
Spatial Distribution of Cultural Heritage in ASEAN Countries Based on GIS

Jinhua Chen ^{*}, Yamei Hu, Xueke Yang, Hongdou Wang

College of Tourism, Huaqiao University, Quanzhou, Fujian, China

*Corresponding Author: Jinhua Chen

Abstract:

In this paper, 546 representative cultural heritage resources in ASEAN countries are taken as research samples, and their spatial distribution, regularities of distribution and distribution densities are quantitatively studied by spatial autocorrelation and kernel density estimation to explore their distribution laws. The results show that: (1) As a whole, the spatial distribution of cultural heritage in ASEAN countries shows positive autocorrelation, with obvious spatial clustering. (2) Spatially, the core cultural heritage areas of ASEAN countries are centered on Myanmar and Thailand; the secondary cultural heritage areas are centered on Cambodia, Vietnam, Laos, Malaysia and Singapore; and the marginal areas are cultural heritage distribution areas composed of Brunei, Indonesia and the Philippines. (3) Topographically, cultural heritages in ASEAN countries are concentrated in areas with flat terrain, convenient transportation, developed economy and large population. Based on the above conclusions, ASEAN countries should integrate policies, markets and management in terms of tourism development, so as to reduce the tourism costs of tourists and expand the tourism market.

Keywords: Space, Cultural heritage, ASEAN.

I. INTRODUCTION

Nowadays, the world is undergoing profound changes, with more unstable factors affecting the international situation and insufficient momentum for global economic recovery and growth. In order to better promote economic development, especially in the marine economy, the construction of the “Maritime Silk Road” Economic Zone in the 21st century has become the focus of China’s diplomatic work. In October 2013, Chinese leaders presented their vision of jointly building the 21st century Marine Silk Road with ASEAN countries in their speech to the Indonesian Parliament, and in April 2014, at the Boao Asian Forum, they proposed to build an upgraded version of the China-ASEAN Free Trade Zone to promote the construction of the Silk Road Economic Belt and the 21st century Marine Silk Road. Therefore, how to promote the construction of “Maritime Silk Road” and how to play its role has gradually become the focus of academic research [1].

The ten ASEAN countries, as China's important cooperative partners in Asia, are important nodes in the construction of the "Maritime Silk Road". Both ASEAN countries located in Southeast Asia and China are world tourist attractions. Moreover, the ASEAN region also has a large number of world heritages, coupled with unique natural and cultural landscapes that attract a large number of tourists to visit each year, making tourism a pillar industry in ASEAN countries. As there are many similarities between ASEAN countries' tourism resources and China's, exploring the spatial distribution of its cultural heritage is beneficial to the cooperation between China and ASEAN countries in tourism industry and the promotion of cooperation and upgrading of the marine Silk Road.

ASEAN countries are our neighbours both at sea and on land, and the research on ASEAN is also increasing. As early as 1979, Liao Shaolian explored the smokeless industry - tourism in ASEAN, and elaborated the current situation, function and development measures of tourism development there [2]. Lai Fuqiang and Liu Qing proposed the idea of building a China-ASEAN borderless tourism circle [3]. Zou Chunmeng explained the process of ASEAN tourism regional integration from the perspective of ASEAN regional economic integration, and put forward an integration strategy and effect based on policies and market [4]. Ye Li and Chen Xiuqian quantified the tourism competitiveness of China-ASEAN by using the quantitative research method, constructed the interactive concept model and put forward counter measures [5]. Hu Aiqing and Dong Haiwei analyzed the competitiveness of tourism industry in Southeast Asia and proposed strategies to improve it [6,7]. Deng Yingying analyzed China-ASEAN tourism cooperation based on the background of "Maritime Silk Road" to build the South China Sea cross-ocean Silk Road tourism circle [8]. In the early days, scholars mainly focused on how to use the tourism development model and policy measures of ASEAN region for reference. In the later period, they mainly focused on regional tourism cooperation, especially on the topic of China-ASEAN regional tourism cooperation research after the "Maritime Silk Road" strategy was proposed. However, there are few studies on the spatial distribution of representative cultural heritages in ASEAN based on GIS.

In this paper, on the basis of fully understanding the world heritage in ASEAN, the cultural heritage resources in ASEAN region are studied by using GIS spatial analysis method, and their spatial pattern and characteristics are analyzed, so as to further grasp the distribution law and overall characteristics of cultural heritage in ASEAN countries, enhance China-ASEAN cooperation, promote the cooperation and exchange of Tourism industry, accelerate the joint application of sites and relics along the ASEAN-China Marine Silk Road, and provide reference for improving the competitiveness of countries along the "Maritime Silk Road".

