



# Evaluation on Traditional Commercial Street Space Quality of Tourism Ancient Town in China----A Case of Xing'ping Town

Wen-Yi Fan<sup>1, \*</sup>, Noel B. Salazar<sup>2</sup>

<sup>1</sup>Department of Tourism, International Business School, Zhejiang International Studies University, Hangzhou, China

<sup>2</sup>Faculty of Social Sciences, University of Leuven, Leuven, Belgium

## Email address:

fanwenyi1983@sina.com (Wen-Yi Fan), Noel.Salazar@soc.kuleuven.be (N. B. Salazar)

\*Corresponding author

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**Abstract:** This exploratory paper investigates traditional commercial street space quality in tourism ancient town to inspect its adaptability in tourism environment and improve its management. Existing literatures have highlighted the role of street quality at different aspects but most with a narrow focus on urban city design. However, this paper regards traditional commercial street as "social space" and a typical kind of cultural tourist resource. With space users' perspective, this paper pays attention to thoroughly evaluation on the quality of traditional commercial street far more beyond material assessment. Questionnaires are assessed to tourists, local commercial tenants and residents in the case study of a typical Chinese tourism ancient town Xing'ping in southern China. Principle Component Analysis (PCA) is applied and gets instructive results. It finds that the quality of traditional commercial street space in tourism ancient town is co-determined by five factors. They are the spatial culture factor, spatial function factor, spatial accessibility factor, spatial activity factor and spatial supporting factor, in which the spatial culture factor takes up the first place. The results indicate several strategies for improving traditional commercial street space quality in tourism ancient town.

**Keywords:** Tourism Ancient Town, Commercial Street, Space, Xing'ping Town

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## 1. Introduction

Ancient town has been an important tourist destination in China since 1980's. Its unique historical features as well as a slow life style make ancient town attracting millions and billions of tourists ever year in Chinese rapid urbanization process. These ancient towns driven or depending on tourism industry are called tourism ancient town. Street is a decisive element of townscape in ancient town. It is the basic framework and the most important exterior space of the town [1]. The history of most existing Chinese ancient towns today can be traced back to late Ming Dynasty (1368-1644 AD) and Qing Dynasty (1616-1911 AD). While the driving force for a long-standing Chinese ancient town is attributed to continuous business trade, especially those towns which are near waterway and river [2-4]. There must be at least one main

commercial street and it once controlled the spatial structure of ancient town [5, 6]. Traditional commercial street is the regular business arena for farmers' fair market in the town. It is also the main recreational public space and social interaction domain for local farmers and residents. In tourism ancient town, traditional commercial street is often crowded with tourists and shops and becomes an attractive tour space in modern tourism [7]. It turns into a linear commerce center providing tourists with a space for shopping, leisure and recreation. These environment and function changes make it a critical need to inspect the quality of traditional commercial street space in tourism ancient town. This study is to evaluate traditional commercial street quality through the perception of different people who are using the street space. It also tries to examine its adaptability in tourism environment and provide an effective means to improve traditional commercial street

space management and its sustainable development in tourism ancient town.

## 2. Literature Review

Academic study on street space has emerged from more than centuries ago dating back to Marcus Vitruvius Pollio. But a social-cultural perspective on street space gets an increasing attention especially from 19th century. Even though existing references emphasize street space quality at different aspects, most with a narrow focus on urban city design.

Addressing on the relationship between space design and human interaction, Jan Gehl illustrates that only if outdoor space is of high quality, optional activity and social activity would take place [8]. Different space environment will create different neighborhood, feelings of security and fear of crime [9, 10] as well as different social interaction and perception [11]. Lynch summarizes four key characteristics of a path. He points out that a path should be with identifiability, continuity, directionality and metrizable [12]. This can be extended to street analysis because street basically has a traffic function like a city path. Jane Jacobs [13] pays more attention to the importance of urban street vitality, emphasizing the vitality of city street is rooted in the safety and the diversity. Research by Chen et al. [14] supports that the high quality of traditional commercial street is a need for encouraging diverse optional and social activities. Kisho identifies street is the main feature of traditional oriental city and town [15]. The street should be able to increase public activities. Yoshinobu Ashihara thinks street is an exterior space formed by architecture's inner order [16]. Exterior space is more meaningful than the natural space and has close relationship with human behavior.

