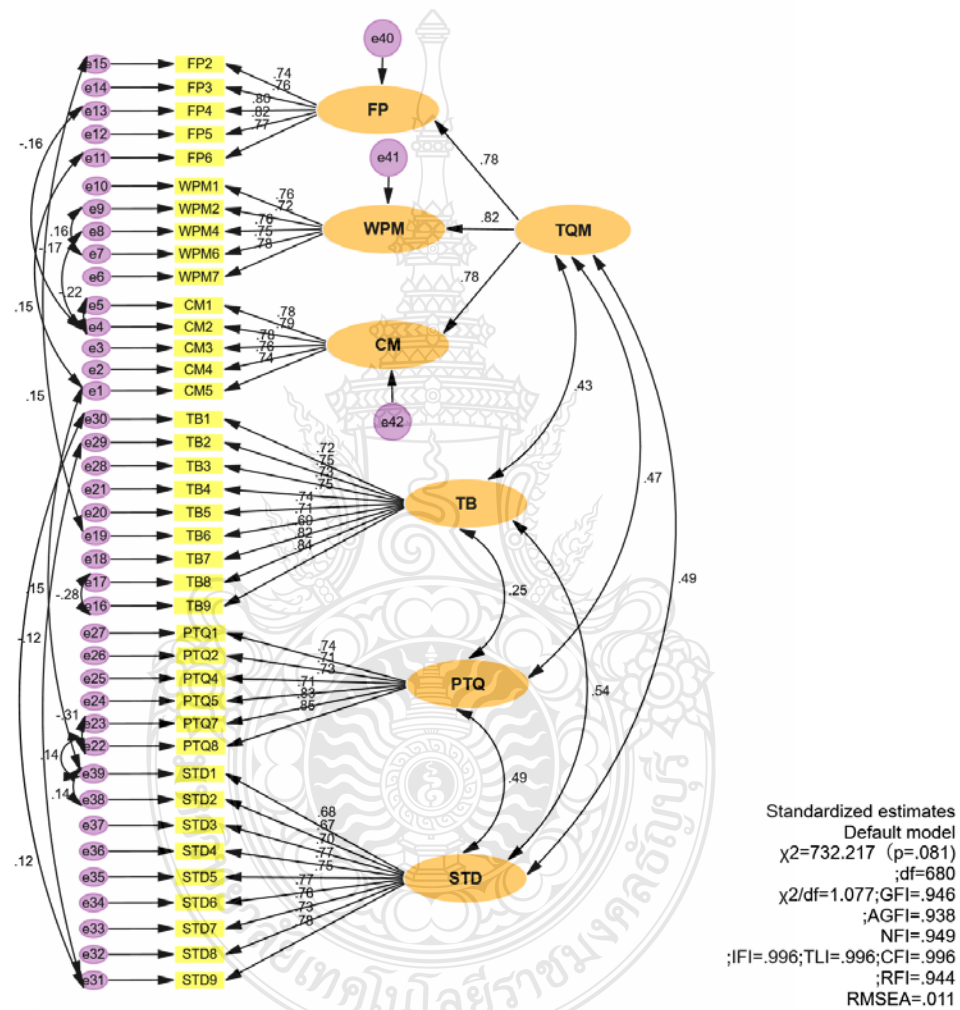
In this study, the researchers utilized Structural Equation Modeling (SEM), which consists of a structural model and a measurement model, for confirmatory factor analysis. The measurement model in SEM is used to describe the relationships between latent variables and observable variables, and confirmatory factor analysis is the primary method for assessing the validity of the measurement model. Using the AMOS tool, the study established pairwise correlation models between variables and conducted confirmatory factor analysis. The main purpose of confirmatory factor analysis is to verify the validity of the model by examining the relationships between questionnaire items and their corresponding factors. The output results clearly show the significant correlations between variables, further confirming the theoretical framework and research hypotheses we constructed.

Where the symbols used in data analyzed are as follows (see Table 4.19).

**Table 4.19** Meaning of Symbols

| Symbols                                                                           | Implication                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------------------|
|  | Latent Variable                                        |
|  | Observed Variable                                      |
|  | Error Term                                             |
|  | Direct Effect                                          |
|  | Relationship between Variable                          |
| CR                                                                                | Composite Reliability                                  |
| AVE                                                                               | Average Variance Extracted                             |
| Chi-square                                                                        | Chi-square statistic Value                             |
| P-value                                                                           | Level of statistical significance set at the level .05 |
| df                                                                                | Degrees of freedom                                     |
| GFI                                                                               | Goodness of fit                                        |
| AGFI                                                                              | Adjusted goodness of fit                               |
| NGFI                                                                              | Norm Fit Index                                         |
| CFI                                                                               | Comparative fit index                                  |
| RMSEA                                                                             | Root mean square error of approximation                |
| e                                                                                 | Error term                                             |
| FP                                                                                | Full Participation                                     |
| WPM                                                                               | Whole Process Management                               |
| CM                                                                                | Comprehensive Management                               |
| TQM                                                                               | Total Quality Management                               |
| TB                                                                                | Tourism Benefits                                       |
| PTQ                                                                               | Perceived Tourism Quality                              |
| STD                                                                               | Sustainable Tourism Development                        |

Based on Confirmatory Factor Analysis (CFA), the results of the Confirmatory Factor Analysis for total quality management including full participation, whole process management, comprehensive management, tourism benefits, perceived tourism quality, and sustainable tourism development are presented in the measurement model shown in Figure 4.1, using the statistical software AMOS, to validate the development and validity of the model.



**Figure 4.1** Confirmatory Factor Analysis Model (with modification indices)

The test of goodness-of-fit was conducted (Table 4.20). The model was adjusted by using modification indices, the covariance between residual error, e16 and e17, e38 and e39, e15 and e19, e4 and e5, e1 and e39, e22 and e23, e22 and e39, e4 and e8, e4 and e13, e1 and e11, e29 and e31, e30 and e31, e7 and e9 are added. The criteria after

modification were met and suggested model fit. The result of the assessment were as follows: Chi-Square = 732.217, Degree of freedom = 680, Chi-Square/Degree of freedom = 1.077, p-value = .081, GFI = .946, AGFI = .938, RMSEA = .011, NFI = .949 and CFI = .996.

**Table 4.20** Model Fit Analysis for all Latent Variables (with modification indices)

| Model Fit Criteria | Value   | Acceptable level |
|--------------------|---------|------------------|
| Chi-square         | 732.217 | -                |
| Degree of freedom  | 680     | -                |
| Chi-square/df      | 1.077   | < 2              |
| p-value            | .081    | > .05            |
| GFI                | .946    | ≥.90             |
| AGFI               | .938    | ≥.80             |
| RMSEA              | .011    | < .06            |
| NFI                | .949    | > .90            |
| CFI                | .996    | > .90            |

#### 4.9 Convergent Validity

The results of convergent validity testing for total quality management are presented in Table 4.21.

**Table 4.21** Convergent Validity Analysis Results for Total Quality Management

| Variables                | Items | Factor loading | R <sup>2</sup> | $\theta$<br>(1-R <sup>2</sup> ) | AVE  | CR   |
|--------------------------|-------|----------------|----------------|---------------------------------|------|------|
| Total Quality Management | FP    | .786           | .618           | .382                            | .632 | .837 |
|                          | WPM   | .812           | .659           | .341                            |      |      |
| FP                       | CM    | .786           | .618           | .382                            | .602 | .883 |
|                          | FP2   | .741           | .549           | .451                            |      |      |
|                          | FP3   | .758           | .574           | .426                            |      |      |
|                          | FP4   | .795           | .632           | .368                            |      |      |
|                          | FP5   | .814           | .663           | .337                            |      |      |
|                          | FP6   | .769           | .591           | .409                            |      |      |
| WPM                      | WPM1  | .758           | .575           | .425                            | .578 | .873 |
|                          | WPM2  | .751           | .564           | .436                            |      |      |
|                          | WPM4  | .758           | .575           | .425                            |      |      |
|                          | WPM6  | .767           | .588           | .412                            |      |      |
|                          | WPM7  | .782           | .612           | .388                            |      |      |
| CM                       | CM1   | .755           | .570           | .430                            | .586 | .876 |
|                          | CM2   | .764           | .584           | .416                            |      |      |
|                          | CM3   | .792           | .627           | .373                            |      |      |
|                          | CM4   | .764           | .584           | .416                            |      |      |
|                          | CM5   | .752           | .566           | .434                            |      |      |

According to Table 4.21, it can be observed that all factor loadings of the indicators are greater than .5, indicating that each indicator has good representativeness for its corresponding latent variable. The average variance extracted (AVE) for each variable is also greater than .5, and the composite reliability (CR) is greater than .7 for all variables. This suggests that the convergent validity in this study is acceptable.

The results of convergent validity testing for tourism benefits are presented in Table 4.22.

**Table 4.22** Convergent Validity Analysis Results for Tourism Benefits

| Variables        | Items | Factor loading | R <sup>2</sup> | $\theta (1-R^2)$ | AVE  | CR   |
|------------------|-------|----------------|----------------|------------------|------|------|
| Tourism benefits | TB1   | .721           | .520           | .480             | .559 | .919 |
|                  | TB2   | .750           | .562           | .438             |      |      |
|                  | TB3   | .731           | .534           | .466             |      |      |
|                  | TB4   | .755           | .570           | .430             |      |      |
|                  | TB5   | .743           | .552           | .448             |      |      |
|                  | TB6   | .710           | .504           | .496             |      |      |
|                  | TB7   | .691           | .477           | .523             |      |      |
|                  | TB8   | .802           | .643           | .357             |      |      |
|                  | TB9   | .816           | .666           | .334             |      |      |

According to Table 4.22, it can be observed that all factor loadings of the indicators are greater than .5, indicating that each indicator has good representativeness for its corresponding latent variable. The average variance extracted (AVE) for each variable is also greater than .5, and the composite reliability (CR) is greater than .7 for all variables. This suggests that the convergent validity in this study is acceptable.

The results of convergent validity testing for perceived tourism quality are presented in Table 4.23.

**Table 4.23** Convergent Validity Analysis Results for Perceived Tourism Quality

| Variables                 | Items | Factor loading | R <sup>2</sup> | $\theta (1-R^2)$ | AVE  | CR   |
|---------------------------|-------|----------------|----------------|------------------|------|------|
| Perceived tourism quality | PTQ1  | .749           | .561           | .439             | .579 | .892 |
|                           | PTQ2  | .720           | .518           | .482             |      |      |
|                           | PTQ4  | .740           | .548           | .452             |      |      |
|                           | PTQ5  | .722           | .521           | .479             |      |      |
|                           | PTQ7  | .803           | .645           | .355             |      |      |
|                           | PTQ8  | .824           | .678           | .321             |      |      |

According to Table 4.23, it can be observed that all factor loading of the indicators are greater than .5, indicating that each indicator has good representativeness for its corresponding latent variable. The average variance extracted (AVE) for each variable is also greater than .5, and the composite reliability (CR) is greater than .7 for all

variables. This suggests that the convergent validity in this study is acceptable.

The results of convergent validity testing for sustainable tourism development are presented in Table 4.24.

**Table 4.24** Convergent Validity Analysis Results for Sustainable Tourism Development

| Variables                             | Items | Factor loading | R <sup>2</sup> | θ( 1-R <sup>2</sup> ) | AVE  | CR   |
|---------------------------------------|-------|----------------|----------------|-----------------------|------|------|
| Sustainable<br>tourism<br>development | STD1  | .684           | .468           | .532                  | .542 | .914 |
|                                       | STD2  | .679           | .461           | .539                  |      |      |
|                                       | STD3  | .697           | .486           | .514                  |      |      |
|                                       | STD4  | .767           | .588           | .412                  |      |      |
|                                       | STD5  | .754           | .569           | .431                  |      |      |
|                                       | STD6  | .770           | .593           | .407                  |      |      |
|                                       | STD7  | .760           | .578           | .422                  |      |      |
|                                       | STD8  | .730           | .533           | .467                  |      |      |
|                                       | STD9  | .776           | .602           | .398                  |      |      |

According to Table 4.24, it can be observed that all factor loadings of the indicators are greater than .5, indicating that each indicator has good representativeness for its corresponding latent variable. The average variance extracted (AVE) for each variable is also greater than .5, and the composite reliability (CR) is greater than .7 for all variables. This suggests that the convergent validity in this study is acceptable.

#### 4.10 Discriminant Validity

The correlation values ranged from .270 to .795 which were equal to or more than .1 but not over 1.00. The testing result of the correlation was then accepted. This kind of discriminant validity could be checked from the comparison between the square root of the AVE value and the correlation. Finally, the author proved the discriminant validity of the instrument by examining the Square root of AVE which should be more than the correlation as recommended. The testing results showed that the values as obtained supported the discriminant validity as shown in table 4.25. The value Square root of AVE for each construct was greater than the correlation coefficient involving the construct.

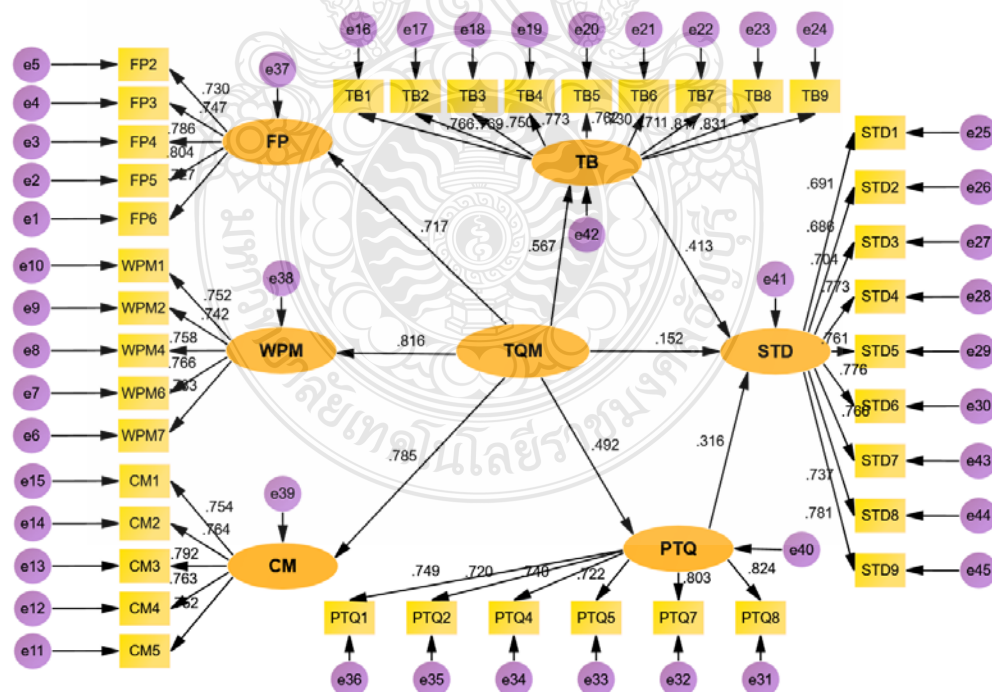
**Table 4.25** Validity Analysis

|     | TQM   | TB    | PTQ   | STD   |
|-----|-------|-------|-------|-------|
| TQM | 0.795 |       |       |       |
| TB  | 0.446 | 0.748 |       |       |
| PTQ | 0.477 | 0.270 | 0.761 |       |
| STD | 0.495 | 0.558 | 0.506 | 0.736 |

Notes: Diagonal numbers mean squared correlation, Off - diagonal numbers mean Square root of AVE

#### 4.11 Hypothesis Testing and Results Analysis

To further analyze whether the hypotheses regarding the relationships between Total Quality Management and Sustainable Tourism Development factors in the theoretical model are valid, this study employed the path analysis function of AMOS statistical software. The maximum likelihood estimation method was used to estimate the relevant parameters and conduct an analysis of the model's simulated paths and explanatory power. Additionally, significance tests were conducted on the estimated path coefficients to validate the causal relationships between latent variables (Figure 4.2).