II. DATA SOURCE AND METHODOLOGY

2.1 Data Source

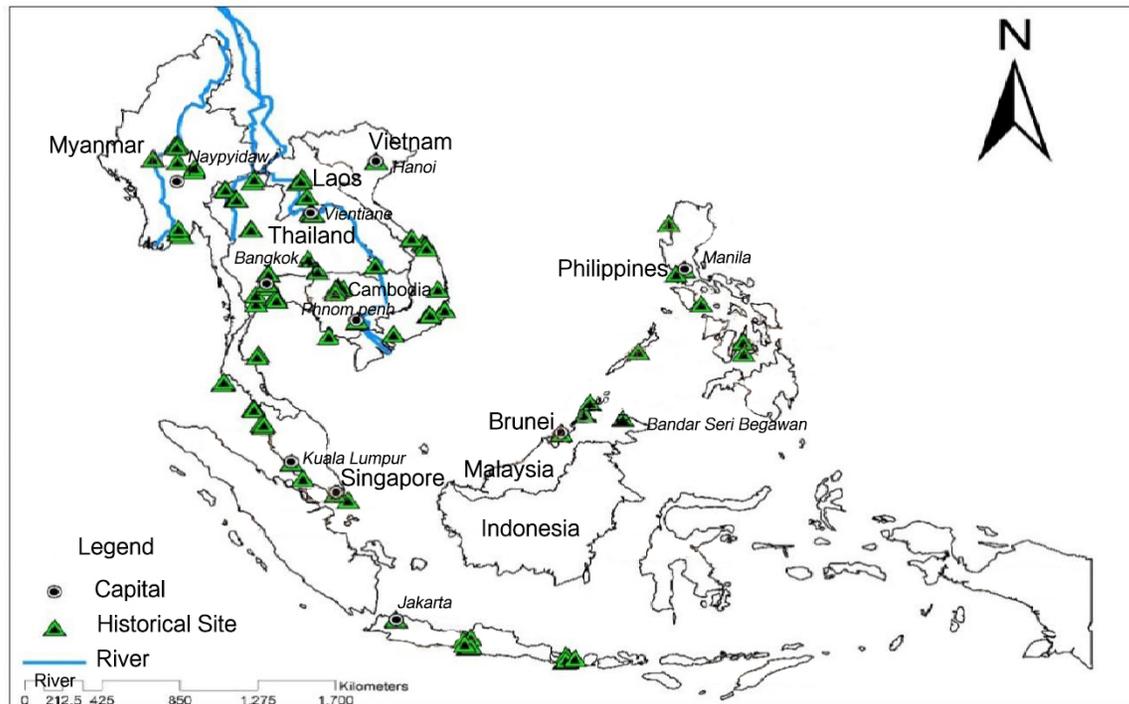


Fig 1: Distribution of cultural heritages of ASEAN countries

In this paper, based on the related cultural heritage resources published by Google Maps and the official website of ASEAN countries, the representative cultural heritage sites of ASEAN countries are selected to establish a spatial database, supplemented by basic geographic data and related statistical data of ASEAN countries, with GIS and Excel as data analysis platforms (Fig. 1).

2.2 Methodology

GIS spatial analysis, with the ability to accurately understand, evaluate and comprehensively understand spatial location and spatial interaction [9], is used in this paper in terms of exploratory spatial data analysis (ESDA) and kernel density estimation to study the spatial distribution pattern characteristics of cultural heritage resources in ASEAN countries. ESDA mainly reveals the spatial pattern characteristics of heritage resources through spatial autocorrelation [10].

2.2.1 Spatial Autocorrelation

Spatial autocorrelation is mainly used to explore the spatial dependence of heritage, which refers to the correlation between the object of study and its spatial location. It is an important index to test whether the attribute value of an element is significantly associated with the attribute value at its adjacent points [11], also known as global autocorrelation and local autocorrelation. The global autocorrelation is used to judge whether the heritage sites are clustered in space according to the overall distribution of cultural heritage in ASEAN. Moran's I is commonly used to represent global autocorrelation, and the formula is as follows [12]:

$$I = \frac{N}{\sum_{i=1}^n \sum_{j=1}^n w_{ij}} \cdot \frac{\sum_{i=1}^n \sum_{j=1}^n w_{ij} (X_i - \bar{x})(X_j - \bar{x})}{\sum_{j=1}^n (x_i - \bar{x})^2} \quad (1)$$

Where,

N, n=the number of space numbers;

x_i = the observed value;

\bar{x} = the mean value of x_i ;

w_{ij} = the spatial connection matrix between space unit i and space unit j (I,j=1,2,3,4,...,n) within the scope of study.