Many other references are on the factors influencing street space quality. Street should provide people a place with traffic, activity, interaction and become an element to support the image of city. Factors such as space function, behavior vitality, social security, landscaping quality and identifiability all have effects on street space quality [17~19]. Even business mode varies in different tourism town, most traditional commercial street in Chinese tourism ancient town remains the traditional pedestrian priority mode [20]. Shi made clearly the quality of a pedestrian priority space was determined by its security, scale, convenience and landscape [21]. Traditional commercial street also has unique features in space scale, activity type, business model and spatial form [22~24]. In tourism, it is both the traditional public space for the locals and the leisure and shopping space for tourists. Traditional commercial street is not only with the function of commercial shopping, but also take into account the tourism and leisure functions as well as displaying the image of ancient town [25]. From a social cultural perspective, *space* is the production of people's social practices and interactions [26, 27]. Street space quality can be judged by the perception of street space users. On literature review, this study takes a typical Chinese tourism ancient town Xing'ping as a case study and constructs the indicator system to evaluate traditional commercial street space quality.

## 3. Traditional Commercial Street at Xing'ping Town

### 3.1. An Introduction of Xing'ping Town

Xing'ping town is located northeast of Guangxi Zhuang Autonomous Region, P.R.China (Fig.1) and under administrative jurisdiction of Yangshuo County, Guilin City. Along the waterways of Lijiang River National Scenic Area, the town preserves affluent historic relics and is rich in Karst natural landscape. The picture of Li River landscape in Xing'ping is depicted on the reverse side of current 20-Chinese banknote. Tourism in Xing'ping started in the 1990's. It becomes a famous tourism ancient town since the then U.S.A. President Bill Clinton visited Fishing Village at Xing'ping town in 1998. In 2007, Xing'ping was awarded as Historic Town of China (the third batch) by Ministry of Housing and Urban-Rural Development of the People's Republic of China and State Administration of Cultural Heritage. In 2011, it was endorsed as National Characteristic Landscape Tourism Town (the second batch). According to Xing'ping Town Government [28] its tourists were up to 1.5 million and tourism revenue 120 million Yuan in 2010. Currently, its main tourist attractions are the old streets in the town and the Lijiang river landscape on the periphery of the town.

Traditional commercial street layout in Xing'ping Town consisted of the Old Street, New Street and Hunan Street with total length over 700 meters. Landing on the Gudu quay, there is the entrance of Old Street. With commercial development in Ming and Qing Dynasties, the Middle Street which now is one stretch of the New Street extended out at the ending of Old Street. It continued rolling out and formed today's complete New Street. Hunan Street grew up later when business men from Hunan Province moved in and their decedents settled down in Xing'ping after 1840 AD. Three streets finally connect with each other and become the complete traditional commercial streets in Xing'ping Town. Figure 2 shows the traditional commercial streets in Xing'ping Town.



Figure 1. Location of Xing'ping town in map of China.

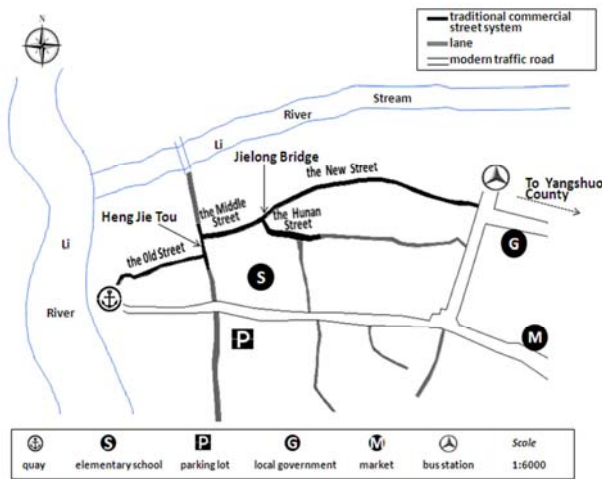


Figure 2. Street Layout of Xing'ping town.

