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# Journal of Environmental Management and Tourism

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## Journal of Environmental Management and Tourism

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# Knowledge Map of Chinese Tourists Travelling to Thailand: Based on the Bibliometric Method

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**Abstract:**

Chinese tourists have essential economic and cultural exchange values for Thai tourism. The present research on Chinese tourists traveling to Thailand (CTTT) has made a significant breakthrough, but it rarely observes the research status quo, hot spots, and the future based on bibliometric methods and visualization technology. Based on 710 articles on the Web of Science (WoS), Cite Space visualization technology was used to analyze the publishing trend of CTTT, authors, institutions, countries, keywords, and categories, and build a knowledge map about CTTT. The study found that although the positive trend of published articles indicates excellent future development, the overall number of published articles is not ideal. Moreover, research on this topic has made significant progress and breakthroughs in the healthcare field, meaning that there is still much research space in the business and economic areas. Thai institutions and scientific research institutions and their scholars have significantly contributed to CTTT. They focus more on healthcare, disease, health, sexual safety, and equality in travel. Although there is an increasing focus on consumer behavior, habits, and models, However, the research on CTTT under the background of the digital economy, sharing economy, big data, artificial intelligence, and the COVID-19 pandemic is of great research value. Therefore, this study encourages different countries, institutions, and scholars to do more on this topic. Furthermore, interdisciplinary research is even more critical.

**Keywords:** visualization technology; chinese tourists; thailand tourism; knowledge map; tourism economy; tourism market; bibliometric method.

**JEL Classification**: Z30; D80; F63; M20.

## Introduction

In recent years, with the development of economic globalization, tourism has shown a steady upward trend of development. Tourism is considered the fastest part of economic development, and tourism is widely regarded as a pillar industry for the economic development of many regions and countries (Jayasinghe and Selvanathan 2021). Tourism, as the world's most significant industry, with the best development prospects, the fastest sunrise industry, "one of the green industries," less resource consumption, more employment opportunities, significant multiplier effect, good comprehensive benefits, its increasingly significant economic function, and its huge correlation and driving effect on the local economy, has made it an essential means for many countries and regions in the world to revitalize their economies (Wondirad *et al.* 2021). Just as the development of tourism has an undeniable role in promoting the economic development of various countries in the Sahara region (Asamoah,

Mensah, and Bondzie 2019), the global tourism industry will create 100 million new jobs over the next ten years (Škare *et al.* 2021). Tourism has undoubtedly become the largest, most concentrated, most competitive, and most enduring industry (Wondirad *et al.* 2021). As some countries increasingly shift to domestic demand, tourism will become even more critical as an engine of economic development and a tool for exchanging cultures and building mutual understanding (Jayasinghe and Selvanathan 2021). Therefore, more and more countries have begun to pay attention to the development of the tourism industry (Koens *et al.* 2018).

China has become the fastest-growing tourism market in the world (Zhao and Liu 2020). Before the COVID-19 pandemic, the status of Chinese outbound tourism had been continuously improved, and China has paid more and more attention to the development of outbound tourism and has continuously adjusted its pace and policies in the process of developing outbound tourism to develop steadily (Haibo *et al.* 2020). China's outbound tourism has grown exponentially and has become one of the world's largest source countries (Zhuang *et al.* 2021). Although the international tourism market has maintained good growth in recent years, the pace of growth has slowed down significantly (Nundy *et al.* 2021). In the 21st century, the world tourism market has become increasingly dependent on new economies. China has become a significant contributor to the output of tourists in the world tourism market (Wu *et al.* 2022). The economies of various countries have developed steadily and actively explored the tourism market to attract tourists from around the world from 2015 to 2019 (Mkwizu 2019). The major countries in the development of tourism in Asia include Japan and South Korea (Nuraini 2021). The tourism market is fiercely competitive, and various means are used to seize the source of tourists and seize the tourism market. Thailand is facing intense competition (Kulakhmetova *et al.* 2022).

Since the establishment of the Southeast Asian Alliance, Southeast Asian countries have also actively carried out inbound tourism (Choi *et al.* 2019). Singapore, Malaysia, Indonesia, Brunei, and other countries have introduced policies to attract overseas tourists, and the source of tourists from China and even around the world has been diverted (Yudhistira *et al.* 2021). At the same time, Thailand has also actively launched the inbound tourism industry, introducing visa preferences, low-cost airlines, and other policies to attract many overseas tourists to visit Thailand (Rooyen 2018). Thailand is facing how to stabilize the source market better, open up tourist sources so that the Thai tourism market grows and stabilizes, improve the quality of tourists, develop more tourists, and other issues, which is a considerable challenge that Thailand is currently facing (Zhang *et al.* 2019).

As China maintained the status of Thailand's most extensive source country, Chinese tourists entering Thailand increased the opportunity for the Thai tourism market (Lin *et al.* 2021). Thailand has also seized the opportunity to become a world power in tourism (Nomnian *et al.* 2020). In recent years, China and Thailand have carried out many business exchanges, tourism exhibitions, sales promotions, and other activities while actively expanding the tourism markets of China and Thailand and developing high-quality tourism products (Kulakhmetova *et al.* 2022). They have also consolidated the tourism status between China and Thailand and strengthened the friendly ties between the two countries (Teng *et al.* 2020). Among the top ten countries entering Thailand, the tourism revenue brought by Chinese tourists entering Thailand is an essential part of Thailand's tourism revenue (Jia and Zhao 2021). The income brought by Chinese tourists has been ranked among the top ten countries entering Thailand (Hess 2019). Since 2012, China has ranked first in the amount of tourism revenue brought by inbound tourists in Thailand due to inbound tourism (Zhao and Liu 2020). Tourism revenue is an essential part of the national economy and has become an important pillar industry in Thailand. China is the first source of exporters in Asia, and Chinese tourist exports occupy a pivotal position in developing Thailand's tourism market (Chiang 2019). The two countries must pay attention to tourism cooperation between the two sides.