When the value of Moran's I is positive and significant, the regions present a clustered distribution; conversely, they present a discrete distribution. The larger the Moran's I value is, the higher the degree of spatial autocorrelation is, and the value distribution interval is [-1,1]. In order to detect the significance of correlation relationship of spatial distribution, Z-test is used in this study. If Z-value is greater than the distribution interval, it will show significant clustering, whereas the regions will be dispersed.

2.2.3 Kernel Density Estimation

The spatial correlation and clustering features of cultural heritage resources in ASEAN countries are analyzed by spatial autocorrelation. To explore the characteristics of spatial differentiation and cluster areas, it is necessary to further study the kernel of spatial cluster (that is, the spatial hot spots of spatial distribution). In the analysis of spatial cluster area, distribution density is mostly used to measure [13]. Kernel density can be used to analyze the event at any location in geographic space, but the probability of occurrence varies from location to location. In this paper, ArcGIS10.2 kernel density estimation tool is used to calculate the distribution density of heritage sites in ASEAN countries, and then the spatial characteristics are analyzed with ASEAN DEM. Kernel density estimation is defined as: supposing point set x_1, \dots, x_n is the subset of points selected from the total sample R, to estimate the probability value $R(x)$ of R occurring at a certain point x. Rosenblatt-Parzen kernel estimation is usually used:

$$R_n(x) = \frac{1}{nh} \sum_{i=1}^n k\left(\frac{x-x_i}{h}\right) \quad (2)$$

Where,

$k\left(\frac{x-x_i}{h}\right)$ is a kernel function;

$h > 0$ is the bandwidth;

$(x-x_i)$ =the distance from the estimated point to the measured point x_i ;

Kernel function and bandwidth h together determine the degree of kernel density. A reasonable space search zone h of heritage sites in ASEAN countries is set for 3km through multiple tests.

III. RESULTS

3.1 Characteristics and Types of Overall Spatial Differentiation of Cultural Heritage of the Ten ASEAN Countries

Based on the spatial autocorrelation analysis and combined with the spatial analysis tools of ArcGIS10.2, the spatial clustering degree of representative cells in the ten ASEAN countries was calculated, and the correlation characteristics were obtained. The results are shown in TABLE I:

TABLE I. Spatially relevant values of cultural heritages in ASEAN countries

<i>Moran's I</i>	Z-value Test Score	Z-value Test Confidence Interval	Z-value Test Uniform Distribution Interval
0.61	2.81	0.99	-1.65-1.65

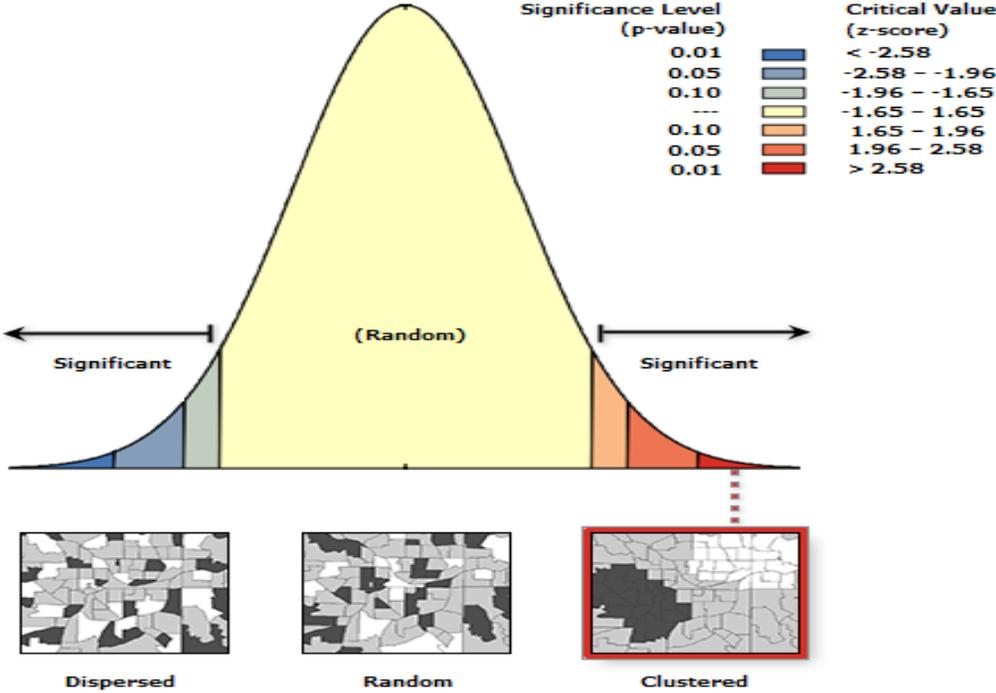


Fig 2: Characteristics of cultural heritages clustering in ASEAN countries

Spatial Moran's Index analysis showed that Moran's I index was $0.61 > 0$ and Z value test showed that $Z=2.81 > 1.65$ (upper limit of uniform distribution interval), confidence interval reached 99%. As shown in Fig. 2, the cultural heritages in ASEAN countries had spatial clustering characteristics in the spatial distribution of units.