**Figure 4.2** The Structural Model Analysis Results

The structural model was to investigate the direct effects of total quality management (TQM) on sustainable tourism development (STD). The indirect effects of total quality management (TQM) through tourism benefits (TB) and perceived tourism quality (PTQ) on sustainable tourism development (STD).

The test of goodness-of-fit was conducted. The results of the assessment were as follows: Chi-Square = 931.212, Degree of freedom = 695, Chi-Square/Degree of freedom = 1.340, p-value = .000, GFI = .932, AGFI = .923, RMSEA = .023, NFI = .935 and CFI = .983 the summary and the comparison with acceptable level for each value, as shown in table 4.26.

**Table 4.26** Model Fit Analysis for the Conceptual Model

| Model Fit Criteria | Value   | Acceptable level |
|--------------------|---------|------------------|
| Chi-square         | 931.212 | -                |
| Degree of freedom  | 695     | -                |
| Chi-square/df      | 1.340   | < 2              |
| p-value            | .000    | > .05            |
| GFI                | .932    | ≥ .90            |
| AGFI               | .923    | ≥ .80            |
| RMSEA              | .023    | < .60            |
| NFI                | .935    | > .90            |
| CFI                | .983    | > .90            |

#### 4.11.1 Direct Effects Test

During the path analysis, first, the structural model of the impact of Total Quality Management on Sustainable Tourism Development factors was constructed based on the theoretical model's path assumptions. Then, using the path analysis function of AMOS, 632 valid sample data were imported to estimate the path coefficients and conduct significance tests. The results of the parameter estimation are shown in Table 4.27.

**Table 4.27** Hypothesis Testing for Direct Effects

| Hypothesis                | Estimate | $\beta$ | S.E. | C.R.  | p-value |
|---------------------------|----------|---------|------|-------|---------|
| H1: TQM $\rightarrow$ STD | .215     | .152    | .77  | 2.799 | .005    |
| H2: TQM $\rightarrow$ TB  | 1.000    | .567    | --   | --    | ***     |
| H3: TB $\rightarrow$ STD  | .331     | .413    | .038 | 8.608 | ***     |
| H5: TQM $\rightarrow$ PTQ | .746     | .078    | .078 | 9.533 | ***     |
| H6: PTQ $\rightarrow$ STD | .294     | .316    | .041 | 7.135 | ***     |

Note: \*\*\*p-value < 0.001 (statistical significance at 0.001 level)

From Table 4.35, the standardized coefficient for the impact of TQM on STD is 0.215, the standardized coefficient for the impact of TQM on TB is 1.000, the standardized coefficient for the impact of TB on STD is .331, the standardized coefficient for the impact of TQM on PTQ is .746, the standardized coefficient for the impact of PTQ on STD is .294. The results from Table 4.35 indicate that the significance levels of the impacts of TQM on STD, TQM on TB, TB on STD, TQM on PTQ, PTQ on STD are all less than 0.01. When the p-value is less than 0.05, it signifies a significant effect, which can be accepted. This validates the hypotheses H1, H2, H3, H5, H6.

#### 4.11.2 Mediation Effects Test

In the article, there are two mediating effects, the first is H4: TQM  $\rightarrow$  TB  $\rightarrow$  STD and the second is H7: TQM  $\rightarrow$  PTQ  $\rightarrow$  STD. This study employs the BOOTSTRAP method to test the mediation effect of tourism benefits and perceived tourism quality, extracting 5000 BOOTSTRAP samples for a 95% confidence interval estimation. The test results are shown in Table 4.28.

**Table 4.28** Mediation Effect Test

| Effect Types  | Path                                    | Estimate | Lower | Upper | p    | Effect Proportion |
|---------------|-----------------------------------------|----------|-------|-------|------|-------------------|
| Total Effect  | TQM $\rightarrow$ STD                   | .541     | .472  | .606  | .000 | -                 |
| Direct Effect | TQM $\rightarrow$ STD                   | .389     | .329  | .453  | .000 | 71.9%             |
| Indirect      | TQM $\rightarrow$ TB $\rightarrow$ STD  | .234     | .187  | .282  | .000 | 43.2%             |
| Effect        | TQM $\rightarrow$ PTQ $\rightarrow$ STD | .155     | .115  | .203  | .000 | 28.65%            |

From Table 4.36, it can be seen from the BOOTSTRAP inspection of the path of “TQM → TB → STD”, that the confidence interval for the path does not contain 0 (0.187, 0.282). It can be seen from this that when the mediating variable is tourism benefits, tourism benefits play a partial mediating role in the impact of total quality management on sustainable tourism development. For the path of “TQM → PTQ → STD”, the confidence interval for the path does not contain 0 (0.125, 0.203). It can be seen from this that when the mediating variable is perceived tourism quality, perceived tourism quality plays a partial mediating role in the impact of total quality management on sustainable tourism development. This validates the hypotheses H4, H7.

#### 4.12 Summary of Structural Model Analysis

Combining the content of the 7 hypotheses and the results of the structural model analysis. The testing results of the research hypotheses are shown in Table 4.29.

**Table 4.29** Hypothesis Testing Results

| Hypothesis                                                                                                                     | Result    |
|--------------------------------------------------------------------------------------------------------------------------------|-----------|
| H1: TQM has a positive effect on sustainable tourism development.                                                              | Supported |
| H2: TQM has a positive effect on tourism benefits.                                                                             | Supported |
| H3: Tourism benefits have a positive effect on sustainable tourism development.                                                | Supported |
| H4: Tourism benefits moderate the relationship between total quality management and sustainable tourism development.           | Supported |
| H5: TQM has a positive effect on the perceived tourism quality.                                                                | Supported |
| H6: Perceived tourism quality has a positive effect on sustainable tourism development.                                        | Supported |
| H7: Perceived tourism quality moderates the relationship between total quality management and sustainable tourism development. | Supported |

Based on the path analysis results, the author has depicted the path validation model of the impact factors of total quality management on sustainable tourism development. The standard path coefficients and significance levels are indicated on the paths between every latent variable. With the assistance of AMOS, the researcher organized and summarized the data results of various direct effects in the model. This

table provides a clear view of key information regarding the non-standardized coefficients, standardized coefficients, and significance levels of each hypothesis in the research model. Based on the results, the researcher further analyzed and assessed whether the hypotheses proposed in this study could be validated. The detailed analysis is as follows:

#### 4.12.1 Direct Effects Analysis

The p-value for the direct impact paths of the four latent variables, namely total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development are all less than 0.05, indicating that their relationships with sustainable tourism development are statistically significant. They exhibit significant positive effects on sustainable tourism development. Hypotheses H1, H2, H3, H5, H6 are all supported. Furthermore, the direct impact strengths of four variables on sustainable tourism development, from highest to lowest, are as follows: a direct relationship between TQM and TB ( $\beta=0.567$ ,  $p<0.001$ ), a direct relationship between TQM and PTQ ( $\beta=0.492$ ,  $p<0.001$ ), a direct relationship between TB and STD ( $\beta=0.413$ ,  $p<0.001$ ), a direct relationship between PTQ and STD ( $\beta=0.316$ ,  $p<0.001$ ), a direct relationship between TQM and STD ( $\beta=0.152$ ,  $p<0.001$ ).

#### 4.12.2 Indirect Effects Analysis

To verify the mediating effects in our research model, we employed the bootstrapping method recommended by Edwards (2007). Using Amos, we set up 5000 bootstrap samples for testing and established a confidence interval of 95%. Given the presence of multiple mediating effects in our model, including simple mediation, parallel mediation, and serial mediation, we utilized the custom syntax feature in Amos to comprehensively examine all mediating effects. From Table 4.36, the influence of TQM on STD through TB as a mediating variable ( $\beta=0.232$ ,  $p<0.001$ ), when TB is the mediating variable, the effect proportion is 43.2%. It shows that tourism benefits play a partial intermediary role. At the same time, the influence of TQM on STD through PTQ as a mediating variable ( $\beta=0.155$ ,  $p<0.001$ ), when PTQ is the mediating variable, the effect proportion is 28.6%. It shows that perceived tourism quality plays a partial intermediary role. Hypotheses H4, and H7 are all supported.

#### 4.12.3 Total effect analysis

Based on the above analysis of direct and indirect effects, the direct, indirect, and total impact coefficients of each variable on sustainable tourism development are provided, allowing for a clear understanding of the specific influence of each factor. The total effect path is TQM to STD ( $\beta=0.541$ ,  $p<0.001$ ).



## **CHAPTER 5**

### **CONCLUSIONS AND RECOMMENDATIONS**

Through the correlation results of the previous chapter, explore the interrelationships between indicators including total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development. The consistency or lack of it with relevant research and existing literature was examined, the research results on the impact of total quality management on the sustainable development of Chengdu and Chongqing cities and tourism were expounded and relevant conclusions were drawn. According to the research objectives, questions, and findings, the main conclusions and theories of this article are summarized and refined. Propose relevant management opinions and strategic suggestions based on tourism management practices. The study's shortcomings were analyzed and areas requiring further research were identified, as well as the research contributions and limitations of the article.

#### **5.1 Conclusions**

This chapter presents the empirical findings of the research questions outlined in the previous chapter, examining their alignment or divergence with relevant studies and existing literature. It also outlines the theoretical contributions and practical implications of this chapter. This chapter concludes by recognizing the study's limitations and emphasizing the objective of exploring factors affecting sustainable tourism development through the perspective of TQM. It thoroughly reviews TQM theory, sustainable tourism development theory, and empirical research to determine the model framework for sustainable tourism development. The study includes exploring the mediating effects of tourism benefits and perceived tourism quality on sustainable tourism development.

A multidimensional structure is established, total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development. Total quality management is considered the antecedent variable for sustainable tourism development, while sustainable tourism development serves as the outcome variable for total quality management. Tourism benefits and perceived tourism quality act as the mediating variable,

forming the basic theoretical framework for understanding the mechanisms influencing sustainable tourism development. Through a combination of theoretical expansion, scale development, questionnaire design, and data collection, the study explores the interrelationships among total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development in the CCUA. It reveals the mediating effect of tourism benefits and perceived tourism quality on the relationship between total quality management and sustainable tourism development, providing insights into the enhancement model of sustainable tourism development through tourism benefits and perceived tourism quality. Specific questions addressed are as follows: (1) What is the relationship between total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development? (2) How does total quality management affect sustainable tourism development through tourism benefits? (3) How does total quality management affect sustainable tourism development through perceived tourism quality?

This study integrates bibliometric analysis and expert insights to construct an innovative hypothesis model on the impact of TQM on STD. Based on questionnaire data from 632 respondents collected from 5A-level scenic spot in the Chengdu-Chongqing urban agglomeration, the study conducts research on the development and validation of the TQM-STD scale system. The three crucial stages of scale development have undergone a series of rigorous tests. The development process and results hold significant value: bibliometric analysis provides a more scientifically accurate analysis of existing research on TQM and STD, enhancing understanding of their spatial dimensions and scientific implications. This leads to the construction of a reasonable TQM-STD multidimensional impact relationship. Supported by two intermediate variables, the TQM, TB, and PTQ dimensions were successfully constructed, comprising 39 items TQM-STD scale system. This scale system demonstrates high reliability and validity, serving as an accurate and effective measurement tool, and providing theoretical references and technical support for future research. This study also holds significant practical significance. Through interviews with managers from 5A-level tourist attractions and conducting online and offline surveys, it deeply analyzes the connotations and dimensions of sustainable tourism development. It scientifically introduces TQM concepts into STD management, guiding method innovation in STD processes

effectively, thereby improving the quality and level of tourist attraction management. Furthermore, the study thoroughly analyzes the dimensions of TQM and STD, as well as the influence of different TQM dimensions on STD, and incorporates them into scale items. This helps managers effectively identify factors influencing STD at tourist attractions and explore effective pathways for STD based on this, ultimately enhancing the tourist experience and sustainable development of tourist attractions.

The study includes seven hypotheses, namely: H1: Total quality management has a positive effect on sustainable tourism development. H2: Total quality management has a positive effect on tourism benefits. H3: Tourism benefits have a positive effect on sustainable tourism development. H4: Tourism benefits mediate the relationship between total quality management and sustainable tourism development. H5: Total quality management has a positive effect on perceived tourism quality. H6: Perceived tourism quality has a positive effect on sustainable tourism development. H7: Perceived tourism quality mediates the relationship between total quality management and sustainable tourism development.

Next, this study constructs a Structural Equation Modeling (SEM) model of the impact of TQM on STD with innovative thinking and perspective. Drawing on data from 632 questionnaires, the study tests the proposed hypothesis regarding the impact of TQM on STD and employs the Bootstrapping method for validation. Through analysis and validation, the results show that the sample data structure, model construction, and analysis results are accurate, leading to two main conclusions:

- 1) Efficient acquisition of large sample data in the research area can be achieved through online and offline questionnaires passed IOC verification. There are no collinearity issues among the scale data ( $VIF < 5$ ), and the scale demonstrates high reliability and validity ( $\alpha > 0.8$ ,  $VL > 0.7$ ,  $AVE > 0.5$ ,  $CR > 0.7$ ). The scale structure and survey methods are scientifically reasonable and have broad applicability.

- 2) Based on the conceptual model hypothesis, an SEM model of the three dimensions of TQM and two intermediate variables with STD is constructed. The Variables Loadings of TQM, PTQ, TB, and STD are all greater than 0.7. The Structural Equation Model (SEM) demonstrates a good fit, confirming the validity of the hypothesis and suggesting that TQM can be effectively applied to the domain of STD.

## 5.2 Discussion

According to the research purpose and research questions of the article, the article provides explanations, discussions, and analysis of the research objectives.

### 5.2.1 Discussion on Causal Relationships between TQM and STD

To explore four variables, including total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development, where total quality management includes full participation, whole process management, and comprehensive management, explore the relationship between them and form a TQM-STD scale. In response to research objective 1, research question 1 is proposed: What is the relationship between total quality management, tourism benefits, perceived tourism quality, and sustainable tourism development? Based on this, the following three hypotheses are proposed:

Hypothesis 1: Total quality management has a positive effect on sustainable tourism development.