In 2018, Thailand was one of the fastest growing countries in the world in terms of tourism growth, ranking fourth in global tourism growth with an increase of 6% (Kyrylov *et al.* 2020). The report also shows that Thailand's tourism revenue in 2018 was as high as $110 billion, or about 3.5 trillion baht, compared with 950 in 2017, and $100 million, or about 3 trillion baht, showing a trend of year-on-year growth (Kyrylov *et al.* 2020). Outbound tourism has led to the development of a series of related industries, providing employment for a considerable number of people and promoting socio-economic development (Su and Microsystems 2020). Although the COVID-19 pandemic has temporarily changed this situation, many forecasts indicate that after 2024, China may still be Thailand's largest tourism market (Zhang *et al.* 2021).

Therefore, the study and discussion of Chinese tourists to Thailand has a particular market value and can also provide some thinking for scholars in this field (Sangkaew *et al.* 2022). There is much literature on Chinese tourists traveling abroad or to Thailand, and significant breakthroughs have been made (Johnson *et al.* 2020). Many quantitative and qualitative studies focus on the current situation, opportunities, and challenges of Chinese tourists traveling to Thailand (Gong *et al.* 2019). Supported by classical theories, the theory of planned behavior, the theory of social exchange, and the theory of consumer behavior all tell us the motivation, purpose, and

behavior of Chinese tourists traveling to Thailand (Tmpab & Dassanayake).

This topic has been heavily debated in healthcare (Pathomsirikul 2019), psychology (Mungkornhong and Chen 2019), economics (Wen *et al.* 2018), and management (Yasami *et al.* 2021). We must acknowledge that CTTT is not particularly hot, but this topic continues to gain attention and be studied. Current research makes little use of bibliometric techniques and visualization techniques to construct knowledge graphs of CTTT results statistically.

Therefore, the research attempts to use Cite Space to complete this discussion, which may allow the academic community to have a new understanding of CTTT. The research builds a knowledge map from the perspective of publishing trends, authors, institutions, and countries that promote research in this field, letting more scholars pay attention to this topic and providing relevant suggestions for Sino-Thai tourism management, tourism market, and tourism forecasting.

## 1. Literature Review

### 1.1 Outbound Travelling

Outbound tourism refers to Chinese mainland residents going to other countries and regions (Li *et al.* 2010) to carry out various activities such as shopping, light viewing, religious affairs, medical treatment, and the economy (Pan *et al.* 2018). Outbound tourism generally refers to nationals of the region or their own country traveling to other countries or regions (Stone and Nyaupane 2019). There are three ways of outbound tourism in China: overseas tourism, border tourism, and Hong Kong, Macao, and Taiwan tourism (Arlt 2013).

Most scholars focus on the tourism demand of Chinese mainland residents to a particular country or region (Fu, Ridderstaat and Jia 2020), the impact of China's outbound tourism development, and other aspects of market positioning (Bao, Jin and Weaver 2019). The development of the outbound tourism market on the Chinese mainland means that mainland residents traveling to Hong Kong, Macao, and Singapore-Malaysia is a trend (Sio-Chong and So 2020). Thailand became the first destination country for cross-border outbound tourism (Zhu, Airey and Siriphon 2022). Singapore, Malaysia, the Philippines, South Korea, Australia, and New Zealand have also become major outbound tourist destinations (Huang *et al.* 2021).

So far, 150 countries and regions worldwide have become outbound tourist destinations for Chinese citizens (Folinas and Metaxas 2020). The demand for Chinese mainland tourists to travel to Hong Kong is deeply understood (Sio-Chong and So 2020). With the Chinese mainland carrying out tourism cooperation with Southeast Asian countries, there is also a preliminary study on the motivation of Chinese mainland tourists to travel abroad to Singapore and Malaysia (Song and Fabinyi 2022). The tourism markets in Singapore, Malaysia, and Thailand differed significantly from those in other Asia-Pacific and non-Asia-Pacific regions.

### 1.2 Thailand Tourism

Thailand tourism is Thailand as a destination to show all kinds of tourism products to the world, including hotels, landscapes, humanities, and customs. Thailand is a crucial tourist country with rich tourism resources. The study of Thai tourism is carried out almost worldwide in tourism studies with content.

Lopez and Bhaktikul (2018) evaluated and assessed the tourism policies and environmental sustainability related to the tourism industry in the Khon Kaen province of Thailand. Božić *et al.* (2018) examined what kind of experience international exchange students, as future professionals in the tourism industry, gained during their studies at the faculty of hospitality and tourism in Phuket, Thailand. Wadeecharoen *et al.* (2018) investigated Singaporean, Malaysian, and Laotian tourists' perceptions of Thailand's destination image via Thailand's tourism campaign and activities. Statham *et al.* (2020) revealed the mobile application from the point of interest process and developed an online tourism system that will aid tourists. Japanese long-stay in Thailand has increased according to economic agreements. Meanwhile, there is no data on second-generation Thai-Japanese multiracial groups in Thailand (Limsiritong *et al.* 2020). Awichanirost and Phumchusri (2020) developed a methodology to analyze the effects of sessions on unique visitors and unique page views of tourism websites based on time series data on Google analytics.

There is a long-term relationship between climate parameters and coastal water quality near shrimp farms in China and Thailand. Peco-Torres *et al.* (2021) normalize the Covid-19 situation and resume tourism in Thailand. Kerdpitak *et al.* (2022) propose historical and cultural tourism to promote competitive business in Udon Thani Province. Medhekar and Kaur (2021) review the critical reasons for the lack of promotion of investment and economic relations via tourism services related to Buddhist heritage and spiritual tourism circuits and sites to Southeast Asian countries and domestic tourists. Farber and Medicine (2022) bridges a political economy approach to global health with gendered analyses of health and labor.

### 1.3 Chinese Tourists Travel to Thailand (CTTT)

CTTT is a common topic in tourism management, referring to the process of tourists going to Thailand to engage in natural landscapes, cultural landscapes, social phenomena, and tourism product consumption (Wen *et al.* 2018). While CTTT brings economic benefits to Thailand, they also create good cultural exchange opportunities for China and Thailand; at the same time, they also pose particular challenges to Thailand's tourism environment and social environment (Jia and Zhao 2021). In the process of globalization, sustainable tourism development remains an essential issue in this field of research.