3.2 Spatial Kernel Density Estimation of the Cultural Heritages in the Ten ASEAN Countries

According to ArcGIS 10.2, the density of cultural heritage resources in ASEAN countries was analyzed by kernel density to explore the balance degree of cultural heritages in ASEAN.

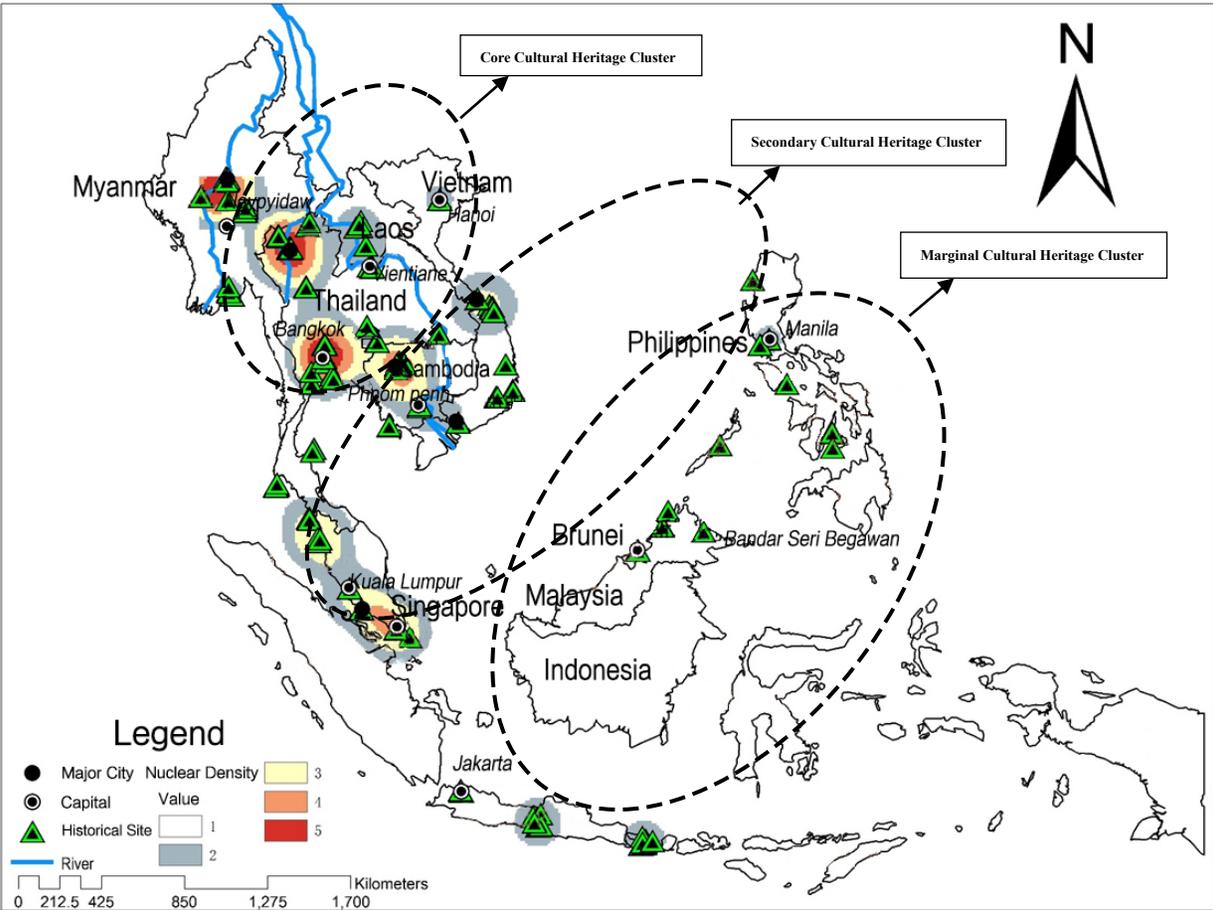


Fig 3: Kernel density of cultural heritage distribution in ASEAN countries

Fig. 3 shows that cultural heritages of ASEAN are mainly distributed in three areas with the spatial distribution pattern: the core cultural heritage cluster area is dominated by Myanmar and Thailand; the secondary cultural heritage cluster area is composed of Laos, Cambodia, Singapore, Vietnam and Malaysia; and the marginal cultural heritage cluster area consists of the Philippines, Indonesia and Brunei.