### 3.2. Characteristics of Traditional Commercial Street at Xing'ping Town

Street width is consistently around 5 meters and similar building height along streets' two sides. Architectures along the street were originally wooden construction but were later changed to masonry-wooden mixed structure. Building has two stories. The ground floor was once used as shopfront and paved with local blue flagstones. Almost every street building remains the traditional sloping roof, horsehead walls and upturned eaves.

Historically, Xing'ping Town's shops and fair market gathered along the Old Street and New Street. Most former inns and stalls were in Hunan Street. This area was a commercial-residential integrated space. In 1980's, Xing'ping began to develop new district in urbanization process. Farmers' fair market was moved out and a new-built commodity trading market was built up at the entrance of the town. During that period, the old commercial streets fell into recession. This condition lasted until tourism came in the town in mid-late 1990's. Some time-honored brands, such as Songhua Sugar of Feng's Family and Bamboo & Wood Products of Zhao's Family reopened in the traditional commercial street to cater to tourists. There also appear tourist souvenir shops, painting shops, restaurants, bars and other new commercial formats. In each street section, small family-run shops such as repair shop and bee candy shop are served both tourists and the locals. With tourism development, the traditional commercial street seems to revive in Xing'ping. But our fieldwork also finds there are many problems, such as locals continuously move out to new town district and shops are selling similar low quality products in the street.

## 4. Evaluation on Traditional Commercial Street Space Quality

### 4.1. Questionnaire Design

With literatures and fieldwork in Xing'ping, this study designs the evaluation indicator system (Table 1) and a

primary questionnaire. After questionnaire pretest, it removes two candidate indicators with low importance level which are "Greening and sanitation facilities ( $V_{19}$ )" and "Intangible cultural elements ( $V_{26}$ )". The final 5-point Likert Questionnaire has two parts. The first part is demographic profile and background information questions. The second part is made up of 24 themed measurement items.

Table 1. Candidate indicators of evaluation on traditional commercial street space quality.

Code	Indicator
$V_1$	Numbers of shops
$V_2$	Average daily shop turnover
$V_3$	Monthly shop rent fees
$V_4$	Temporary and movable commercial stalls and facilities
$V_5$	Space utilization rate
$V_6$	Shopping retail format
$V_7$	Food and beverage retail format
$V_8$	Leisure and entertainment retail format
$V_9$	Cultural festivals and sports activity
$V_{10}$	Conducts of community residents daily life
$V_{11}$	Numbers of street exits
$V_{12}$	Crossing numbers inside street system
$V_{13}$	Types of transport
$V_{14}$	Flow of people
$V_{15}$	Street spatial form
$V_{16}$	Building integrity along the street
$V_{17}$	Style and size of buildings along the street
$V_{18}$	Pavement texture
$V_{19}$	Greening and sanitation facilities
$V_{20}$	Ratings of word-of-mouth
$V_{21}$	Commodity price-to-quality ratio
$V_{22}$	Theft and crime
$V_{23}$	Regional and ethnic culture features
$V_{24}$	Architecture decorations and oddments
$V_{25}$	Continuity of side interface
$V_{26}$	Intangible cultural elements

### 4.2. Sample Sources and Demographic Profile

The survey was conducted on October 15th – 17th, 2015, using simple random sampling and household survey methods. The informants included main space users in Xing'ping traditional commercial street space. A total of three hundred questionnaires were distributed. 252 pieces of questionnaires were reclaimed in which 222 pieces were valid. The callback rate is 96.1% and the questionnaire-reclaiming efficiency is 88.1%. Table 2 shows basic information of the sample.