The structural equation model (SEM) results from Amos (as shown in Figure 4.2) indicated that the coefficient of total quality management impact on sustainable tourism development was 0.541, with a significance p-value below 0.05, confirming a positive correlation. Therefore, H1 was established.

Sustainable development is inseparable from management. In the study by Isaksson et al. (2023), the concept of sustainable development is understood, defined, and measured from an outward-in perspective, hoping to redefine sustainable development from the organization's standpoint. Ramanathan & Isaksson (2023) explore potential approaches of quality science and quality management in addressing challenges of Corporate Social Responsibility (CSR) for sustainable development, by establishing a common understanding of sustainability and sustainable development. In the tourism sector, how Total Quality Management improves the quality of tourism services (Razak et al., 2023), adjusts tourism planning (Wang, 2022), promotes employee training and development (Albloushi et al., 2023), and drives companies towards greater environmental and social responsibility (Jum'a et al., 2023) are all closely related to sustainable tourism development.

### 5.2.2 Discussion on the Mediating Effect of TB

The second research objective of this study is to establish a causal relationship model between total quality management and sustainable tourism development in Chengdu-Chongqing urban agglomeration, mediated by tourism benefits. In response to this research objective, research question 2 is proposed: How does total quality management affect sustainable tourism development through tourism benefits? Consequently, hypothesis H2, H3, H4 is formulated:

Hypothesis 2: Total quality management has a positive effect on tourism benefits.

Hypothesis 3: Tourism benefits have a positive effect on sustainable tourism development.

Hypothesis 4: Tourism benefits mediate the relationship between total quality management and sustainable tourism development.

The structural equation model (SEM) results from Amos (as shown in Figure 4.2) indicated that the coefficient of total quality management impact on tourism benefits was 0.567, with a significance p-value below 0.05, confirming a positive correlation. Therefore, H2 was established. The coefficient of tourism benefits impact on sustainable tourism development was 0.413, with a significance p-value below 0.05, confirming a positive correlation. Therefore, H3 was established. To test this hypothesis, the researcher employed a mediation effect adaptation model and examined the mediating effect path of tourism benefits. The study revealed that the total effect of total quality management → tourism benefits → sustainable tourism development was 0.234. The confidence interval did not include 0, indicating a significant mediating effect of tourism benefits between total quality management and sustainable tourism development. This confirms the validity of H4.

TB and PTQ are two intermediate variables influenced by TQM-STD, with the TB scale including nine items related to residents' income increase, investment, product sales, and environmental awareness, aligning with the three dimensions of economic, social, and ecological benefits of sustainable tourism development (León-Gómez et al., 2021; Czernek et al., 2020; Khan et al., 2020).

Furthermore, in the model, the positive impact of tourism benefits on sustainable tourism development indicates that the better the tourism benefits, the more sustainable and enduring tourism development will be. In other words, Total Quality Management can indirectly influence sustainable tourism development by positively affecting tourism benefits.

### **5.2.3 Discussion on the Mediating Effect of PTQ**

The second research objective of this study is to establish a causal relationship model between total quality management and sustainable tourism development in Chengdu-Chongqing urban agglomeration, mediated by perceived tourism quality. In response to this research objective, research question 3 is proposed: How does total quality management affect sustainable tourism development through perceived tourism quality? Consequently, hypothesis H5, H6, H7 is formulated:

Hypothesis 5: Total quality management has a positive effect on perceived tourism quality.

Hypothesis 6: Perceived tourism quality have a positive effect on sustainable tourism development.

Hypothesis 7: Perceived tourism quality mediates the relationship between total quality management and sustainable tourism development.

The structural equation model (SEM) results from Amos (as shown in Figure 4.2) indicated that the coefficient of total quality management impact on perceived tourism quality was 0.493, with a significance p-value below 0.05, confirming a positive correlation. Therefore, H5 was established. The coefficient of perceived tourism quality impact on sustainable tourism development was 0.316, with a significance p-value below 0.05, confirming a positive correlation. Therefore, H6 was established. To test this hypothesis, the researcher employed a mediation effect adaptation model and examined the mediating effect path of perceived tourism quality. The study revealed that the total effect of total quality management → perceived tourism quality → sustainable tourism development was 0.155. The confidence interval did not include 0, indicating a significant mediating effect of tourism benefits between total quality management and sustainable tourism development. This confirms the validity of H7.

Timothy & Said (2023) suggest that local residents' tourism perceptions include positive and negative perceptions, with positive perceptions showing high consistency with the overall perception scale items in this study. Additionally, research shows that in special tourism scenarios, tourists are willing to exchange time costs for better tourism experiences (Yin et al., 2024), and tourism scenic areas often focus on tourists' tourism experiences for better marketing (Dong & Qu, 2023). This underscores the importance of tourism perceptions for sustainable tourism, which is highly relevant to the content of the PTQ items in this study.

Furthermore, in the model, the positive impact of perceived tourism quality on sustainable tourism development indicates that the better the perceived tourism quality, the more sustainable and enduring tourism development will be. In other words, Total Quality Management can indirectly influence sustainable tourism development by positively affecting perceived tourism quality.

### **5.3 Contributions of the Study**

The impact of Total Quality Management on the sustainable development of tourism in the Chengdu-Chongqing metropolitan area is multifaceted, offering significant benefits in terms of customer satisfaction, operational efficiency, employee management and stakeholder collaboration. By adopting TOM practices, this region can achieve sustainable tourism development that preserves its unique cultural and natural heritage while promoting economic growth and innovation. This research contributes to the understanding of effective implementation of TOM in the tourism sector and provides a model for other regions seeking sustainable development.

#### **5.3.1 Theoretical Contributions**

##### **5.3.1.1 Integration of TQM and Sustainable Tourism Theories**

To further explore the application of total quality management, the article divides total quality management into three observation variables, namely full participation, management of the whole process and comprehensive management. In the TQM-STD scale system, the items of the FP scale primarily revolve around tourists, locals and employees in scenic areas and cover the interests of stakeholders in tourism (Roxas et al., 2020). The items of the WPM scale are related to tourism planning,

operation and monitoring and align with the PDCA cycle (Carvalho et al., 2023), which is an important manifestation of life cycle management (Witt & Muhlemann, 1994). CM includes five elements that cover aspects such as hardware and software, tourism characteristics and innovative ideas, and are consistent with comprehensive management to promote sustainable tourism development (Li et al., 2024; Ahmad et al., 2022). This research contributes to the theoretical discourse by integrating TQM principles with sustainable tourism development theories. By exploring how TQM influences sustainable tourism, the study bridges a gap in existing literature and provides a new perspective on managing tourism industries.

#### 5.3.1.2 Mediating Role of Tourism Benefits and Perceived Tourism Quality

The study's exploration of the mediating roles of tourism benefits and perceived quality in the relationship between TQM and sustainable tourism development offers a deeper understanding of the mechanisms through which TQM impacts sustainability. This adds complexity to the theoretical models of both TQM and sustainable tourism, highlighting the indirect effects that contribute to sustainable outcomes.

Yan (2007) developed an evaluation index system for the sustainable development of ecotourism from the perspectives of environment, economy and society. Han (2015) believed that for the sustainable development of regional tourism cooperation, the tourism industry itself must have long-term benefits, thus enabling better development of regional tourism cooperation. Xiao (2020) considered the sustainable development of rural tourism as a dependent variable and the government's ecological management as an independent variable. The sustainable development of rural tourism was divided into four measurement dimensions: Tourism Resources, Tourism Benefits, Tourism Operations, and Tourism Security System. Strategies and suggestions for sustainable rural tourism development were proposed from the perspective of government environmental management. Zhou & Yuan (2023) studied the comprehensive benefits of the tourism industry and divided the social, economic and environmental benefits into 15 indicators. They suggested that the ability to attract tourists is a key factor for increasing the economic benefits of tourism, while the balance of the rurality index is crucial for the sustainable development of ecotourism. Zhang (2023) studied the coupling relationship

between the three aspects of forest tourism benefits to promote the sustainable development of forest tourism.

Perceived tourism quality has a direct impact on their satisfaction, loyalty and word-of-mouth promotion of tourism products. Li & Yuan (2023) argue that pro-tourist behavior is a prerequisite for sustainable tourism. They examine the mediating role of perceived tourism benefits in the relationship between tourists' perceptions and pro-tourism behavior and provide empirical support. The results show that perceived tourism benefits have a facilitating effect on the sustainable development of film tourism. Liang (2023) analyzes the influence of tourist perception on the development of ecotourism in Yunhe County and provides insights and guidance for the sustainable development of ecotourism in Yunhe County. Feng (2022) suggests that clarifying tourists' perceptions can help rural tourism gain competitive advantages and promote the development of rural tourism in Bozhou City. Peters et al. (2018) emphasizes the importance of residents' perception of a tourism destination as it can determine their level of support for tourism development. Styliadis et al. (2014) suggested that residents' sense of place influences their perception of the impact of tourism and thus their support for tourism development.

#### 5.3.1.3 Contextual Contribution

In the process of promoting sustainable tourism development in the Chengdu-Chongqing urban agglomeration through Total Quality Management (TQM), the core principles of TQM go beyond improving service quality and drive comprehensive optimization and transformation of the tourism industry. Through systematic management under TQM, local tourism businesses and governments can effectively address the challenges posed by rapid urbanization and the growing demand for tourism, avoiding excessive resource consumption and environmental degradation. TQM's emphasis on continuous improvement at every stage means that from tourism resource planning and development to visitors experience feedback, each step can be optimized to ensure the achievement of sustainability goals. Additionally, TQM's principle of full participation helps enhance the sense of responsibility among managers and service providers alike, fostering collective efforts to maintain the region's tourism image and promote the long-term health of the industry. This offers a replicable model for sustainable development in urban agglomerations within emerging economies.

#### 5.3.1.4 Empirical Validation

By empirically testing the proposed hypotheses, the research offers validation of theoretical models within the context of tourism management. This strengthens the academic foundation of TQM's applicability to sustainable tourism, encouraging further research and application in other geographical and cultural contexts.

Overall, total quality management (TQM) has the following theoretical significance for sustainable tourism development: (1) TQM emphasizes systematic management from an overall perspective and improves organizational efficiency through continuous improvement. This systematic management helps the tourism industry to achieve sustainable development in environmental, social and economic terms. (2) In the tourism industry, TQM focuses on the quality of attractions and services and emphasizes cross-process quality management to meet the needs of tourists. This is crucial to increase the satisfaction and loyalty of tourists and thus promote the long-term development of the tourism industry. (3) TQM emphasizes full participation and cooperation and encourages employees to propose and implement improvement suggestions at all stages. This model of full participation increases the recognition and commitment of employees to sustainable development goals and thus promotes sustainable development more effectively. (4) In TQM, guest satisfaction is the key measure for evaluating the effectiveness of quality management. By improving tourist satisfaction, repeat visits and word-of-mouth can be increased, thereby promoting the sustainable development of destinations. (5) One of the core concepts of TQM is continuous improvement, i.e. the constant optimization of processes and services to improve operational efficiency and service quality. This concept of continuous improvement is highly consistent with the goals of sustainable development and contributes to a more efficient use and management of limited resources. (6) TQM emphasizes prevention rather than retrospective control. Preventive action is taken before problems occur to reduce waste and over-consumption of resources. This preventive management approach contributes to environmental protection and the sustainable use of resources.

### **5.3.2 Practical Contributions**

#### **5.3.2.1 Strategic Alignment with Sustainable Development Goals**

Total Quality Management coordinates the strategic goals of tourism enterprises with global and regional sustainable development goals through a systematic approach. This coordination is not only reflected in efficient resource utilization and optimized operational processes, but also has a profound impact on environmental protection, social responsibility, and economic sustainability. Through TQM, tourism enterprises can improve operational efficiency, reduce resource waste and environmental burden, thereby maintaining a competitive advantage in fierce market competition. In addition, TQM helps companies integrate sustainable development into their core business at the strategic level, enhance brand reputation, and attract more and more eco-conscious tourists. This reputation not only enhances the company's market positioning, but also creates more business opportunities for it. More importantly, the application of TQM ensures that tourism enterprises can balance environmental protection and social equity while pursuing profitability, achieving true sustainable development, thereby laying a solid foundation for the long-term success and steady growth of the enterprise, which is consistent with the strategy of sustainable development goals.

#### **5.3.2.2 Enhanced Decision-Making for Resource Allocation**

Total Quality Management plays a crucial role in the sustainable development of the tourism industry, particularly in resource management. Through TQM, managers can accurately optimize resource allocation, reduce waste in the operational process, and significantly improve overall efficiency. This not only saves operating costs for enterprises but also enables them to more effectively utilize natural and human resources, avoiding unnecessary resource consumption. In addition, through the cost savings generated by these optimizations, tourism companies can reinvest more funds into sustainable practices, including building eco-friendly infrastructure, adopting renewable energy, and promoting community-based tourism projects. These reinvestment measures not only help reduce environmental impact, but also promote community participation and economic development, enhancing corporate social responsibility. Overall, TQM has systematically improved the level of resource management, not only promoted the economic benefits of tourism enterprises, but also making positive

contributions to environmental protection and social equity, thus providing a solid guarantee for the long-term sustainable development of the tourism industry.

#### 5.3.2.3 Improvement of Customer Satisfaction and Loyalty

Total Quality Management has played an important role in enhancing the sustainable development of tourism enterprises, particularly through continuous improvement of service quality and customer experience. Research has shown that TQM has a significant positive impact on customers' perceived tourism quality, which directly translates into higher customer satisfaction. Satisfied customers are more likely to become loyal customers, not only choosing to repeat visits, but also recommending the company's services to others, thereby bringing valuable word-of-mouth effects to the enterprise. Through this approach, companies can not only steadily expand their market share, but also continuously increase their revenue. The core of TQM lies in continuous improvement, which includes the continuous improvement of service quality, deep attention to customer experience, and quick response to customer feedback. Through these efforts, tourism enterprises can create higher quality tourism experiences and stand out in the fiercely competitive market. At the same time, the application of TQM helps enterprises establish long-term trust relationships with customers, enhance customer loyalty, which is crucial for achieving sustainable growth of the enterprise. In addition, by continuously focusing on and improving these key areas, tourism enterprises can maintain a leading position in the market and achieve long-term success and steady development in the constantly changing market environment. Overall, TQM not only helps companies improve operational efficiency, but also makes important contributions to customer relationship management and market competitiveness, laying a solid foundation for the sustainable development of tourism enterprises.

#### 5.3.2.4 Development of a Quality-Oriented Organizational Culture

Total Quality Management plays a crucial role in the sustainable development of tourism enterprises, especially by cultivating a culture that prioritizes quality at all levels within the organization. TQM emphasizes the promotion of quality centered values within the enterprise, which is not just a management strategy, but a cultural construction rooted in every level of the organization. By focusing on conducting training and development programs that emphasize the importance of quality, teamwork,

and continuous improvement, TQM helps companies establish a strong sense of quality awareness and responsibility among employees. This quality-oriented culture makes employees more proactive in their daily work, not only increasing their job satisfaction, but also encouraging innovation and improvement. This practice of empowering employees enables them to propose and implement innovative solutions more effectively in improving service delivery processes, thereby continuously improving service quality. This continuous improvement mechanism not only helps companies achieve significant performance improvement in the short term but also provides a solid guarantee for long-term business success and market competitiveness.