Lin *et al.* (2015) examined the demand for outbound tourism by mainland Chinese residents to 11 international destinations and provided long-run forecasts up to 2020. Liu *et al.* (2018) presented data on the top 50 outbound destinations for Chinese tourists from 2002 to 2013, and Thailand ranked number one. Wen *et al.* (2018) investigated the impact of movies and TV dramas on Chinese tourists' choice of international travel destinations. Tang (2018) uses the Baidu trends based on internet big data to construct an inflow index of Chinese tourists to Thailand to provide forecasts on the auxiliary. Promsivapallop *et al.* (2019) investigated destination food image dimensions and their effects on the food preference and consumption of independent Chinese and Australian tourists visiting Phuket.

Taking Chinese tourists in Nordic countries as the research object, Zheng *et al.* (2021) focus on their behavior, seasonal patterns, and complex network effects using geo-located travel blog data collected from Qunar.com. Wongsunopparat *et al.* (2021) explored the structural relationships among the first-order and second-order latent variables and their impact on the choice of tourist destinations in China. Bao *et al.* (2019) revealed an elite middle-aged Chinese cohort of significant size, with ample buying power and considerable discretionary time to support the outbound travel of themselves and their children.

After COVID-19, Chinese tourists continued to pay attention to Thailand's tourism information, including data preparation, opening hours, and policies in various aspects, and even policies are one of the essential factors for Chinese tourists to travel to Thailand in the future. Therefore, the importance of the discussion on this topic is self-evident. However, research on this topic has almost no knowledge of graph results, and bibliometric techniques and visualization techniques are new attempts to help us study the topic more deeply.

### 2. Methodology

Cite Space is a vital tool for visual analysis and plays an essential role in current research in the travel industry, helping researchers identify research hotpots and research status and even predict future research trends (Shi and Liu, 2019). As one of the primary scientific research databases, the Web of Science (WoS) has a guiding role in sustainable research worldwide, reflecting the main research results of different industries (Mangvwat, Ewuga and Izam 2020).

Table 1. The Process of Article Selection

```
Total Records Found: 986
774  Article
1 Book Review
16   Editorial Material
1 Excerpt
5 Letter
4 Meeting Abstract
3 Note
139  Proceedings Paper
43   Review
------------------------------------------------------
Total Unique Records (Article): 774
Duplicates: 0
Discarded: 212
------------------------------------------------------
Time slide (Article): 2010-2022
Discarded: 64
Final used article：710
------------------------------------------------------
```
*Source*: by this study

Therefore, the study used the advanced search function in WoS to mine research on the topics of Chinese tourism or Chinese tourists and contained research results on the topics of Thailand, Thailand travel, or Thailand

travel. The search formula is as follows:

(((((TS=(Chinese tourism)) OR TS=(Chinese tourist)) AND TS=(Thailand)) OR TS=(Thailand travel)) OR TS=(Thailand traveling))

We collected 986 results, published from 1992 to 2022, of which articles were the immediate result type (774), there were also some review articles, and 139 papers were in the process of being published. Although the research on Chinese tourists traveling to Thailand has achieved specific results, the 986 research results in the last 31 years are not outstanding. Therefore, there is still a lot to explore in studying this topic. The study imported 986 results into Cite Space, and after deduplication processing, the valuable article was 774. However, in constructing the knowledge graph of authors, institutions, countries, keywords, sources, and classifications to ensure the timeliness and reliability of the research, only the results after 2010 were selected for analysis. Finally, 710 results met the analysis requirements. Table 1 shows the specific selection process.

## 3. Case Studies

The results of 710 articles on Chinese tourists traveling to Thailand appeared in 2010–2022, and Figure 1 shows the volume of posts with a clear upward trend at this stage. Before 2015, the number of posts had a specific upward trend, but the slope was slower, which meant that the research on this topic before 2015 was not in-depth enough, and the results were not very many. After 2015, the upward slope is steeper, indicating that after 2015, there is more and more attention paid to CTTT, which seems to be related to international tourism trends. It is surprising that, after 2020, the COVID-19 pandemic almost completely blocked the situation of CTTT, but the research results and trends have not vanished; perhaps this indicates that the academic community is still paying attention to CTTT research, but the topic should be different than before COVID-19. The results of the 2019 and 2020 publications are similar, reflecting no significant breakthrough in research on this topic in 2020.

Figure 1. The publication number of the article about Chinese tourist traveling to Thailand.
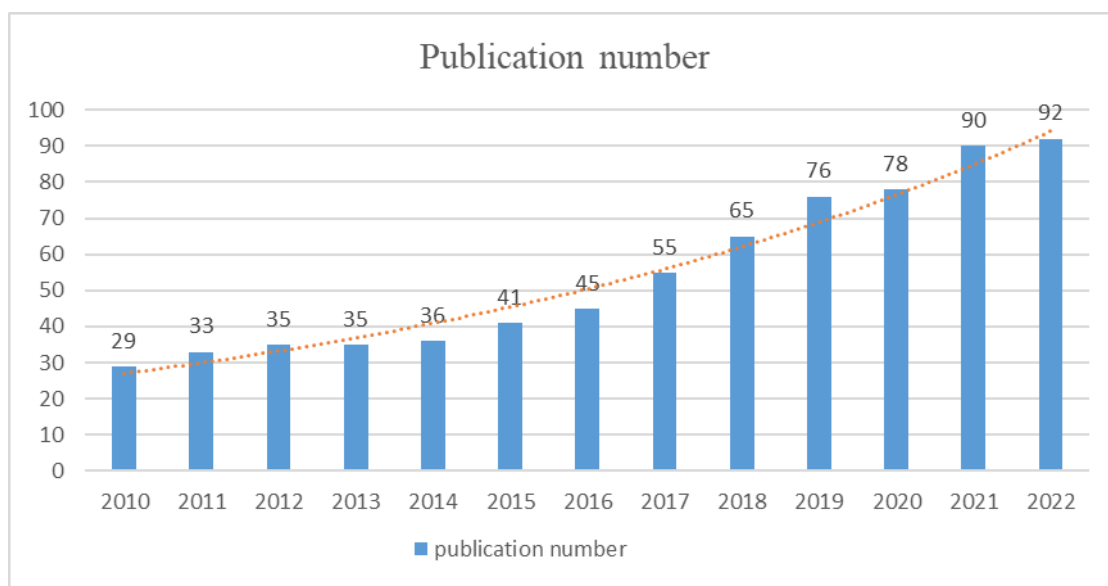


The outbreak of COVID-19 can be explained, and it is reasonable that 2020 will be the world's most severe year for COVID-19. It restricted Chinese tourists from traveling abroad. Overall, the study of CTTT shows an upward trend. Although there are only 92 works in 2022, this is only the result of the first half of the year, and 136 studies are being published, which predicts that after 2022, the situation of CTTT will make an unprecedented breakthrough.