Three core areas are formed in the core cultural heritage cluster area: the Buddhist cultural heritage area centered on Bangkok, Thailand; the historical and cultural heritage area centered on Chiang Mai, Thailand; and the historical and cultural heritage area centered on Mandalay, Myanmar and other historical and cultural heritage areas. Despite the relatively large distribution of cultural heritages in this region, the heritages are clustered centering on the region unevenly [14].

The secondary cultural heritage cluster areas are mainly distributed in Laos, Cambodia, Vietnam, Malaysia and Singapore, mainly including two core areas, Siem Reap City of Cambodia and the core area composed of Malacca Ancient City of Malaysia, Penang Georgetown and Singapore, with uneven distribution of density kernels. The number of heritage resources in this area is significantly reduced compared to those in the core cluster area.

The marginal cultural heritage cluster area is mainly in the Malay islands, with cultural

heritage scattered, mainly distributed in the coastal edge of each island, without forming an obvious core distribution area, which belongs to the unbalanced distribution area of cultural heritages.

TABLE II. Statistics of cultural heritage sites in ASEAN countries

Geographic area	Countries	Total number	Proportion/%	Ranking
Core cluster area	Thailand	146	26.35	1
	Myanmar	83	14.98	2
Secondary cluster area	Cambodia	54	9.75	5
	Laos	29	5.23	8
	Vietnam	60	10.83	4
	Malaysia	67	12.09	3
	Singapore	33	5.96	7
Marginal cluster area	Indonesia	43	7.76	6
	Brunei	13	2.35	10
	Philippines	26	4.69	9

3.3 Spatial Differentiation Characteristics of Geographical Sub-regions

Based on the spatial distribution characteristics of cultural heritage sites and the administrative divisions of ASEAN countries, the three regions are matched with administrative regions to explore the overall spatial distribution characteristics of cultural heritages. The results of the spatial distribution of cultural heritages are shown in TABLE II. Statistical results show that the number of cultural heritages in the core cluster area accounts for 41.33% of the total and absolutely dominates the development of tourism; that in the secondary cluster area is 43.86%, showing that they are rich in tourism resources, while that in the marginal cluster area only accounts for 14.8%. The spatial distribution of cultural heritage resources in ASEAN countries differs significantly, mainly in the plains of the Indo-China Peninsula and the coastal plains. (1) The core cultural heritage cluster area is mainly located in the areas along the river and at the estuary of river, mainly with religious tourism and heritage tourism resources. (2) The secondary cultural heritage cluster areas are also distributed along rivers and in coastal plains and mountainous plains, with relatively scattered spatial distribution. (3) The marginal areas are mainly scattered on the islands with extremely dispersed distribution. The main tourism activities in this area are coastal leisure and vacation tourism.

IV. ANALYSIS ON INFLUENCING FACTORS OF SPATIAL DISTRIBUTION OF

WORLD HERITAGE SITES IN TEN ASEAN COUNTRIES

The spatial distribution of cultural heritages in ASEAN countries differs significantly, which is mainly influenced by natural environmental and humanistic and social factors. In terms of natural environment, the main influencing factor is terrain, such as large elevation drop and narrow plain distribution. Social and human factors, to a certain extent, are affected by environmental conditions, thus forming the political, economic and cultural environment of a specific region. Based on the kernel density spatial distribution map, the spatial density distribution pattern of heritage resources (Fig. 3), the typical geomorphic types of ASEAN region and the types of tourism activities in ASEAN region (mainly heritage, religious and coastal tourism in the Indo-China Peninsula, and mainly coastal tourism in the Malay Islands), this study analyzed the influencing factors on the spatial distribution of World Heritage Sites in the ten ASEAN countries [15,16].

4.1 Natural Environmental Factors

The natural environment is the basis and material source for the existence and development of things. The ASEAN region straddles the equator at the junction of the Indian Ocean and the Pacific Ocean, and has a complex and diverse terrain. With the development of geological space, it forms two major geological units, one is the Malay-Indian plate with stable geological structure, the other is the mountainous area with active geological structure [17]. Here, the coexistence of two types of equatorial rainy climate and tropical monsoon climate results in natural vegetation dominated by tropical rainforest and tropical monsoon forest. ASEAN countries are mainly distributed in Indo-China Peninsula and Malay Archipelago. The former includes Vietnam, Laos, Cambodia, Thailand, Singapore and Myanmar, most of which are peninsula countries or land-based countries; Malaysia, Indonesia, Philippines and Brunei are distributed on the Malay Archipelago, known as “maritime countries” [18].