**Table 2.** Demographic profile of sample (N = 222).

Items	Variables	Frequency	Percentages (%)
Age	14 and below	4	1.8
	15-24	60	27.0
	25-34	80	36.0
	35-44	30	13.5
	45-54	25	11.3
	55-64	12	5.4
	65 and above	11	5.0
Gender	Male	116	52.3
	Female	106	47.7
User	Tourist	99	44.6
	Commercial tenant	50	22.5
	Resident	73	32.9
Source	Local and nearby villages	87	39.2
	Guilin area (Excl. Yangshuo county)	42	18.9
	Guangxi Province (Excl. Guilin city)	37	16.7
	Mainland China (Excl. Guangxi Prov.)	36	16.2
	Overseas	20	9.0
Education	Below middle school	22	9.9
	Middle school	45	20.3
	High school	77	34.7
	College graduate	62	27.9
	Post graduate	16	7.2
Reasons on visiting	Doing business /work	67	30.2
	Family, relatives and friends	52	23.4
	Natural landscape	52	23.4
	Ancient town and old street	45	20.3
	Other	6	2.7

### 4.3. Data Structure Analysis

#### 4.3.1. Reliability and Validity Testing

Cronbach's Alpha Based on Standardized Items is 0.786. Generally, internal reliability of the scale data is satisfactory. The Bartlett's Test of Sphericity Approx. Chi-square is 3155.007 and Sig.=0.000. Based on the output the KMO is 0.812(>0.5). This shows that the degree of common variance among the variables is quite high, therefore factor analysis can

be conducted. We use PCA (Principle Component Analysis) to do data structure analysis.

#### 4.3.2. Data Analysis

SPSS17.0 software is used to output the correlation matrix. Variance contribution of the correlation matrix is explained in Table 3. This study decides to extract five principal components.

**Table 3.** Total variance explained.

Component	Initial Eigenvalues			Extraction Sum of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.323	42.011	42.011	8.323	42.011	42.011
2	3.479	17.192	59.203	3.479	17.192	59.203
3	2.671	12.305	71.508	2.671	12.305	71.508
4	1.899	9.358	80.866	1.899	9.358	80.866
5	1.301	6.186	87.052	1.301	6.186	87.052
6	0.833	3.923	90.975			
...	...	...	...			
24	0.071	0.027	100.000			

Extraction Method: Principle Component Analysis.

Table 4. Component matrix <sup>a</sup>.

Component	Component				
	1	2	3	4	5
V <sub>1</sub>	0.247	0.544	0.312	0.186	0.081
V <sub>2</sub>	0.045	0.672	0.483	0.290	-0.023
V <sub>3</sub>	-0.165	0.686	-0.197	0.077	-0.165
V <sub>4</sub>	0.604	-0.343	0.298	0.284	0.312
V <sub>5</sub>	0.229	0.457	0.145	0.611	0.164
V <sub>6</sub>	0.326	0.519	0.247	0.436	0.238
V <sub>7</sub>	-0.239	0.225	0.182	0.216	0.487
V <sub>8</sub>	-0.318	-0.246	0.453	0.704	-0.175
V <sub>9</sub>	-0.442	0.377	0.127	0.820	-0.033
V <sub>10</sub>	0.735	0.406	-0.148	0.007	0.325
V <sub>11</sub>	0.411	0.356	0.630	0.316	-0.316
V <sub>12</sub>	0.048	-0.146	0.911	0.426	-0.283
V <sub>13</sub>	-0.185	-0.226	0.726	0.126	-0.151
V <sub>14</sub>	0.273	0.174	0.866	-0.234	0.159
V <sub>15</sub>	-0.173	-0.365	0.509	0.144	0.316
V <sub>16</sub>	0.181	0.688	0.373	-0.205	-0.065
V <sub>17</sub>	0.818	0.168	0.146	0.112	0.439
V <sub>18</sub>	0.616	0.261	0.285	0.227	0.255
V <sub>20</sub>	0.353	-0.288	-0.245	0.097	0.519
V <sub>21</sub>	0.332	0.789	0.374	0.142	0.406
V <sub>22</sub>	-0.285	0.365	0.416	0.393	0.631
V <sub>23</sub>	0.509	0.167	-0.266	0.214	0.400
V <sub>24</sub>	0.547	-0.299	0.223	-0.189	0.408
V <sub>25</sub>	0.665	0.447	0.045	0.125	0.032

Extraction Method: Principle Component Analysis.  
5 components extracted.

Values of unit eigenvectors can be acquired by using Component Matrix data (Table 4). On the rules of naming a principal component, we then name the five principal components as spatial culture factor, spatial function factor, spatial accessibility factor, spatial activity factor and spatial supporting factor respectively and labels them as Fn(n=1,2,3,4,5) sequentially.