## 3.1 Knowledge Map of Author Cooperation

Figure 2 inspired the authors of the research in CTTT. The collaboration line shows that Watcharapong has a close working relationship with many authors, including Chayasin, Viravarn, Anek, Sopon, and others. In addition, the atlas shows Hatz and Farnham as a collaborative group. The collaborative map formed by Watcharapong *et al.* and Christoph is prominent. The larger font in Figure 2 indicates that the author's influence is more pronounced.

Table 2 summarizes the most influential authors and the years of their work and contributions on this topic.

Piyaphanee *et al.* (2011) arguably had the most influence. However, it was almost a decade ago, and before 2010, Hatz *et al.* (2008), Belton, Whittaker (2007), Hendriksen *et al.* (2008), and Piyaphanee *et al.* (2009) had a more considerable impact in this field, and after 2020, Sopon *et al.* (2020) and Suttiporn *et al.* (2021) continues to contribute to this topic. The counts in Table 2 show how many times authors are associated across the knowledge graph, with Watcharapong (11) having an absolute advantage and Christoph (6), Andrea (5), and Anek (4) not being very competitive with Watcharapong (11). And after 2020, Anek (4), Sopon (4), and Viravarn (4) mean that although these scholars have contributed to the field, their influence is not enough, perhaps because the attention to this topic in the past two years has not been close enough.

Figure 2. Author Cooperative Knowledge Map: Chinese Tourists Travelling to Thailand
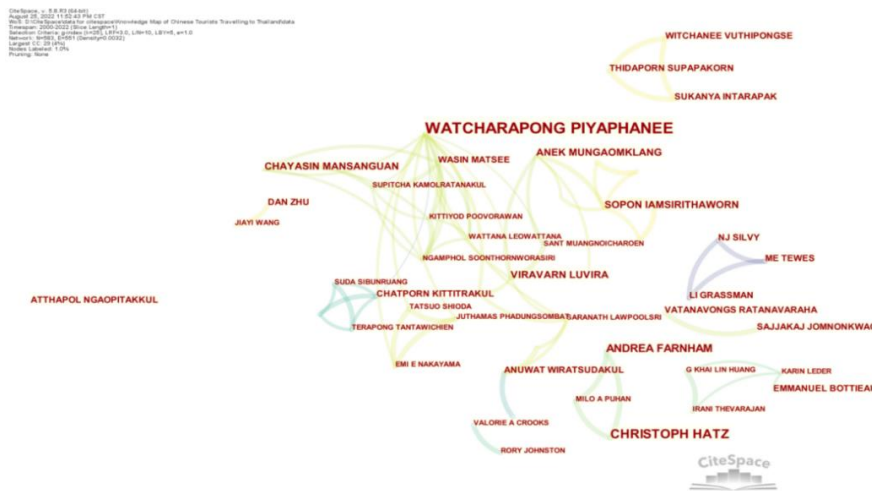


Table 2. Lists the top 10 most influential authors on Chinese travel to Thailand

| Counts | Year | Author |
|--------|------|--------|
| 11 | 2011 | Watcharapong Piyaphanee |
| 6 | 2008 | Christoph Hatz |
| 5 | 2016 | Andrea Farnham |
| 5 | 2007 | Andrea Whittaker |
| 4 | 2020 | Anek Mungaomklang |
| 4 | 2012 | Annelies Wildersmith |
| 4 | 2008 | Chaiwat Pulsrikarn |
| 4 | 2009 | Chayasin Mansanguan |
| 4 | 2021 | Sopon Iamsirithaworn |
| 4 | 2020 | Viravarn Luvira |

### 3.2 Knowledge Map of Institutional Cooperation

Mahidol Univ and Chulalongkorn Univ, as the two most comprehensive institutions of higher learning in Thailand, have a unique advantage in the research of the topic of Chinese tourism to Thailand. Figure 3 reveals the most influential maps of Mahidol Univ and Chulalongkorn Univ as the centers of the institutional collaboration map, and the map clearly shows the strong partnership around these two schools. In addition, Chiang Mai Univ, Minist Publ Hlth, Prince Songkla Univ, Khon Kaen Univ, Thammasat Univ, Asian Inst Technol, and Kasetsart Univ also have a place on the map. The larger the font in the atlas, the more pronounced the influence.

Table 3 lists the ten most influential institutions for research in this field, all of which are from Thailand, which means that Thai universities and colleges contribute more to Chinese tourism research in Thailand. Table 3 suggests that Mahidol Univ has been associated 67 times, implying partnerships with 67 institutions. Chulalongkorn has been associated with 35 agencies, Chiang Mai Univ has collaborated with other institutions 28 times, and Minist Publ Hlth has been associated with other institutions 27 times. By analogy, Prince Songkla Univ (20), Khon Kaen Univ (17), Thammasat Univ (16), Asian Inst Technol (14), Kasetsart Univ (13), and Suranaree Univ Technol (10).

However, Table 3 inspires us from the years. Although these institutions have made outstanding contributions to the research of Chinese tourism to Thailand, before 2010, the results of the past two years have been few, which means that there may be more new institutions working on this topic in these years. After 2020,

very few institutions can reach a situation where the number of associations exceeds 5 times, and the study found in Cite Space that in 2020, Univ Tokyo, Macau Univ Sci & Technol, and other institutions have contributed in this field, and Univ Tokyo has only 5 more affiliates than the most affiliated institutions.