Overall topographical characteristics of ASEAN countries are high in the north and low in the south. Mountains are fan-shaped and distributed from north to south. Mountains and rivers are scattered across each other. Moreover, rivers originate from high mountains with large upstream drop. Sediment deposition in the downstream of rivers will form an estuary delta plain through erosion, transport and cutting of rivers. Therefore, there are fertile plains and deltas in the lower reaches and estuaries of ASEAN countries. It is the natural development environment of mountains and rivers that has affected the distribution of urban settlements in ASEAN countries since ancient times. The Malay Islands, on the other hand, consists of thousands of islands of different sizes, with complex and diverse terrain, low middle and high edges, small relative elevation differences, relatively low altitude, no major rivers and scattered urban distribution.



Fig 4: Topographic distribution of Southeast Asia

Based on the topographic distribution in Southeast Asia in Fig. 4, it is concluded that (1) The core cultural heritage cluster area is mainly distributed in the plain area along the river and the alluvial Delta area at the estuary of the river. Thailand and Myanmar in this area mainly include the Irrawaddy River, the Salween River and the Menam River. The core area of Mandalay is located in the north-central inland area of central Myanmar and in the middle of the Irrawaddy River, with western mountainous areas and Shan Plateau on both sides. It is an ancient city of Myanmar with numerous historical sites, long history and rich cultural heritage resources. The unbalanced distribution with two kernels between Chiang Mai and Bangkok is mainly affected by the topography, with large elevation drop. Bangkok is a Mekong River delta formed by the alluviation of the Menam River. It spans both sides of the Mekong River and has a low-lying terrain. Chiang Mai, with an average elevation of 300 meters, is a plateau city in Thailand, with the Kundan mountain range in the East and the Intan Aung Mountains in the west. The mountains are more than 2,000 meters. The main peak, Intan Aung, is the highest in the country with an altitude of 2,576 meters. Chiang Mai, once the capital of Thailand for a long time, still retains a large number of valuable historical and cultural relics. Bangkok, as the present capital of Thailand, is known as the “capital of Buddhist temples” and has rich architectural heritages, among which the Grand Palace and Jade Buddhist Temple are the most outstanding representatives. (2) The Mekong River runs through the secondary cultural heritage cluster area, with complex and diverse topography, large fluctuations, wide plateau and mountainous area, high in the middle of the terrain and low around, and the plains are mostly distributed in the middle and lower reaches of the river. Consequently, the heritages are scattered in the plains of the middle and lower reaches of the river. (3) In the marginal cultural heritage cluster area, only the northern plains of Jawa and the eastern part of Sumatra are large and the middle part of the island is mainly mountainous with a narrow plain area. Therefore, the cultural heritages are mainly distributed in the coastal area. As a result of the influence of natural environment, heritage resources are scattered in the plain areas of coastal areas with uneven regional distribution.

It is thus clear that cultural heritages of ASEAN countries are distributed in plains or

plateaus with low elevation, gentle slope because it is easy to carry out agricultural production activities in such areas (ASEAN countries are the main exporters of cash crops) with good traffic accessibility, which is conducive to the development of economy and society. As ASEAN countries have complex terrain, abundant and diverse tourism resources and hindered intervention of modern civilization, they retain good regional characteristics and cultural beliefs, and cultural heritage resources are also protected to a certain extent (except during wartime). As a result, the ASEAN countries attract tourists from all over the world with their unique natural and human landscapes.

4.2 Humanistic and Social Factors

Cultural heritage can be regarded as the historical evolution of some important periods of human historical development and the historical product reflecting the times. The formation of cultural heritage in all countries depends on the development of culture and eventually becomes an integral part of culture, which promotes each other [19]. The formation of cultural heritage centers in ASEAN countries is related to the development of religion except for some core areas which are historical capitals:

(1) Core cultural heritage cluster area: In addition to the ruins of Mandalay Palace, the core area of Mandalay in Myanmar is also a famous Buddhist holy land. Burmese people who believe in Hinayana Buddhism built large and small pagodas with great sincerity. In 1871, King Mington convened 2,400 elders to hold a fifth gathering in Mandri to re-compile the Burmese Pāli Canon and then carved all classics on 729 marble monuments for perpetuation. Looking down from the southeast entrance of Mount Mandalay, 729 monuments of merit and virtue are circled in a square shape. The so-called “world’s largest book” of Kuthodaw Pagoda is marked with stone monuments, with dense Burmese and ancient Pali scriptures engraved on both sides. Chiang Mai is a concentrated area of art and buildings in northern Thailand, which retains a large number of cultural relics and is a city of temples and pagodas. Bangkok, the capital of Buddhist temples, is a kingdom of yellow-gown Buddhists. In addition to the famous Ayutthaya ruins and buildings, there are a considerable number of Buddhist temples in Bangkok, because the Thai people have a pious religious belief [20].