Taking the principal components as the new variables, a logistic model can be obtained, in which the dependent variable is traditional commercial street space quality. The logistic model is giving as following equation (1). Variables in the equation are showed in Table 5. Finally, we studied Cox & Snell R Square and Nagelkerke's R square as measures of explained variation (Table 6). The Nagelkerke R Square shows that about 63% of the variation in the outcome variable is explained by this model.

$$Y = 1.210 + 0.706F_1 + 0.499F_2 + 0.419F_3 + 0.250F_4 + 0.205F_5 \quad (1)$$

Table 5. Variables in the equation.

	B	S.E.	Wald	df	Sig.	Exp(B)	
	F <sub>1</sub>	.706	.155	20.748	1	.000	2.026
	F <sub>2</sub>	.499	.162	9.486	1	.021	1.647
Step	F <sub>3</sub>	.419	.168	6.220	1	.004	1.520
1 <sup>a</sup>	F <sub>4</sub>	.250	.158	2.502	1	.000	1.284
	F <sub>5</sub>	.205	.145	1.999	1	.000	1.228
	Constant	1.210	.447	7.328	1	.000	3.353

a. Variable(s) entered on step 1: F1, F2, F3, F4, F5.

Table 6. Model summary.

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	40.819	.477	.636

## 5. Conclusions and Discussions

### 5.1. Main conclusion

The analysis uses PCA method to find out five main influencing factors on traditional commercial street space quality in a typical Chinese tourism ancient town Xing'ping. The analysis also implicates management measures are needed for the long-term development of traditional commercial street.

The results show spatial culture factor is an essential factor. Xing'ping town government body should regularly maintain the street spatial interfaces in accordance with its historic and regional style. Movable commercial stalls should be allowed to exist in an appropriate way instead to remove them totally away. Local residents are living culture resources and support the long-term development of the street. Supporting resident-owned business or allowing residents to keep their traditional way of living are good ways to retain residents.

On spatial function factor, this case study indicates Xing'ping town should pay attention to increasing commercial value and applying a more active and dynamic way to enhance commerce absorptive capacity. The mixture of different commercial formats is good way for traditional commercial street. In the near future, a commercial format planning will help promote the street's spatial vitality.

There are three ways to promote spatial accessibility in traditional commercial street. First, Xing'ping town should have easier path to let people arrive and leave the street. With tourism development, more self-drive tourists come to Xing'ping. Private cars take up road randomly and cause traffic jam during tourism peak period. Local government should plan a place outside the town center for private car parking and encourage people to walk on foot into the street. The second is to increase the traditional commercial street internal interconnectivity. A complete lane network in traditional commercial street will increase the internal crossings and space utilization rate. The permeability between indoor commercial space and outdoor street space should be enhanced. Various types of street cultural festivals and leisure activities not only enhance activity and vitality on traditional commercial street, also attract indoor activities into outdoor street space.

Spatial activity factor is the key to the vitality of traditional commercial street space. With regularly folk customer activities, cultural performances and featured market fairs, street can become an important trade and social interaction center to increase the meets and interactions among different people in tourism environment. Be sure most those activities should promote by locals.

The traditional commercial street in tourism ancient town

also needs the supporting factor to have a good space quality. Local government and shop owners should jointly ensure the street safety and maintain street a good word-of-mouth. A tourist security service station will soon give help on this.

## 5.2. Discussions

From space users' perspective, this study did quantitative evaluation on traditional commercial street space quality at a typical tourism ancient town and got some instructive results. A relatively representative sample is used in the study. However, research area could be extended to more tourism ancient towns. The results and the mathematical model could also point to future further research and verification. Two questions may lead to future subsequent researches. First, according to the Embeddedness Theory of Karl Polanyi, economy is immersed in social structure. With the improvement of traditional commercial street space quality, is it possible or how to optimize the overall social structure of tourism ancient town in modern era? The second issue may lead to the quantitative effects of different retail formats on traditional commercial street space quality in tourism ancient town.

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