#### 5.3.2.5 Risk Management and Adaptability

The contribution of Total Quality Management to sustainable tourism development is reflected in its effective identification and management of potential risks related to sustainable development, such as environmental degradation, excessive tourism, and strong community opposition. TQM integrates risk management into the quality management system, enabling tourism enterprises to systematically identify and evaluate these risks, formulate response strategies, and develop more flexible operating models. This systematic approach enhances the adaptability of enterprises to changes in market conditions, regulatory environment, and customer preferences, enabling them to maintain flexibility in the face of challenges and seize emerging opportunities. By implementing TQM, enterprises can establish stronger risk warning mechanisms and response capabilities, reducing negative impacts caused by environmental issues or social conflicts. This forward-looking risk management not only helps businesses maintain business continuity but also enhances their competitiveness in the market. In addition, TQM promotes innovative practices in sustainable development for enterprises, such as optimizing resource utilization, improving service quality, and enhancing community relationships, thereby further driving the long-term success and sustainable growth of enterprises. Overall, TQM provides solid support for enterprises to achieve sustainable development in complex and ever-changing market environments by enhancing their risk management capabilities and operational resilience.

#### 5.3.2.6 Stakeholder Engagement and Collaboration

The impact of Total Quality Management on sustainable tourism development lies in its encouragement of establishing deep cooperative and participatory relationships with a wide range of stakeholders, such as local communities, government agencies, and tourists. Through this collaboration, managers can create and maintain strong partnerships to support and drive the implementation of sustainable tourism plans. TQM not only promotes active participation from all parties but also drives more inclusive and sustainable tourism practices by generating synergies. This cooperation model allows all parties to jointly formulate and implement tourism policies and practices, ensuring consideration of the needs and opinions of different stakeholders, thereby achieving a more balanced distribution of benefits. This method of TQM not only ensures that tourism projects meet environmental and social sustainability standards but also enhances the sense of participation and belonging of local communities, while improving the satisfaction of tourists' experiences. This comprehensive approach enhances the overall resilience of the tourism industry, enabling it to better respond to market fluctuations, environmental changes, and social challenges, thereby ensuring the long-term sustainable development and prosperity of the tourism industry. Overall, TQM promotes more inclusive and sustainable tourism practices by fostering collaboration and participation from a wide range of stakeholders, providing important support for the sustained success and development of the tourism industry.

### 5.4 Research Limitations and Suggestions for Future Research

#### 5.4.1 Limitation of the Study

Study also has some limitations. Firstly, the data comes from the responses to the questionnaire. Even if respondents make an effort to answer truthfully during the survey, they may be influenced by societal expectations, leading them to give answers that conform to these expectations and thus inflate the scores. This phenomenon is a common problem in questionnaire surveys (Fowler et al., 2014). Secondly, in the pre-survey phase of scale development, the samples were drawn from two countries that are scenic Grade 5A locations that tend to employ relatively advanced management practices. However, the management concepts and methods of different levels of scenic spots may

differ (Wang et al., 2024). Therefore, in the future, it would be necessary to take uniform samples of prospects from levels A to 5A to verify the applicability of the scale. Although the scale has been subjected to various tests of reliability and validity, further optimization of the scale items for each dimension may be necessary to adapt them to specific survey objectives if the application scenarios change.

#### **5.4.2 Suggestions for Future Research**

TQM is a systematic management method that is widely used in all areas of life. In the tourism industry, TQM not only helps to improve service quality and guest satisfaction, but also promotes the efficient use of resources and sustainable development. Participation of all employees is one of the core concepts of TQM. Future research can further explore how to enhance employees' sense of participation and belonging through TQM and promote the construction of organizational culture. At the same time, tourism development cannot be separated from community support and community participation. The government and industry associations play an important role in promoting TQM and achieving sustainable tourism development. We can examine how tourism businesses promote local economic development, protect cultural heritage and improve the environment in the community through TQM, as well as the long-term impact of these actions on business reputation and sustainable development. At the same time, we can explore how the government promotes TQM through policy incentives and monitoring application, and how industry associations help tourism enterprises implement TQM by setting standards, sharing experiences and integrating resources. The scenic spots in the Chengdu-Chongqing metropolitan area are managed by the local government where the attraction is located. For example, the Leshan Giant Buddha in Sichuan Province is managed by the Leshan Giant Buddha Scenic Area Management Committee, which is responsible for the protection and development of scenic resources, the maintenance of the scenic area and the reception of tourists. Therefore, the concept of comprehensive participation applied in the management of level 5A scenic spots requires the participation of government employees, scenic area managers, scenic area staff, local residents and tourists of the scenic area in the quality control for the sustainable development of the scenic area. For tourism management in the Chengdu-Chongqing Urban Agglomeration metropolitan area, total comprehensive participation is crucial and

should be emphasized. Previous research has mainly focused on government management administration and scenic area managers in quality management through total comprehensive participation, with while less attention given has been paid to the participation of local residents and tourists. However, the participation of residents and tourists is a crucial aspect of total full participation. Local residents people are familiar with the local environment and geographical characteristics features. Through tourism operation and management, environmental protection, and related relevant training, they should also take on corresponding responsibilities appropriate responsibility and benefit directly benefit from tourism development. This can enhance improve the ability of local residents people to develop the tourism industry themselves, thereby achieving and thus achieve sustainable destination development of tourist destinations. Future research should further explore investigate the specific mechanisms and effects of TQM in improving the quality of tourism service quality services. By studying investigating the impact effects of different various TQM practices (such as employee training, process optimization, customer feedback management) on service quality, and how to achieve high tourist satisfaction and loyalty through these practices. As a systematic management method, total quality management will play a more important role in the sustainable development of tourism in the future. By continuously improving service quality, optimizing resource management, enhancing strengthening employee participation, introducing technological innovation and fulfilling taking social responsibilities responsibility, the tourism industry will be able to achieve a higher level of sustainable development, deeply explore the application and effect of TQM in the tourism industry in depth, and provide the industry with theoretical support and practical guidance to the industry.

## List of Bibliography

- Ababneh, O. M. A. (2021). The impact of organizational culture archetypes on quality performance and total quality management: the role of employee engagement and individual values. *International Journal of Quality & Reliability Management*, 38(6), 1387-1408.
- Abbas, T. I., Phan, A. C., & Matsui, Y. (2020). A study of the impact of financial performance in tourists and travel agencies by applying a Total Quality Management approach. *African Journal of Hospitality, Tourism and Leisure*, 9(1), 1-13.
- Ahmad, N., Youjin, L., & Hdia, M. (2022). The role of innovation and tourism in sustainability: why is environment-friendly tourism necessary for entrepreneurship? *Journal of Cleaner Production*, 379, 134799. <https://doi.org/10.1016/j.jclepro.2022.134799>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Akca, B., Dogan, O., & Hiziroglu, K. (2023). Decision Making Using Statistical Methods for Opening a Training at Continuing Education Centers Under Smart Campus Applications. *International Conference on Electronic Governance with Emerging Technologies*, 38-46.
- Al Ziadat, M. T. (2015). Applications of planned behavior theory (TPB) in Jordanian tourism. *International Journal of Marketing Studies*, 7(3), 95-106. <http://dx.doi.org/10.5539/ijms.v7n3p95>
- Albloushi, B., Alharmoodi, A., Jabeen, F., Mehmood, K., & Farouk, S. (2023). Total quality management practices and corporate sustainable development in manufacturing companies: the mediating role of green innovation. *Management Research Review*, 46(1), 20-45.
- AL-Hazmi, N., & Alkhateeb, T. (2020). Obstacles to implementing total quality management in Saudi Arabia marketing tourism Services. *Management Science Letters*, 10(3), 507-514.

- Alsrabi, A. H. A. (2013). Total Quality Management in Tourism Companies: A Field Study of the Views of a Sample of Top Management in First-Class Hotels in Riyadh. *International Journal of Asian Business and Information Management*, 4(3), 1-15.
- Alzoubi, M. M., Hayati, K. S., Rosliza, A. M., Ahmad, A. A., & Al-Hamdan, Z. M. (2019). Total quality management in the health-care context: integrating the literature and directing future research. *Risk management and healthcare policy*, 12, 167-177. <https://doi.org/10.2147/RMHP.S197038>
- Andrić, B.; De Alwis, A. C.; & De Alwis, T. A. H. M. (2022). The effect of HRM practices on the implementation of TQM in tourism sector. *Specialusis ugdymas*, 2(43), 3068-3080.
- Beck, D., & Storopoli, J. (2021). Cities through the lens of Stakeholder Theory: A literature review. *Cities*, 118, 103377. <https://doi.org/10.1016/j.cities.2021.103377>
- Bengalica De Silva. (2020). Quality and Sustainable Development. *Shanghai Quality* 12, 16-17.
- Bolis, I., Morioka, S. N., & Sznclwar, L. I. (2017). Are we making decisions in a sustainable way? A comprehensive literature review about rationalities for sustainable development. *Journal of cleaner production*, 145, 310-322.
- Cai Songmei. (2020). *N city tourism master planning project management based on life cycle theory* (Master's thesis, Southwest Jiaotong University).
- Camilleri, M. (2014). Advancing the sustainable tourism agenda through strategic CSR perspectives. *Tourism Planning & Development*, 11(1), 42-56.
- Cao Weiwei. (2021). *Research on passengers' travel behavior influenced by high-speed rail* (Doctoral Dissertation, Sichuan University).
- Carlone, C., Milan, S., Decoste, C., Borelli, J. L., McMahon, T. J., & Suchman, N. E. (2023). Self-report measure of parental reflective functioning: A study of reliability and validity across three samples of varying clinical risk. *Infant Mental Health Journal*, 44(2), 240-254.
- Carvalho, A. B., Carvalho, M., Mota, M., Fonseca, S., & Martins, S. (2023). Lean Thinking and Tourism Management An Airbnb Case Study in Douro. *In Advances in Tourism, Technology and Systems*, 1, 263-279.

- Çelik, S., & Rasoolimanesh, S. M. (2023). Residents' attitudes towards tourism, cost–benefit attitudes, and support for tourism: A pre-development perspective. *Tourism Planning & Development*, 20(4), 522-540.
- Chakraborty, A. (2021). Can tourism contribute to environmentally sustainable development? Arguments from an ecological limits perspective. *Environment, Development and Sustainability*, 23(6), 8130-8146.
- Chamarro, A., Cobo-Benita, J., & Herrero Amo, M. D. (2023). Towards sustainable tourism development in a mature destination: Measuring multi-group invariance between residents and visitors' attitudes with high use of accommodation-sharing platforms. *Journal of Sustainable Tourism*, 31(2), 520-537.
- Chen Lu. (2012). *Research on Intercity Tourism Models in Chengdu and Chongqing* (Master's Thesis, Chongqing Normal University).
- Chen Qingkun. (2020). Implement TQM and improve customer satisfaction. (eds.) *Proceedings of the 17th China Standardization Forum*, 939-944.
- Chen Xu. (2020). Impact of COVID-19 on Sichuan tourism and its countermeasures. *Journal of Sichuan University of Administration*, 2, 5-14.
- Cheng Xiangye & Liu Yutang. (2017). Empirical Study on Total Quality Management of Wuzhen Tourist Attractions in Zhejiang Province. *Enterprise Reform and Management*, 9, 40-41.
- Cheng Zibiao & Wang Chengduan. (2019). A Study on Synergistic Development of All-for-One Ecotourism of Chengdu-Chongqing Urban Agglomeration. *Open Access Library Journal*, 6, 1-8.
- Cheon Deokhee; Chung yungwoong. (2019). A Study on the Influence of Knowledge Management System Quality in Travel Industry on Knowledge Management Process and Innovation. *International Journal of Tourism Management and Sciences*, 34, 25-42.
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2023). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 41, 745-783

- Cheung, K. S., & Li, L. H. (2019). Understanding visitor–resident relations in overtourism: Developing resilience for sustainable tourism. *Journal of Sustainable Tourism*, 27(8), 1197-1216.
- Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of applied social psychology*, 28(15), 1429-1464.
- Cronin, L. (1990). A strategy for tourism and sustainable developments. *World Leisure & Recreation*, 32(3), 12-18.
- Czernek-Marszałek, K. (2020). Social embeddedness and its benefits for cooperation in a tourism destination. *Journal of Destination Marketing & Management*, 15, 100401. <https://doi.org/10.1016/j.jdmm.2019.100401>
- Dale, B. G. , Wiele, T. V. D. , & Bamford, D. . (2016). *TQM: An Overview and the Role of Management: An Essential Guide and Resource Gateway*. John Wiley & Sons, Ltd.
- Dangi, T. B.; Kc, B.; & Gautam, L. (2021). History of tourism planning and development in Nepal: achievements and challenges to sustainable future of tourism. *Tourism planning and development in South Asia*, 42-62.
- Ding Liming.(2014). Analysis on Total Quality Management of Rural Tourism. *Rural Economy and Technology*, 25(11), 87-138.
- Diotaiuti, P., Corrado, S., Mancone, S., Cavicchiolo, E., Chirico, A., Siqueira, T. C., & Andrade, A. (2023). A psychometric evaluation of the Italian short version of the Fear of Pain Questionnaire-III: Psychometric properties, measurement invariance across gender, convergent, and discriminant validity. *Frontiers in Psychology*, 13, 1087055. <https://doi.org/10.3389/fpsyg.2022.1087055>
- Dong, Y., & Qu, Y. (2023). The impact mechanism and boundary conditions of tourists' restoration perception on destination attachment: A resource conservation perspective. *Tourism Management Perspectives*, 48, 101165. <https://doi.org/10.1016/j.tmp.2023.101165>
- Du Haoyuan & Wang Mingzhen. (2023). Research on the challenges and paths facing the sustainable development of rural tourism in the context of rural revitalization. *Tourism Overview*, 2, 94-96.

- Du Xiao. (2021). *Evaluation of Sustainable Tourism Development in Changyang County Based on Cultural Ecological Protection* (Master's Thesis, Hubei University).
- e Silva, J. D. A., & Lucchesi, S. (2022). Land-use patterns, location choice, and travel behavior: Evidence from São Paulo. *Journal of Transport and Land Use*, 15(1), 315-332.
- Edgell Sr, D. L. (2019). *Managing sustainable tourism: A legacy for the future*. Routledge.
- Edwards, J. R.; & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological methods*, 12(1), 1-22.
- Eslami, S. , Khalifah, Z. , Mardani, A. , Streimikiene, D. , & Han, H. . (2019). Community attachment, tourism impacts, quality of life and residents' support for sustainable tourism development. *Journal of Travel & Tourism Marketing*, 36(9), 1061-1079.
- Fehling, M., Nelson, B. D., & Venkatapuram, S. (2013). Limitations of the Millennium Development Goals: a literature review. *Global public health*, 8(10), 1109-1122.
- Feng xiao & Fan Leyao. (2022). Research on the network attention of 5A level tourist attractions in the Chengdu Chongqing Economic Circle. *Cooperative Economy and Technology*, 13, 72-75.
- Feng Zhenzhen. (2022). *A Study on the Development of Rural Tourism in Bozhou City Based on the Perceived Value of Tourists* (Master Degree Thesis, Nanning Normal University).
- Fowler Jr, F. J. (2013). *Survey research methods*. Sage publications.
- Freeman, R. E. (2015). Stakeholder theory. *Wiley encyclopedia of management*, 1-6.
- Gautam, V., & Bhalla, S. (2024). Exploring the relationships among tourism involvement, residents' empowerment, quality of life and their support for sustainable tourism development. *Journal of Cleaner Production*, 434, 139770.  
<https://doi.org/10.1016/j.jclepro.2023.139770>
- General Office of the State Council of the People's Republic of China. (2003). Notice of the State Council on Issuing the Action Plan for Sustainable Development in China at the Beginning of the 21st Century. *Yunnan Political Daily*, 17, 5-14.