In 2021, Walailak Univ (4), Stanford Univ (3), Univ Massachusetts (2), Guilin Tourism Univ (1), City Univ Macau (1), and other institutions are in the same situation, more and more institutions studying Chinese travel to Thailand, but the number of associations is not prominent, indicating that there are no pioneer institutions under this topic after 2020. Similarly, in 2022, the representative institutions are Srinakharinwirot Univ (4), Donghua Univ (3), Univ Florida (2), Dongbei Univ Finance & Econ (1), etc., but the results of 2022 show that China's institutions are more prominent. In addition to the above-mentioned institutions, Hanyang Univ, Hubei Institute of Economics, and others are also working hard.

From the perspective of the institutional cooperation map, the study almost confirms that the research on this topic in Thailand's higher education has been continuing and in a leading position. After 2020, more and more national higher education institutions participate in the discussion of this topic, especially in Europe, the United States, and China higher education institutions on this topic more and more research, therefore, more abundant and diverse higher education institutions participate in the study of Chinese tourists to Thailand. It seems that this is not only the topic of Thailand or Chinese higher education institutions. The whole world is paying attention to the pioneering and development of this outbound tourism as well as the problems and challenges it faces.

Figure 3. Institutional Cooperative Knowledge Map: Chinese Tourists Travel to Thailand



Table 3. Top 10 most influential Institutions of Chinese Travel to Thailand

| Counts | Year | Author |
|--------|------|--------|
| 67 | 2006 | Mahidol Univ |
| 35 | 2002 | Chulalongkorn Univ |
| 28 | 2009 | Chiang Mai Univ |
| 27 | 2004 | Minist Publ Hlth |
| 20 | 2008 | Prince Songkla Univ |
| 17 | 2010 | Khon Kaen Univ |
| 16 | 2009 | Thammasat Univ |
| 14 | 2006 | Asian Inst Technol |
| 13 | 2005 | Kasetsart Univ |
| 11 | 2011 | Suranaree Univ Technol |

## 3.3 Knowledge Map of Country Cooperation

Figure 4 has inspired many countries worldwide to study Chinese tourists to Thailand. Thailand's position at the very center of the map influences the attention of other countries to the topic. China, as the second center, has also contributed to studying Chinese tourists traveling to Thailand. Each line in the map of national cooperation is closely linked, meaning a closer cooperative relationship exists between countries.

Figure 4. Country Cooperative Knowledge Map: Chinese Tourists Travel to Thailand



Table 4 shows the ten countries that have made the most significant contributions to the study of Chinese tourists to Thailand, and counts represent the number of times countries have been associated with the map, which also means influence. Table 4 suggests that the number of associations in Thailand is as high as 266, which has a significant advantage, and the United States, which ranks second, has 82 associations, which is a certain distance from the Thai study. The United Kingdom, Australia, Japan, Germany, Switzerland, and France are all in the top ten. Surprisingly, China's attention to this topic is not prominent, and almost all of these countries' research on Chinese tourists to Thailand is more concentrated around 2012. In the past two years, Countries in West Asia and the Middle East have also begun to pay attention to this topic, such as UGANDA (2022), PAKISTAN (2021), NIGERIA (2021), RUSSIA, SAUDI ARABIA, UKRAINE (2020) have all presented the results of research on CTTT.

Table 4. Top 10 most influential countries of Chinese travel to Thailand

| Counts | Year | Country |
|--------|------|---------|
| 266 | 2012 | THAILAND |
| 82 | 2012 | USA |
| 64 | 2012 | ENGLAND |
| 52 | 2012 | AUSTRALIA |
| 51 | 2012 | PEOPLES R CHINA |
| 38 | 2012 | JAPAN |
| 30 | 2012 | GERMANY |
| 20 | 2012 | SWITZERLAND |
| 20 | 2013 | CANADA |
| 19 | 2012 | FRANCE |

## 3.4 Knowledge Map of Keywords

Keyword clustering analysis was carried out based on the LLR algorithm in Cite Space, and a total of 9 major categories were formed. Furthermore, Figure 5 formed a keyword knowledge map. Different keywords have different colored line links between them, indicating that there are standard references to keywords on the map. Thailand dominates other keywords as the most essential, including model, impact, disease, risk, tourism, travel, behavior, infection, care, epidemiology, country, satisfaction, attitude, and transmission.

Figure 5 and Table 5 both introduce the nine keyword clusters formed under cluster analysis, namely, South Korea, travellers' diarrhea, patient, travel-related leptospirosis, sextual risk, Thai tourist, indo-China peninsula, CMV retinitis, dive tourism. Table 5 explains the size, average year, and keyword illustrations under the nine clustering analyses.
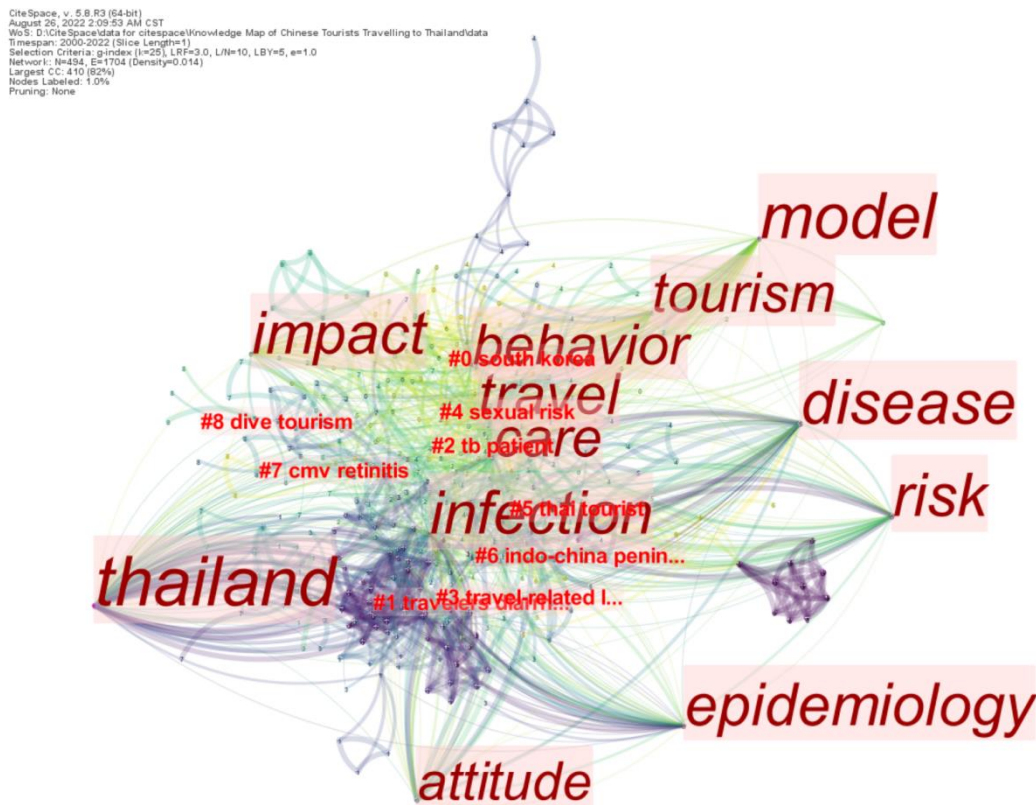
Figure 5. Keyword knowledge map