(2) Secondary cultural heritage cluster area is mainly distributed in Siem Reap in Cambodia and Luang Prabang in Laos. Angkor Wat in Siem Reap is a complete city composed of palaces, temples, gardens and castles. Influenced by Mahayana Buddhism and Hinduism, Angkor City, which was founded in the end of the 9th century and completed in the 12th century, and Gia Lam in Angkor Wat, which was established later, are the reflection of the mixture of the two religions in temple buildings. The ancient city of Luang Prabang is also a famous ancient capital and Buddhist Center in Laos.

(3) In the marginal areas, Indonesia was influenced by Brahmanism in history, and later Islam was the bishop. Therefore, the Borobudur Temple group and Prambanan Temple group in Indonesia are regarded as the world cultural heritage and the representative cultural heritage of Indonesia. Bali, Indonesia, not only has unique natural scenery, but also has a strong religious

and humanistic landscape. Catholicism is dominant in the Philippines, and 93% of the people believe in Catholicism and Protestantism. The church has a wide social influence. Manila, the capital of the Philippines, also has a large number of churches. The development of religion in history has strongly promoted the cultural construction and development of ASEAN countries.

4.2.1 Location and Traffic Conditions

Traffic is the gateway connecting regions to the outside world. As the cultural heritages of ASEAN countries are closely related to the development of religions, convenient traffic facilitates the spread of culture and promotes economic development, which provides a material basis for the flourishing of religions in the region. Fig. 3 shows that cultural heritages of ASEAN countries gather in ports, docks and major cities with convenient transportation, such as Mandalay in Myanmar, Bangkok in Thailand, Ho Chi Minh City and Hanoi in Vietnam, Phnom Penh in Cambodia, Manila in the Philippines, Singapore, Penang in Malaysia and so on, which are cultural heritage cluster areas. The accumulation of cultural heritage, together with the convenient transportation in these areas, strongly promotes economic development and provides a material basis for cultural prosperity.

4.2.2 Economic Conditions

Mandalay, Bagan, Siem Reap, Luang Prabang, Yangon and Hue were all former capitals with good regional economic development. From the historical development, the quantity and scale of cultural heritage resources are proportional to the level of regional economic development. The existence and development of religious sites and palaces are based on material support from the secular world, and the funds for their construction and maintenance largely come from donations and gifts from all levels of society, as well as national taxes. The development of the city provided material basis, human resources for the construction of religious and cultural sites and imperial palaces, as well as guarantee for the subsequent expansion and development [21]. The more developed the economy, the more religions and Imperial Palace buildings, the higher the level; conversely, the more backward the economy, the smaller the religious sites, the lower the level.

V. CONCLUSIONS

In this paper, spatial statistical methods such as spatial global autocorrelation analysis and kernel density estimation in GIS spatial analysis are used to intuitively express the overall pattern and spatial distribution characteristics of cultural heritages of ASEAN countries, which is helpful for in-depth analysis of influencing factors of spatial distribution pattern. Considering the development status of tourism industry, cultural heritage resources of ASEAN countries are mainly distributed in coastal plains, river deltas and Intermountain basins in space, because topographical factors have decisive influence on the formation of cultural heritage. ASEAN is an alliance of ten countries in Southeast Asia. Because of the differences in economic development, political system, religious beliefs and so on, regional communication and cooperation are particularly important [22]. Therefore, regional integration is a future trend for the tourism development of ASEAN countries, which requires perfect cooperation mechanism

and integrated tourism policy [23]. Regional tourism facilitation measures should be taken to implement a single visa system for international tourists outside the region; the regional allocation of tourism resources should be perfected to form a unified regional product supply market and carry out unified tourism product marketing to the outside world; the integration of tourism policies should be achieved to the greatest extent in terms of industry management, thereby reducing tourists' tourism costs and increasing tourism flows to achieve the optimal allocation of regional resources [24]. As ASEAN countries have rich cultural heritage, prominent regional characteristics and diverse types of natural tourism resources, they have formed a diversified tourism area [25]. Therefore, the development of national tourism should be led by the government and carry out various types of cultural tourism activities. To study the spatial distribution of foreign cultural heritage resources, it is necessary to find more accurate and comprehensive data to explain the spatial distribution of cultural phenomena, as well as the spatial evolution mechanism of cultural phenomena, which are the focus of future research.