- General Office of the State Council of the People's Republic of China. (2014). Several Opinions of the State Council on Promoting the Reform and Development of the Tourism Industry. *Xining Political Daily*, 08, 4-9.
- Godovykh, M., Hacikara, A., Baker, C., Fyall, A., & Pizam, A. (2023). Measuring the perceived impacts of tourism: a scale development study. *Current Issues in Tourism*, 1-17.
- Gorsuch, R. L. (1990). Common factor analysis versus component analysis: Some well and little known facts. *Multivariate behavioral research*, 25(1), 33-39.
- Hadian, M. S. D., Suganda, B. R., Khadijah, U. L. S., & Anwar, R. K. (2021). River development as a sustainable geo-tourism with a participatory stakeholder approach. *Geo Journal of Tourism and Geosites*, 34(1), 155-163.
- Hair Jr, J., Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
- Han Hong. (2015). On the Benefit Analysis of Regional Tourism Cooperation under the Perspective of Sustainable Development. *Market Weekly*, 1, 44-45.
- Han, H., Al-Ansi, A., Chua, B. L., Tariq, B., Radic, A., & Park, S. H. (2020). The post-coronavirus world in the international tourism industry: Application of the theory of planned behavior to safer destination choices in the case of US outbound tourism. *International journal of environmental research and public health*, 17(18), 6485.
- Hardy, A., & Pearson, L. J. (2018). Examining stakeholder group specificity: An innovative sustainable tourism approach. *Journal of Destination Marketing & Management*, 8, 247-258.
- He Honhhua. (2018). Research on the "Bulge" of Urban Agglomeration in the Middle Zone of Chengdu Chongqing. *Green Technology*, 4, 201-204+212.
- He, L., Zha, J., & Loo, H. A. (2021). How to improve tourism energy efficiency to achieve sustainable tourism: Evidence from China. *In Current Issues in Asian Tourism: Volume II*, 188-203.

- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, **43**, 115-135.
- Hong Yawen & Ge Yue. (2013). On the Sustainable Development of Chongqing Yangren Street Tourism. *Green Technology*, **8**, 306-308.
- Hsu, C. Y., Chen, M. Y., Nyaupane, G. P., & Lin, S. H. (2020). Measuring sustainable tourism attitude scale (SUS-TAS) in an Eastern island context. *Tourism Management Perspectives*, **33**, 100617.  
<https://doi.org/10.1016/j.tmp.2019.100617>
- Hu, L., Bentler, P.M. (1999), "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives" SEM, **6**(1), 1-55.
- Huang Mei. (2023). *Study on Tourism Sustainable Development of Dihua Ancient Town in Shanxi Province* (Master's Thesis, Qinghai Normal University).
- Iqbal, U. P., Hamza, V. K., Nooney, L. K., & Sainudeen, S. (2023). Exploring the determinants of destination satisfaction: a multidimensional approach. *Future Business Journal*, **9**(1), 59. <https://doi.org/10.1186/s43093-023-00240-1>
- Isaksson, R., Ramanathan, S., & Rosvall, M. (2023). The sustainability opportunity study (SOS)—diagnosing by operationalising and sensemaking of sustainability using Total Quality Management. *The TQM Journal*, **35**(5), 1329-1347.
- Ismail, F. K. M., & Zubairi, A. M. B. (2022). Item Objective Congruence Analysis for Multidimensional Items: Content Validation of a Reading Test in Sri Lankan University. *English Language Teaching*, **15**(1), 106-117.
- Jessen Yeoh & Wang Weiren. (2023). Spiritual Leadership in ISO 9000 Quality Management Family. *China Quality*, **3**, 81-84
- Jia Wenyi. (2023). A Study on the Temporal and Spatial Differences of Tourism Efficiency in Chengdu Chongqing Urban Agglomeration. *Northern Economic and Trade*, **6**, 151-155.
- Jiao Chenyang. (2003). *Research on Residents' Perception and Attitude towards Cruise Tourism* (Master Degree Thesis, Shanghai University of Engineering and Technology).

- Jin, M.; & Liang, Y. (2022). Study on the Comprehensive Capacity of Tourism Development in Twin Cities Economic Circle of Chengdu-Chongqing Region. *Proceedings of the International Conference on Information Economy, Data Modeling and Cloud Computing*, 6, 17-19.
- Jum'a, L., Alkalha, Z., Al Mandil, K., & Alaraj, M. (2023). Exploring the influence of lean manufacturing and total quality management practices on environmental sustainability: the moderating role of quality culture. *International Journal of Lean Six Sigma*, 14(7), 1626-1654. <https://doi.org/10.1108/IJLSS-11-2021-0203>
- Keshavarzian, P., & Wu, C. L. (2017). A qualitative research on travellers' destination choice behaviour. *International Journal of Tourism Research*, 19(5), 546-556.
- Khan, A., Bibi, S., Lorenzo, A., Lyu, J., & Babar, Z. U. (2020). Tourism and development in developing economies: A policy implication perspective. *Sustainability*, 12(4), 1618. <https://doi.org/10.3390/su12041618>
- Kiran, D. R. (2017). Total quality management: an overview. *Total Quality Management*, 1-14.
- Kline, R. B. (2016). Principles and practice of structural equation modeling, 3rd ed. *Guilford press*.
- Kyriazos, T. A. (2018). Applied psychometrics: sample size and sample power considerations in factor analysis (EFA, CFA) and SEM in general. *Psychology*, 9(8), 2207.
- Lee, S. W., & Xue, K. (2020). A model of destination loyalty: Integrating destination image and sustainable tourism. *Asia Pacific Journal of Tourism Research*, 25(4), 393-408.
- Lee, T. H. (2013). Influence analysis of community resident support for sustainable tourism development. *Tourism management*, 34, 37-46.
- León-Gómez, A., Ruiz-Palomo, D., Fernández-Gámez, M. A., & García-Revilla, M. R. (2021). Sustainable tourism development and economic growth: Bibliometric review and analysis. *Sustainability*, 13(4), 2270. <https://doi.org/10.3390/su13042270>
- Li Dong, Cui Chunyu, Ma Changfa, Guan Jingyun, Chen Yuetong & Wang Yuqing. (2020). Community relationship, benefit perception and pro-tourism behavior: A moderated mediation model. *Geography of Arid Areas*, 4, 1098-1107

- Li Qingshu. (2019). Seize the opportunity and take advantage of the situation to stride forward towards a strong cultural and tourism province in Sichuan. *Ministry of Culture and Tourism of The People's Republic of China*.
- Li Wenzhen & Yuan Yazhong. (2023). A Study on the Impact of Perception of Film and Television Tourism Benefits on Pro tourism Behavior: Taking Zhanjiang City as an Example. *Business Economics*, 2, 114-148.
- Li, Y., Liu, Y., & Solangi, Y. A. (2024). Analysis of factors and strategies for the implementation of sustainable tourism in a green economic structure in China. *Journal of Cleaner Production*, 434, 140011.  
<https://doi.org/10.1016/j.jclepro.2023.140011>
- Liang Yijun. (2023). **Research on the Development of Ecotourism in Yunhe County Based on Tourist Perception** (Master Degree Thesis, Northwest Normal University).
- Liu Chuanshui. (2015). **Research on project management of Qingdao Tourism Experience Network based on project life cycle theory** (Master's thesis, Beijing University of Technology).
- Liu Dajun, Chen Junzi & Jia Yaoyan.(2020). Characteristic of tourist flow network in Chengdu Chongqing Urban agglomeration under the influence of high-speed railway. *World Regional Studies*, 3, 549-556.
- Liu Jianwei. (2023). **Study on the Construction of Tourism Opportunity Mapping in Chengdu-Chongqing City Agglomeration** (Master's thesis, Chongqing University of Technology).
- Liu Luyan. (2023). Promote the high-quality development of rural tourism in Changzhou from the perspective of global tourism. *Today's Wealth*, 2, 38-40
- Liu, J., Wang, C., Fang, S., & Zhang, T. (2019). Scale development for tourist trust toward a tourism destination. *Tourism Management Perspectives*, 31, 383-397.
- López-Sanz, J. M., Penelas-Leguía, A., Gutiérrez-Rodríguez, P., & Cuesta-Valiño, P. (2021). Rural tourism and the sustainable development goals. A study of the variables that most influence the behavior of the tourist. *Frontiers in Psychology*, 12, 722973.  
<https://doi.org/10.3389/fpsyg.2021.722973>

- Lu Xiaolong & Zhou Zhihong. (2015). A literature review on sustainable tourism development. *Times Agricultural Machinery*, 2, 91-100.
- Ma Zhen. (2010). *Research on Evaluation of Tourists' Service Quality Perception of the Scenic regions* (Doctoral Dissertation, Northwestern University).
- Marsh, H. W., Guo, J., Dicke, T., Parker, P. D., & Craven, R. G. (2020). **Confirmatory factor analysis (CFA), exploratory structural equation modeling (ESEM), and set-ESEM: Optimal balance between goodness of fit and parsimony.** *Multivariate behavioral research*, 55(1), 102-119.
- Matarrita-Cascante, D., Brennan, M. A., & Luloff, A. E. (2010). Community agency and sustainable tourism development: The case of La Fortuna, Costa Rica. *Journal of sustainable tourism*, 18(6), 735-756.
- Memmedova, K., & Ertuna, B. (2024). Development of a fuzzy Likert scales to measure variables in social sciences. *Information Sciences*, 654, 119792.  
<https://doi.org/10.1016/j.ins.2023.119792>
- Ming Hao. (2022). *Evaluation of rural tourism development benefits based on villagers' perception perspective* (Master's thesis, Guizhou University of Finance and Economics).
- Moore, W., & Whitehall, P. (2005). The tourism area lifecycle and regime switching models. *Annals of Tourism Research*, 32(1), 112-126.
- Munanura, I. E., Tumwesigye, B., Sabuhoro, E., Mariza, D., & Rugerinyange, L. (2018). The quality and performance nexus of the community-based ecotourism enterprises at Nyungwe National Park, Rwanda: a total quality management perspective. *Journal of Ecotourism*, 17(2), 160-183.
- Muzi, S., Di Trani, M., Renzi, A., & Pace, C. S. (2023). Can alexithymia be assessed through an interview in adolescents? The Toronto Structured Interview for Alexithymia: Reliability, concurrent validity, discriminant validity, and relationships with emotional-behavioral symptoms. *Frontiers in Psychiatry*, 13, 1055946. <https://doi.org/10.3389/fpsyt.2022.1055946>
- Nazem, G., & Mohamed, B. (2016). Understanding medical tourists' perception of private hospital service quality in penang island. *Asian Culture and History*, 8(1), 100-111 <http://dx.doi.org/10.5539/ach.v8n1p100>

- Noureddine Er Ramy;Driss Nachite;Giorgio Anfuso;Soria Azaaouaj.(2023). The Sector Analysis as a Coastal Management Tool for Sustainable Tourism Development on the Mediterranean Coast of Morocco. *Sustainability*, **15**(16), 12581. <https://doi.org/10.3390/su151612581>
- Nunkoo, R., Sharma, A., Rana, N. P., Dwivedi, Y. K., & Sunnassee, V. A. (2023). Advancing sustainable development goals through interdisciplinarity in sustainable tourism research. *Journal of Sustainable Tourism*, **31**(3), 735-759.
- Nunnally, J. C. (1975). Psychometric theory 25 years ago and now. *Educational Researcher*, **4**(10), 7-21.
- Nwokorie, E. C., & Adeniyi, E. E. (2020). Tourists' Perception of Ecotourism Development in Lagos Nigeria: The Case of Lekki Conservation Centre. *Turizam*, **25**(1), 11-30.
- Permana, A. Y., Susanti, I., & Wijaya, K. (2020). Architectural tourism development model as sustainable tourism concept in Bandung. *IOP Conference Series: Earth and Environmental Science*, **409**(1), 012005. <https://doi.org/10.5772/intechopen.94015>
- Peters, M., Chan, C. S., & Legerer, A. (2018). Local perception of impact-attitudes-actions towards tourism development in the Urlaubsregion Murtal in Austria. *Sustainability*, **10**(7), 2360. <https://doi.org/10.3390/su10072360>
- Polukhina, A., Sheresheva, M., Efremova, M., Suranova, O., Agalakova, O., & Antonov-Ovseenko, A. (2021). The concept of sustainable rural tourism development in the face of COVID-19 crisis: Evidence from Russia. *Journal of Risk and Financial Management*, **14**(1), 38. <https://doi.org/10.3390/jrfm14010038>
- Poudel, S., Nyaupane, G. P., & Budruk, M. (2016). Stakeholders' perspectives of sustainable tourism development: A new approach to measuring outcomes. *Journal of Travel Research*, **55**(4), 465-480.
- Purwanda, E., & Achmad, W. (2022). Environmental concerns in the framework of general sustainable development and tourism sustainability. *Journal of Environmental Management & Tourism*, **13**(7), 1911-1917.
- Qazi, A. J., & Gani, R. (2018). A Conceptual Framework of Total Quality Management and its Application in Tourism Industry. *International Journal of Management Studies*, **3**(2), 32-35. [http://dx.doi.org/10.18843/ijms/v5i3\(2\)/05](http://dx.doi.org/10.18843/ijms/v5i3(2)/05)

- Qiu Hongliang. (2017). A Study on the Impact Mechanism of Civilized Tourism Behavior Intention of Outbound Tourists Based on TPB Extended Model. *Journal of Tourism*, **6**, 75-85.
- Ramanathan, S., & Isaksson, R. (2023). Sustainability reporting as a 21st century problem statement: Using a quality lens to understand and analyse the challenges. *The TQM Journal*, **35**(5), 1310-1328.
- Rasulov, A., Alimkulov, N., & Safarov, U. (2022). The role of geoecological indicators in the sustainable development of Areas. *Journal of Pharmaceutical Negative Results*, 6498-6501. <https://doi.org/10.47750/pnr.2022.13.S09.774>
- Razak, A. A., Malik, I., Derioh, G., & Rani, S. U. (2023). SERVICE QUALITY INFRASTRUCTURE OF TRAVEL AGENCIES IN MALAYSIA. *Al-Din: Jurnal Dakwah dan Sosial Keagamaan*, **8**(2), 1-15.
- Roxas, F. M. Y., Rivera, J. P. R., & Gutierrez, E. L. M. (2020). Mapping stakeholders' roles in governing sustainable tourism destinations. *Journal of Hospitality and Tourism Management*, **45**, 387-398.
- Lord, F.M., Novick, M.R., & Birnbaum, A. (1968). *Statistical theories of mental test scores*. Addison-Wesley.
- Saarinen, J. (2019). Communities and sustainable tourism development: Community impacts and local benefit creation tourism. *A research agenda for sustainable tourism*, 206-222.
- Salerno, F., Viviano, G., Manfredi, E. C., Caroli, P., Thakuri, S., & Tartari, G. (2013). Multiple Carrying Capacities from a management-oriented perspective to operationalize sustainable tourism in protected areas. *Journal of environmental management*, **128**, 116-125.
- Sang Senyao. (2017). Analysis on Promotion Function of Regional Eco-tourism on Sustainable Development of Environmental Protection. *Education and Teaching Forum*, **11**, 178-181.
- Scheyvens, R., & Laeis, G. (2022). Linkages between tourist resorts, local food production and the sustainable development goals. *Recentering Tourism Geographies in the Asian Century*, 139-161.