Figure 5 and Table 5 both introduce the nine keyword clusters formed under cluster analysis, namely, South Korea, travellers' diarrhea, patient, travel-related leptospirosis, sextual risk, Thai tourist, indo-China peninsula, CMV retinitis, dive tourism. Table 5 explains the size, average year, and keyword illustrations under the nine clustering analyses. South Korea, as the largest cluster, contains 86 keywords with an average annual of 2017. Including public transportation, mass transit, total travel time, and distance ranges condition. Travelers' diarrhea contains 54 keywords, but the average year is earlier, around 2004, and mainly includes research on locusts, the environment, life, tourism, and so on.

Table 5. Keyword clustering analysis and keyword illustrations

| Cluster ID | Cluster name | Size | Mean year | Keywords |
|---|---|---|---|---|
| 0 | South Korea | 86 | 2017 | public transport; mass transit; total travel time; distance ranges condition; influential factors |
| 1 | Travelers diarrhea | 54 | 2004 | black locust; environmental profile; life cycle assessment; short rotation forestry; travel clinic; central America; travel advice |
| 2 | Patient | 47 | 2013 | medical tourism; informal caregivers; medical tourists; informal care |
| 3 | Travel-related leptospirosis | 45 | 2008 | dengue virus; dengue virus infection; respiratory specimens; serum samples; human origin |
| 4 | Sextual risk | 43 | 2012 | sex tourism; sex tourists; sex work; dirty work; dirty customers |
| 5 | Thai tourist | 39 | 2010 | Swedish travelers; attack rates; attack rate; Sri Lanka; |
| 6 | Indo-China peninsula | 33 | 2009 | primary health care post; primary health care posts; health care services; remote areas |
| 7 | CMV retinitis | 28 | 2009 | cmv retinitis; physical activity; leisure time; physical inactivity; population-based survey |
| 8 | dive tourism | 24 | 2012 | dive tourism; marine reserves; entry fee; price elasticity; South East Asia |

The Patient cluster, which occurred mainly in 2013, contains 47 keywords and involves a lot of content related to medical tourism. Travel-related leptospirosis, as the fourth largest cluster, produced 45 keywords in around 2008, mainly elaborating on viruses, infections, serums, and other types of research. In 2012, there were 43 keywords

in the risk cluster, and the research topics mainly included sex tourism, sex tourists, sex work, and so on. The 39 keywords in Thai tourists occurred around 2010, and this cluster focuses on topics such as tourism attacks, attacks, etc. Indo-China 33 topics in the peninsula and remains focused on health issues in tourism. CMV retinitis continued to discuss medical issues in 2009. Dive tourism focused on issues such as diving tourism, marine conservation and more in 2012. In summary, these studies have inspired the topic of Chinese travel to Thailand, mainly from the aspects of the environment, health, medical treatment, and diving. Therefore, there are still many research gaps worth exploring.

Based on the Cite Space time series analysis, figure 6, introduced diseases, including dysentery, fever, infectious diseases, and viruses, were the focus of the research before 2010. After 2010, keywords about tourism gradually appeared, such as tourists, experience, geography, satisfaction, destination, and other keywords. Around 2015, health issues during travel continued to receive attention, such as healthcare, HIV, and the like. At the same time, keywords in psychology include knowledge, management, behavioral intention, and perception. After 2019, topics closely related to social development, such as information, value, tourism fever, automobiles, and geopolitics, have gradually emerged. Therefore, it means that after 2022, CTTT can also emerge as more unexpected topics and be carried out in various fields.

Figure 6. Key words Knowledge map of time series
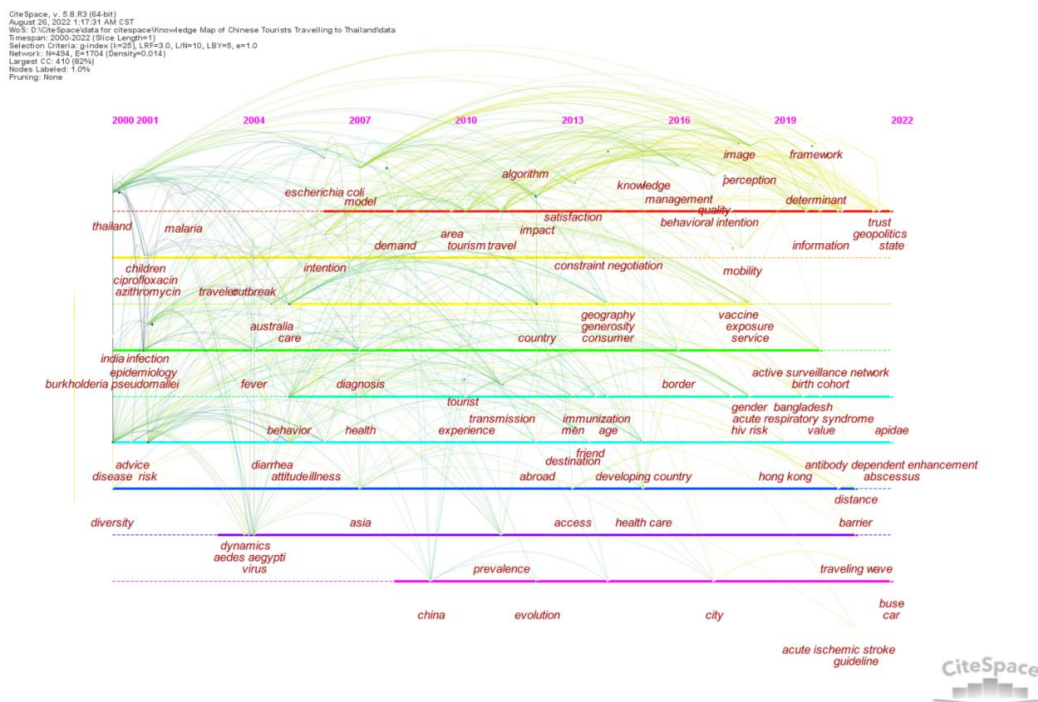