ACKNOWLEDGEMENT

This paper was financially supported by Special Subject of "Marine Silk Road" of Huaqiao University: Strategies for China-ASEAN Joint Declaration of the World Cultural Heritage of the Maritime Silk Road (HSYB2014-08); "Training Base for Outsourcing Talents of Tourism Information Services" Subject of Fujian Education Department (422-52900010).

REFERENCES

- [1] Liao Shaolin (1979) Tobacco-free industry in ASEAN countries - tourism. *Southeast Asian Affairs* (2): 58-63
- [2] Lai Fuqiang, Liu Qing (2004) Conception on establishing china-asean borderless tour circle - discussing the synchronous development of trade in services and trade in goods. *Around Southeast Asia* (4): 31-37
- [3] Zou Chunmeng (2007) Analysis on strategies and effects of regional tourism integration in ASEAN. *Asia-Pacific Economic Review* (2): 49-52
- [4] Ye Li, Chen Xiuqian (2013) Analysis on the interaction between china and ASEAN in tourism and trade based on the evaluation of tourism competitiveness (12): 177-181
- [5] Hu Aiqing (2014) Regional tourism competitiveness of ASEAN. *Southeast Asian Studies*, (5): 35-44
- [6] Dong Haiwei (2015) Analysis on advantages, disadvantages and promotion strategies of regional tourism competitiveness in ASEAN. *Around Southeast Asia* (4): 35-40
- [7] Deng Yingying (2015) An effective way to construct the maritime silk road in the 21st century: China-ASEAN tourism cooperation. *Around Southeast Asia* (10): 15-21
- [8] Anselin L. (1999) The future of spatial analysis in the social sciences. *Geographic Information Sciences* 5(2): 67-76
- [9] Cliff A., Ord J. (1981) *Spatial processes: models and applications*. Pion, London
- [10] Li Jianbao, Bai Yongping, Luo Jun, et al. (2011) Spatial analysis of county-level economic differences in gansu province. *Economic Geography* 31(3): 390-395

-
- [11] Guo Xiaodong, Zhang Qiyuan, Ma Libang (2012) Spatial distribution characteristics and influencing factors of rural settlements in the transition area between mountain and hill. *Economic Geography* 32(10): 114-120
 - [12] Yue Hui, Li Fan, Wang Bin (2011) A preliminary study on the buddhist cultural landscape in guangdong and its regional differentiation. *Human Geography* (6): 45-50
 - [13] Li Xiangyu, Liang Liuke (2012) Regional differentiation of cultural tourism of buddhist pagodas in henan province based on GIS analysis. *Economic Geography* (12): 176-181
 - [14] Guo Peng, Dong Suocheng, Li Zehong, et al. (2014) Tourism pattern and international tourism cooperation mode in the silk road economic belt. *Resources Science* 36 (12): 2459-2467
 - [15] Li Tao, Tao Zhuomin, Li Zaojun (2014) Rural tourist attraction types and space-time characteristics of jiangsu province based on GIS technology. *Economic Geography* 34(11): 179-184
 - [16] Tai Pengfei, Wang Tie (2017) Spatial distribution characteristics of state-level rural tourist destinations in shandong province and influencing factors. *Economic Geography* (1)
 - [17] Cheng Xiaoli, Huang Guoping (2012) Evolution and optimization of tourism spatial structure in anhui. *Human Geography* (6): 145-150
 - [18] Wu Jiayu (2014) Spatial distribution characteristics of national scenic spots. *Geographical Research* 33(9): 1747-1757
 - [19] Xu Xiantang, et al. (2015) Spatial distribution characteristics and influencing factors of state-level rural tourist destinations-taking national leisure agriculture and rural tourism demonstration spot as an example. *Economic Geography* (9): 182-188
 - [20] Zeng Qingcheng, et al. (2016) Spatial distribution characteristics of maritime silk road ports. *Journal of Dalian University of Technology (Social Science Edition)* (1): 25-30
 - [21] Nilsson P.A. (2002) Staying on farms: an ideological background. *Annals of Tourism Research* 29(1): 7-24
 - [22] Songling Xu, Yu Liu (2017) The significance of the west lake pattern and its heuristic implications for creating china's heritage tourism economics. *Tourism Management* 58(2): 286-292
 - [23] David B. Weaver (2011) Contemporary tourism heritage as heritage tourism: evidence from las vegas and gold coast. *Annals of Tourism Research* 38(1): 249-267
 - [24] S. Mostafa Rasoolimanesh. (2017) Community participation in world heritage site conservation and tourism development 58(2): 142-153
 - [25] Frederick J., Conway. (2014) Local and public heritage at a world heritage site. *Annals of Tourism Research* 44(1): 143-155