- Schreiber, J. B. (2021). Issues and recommendations for exploratory factor analysis and principal component analysis. *Research in Social and Administrative Pharmacy*, 17(5), 1004-1011.
- Shen Kui & Si Huichao. (2018). Thoughts on the Town Master Plan Based on Regional Characteristics-Taking Xinfeng Town in Huangshan District of Huangshan City as an Example. *Anhui agricultural science*, 24, 216-219.
- Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of Applied Mathematics and Statistics*, 8(2), 39-42.
- Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4-11.
- Sneed, N. M., Ukwuani, S., Sommer, E. C., Samuels, L. R., Truesdale, K. P., Matheson, D., ... & Heerman, W. J. (2023). Reliability and validity of assigning ultraprocessed food categories to 24-h dietary recall data. *The American Journal of Clinical Nutrition*, 117(1), 182-190.
- Song Huilin, Lv Xiangyang & Jiang Yiyi. (2016). The Impact of Population Characteristics on Residents' Choice of Outbound Tourism Destinations: An Empirical Analysis Based on the TPB Model. *Journal of Tourism*, 2, 33-43.
- Song, H., Zhu, C., & Fong, L. H. N. (2021). Exploring residents' perceptions and attitudes towards sustainable tourism development in traditional villages: The lens of stakeholder theory. *Sustainability*, 13(23), 13032.
- Spenceley, A., & Rylance, A. (2019). The contribution of tourism to achieving the United Nations Sustainable Development Goals. *A research agenda for sustainable tourism*, 107-125.
- Stylidis, D., Biran, A., Sit, J., & Szivas, E. M. (2014). Residents' support for tourism development: The role of residents' place image and perceived tourism impacts. *Tourism management*, 45, 260-274.
- Tang Zhihao. (2023). *Study on the coupling and coordinated development of tourism industry and regional economy in Chengdu Chongqing double city Economic Circle* (Master's thesis, Xihua university).

- Tarí, J. J., Pereira-Moliner, J., Molina-Azorín, J. F., & López-Gamero, M. D. (2020). Quality standards and competitive advantage: The role of human issues in tourism organizations. *Current Issues in Tourism*, 23(20), 2515-2532.
- Timothy, V. L., & Said, S. K. (2023). Perception of residents on the impacts of beach tourism: The case of Nungwi village in Zanzibar, Tanzania. *Heliyon*, 9(11).
- Tuan, V. K., & Rajagopal, P. (2019). Analyzing factors affecting tourism sustainable development towards vietnam in the new era. *European Journal of Business and Innovation Research*, 7(1), 30-42.
- Um, J., & Yoon, S. (2021). Evaluating the relationship between perceived value regarding tourism gentrification experience, attitude, and responsible tourism intention. *Journal of Tourism and Cultural Change*, 19(3), 345-361.
- United Nations. (2001). Management Sustainable Tourism Development. *ESCAP Tourism Review*.
- Vethirajan, C., & Ganapathi, R. (2021). A study on perception of religious tourists on service quality of hotels in south tamil nadu. *Effulgence-A Management Journal*, 19(1), 8-22.
- Vidal Rua, S. (2020). Perceptions of tourism: a study of residents' attitudes towards tourism in the city of Girona. *Journal of Tourism Analysis: Revista de Análisis Turístico*, 27(2), 165-184.
- VU THI KIEU OANH (2023). *Research on Sustainable Tourism Development of Fukuo Island in Vietnam* (Master's Thesis, Southwest University).
- Wang Hao and Zhang Haiqin (2024). Tourism Lifestyle: A Study on the Behavior and Experience Characteristics of Tourists in "Internet Famous Cities" - A Big Data Analysis of Tourists in Zibo City Based on Baidu Index and UGC. *Resources and Environment in Arid Areas*, 2, 173-180.
- Wang Hui (2022). Tourism planning based on total quality management concept. *Travel overview*, 21, 100-102.
- Wang Rong. (2023). *Research on the Relationship between Community Participation, Political Trust, and Tourism Benefits in Rural Tourism Destinations* (Master's Thesis, Shaanxi Normal University).

- Wang Shaidi. (2022). Research on the Impact of Chongqing's Tourism Industry on Chongqing's GDP. *Chinese market* 29, 72-74.
- Wang Yu. (2022). *Analysis of the Spatial Structure of Tourist Attractions in the Chengdu Chongqing Region Based on Baidu Index* (Master's Thesis, Southwest Jiaotong University).
- Wang, L. H., Yeh, S. S., Chen, K. Y., & Huan, T. C. (2022). Tourists' travel intention: Revisiting the TPB model with age and perceived risk as moderator and attitude as mediator. *Tourism Review*, 77(3), 877-896.
- Wang, X., Zeng, Y., Wen, H., & Gui, Z. (2024). Ticket Pricing and Spatial Heterogeneity of Scenic Spots in China: A Spatial Hedonic Pricing Approach. *Journal of China Tourism Research*, 1-25.
- WCED, S. W. S. (1987). World commission on environment and development. *Our common future*, 17(1), 1-91.
- Wen Ting. (2018). Research on Sustainable Development of Tourism in Bangkok, Thailand (Doctoral Dissertation, Guangxi University).
- Witt, C. A., & Muhlemann, A. P. (1994). The implementation of total quality management in tourism: some guidelines. *Tourism Management*, 15(6), 416-424.
- Worthen, B. R., Borg, W. R., & White, K. R. (2014). *Measurement and evaluation in the schools*. Pearson.
- WTO. (1998). Guide for local authorities on developing sustainable tourism. *World Tourism Organization*.
- Wu Haiyan. (2019). The Dilemmas and Countermeasures for Sustainable Development of Rural Tourism. *Agricultural Economy*, 10, 46-47
- Wu Minglong(2013). *Structural Equation Modeling: Advanced AMOS Practice*. Chongqing: Chongqing University Press
- Wu Minglong. (2012). *Questionnaire Statistical Analysis Practice - SPSS Operation and Application*. Chongqing University Press.
- Wu Yingying. (2023). *Research on Tourism quality improvement of Rose Festival in Henan Nanyang based on tourists' perception* (Master's thesis, Guilin University of Technology).

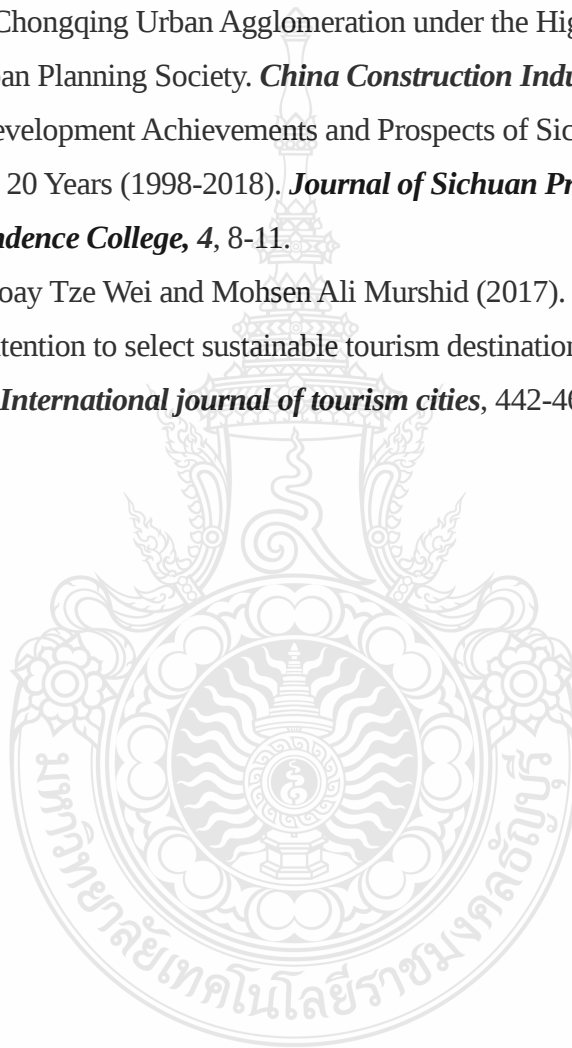
- Xiang Cheng, Tang Zhongxia, & Li Huan. (2020). Research on the evaluation of coordinated development of core stakeholders in rural tourism. *Western Economic Management Forum*, 31(6), 42-52.
- Xiao Liangwen. (2020). *Research on the Impact of Government Ecological Management on the Sustainable Development of Rural Tourism* (Master Degree Thesis, Jishou University).
- Xiaorong, N.; Bojian, X.; & Huili, Z. (2013). The application of total quality management in rural tourism in the context of new rural construction—the case in China. *TQM & BE*, 24(9-10), 1188-1201.
- Xie Yanjun, Na Mengfan. (2019). Theoretical Development and Role Evolution in the 40 Year Study of Chinese Tourism. *Tourism Tribune*, 2, 13-15.
- Xing Zebang. (2022). *Study on the evolution and coordination of economic structure between intercity railway and Urban agglomeration* (Master's thesis, Shijiazhuang Railway University).
- Xiong Xiaoqin. (2023). *A Study on the Evaluation of Sichuan's Tourism High-quality Development Level from the Perspective of multidimensional Equilibrium* (Master's thesis, Chengdu University of Technology).
- Xu Haidong, Ni Pengfei. (2023). Enhancing the Competitiveness of Cities in Tourism and Leisure. *Tourism Tribune*, 7, 1-4.
- Xu Jiali & Yu Bowen. (2023). The Driving System of the 2030 Agenda for Sustainable Development in the Post Epidemic Era: Impact and Reconstruction. *International Relations Research*, 134(2), 154-159.
- Xu Qingquan, Cai Chunyuan, Wang Qing, Cheng Xiang, Wang Yanfei. (2024). Practical research on total quality management of power supply enterprises based on excellent efficiency model. *Operations and Management*, 1, 115-121.
- Xu Wenjuan & Wu Xi. (2020) .A study on Sustainable Development of Eco-tourism in Hainan Based on Systematic Analysis of Literature. *Education and Teaching Forum*, 38, 109-110.
- Yamagishi, K.; Gantalao, C.; & Ocampo, L. (2022). A case of greening the Sinulog festival with the Plan-Do-Check-Act (PDCA) cycle. *Event Management*, 26(3), 671-678.
- Yan Jiachen. (2023). *SEM-IPA of Rural Tourism Public Service in Hua qiao Town in Xinjiang: Based on Tourists Perception* (Master's thesis, Tarim University).

- Yan Shougang. (2007). *Research on the Evaluation Index System and Evaluation Model for Sustainable Development of Ecotourism* (Master Degree Thesis, Tianjin Normal University).
- Yang Hong, Hu Zhiyi. Research on the Joint Development Model of Tourism in the Chengdu-Chongqing Economic Zone. *Journal of Sichuan Tourism University*, 3, 60-64.
- Yang Huan & Qiao Zhijie. (2013). Analysis of the Inheritance and Innovation of Total Quality Management from Traditional Quality Management. *Business Economy*, 11, 46-124.
- Yang Mingjie. (2023). *The implementation of the Urban agglomeration development plan has an impact on regional economic linkages--Taking the Chengdu-chongqing Region as an Example* (Master's thesis, Lanzhou University of Finance and Economics).
- Yang, M., & Wang, J. X. (2020). Marine high-tech Enterprise ecosystem based on sustainable development. *Sustainable Computing: Informatics and Systems*, 28, 100399. <https://doi.org/10.1016/j.suscom.2020.100399>
- Yang, Q., Dan, H.; Ni, T.; Zhao, P.; Wei, J.; & Wang, G. (2023). Research on the Coupling and Coordinated Development of the Tourism Industry and Regional Economy in the Economic Circle of the Sichuan–Chongqing Region in Southwest China. *Sustainability*, 15(3), 2405. <https://doi.org/10.3390/su15032405>
- Yi Yalin, Zhao Wei, Huang Cheng, Wang Lanping, Lin Chuanlan, Zhang Yingchen & Li Deyong. (2023). Research on the evaluation of high-quality development benefits of eco-tourism in Giant Panda National Park based on analytic hierarchy process and fuzzy comprehensive evaluation method - taking Sichuan area as an example. *Tourism Overview*, 17, 87-93.
- Yin Lu. (2017). The Impact of High Speed Rail on the Spatial Structure of Tourism Destinations along the Line: Taking the Chengdu Chongqing High Speed Rail as an Example. *China Statistics*, 11, 40-43.
- Yin, J., Cheng, Y., & Ni, Y. (2024). Staging a comeback? The influencing mechanism of tourist crowding perception on adaptive behavior. *Tourism Management*, 100, 104827. <https://doi.org/10.1016/j.tourman.2023.104827>