The study used Cite Space Keyword Highlight technology to capture the top 25 most vital citation keywords, and Table 6 shows azithromycin as the strongest citation keyword, which has had an impact from 2000 until 2011. Similarly, medical-related keywords include ciprofloxacin, escherichia coli, diagnosis, risk, prophylaxis, fever, disease, care, and Chinese health. Moreover, 10 of the 25 highly cited words are familiar with medical terms, so it is safe to be sure that the results of research in the field of medicine on this topic have attracted much attention.

Table 6. Top 25 Keywords with the Strongest Citation Bursts

| Keywords | Strength | Begin | End | 2000 - 2022 |
|----------|----------|-------|-----|-------------|
| azithromycin | 3.25 | 2001 | 2011 | |
| ciprofloxacin | 2.45 | 2001 | 2007 | |
| escherichia coli | 2.25 | 2006 | 2010 | |
| diagnosis | 2.49 | 2007 | 2014 | |
| risk | 2.85 | 2009 | 2017 | |
| prophylaxi | 2.32 | 2009 | 2011 | |

| tourist | 3.06 | **2010** | 2011 | |
| fever | 2.59 | **2010** | 2013 | |
| country | 3.11 | **2012** | 2015 | |
| evolution | 2.87 | **2012** | 2016 | |
| disease | 3.38 | **2013** | 2014 | |
| care | 3.87 | **2014** | 2016 | |
| developing country | 2.54 | **2015** | 2017 | |
| destination | 2.41 | **2017** | 2019 | |
| behavior | 2.32 | **2017** | 2019 | |
| perception | 4.1 | **2018** | 2022 | |
| health | 2.67 | **2018** | 2022 | |
| mobility | 2.6 | **2018** | 2022 | |
| impact | 6.39 | **2019** | 2022 | |
| satisfaction | 3.79 | **2019** | 2022 | |
| tourism | 2.62 | **2019** | 2020 | |
| model | 3.9 | **2020** | 2022 | |
| intention | 3.07 | **2020** | 2022 | |
| knowledge | 2.59 | **2020** | 2022 | |
| information | 2.36 | **2020** | 2022 | |

## 3.5 Knowledge map of the publication categories

Figure 7. Knowledge map of the publication category
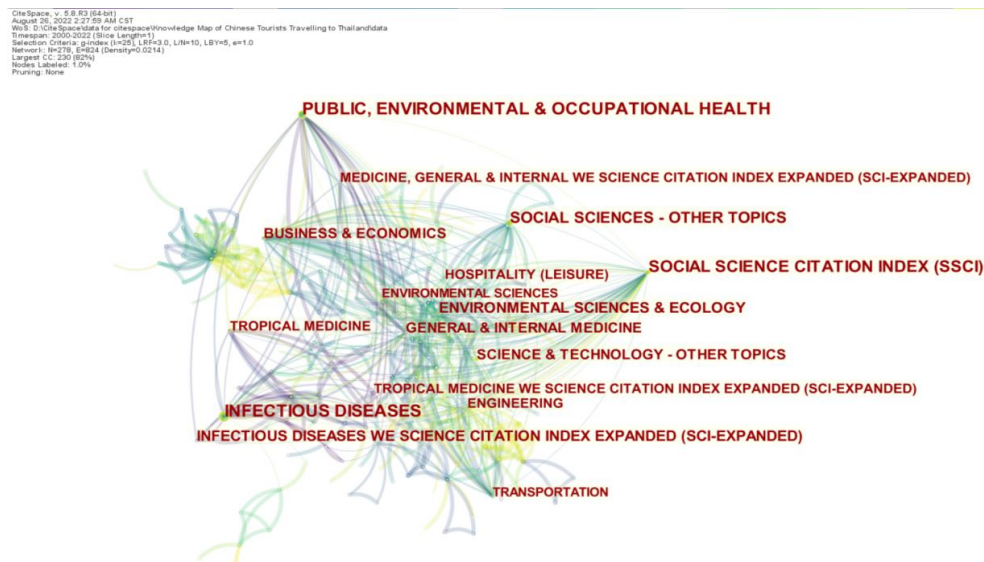


Figure 7 clearly illustrates that the research on Chinese travel to Thailand is more significant in health, disease, and medical treatment. The larger the font in Figure 7, the more significant the range involved. In conjunction with Table 7, specifically, INFECTIOUS DISEASES contained 144 associations around 2000 and 129 with PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH. INFECTIOUS DISEASES WE SCIENCE CITATION INDEX EXPANDED (SCI-EXPANDED) STILL HAS BEEN ASSOCIATED AROUND. At the beginning of the 21st century, there were many studies on Chinese travel to Thailand in MEDICINE AND DISEASE. GENERAL & INTERNAL MEDICINE and TROPICAL MEDICINE were also essential categories.

On the other hand, the classification of research on this topic is mainly the classification of social sciences, and 2004 and 2007 are essential periods for social sciences to study this, and SSCI and SOCIAL SCIENCES - OTHER TOPICS pay more attention to this. During this period, the BUSINESS ECONOMY also contributed to

Chinese tourism in Thailand. Finally, environmental discussions on this topic are meaningful, such as ENVIRONMENTAL SCIENCE & ECOLOGY. As a result, the study reveals the scope of research on Chinese travel to Thailand, and although it is carried out in the fields of healthcare, infectious diseases, social sciences, business, and economics, these early studies still have an impact on our current discussions. At present, psychology (2021), agriculture (2021), education (2022), communication (2021), and other categories have also tried to pay attention to the discussion of this topic and have formed a specific impact. Therefore, the research on Chinese tourism to Thailand can be carried out in more fields and categories, forming a trend of interdisciplinary research.