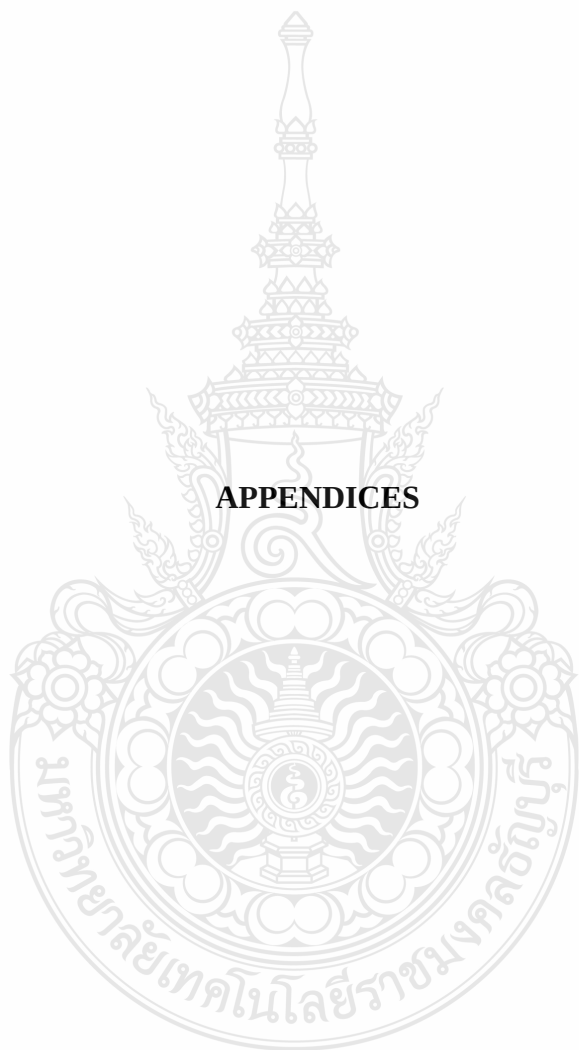
- You Zhi, Yang Na & Wu Dan. (2018). Research on Enhancing the Sustainable Development Ability of Sichuan's Tourism Industry through Cultural Creativity. *Tourism Overview*, 6, 60-62.
- Yu Jiayuan. (2012). Psychometrics: The Mathematical Pearl in the Crown of Psychology. *Journal of the Chinese Academy of Sciences*, 209-215.
- Yu Xiaojin, Hao Yunxia & Zhang Han. (2020). Research on the Benefit Evaluation and Development Countermeasures of Forest Tourism in Yichun, Heilongjiang Province under the Background of Quality Tourism Era. *Economist*, 10, 158-159.
- Yunis, E. (2001). Sustainable development and management of tourism in coastal areas. UNWTO, *Madrid*, 2-5.
- Zhang Chaozhi & Yang Jirong. (2022). An analytical framework for high-quality tourism development based on sustainable development theory. *Journal of Central China Normal University*, 1, 43-50.
- Zhang Dan, Zhu Wen & Zhu Hongdun (2017). Analysis and Optimization of Tourism Spatial Structure in Chengdu Chongqing Urban Agglomeration. *Journal of Sichuan Vocational and Technical College*, 3, 37-40.
- Zhang Ge. (2021). Leshan: the "Rear Garden" of Chengdu and Chongqing-On Leshan Tourism's Integration into the Chengdu-chongqing Twin-city Economic Circle. *Journal of Aba Normal University*, 3, 68-74
- Zhang Guangyong. (2022). *Research on the English Interpretation System of 5A Scenic Spots in Sichuan Province* (Master Degree Thesis, Northwest Normal University).
- Zhang Hao & Shang Lei. (2019). Advancement on statistical methods in the development of medical scale. *Practical Preventive Medicine*, 3, 381-385.
- Zhang Jian & Zhang Yan. (2023). Research on the basic development model of Sichuan's red sports tourism industry. *Sichuan Sports Science*, 1, 100-104.
- Zhang Lingyun. (2023). Sustainable Development: A New Agenda for High Quality Development in the Tourism Industry. *Journal of Tourism*, 1, 1-2.
- Zhang Mengjuan. (2023). *A Study on the Coupling Relationship between Forest Tourism Economy, Ecology, and Social Benefits* (Master Degree Thesis, Guizhou University).

- Zhang Pengyang, Huang Yanmei & Zheng Ting. (2022). Review and prospects of domestic and foreign tourism crisis management research - based on a life cycle perspective. *Tourism Forum*, 4, 101-111.
- Zhang Shuo. (2017). The Way Out for Sustainable Development: Quality Management. *International Engineering and Labor*, 12, 22-25.
- Zhang Ting. (2020). The Current Situation and Development Suggestions of the Tourism Industry in the Chengdu Chongqing Urban Agglomeration. *Modern Marketing*, 5, 124-125.
- Zhang Xi. (2022). The Application of Total Quality Management Concept in Tourism Planning: Taking Dali Tourism Planning as an Example. *Smart City*, 2, 75-77.
- Zhang Yuting & Chen Shuai. (2023). Analysis of Ecological Environment Protection and Sustainable Development in Pingyao County. *Cleaning the World*, 8, 37-39
- Zheng Fei. (2021). *Research on Tourism Experience Quality Management of Baizhangji Scenic Spot* (Master's Thesis, Guangxi Normal University).
- Zheng Qiuming. (2016). Discussion on the Evaluation Method of Tourism Investment Benefit Based on Sustainable Development. *National Business Information*, 34, 45.
- Zhou Jinbo & Yuan Jiaocheng. (2019). An Analysis of Innovative Strategies for Sustainable Development of Guilin's Tourism Industry. *Journal of Liuzhou Vocational and Technical College*, 4, 26-30.
- Zhou Liangliang. (2022). *Research on the Impact of Tourism Destination Management on Sustainable Tourism Development in Hainan Province* (Master's thesis, Hainan University).
- Zhou Xiangyang. (2023). *Tourism Benefit Evaluation of Ethnic Minority Villages-A case study of three Tujia villages in Lichuan City* (Master's thesis, Huazhong Agricultural University).
- Zhou Xiaofeng, & Zhang Chaozhi. (2023). Comparison and reflection on the connotation of the concept of sustainable tourism between China and the West. *Tourism Forum*, 16(1), 43-52.
- Zhu Dan. (2016). Research on Quality Management of Ecotourism Scenic Spots. *Modern Business*, 17, 47-48.

- Zhu Tingting. (2020). *A Study on Tourist Satisfaction of Lianyungang Liandao Coastal Tourism Resort Based on IPA Analysis* (Master's thesis, Yangzhou University).
- Zhu, L., Zhan, L., & Li, S. (2021). Is sustainable development reasonable for tourism destinations? An empirical study of the relationship between environmental competitiveness and tourism growth. *Sustainable Development*, 29(1), 66-78.
- Zou Jiawen & Zhai Guofang. (2017). Exploring the Spatial Pattern and Connection of Chengdu Chongqing Urban Agglomeration under the High Speed Rail Network. China Urban Planning Society. *China Construction Industry Press*, 407-418.
- Zou Yun. (2018). Development Achievements and Prospects of Sichuan's Tourism Industry in the Past 20 Years (1998-2018). *Journal of Sichuan Provincial Cadre Correspondence College*, 4, 8-11.
- Zurina Mohaidin, Koay Tze Wei and Mohsen Ali Murshid (2017). Factors influencing the tourists' intention to select sustainable tourism destination: a case study of Penang, Malaysia. *International journal of tourism cities*, 442-465.



## APPENDICES





**APPENDIX A**  
**Questionnaire**

### Section 1: Demographic Characteristics

| Serial Number | The following are some basic details about you, provided for statistical analysis purposes only. Please check the corresponding box according to the actual information.                                                                                           |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female                                                                                                                                                                                              |
| 2             | Age: <input type="checkbox"/> Under 18 years <input type="checkbox"/> 18-30 years <input type="checkbox"/> 31-40 years<br><input type="checkbox"/> 41-50 years <input type="checkbox"/> More than 50 years                                                         |
| 3             | Respondents' identities: <input type="checkbox"/> Residents <input type="checkbox"/> Tourists<br><input type="checkbox"/> Scenic spot manager <input type="checkbox"/> Scenic area staff<br><input type="checkbox"/> Government management staff                   |
| 4             | Education level: <input type="checkbox"/> High school students and below<br><input type="checkbox"/> Junior college students<br><input type="checkbox"/> Undergraduate<br><input type="checkbox"/> Master's degree students and above                              |
| 5             | Per capital household income/month: <input type="checkbox"/> 2,000 RMB and below<br><input type="checkbox"/> 2,000-5,000 RMB <input type="checkbox"/> 5,000-10,000 RMB<br><input type="checkbox"/> 10,000-20,000 RMB <input type="checkbox"/> More than 20,000 RMB |
| 6             | Place of residence: <input type="checkbox"/> Sichuan Province <input type="checkbox"/> Chongqing <input type="checkbox"/> other                                                                                                                                    |
| 7             | Number of times you have traveled:<br><input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> More than 3 times                                                                                                  |

### Section 2: Survey Questionnaire

Dear Sir/Madam,

Greetings. This is a research survey aimed at investigating the relationship between Total Quality Management and Sustainable Tourism Development. Kindly respond based on your actual situation and work experiences, relying on your intuition. For questions you may not have considered before, please make choices to the best of your ability. This questionnaire is conducted anonymously and is solely for academic research. Ensuring confidentiality of your responses aligns with our professional ethics. Please mark the appropriate boxes according to your actual circumstances.

## 1. Full Participation

(1=strongly disagrees; 2=do not agree; 3=neither; 4=agree; 5=strongly agree)

| Full Participation |                                                                                                                                                              | 1                        | 2                        | 3                        | 4                        | 5                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                  | Do you believe that full participation in quality management has an impact on sustainable tourism development?                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2                  | Do you feel it is necessary for yourself to be involved in tourism quality management?                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3                  | Do you think that the overall participation of staff in managing a tourist attraction would enhance its quality?                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4                  | Do you believe that collecting employees' opinions on quality aspects by the management would improve the quality of the tourist attraction?                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5                  | Do you think it is necessary for the tourist attraction to encourage all staff to actively participate and provide relevant decisions on quality management? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 2. Whole Process Management

(1=strongly disagrees; 2=do not agree; 3=neither; 4=agree; 5=strongly agree)

| Whole Process Management |                                                                                                                                           | 1                        | 2                        | 3                        | 4                        | 5                        |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                        | Do you believe that whole process management in tourist attractions would enhance the quality of the attraction?                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2                        | Do you think it is important for the attraction to prioritize safety in the management process?                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3                        | Do you think it is necessary for the attraction to ensure food safety within the premises during the management process?                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4                        | Do you believe that the attraction needs to continuously monitor and follow up on surrounding facilities, such as hotels and guesthouses? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5                        | Do you think whole process management in quality management has an impact on sustainable tourism development?                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### 3. Comprehensive Management

(1=strongly disagrees; 2=do not agree; 3=neither; 4=agree; 5=strongly agree)

| <b>Comprehensive Management</b> |                                                                                                                                                                | <b>1</b>                 | <b>2</b>                 | <b>3</b>                 | <b>4</b>                 | <b>5</b>                 |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                               | Do you think it is necessary for the attraction to take measures (such as human resources, financial resources, etc.) to maintain the cleanliness of the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2                               | Do you believe that the tourist products offered by this attraction have distinctive features and a clear theme?                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3                               | Do you think the attraction can fulfill the promised services to visitors in a timely and comprehensive manner?                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4                               | Do you believe that the protection and maintenance status of various facilities in the attraction is good?                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5                               | Do you think that comprehensive management of tourist attractions would enhance the quality of the attraction?                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### 4. Tourism Benefits

(1=strongly disagrees; 2=do not agree; 3=neither; 4=agree; 5=strongly agree)

| <b>Tourism Benefits</b> |                                                                                                                                   | <b>1</b>                 | <b>2</b>                 | <b>3</b>                 | <b>4</b>                 | <b>5</b>                 |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                       | Do you believe that the sustainable development of the attraction would increase the income of local residents?                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2                       | Do you think that the sustainable development of the attraction would attract more investments?                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3                       | Do you believe that the development of the attraction would enhance the sales of tourism products?                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4                       | Do you think that the sustainable development of the attraction would increase employment opportunities for local residents?      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5                       | Do you believe that the sustainable development of the attraction would improve local transportation conditions?                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6                       | Do you think that the sustainable development of the attraction would protect local traditional culture and historical buildings? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7                       | Do you believe that the sustainable development of the attraction can improve the environment of the tourist area?                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|   |                                                                                                                                         |                          |                          |                          |                          |                          |
|---|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 8 | Do you think that the sustainable development of the attraction can raise awareness of environmental protection among villagers?        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | Do you believe that the sustainable development of the attraction can raise awareness of environmental protection among the government? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 5. Perceived Tourism Quality

(1=strongly disagrees; 2=do not agree; 3=neither; 4=agree; 5=strongly agree)

| Perceived tourism quality |                                                                                                                 | 1                        | 2                        | 3                        | 4                        | 5                        |
|---------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                         | After this trip, you were able to experience good transportation and facilities in the tourist area.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2                         | After this trip, would you encourage more people to visit the Chengdu-Chongqing region?                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3                         | After this trip, do you think there is a need for further improvement in the effectiveness of the tourist area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4                         | During this trip, do you consider the safety around the tourist area to be important?                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5                         | Compared to other trips, are you very satisfied with this one?                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6                         | Overall, do you feel that this trip was worthwhile (considering cost, time, etc.)?                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## 6. Sustainable Tourism Development

(1=strongly disagrees; 2=do not agree; 3=neither; 4=agree; 5=strongly agree)

| Sustainable Tourism Development |                                                                                                                                    | 1                        | 2                        | 3                        | 4                        | 5                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                               | Do you believe that local residents need to receive promotion and education on "environmental protection"?                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2                               | Do you think it is necessary to receive education on the "Civilized Tourism Agreements" of Chengdu and Chongqing before traveling? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3                               | During this trip, your relationship with local residents was harmonious without conflicts.                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4                               | Do you believe that tourism will increase the economic benefits and job opportunities for local residents?                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5                               | Through this trip, do you find the Chengdu-Chongqing region to have convenient transportation and a favorable location?            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|   |                                                                                                                                                       |                          |                          |                          |                          |                          |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 6 | Would you revisit this tourist area route?                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | Would you recommend this route to family, friends, classmates, and colleagues?                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 | During this trip, did you not impact the local ecosystem and maintained the basic ecological processes?                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | Do you believe that by preserving the natural environment and cultural relics of the tourist area, it can be sustainably utilized for future tourism? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

The questionnaire concludes here. Thank you for your cooperation!





**APPENDIX B**  
**Expert Review Form Item-Objective Congruence (IOC) Evaluation**

**Research Title:** The Impact of Total Quality Management on Sustainable Tourism Development in the Chengdu-Chongqing Urban Agglomeration

**Researcher:** Mrs. Xiangdong Kong

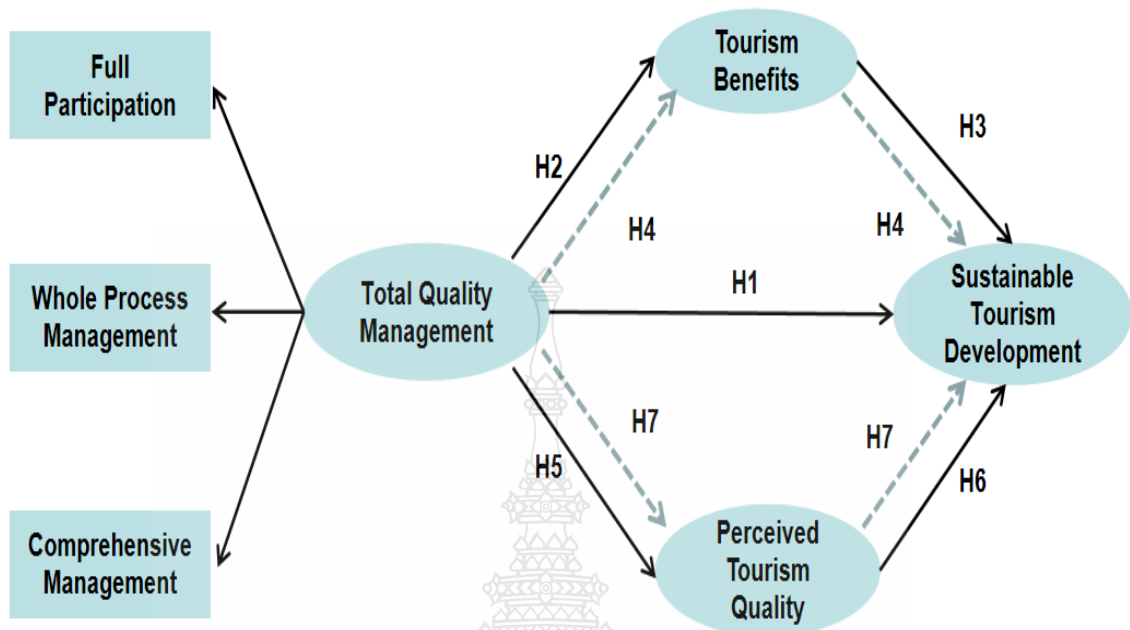
**Research Objectives:**

The main purpose of this study is to reveal the impact of total quality management on sustainable tourism development. Under this study, the author attempts to explore the application of total quality management theory in the tourism industry, analyze the impact of total quality management on tourism efficiency, explore the relationship between total quality management and the perception quality of tourists, as well quantitative evaluation methods for sustainable tourism development, and form beneficial conclusions for the sustainable development of the tourism industry in the Chengdu Chongqing urban agglomeration.