Table 7. the publication categories of study of Chinese traveling to Thailand

| Counts | Year | CATEGORY |
|--------|------|----------|
| 144 | 2000 | INFECTIOUS DISEASES |
| 129 | 2001 | PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH |
| 93 | 2004 | SOCIAL SCIENCE CITATION INDEX (SSCI) |
| 90 | 2007 | SOCIAL SCIENCES - OTHER TOPICS |
| 67 | 2002 | ENVIRONMENTAL SCIENCES & ECOLOGY |
| 62 | 2001 | INFECTIOUS DISEASES WE SCIENCE CITATION INDEX EXPANDED (SCI-EXPANDED) |
| 57 | 2007 | BUSINESS & ECONOMICS |
| 57 | 2001 | GENERAL & INTERNAL MEDICINE |
| 50 | 2004 | SCIENCE & TECHNOLOGY - OTHER TOPICS |
| 47 | 2000 | TROPICAL MEDICINE |

## Conclusion

The study uses Cite Space visual analysis technology to construct a knowledge graph of CTTT, Which expounds the current situation and importance of tourism research in CTTT from the perspectives of publication trend, author, institution, country, keyword, and research scope, and predicts the future research trend and research gaps. The research on CTTT has developed rapidly after 2010, but the number of posts on this topic is not significant. Although there is a clear upward trend after 2015, especially in 2022, there are many unpublished articles that indicate that the research on CTTT will have a large breakthrough in the number of Chinese, and the research in this field will also have richer results. Institutions continue to pay attention to this topic. Therefore, Thai scholars such as Watcharapong, Christoph, Andrea, Anek, etc., although they have paid attention to the research topic of Chinese travel to Thailand in the early days, their influence has been continuing, of which Watcharapong, as the center of the author's collaborative map, is also the most influential scholar on this topic, providing a lot of reference for the research of future generations. At the same time, Thailand and Thai institutions have produced rich research on CTTT. In the decade from 2000 to 2010, Thailand and Thai institutions (Mahidol, Chulalongkorn University, Chiang Mai University, etc.) and Thailand's top universities and other scientific institutions made outstanding contributions to the study of this topic. In recent years, higher education institutions in Hong Kong, Macau, Taiwan, and even many European and American regions have also devoted themselves to the discussion of this topic. China's research on this topic in 2012 has obvious results, but it has not yet become a major research area. Although many Chinese universities, such as Dongbei University of Finance and Economics, Hanyang University, Hubei University of Economics, and other higher education institutions, are also having a certain impact on the study of this topic, they still have certain limitations. From the knowledge graph of keywords, the study identified the most obvious results of the medical and health research on Chinese travel to Thailand. The early studies (before 2010) focused on the problems of diseases and infectious diseases in the tourism process, and after 2010, there was more and more discussion in the management and psychology fields such as tourist behavior, intention, and motivation. Although health issues remain the focus of current attention, tourism knowledge and information have become a staple of the past two years. As mentioned above, the research on Chinese tourism to Thailand is mainly carried out in the context of medical health and social science research, indicating that there are still many scopes that need to be discussed and developed in this field.

Regarding the study of Chinese travel to Thailand, although there is a certain review of the literature and related discussions, there are few bibliometric studies using Cite Space's visualization technology. Therefore, the study analyzed this aspect of the problem more scientifically and systematically, providing more reliable data and recommendations for this research. Therefore, the following inspirations exist in the study:

Academics should step up their discussion of this topic because the economic value of Chinese tourists to Thai tourism cannot be underestimated, so the relevant topic can be discussed from a broader perspective. Both

states and institutions should actively encourage their scholars to participate in the construction of this field and the study of problems. The study of diseases and health in tourism (fever, dysentery, AIDS, sexual health) is itself a topic related to the community of human destiny, which is not only a problem for China and Thailand, so the whole world should participate in the topic of disease and health in tourism, and we should look for more opportunities to participate in these projects and contribute to the achievement of the Sustainable Development Goals (Lopez and Bhaktikul 2018). The research of Chinese tourists traveling to Thailand has gone through several stages and has made major breakthroughs in the fields of medical and health care, but the discussion of topics such as tourist behavior, consumption motivation, consumption patterns, and so on is not in-depth enough, which means that there are many gaps in the research of this topic in the field of economic management. Although tourism is a typical social science topic, there are still more possibilities for the study of this topic, and perhaps researchers should also base themselves on the previous foundation and jump out of the original research mode and framework to find another research method. The digital economy, artificial intelligence, sharing economy, etc. have become important contents and topics in current research, so we have enough reasons to pay attention to the impact of these new economic paradigms and technological forms on CTTT. Social media and information management should also play a role in this research (Wibowo, Chen, Wiangin, Ma, and Ruangkanjanases 2020). It is worth noting that this problem in the context of the Covid-19 pandemic should be more worthy of attention, perhaps the Covid-19 pandemic has almost blocked the pace of CTTT (Zhu *et al.* 2022), Covid-19 will eventually become history, China is still Thailand's highly potential tourism market. Therefore, after the epidemic, Chinese tourists to Thailand's travel motivation, influencing factors (internal and external), models and other research should be given much attention.

Although the study has mapped a certain amount of knowledge graphs, the study has only been collated for WoS databases, and perhaps more databases can be incorporated into the analysis in the future, and more meaningful content may be found. Secondly, the research only focuses on the research content after 2000, and the elaboration of the research in the past five years is not specific enough, so we can continue to explore more research results in the past five years for discussion. Third, the research is mainly based on English literature, so it is difficult to find the attention of Chinese literature or other language literature to this topic, and then we can use the method of comparative research to compare and find the research gap between countries on this topic. In short, the study of CTTT is a topic of sustainable research, and it should also become an interdisciplinary topic. The results of this topic's research have many benefits for both China and Thailand, but this project is not just the content of these two countries, many aspects of which, such as health care, health, gender equality, and violence, should resonate around the world.

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