The purposes of this study are as follows:

1. To analyze the causal relationship model of total quality management, tourism benefits, perceived tourism quality and sustainable tourism development.
2. To analyze the causal relationship model of total quality management on sustainable tourism development mediated by tourism benefits.
3. To analyze the causal relationship model of total quality management on sustainable tourism development mediated by perceived tourism quality.

### Research Framework:



### Content Validity Analysis Using Item-Objective Congruence (IOC)

Using the Index of Item-Objective Congruence form (IOC) to analyze the item content validity. That is to examine the consistency between the questions and the research objectives. The evaluation criteria are as follows:

| IOC value | Meaning                                         |
|-----------|-------------------------------------------------|
| +1        | The question is consistent with the objective   |
| -1        | The question is inconsistent with the objective |
| 0         | Uncertain, its needs some revision.             |

## Questionnaire

| Items                                  | Lists                                                                                                                                             | IOC Scale |   |    | Suggestion |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|----|------------|
|                                        |                                                                                                                                                   | +1        | 0 | -1 |            |
| <b>Part 1 Full Participation</b>       |                                                                                                                                                   |           |   |    |            |
| 1                                      | Do you think quality management with full participation of all employees has an impact on the sustainable development of tourism?                 |           |   |    |            |
| 2                                      | Do you think it is necessary for you to participate in tourism quality management?                                                                |           |   |    |            |
| 3                                      | Do you think that full participation in the management of tourist attractions will improve the quality of the scenic spots?                       |           |   |    |            |
| 4                                      | Do you think management's collection of employees' opinions on quality will improve the quality of scenic spots?                                  |           |   |    |            |
| 5                                      | Do you think scenic spots need to encourage all employees to actively participate in and provide quality-related decisions in quality management? |           |   |    |            |
| 6                                      | Do you think full participation will improve the quality of the scenic spot?                                                                      |           |   |    |            |
| <b>Part 2 Whole process management</b> |                                                                                                                                                   |           |   |    |            |
| 1                                      | Do you think the whole-process management of tourist attractions will improve the quality of the scenic spots?                                    |           |   |    |            |
| 2                                      | Do you think scenic spots need to pay attention to surrounding safety in the management process?                                                  |           |   |    |            |
| 3                                      | Do you think scenic spots need to ensure food safety in scenic spots during the management process?                                               |           |   |    |            |
| 4                                      | Do you think scenic spots need to continue to provide surrounding supporting facilities, such as hotels and homestay?                             |           |   |    |            |
| 5                                      | Do you think quality management with full participation of all employees has an impact on the sustainable development of tourism?                 |           |   |    |            |
| 6                                      | Do you think whole process management will improve the quality of the scenic spot?                                                                |           |   |    |            |
| 7                                      | Do you think whole process management is part of total quality management?                                                                        |           |   |    |            |

| Part 3 Comprehensive management |                                                                                                                                           |  |  |  |  |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| 1                               | Do you think the scenic spot needs to take measures (manpower, financial resources, etc.) to maintain the cleanliness of the scenic spot? |  |  |  |  |
| 2                               | Do you think the tourist product in this scenic spot has obvious features and a clear theme?                                              |  |  |  |  |
| 3                               | Do you think the scenic spot can complete the services promised to tourists in a timely and comprehensive manner?                         |  |  |  |  |
| 4                               | Do you think the various equipment in the scenic area are protected and maintained in good condition?                                     |  |  |  |  |
| 5                               | Do you think that comprehensive management of tourist attractions will improve the quality of scenic spots?                               |  |  |  |  |
| Part 4 Tourism benefits         |                                                                                                                                           |  |  |  |  |
| 1                               | Do you think the sustainable development of scenic spots will increase the income of local residents?                                     |  |  |  |  |
| 2                               | Do you think sustainable development of scenic spots will attract more investment?                                                        |  |  |  |  |
| 3                               | Do you think the development of scenic spots will increase the sales of tourism products?                                                 |  |  |  |  |
| 4                               | Do you think the sustainable development of scenic spots will increase employment opportunities for local residents?                      |  |  |  |  |
| 5                               | Do you think the sustainable development of scenic spots will improve local traffic conditions?                                           |  |  |  |  |
| 6                               | Do you think the sustainable development of scenic spots will protect local traditional culture and ancient buildings?                    |  |  |  |  |
| 7                               | Do you think the sustainable development of scenic spots can improve the environment of tourist attractions?                              |  |  |  |  |
| 8                               | Do you think the sustainable development of scenic spots can improve villagers' environmental awareness?                                  |  |  |  |  |

|                                               |                                                                                                                                    |  |  |  |  |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| 9                                             | Do you think the sustainable development of scenic spots can improve the government's environmental awareness?                     |  |  |  |  |
| <b>Part 5 Perceived Tourism Quality</b>       |                                                                                                                                    |  |  |  |  |
| 1                                             | After this tour, you can experience good transportation and scenic facilities.                                                     |  |  |  |  |
| 2                                             | After this tour, you will encourage more people to visit Chengdu and Chongqing areas.                                              |  |  |  |  |
| 3                                             | After this trip, you think the scenic spot needs further improvement.                                                              |  |  |  |  |
| 4                                             | During this trip, do you think safety issues around the scenic area are important?                                                 |  |  |  |  |
| 5                                             | Compared with other tours, I feel very satisfied with this tour.                                                                   |  |  |  |  |
| 6                                             | For this tour, the overall feeling is that it is worth the time.                                                                   |  |  |  |  |
| 7                                             | For this tour, the overall feeling is that it is worth the cost.                                                                   |  |  |  |  |
| 8                                             | Through this trip, you think the quality management of scenic spots is very important.                                             |  |  |  |  |
| 9                                             | Through this tour, the quality management of the scenic spot has brought a good experience to tourists                             |  |  |  |  |
| <b>Part 6 Sustainable tourism development</b> |                                                                                                                                    |  |  |  |  |
| 1                                             | Do you believe that local residents need to receive promotion and education on "environmental protection"?                         |  |  |  |  |
| 2                                             | Do you think it is necessary to receive education on the "Civilized Tourism Agreements" of Chengdu and Chongqing before traveling? |  |  |  |  |
| 3                                             | During this trip, your relationship with local residents was harmonious without conflicts.                                         |  |  |  |  |
| 4                                             | Do you believe that tourism will increase the economic benefits and job opportunities for local residents?                         |  |  |  |  |
| 5                                             | Through this trip, do you find the Chengdu-Chongqing region to have convenient transportation and a favorable location?            |  |  |  |  |
| 6                                             | Would you revisit this tourist area route?                                                                                         |  |  |  |  |

|   |                                                                                                                                                       |  |  |  |  |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| 7 | Would you recommend this route to family, friends, classmates, and colleagues?                                                                        |  |  |  |  |
| 8 | During this trip, did you not impact the local ecosystem and maintained the basic ecological processes?                                               |  |  |  |  |
| 9 | Do you believe that by preserving the natural environment and cultural relics of the tourist area, it can be sustainably utilized for future tourism? |  |  |  |  |





**APPENDIX C**

**Expert Invitation Letter Requests for Evaluation of the Research Instruments**

ที่ อว 0649.06/ ๙๕๖



คณะบริหารธุรกิจ  
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี  
ตำบลคลองหก อำเภอคลองหลวง  
จังหวัดปทุมธานี 12110

1๖ มกราคม 2567

เรื่อง ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม

เรียน รองศาสตราจารย์ ดร.กล้าหาญ ณ น่าน

สิ่งที่ส่งมาด้วย แบบสอบถามดัชนีพนธ์

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับปริญญาเอก  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น

เพื่อเป็นประโยชน์สำหรับนักศึกษา จึงใคร่ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหา  
ของแบบสอบถาม สำหรับนักศึกษา ราย Miss Xiangdong Kong รหัสนักศึกษา 126490501008-9 เป็นนักศึกษา  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ วิชาเอกการจัดการ เป็นผู้จัดทำดัชนีพนธ์เรื่อง Influence  
of Total Quality Management of Tourism Industry on Sustainable Tourism Development in  
Chengdu-Chongqing City Agglomeration โดยมี ผู้ช่วยศาสตราจารย์ ดร.ศิริญา วิรุณราช เป็นที่ปรึกษาดุษฎี  
นิพนธ์

จึงเรียนมาเพื่อขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม จักเป็น  
พระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.ดวงพร พุทรวงค์)

ผู้ช่วยคณบดีโครงการบัณฑิตศึกษา ปฏิบัติราชการแทน  
คณบดีคณะบริหารธุรกิจ

โครงการปริญญาเอก

โทร.02-5494819 โทรสาร.02-5493243

e-mail: phd.bus.rmUTT@hotmail.co.th



ที่ อว 0649.06/ 346

คณะบริหารธุรกิจ  
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี  
ตำบลคลองหก อำเภอคลองหลวง  
จังหวัดปทุมธานี 12110

17 มกราคม 2567

เรื่อง ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม

เรียน รองศาสตราจารย์ ดร.ชนงกรณ์ กุณทลบุตร

สิ่งที่ส่งมาด้วย แบบสอบถามดัชนีนิพนธ์

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับปริญญาเอก  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น

เพื่อเป็นประโยชน์สำหรับนักศึกษา จึงใคร่ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหา  
ของแบบสอบถาม สำหรับนักศึกษา ราย Miss Xiangdong Kong รหัสนักศึกษา 126490501008-9 เป็นนักศึกษา  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ วิชาเอกการจัดการ เป็นผู้จัดทำดัชนีนิพนธ์เรื่อง Influence  
of Total Quality Management of Tourism Industry on Sustainable Tourism Development in  
Chengdu-Chongqing City Agglomeration โดยมี ผู้ช่วยศาสตราจารย์ ดร.ศิริยุภา วิรุณราช เป็นที่ปรึกษาฯ  
นิพนธ์

จึงเรียนมาเพื่อขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม จักเป็น  
พระคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.กล้าหาญ ณ น่าน)

คณบดีคณะบริหารธุรกิจ

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ที่ อว 0649.06/ 347



คณะบริหารธุรกิจ  
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี  
ตำบลคลองหก อำเภอลองหลวง  
จังหวัดปทุมธานี 12110

17 มกราคม 2567

เรื่อง ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม

เรียน ผู้ช่วยศาสตราจารย์ ดร.กนกพร ชัยประสิทธิ์

สิ่งที่ส่งมาด้วย แบบสอบถามดัชนีนิพนธ์

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับปริญญาเอก  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น

เพื่อเป็นประโยชน์สำหรับนักศึกษา จึงใคร่ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหา  
ของแบบสอบถาม สำหรับนักศึกษา ราย Miss Xiangdong Kong รหัสนักศึกษา 126490501008-9 เป็นนักศึกษา  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ วิชาเอกการจัดการ เป็นผู้จัดทำดัชนีนิพนธ์เรื่อง Influence  
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Chengdu-Chongqing City Agglomeration โดยมี ผู้ช่วยศาสตราจารย์ ดร.ศิริยุภา วิรุณราช เป็นที่ปรึกษา  
ดัชนีนิพนธ์

จึงเรียนมาเพื่อขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม จักเป็น  
พระคุณยิ่ง

ขอแสดงความนับถือ

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ที่ อว 0649.06/851



คณะบริหารธุรกิจ  
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี  
ตำบลคลองหก อำเภอลองหลวง  
จังหวัดปทุมธานี 12110

17 มกราคม 2567

เรื่อง ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม

เรียน ผู้ช่วยศาสตราจารย์ ดร.อภิสิทธิ์ ตั้งเกียรติศิลป์

สิ่งที่ส่งมาด้วย แบบสอบถามดัชนีนิพนธ์

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับปริญญาเอก  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น

เพื่อเป็นประโยชน์สำหรับนักศึกษา จึงใคร่ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหา  
ของแบบสอบถาม สำหรับนักศึกษา ราย Miss Xiangdong Kong รหัสนักศึกษา 126490501008-9 เป็นนักศึกษา  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาบริหารธุรกิจ วิชาเอกการจัดการ เป็นผู้จัดทำดัชนีนิพนธ์เรื่อง Influence  
of Total Quality Management of Tourism Industry on Sustainable Tourism Development in  
Chengdu-Chongqing City Agglomeration โดยมี ผู้ช่วยศาสตราจารย์ ดร.ศิริณญา วิรุณราช เป็นที่ปรึกษาดัชนี  
นิพนธ์

จึงเรียนมาเพื่อขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม จักเป็น  
พระคุณยิ่ง

ขอแสดงความนับถือ

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ที่ อว 0649.06/ 345

คณะบริหารธุรกิจ  
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี  
ตำบลคลองหก อำเภอลองหลวง  
จังหวัดปทุมธานี 12110

17 มกราคม 2567

เรื่อง ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม

เรียน ผู้ช่วยศาสตราจารย์ ดร.เบญจวรรณ ศฤงคาร

สิ่งที่ส่งมาด้วย แบบสอบถามดัชนีนิพนธ์

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับปริญญาเอก  
หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น

เพื่อเป็นประโยชน์สำหรับนักศึกษา จึงใคร่ขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของ  
แบบสอบถาม สำหรับนักศึกษา ราย Miss Xiangdong Kong รหัสนักศึกษา 126490501008-9 เป็นนักศึกษา  
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of Total Quality Management of Tourism Industry on Sustainable Tourism Development in  
Chengdu-Chongqing City Agglomeration โดยมี ผู้ช่วยศาสตราจารย์ ดร.ศิริญา วิรุณราช เป็นที่ปรึกษา  
ดัชนีนิพนธ์

จึงเรียนมาเพื่อขอความอนุเคราะห์ตรวจสอบความถูกต้องเชิงเนื้อหาของแบบสอบถาม จักเป็น  
พระคุณยิ่ง

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## **Biography**

|                         |                                                                                                              |
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