

The Tourism Development and Property Market in Historic Area - Evidence of Tainan City

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Abstract

The property markets in a traditional cultural city are difficult to develop by market mechanism. It is important to make a balance between urban development and tradition conservation in a fast growing cultural city. Tainan City located in the southern part of Taiwan is the earliest developed district. There are affluent cultural assets around the city and are meaningful for all residents. And we would like to take a clear look at the effects of all the historic cultural assets, especially regarding to tourism resources and utilization value.

This research tries to evaluate the urban development with historic assets in Tainan City in terms of tourism development procedure. In order to find the external effects of the tourism development and local property markets vitalization in historic area, the factor and discriminant analysis methods are applied with a questionnaire survey from the tourists and neighboring residents near these cultural assets. All the results will be taken into considerations and referred as the policy for historic assets development and local property market vitalization in historic area.

We further try to measure the value of historic asset tourism development integrated with the consumer surplus function. In order to compare with the existing property market development we introduce the hedonic model to estimate the effects of the historic assets on the property market price. Comparing these research findings, we can investigate the situations where Tainan City has acted as a cultural city and the way ahead considering the tourism development and local property market policy implications.

**Keywords : Tourism development, Historic asset, Property market,
Historical area**

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1 Introduction

Today historic preservation movement emerged as a trend in the past decade. More interest in history and historic sites, buildings, and preservation has continued to increase tremendously. The value of this kind of preservation is controversial when considering the development of the city and property value of the owners. Tainan City is the earliest developed district in Taiwan. There are many cultural assets located in the city and are important for all residents. And we have to take a clear look at the effects of all the cultural assets, especially regarding to tourism resources and utilization value.

This research tries to evaluate the historic assets tourism development in Tainan City in terms of tourism development procedure. We also take a look at the existing situations. In order to find the external effects regarding the tourism development and local industry vitalization, the factor and discriminant analysis method are applied with questionnaire survey. And the results will be taken into consideration and referred as the policy for cultural assets developed and local industry vitalization.

Accordingly integrated with the consumer surplus function, we can measure the value of cultural asset tourism value. Besides using the hedonic model we can calculate the value of the cultural assets effect on the property price. Comparing these research findings, we can investigate the situations where Tainan City has proceeded as a cultural city and the way considering the tourism development and local industry policy implications.

2 Description of study area

Tainan City is the earliest developed city around Taiwan. There are many historic assets should be considered with preservation and conservation. Therefore we have to pay more attention to the historic district renewal project including conservation. An-ping district was the first colony where immigrants from China located. An-ping port no longer plays the leading commercial role in Taiwan and the recession also causes undeveloped here. The original urban texture exist a potential prospect of this area.

The development history in Tainan City could be divided into 5 stages?¹²³⁴⁵
1) Earliest stage: the Siraiya tribe, Chinese immigrants and Japanese bandit resided and traded. 2) Holland occupying stage: In 1632 Hollander invaded and constructed the Zeelandia castle. Besides the residents gathered in the Zeelandia Street (An-ping Street today) and formulated the earliest street houses. 3) Min-Jen stage: General Jen Cheng-Kung terminated the sovereignty of Holland in 1662 and renamed Zeelandia as An-ping. 4) Chin dynasty stage: In 1860 Chin placed An-ping as a trading port and

attracted a lot of foreign company and institutions established here. 5) Japan domination stage: In 1894 Makwang treaty Chin government divided Taiwan to Japan. An-ping was merged to Tainan City in 1920 and the commercial importance decreased till today. Time passed by and considerable heritage left. We have to make a comprehensive consideration of progress and conservation.

There are different kinds of historic assets around Tainan City. For the sake of time and budget constraints we take the most famous and grade as the first historic assets. There are 5 places are chosen as our surveying historic area where shown in the Figure 2.1. An-ping Fort is located in An-ping district. Red Hill Chamber is used to name as Zeelandia castle. Confucius Temple and Wu Temple are familiar with Chinese. The Five Concubines Temple is a grave that remembered the 5 loyal concubines of last emperor of Ming dynasty.

The urban development of Tainan City experienced different sovereign period. The city owns its special characteristics. In the past decade the modernization force had made the traditional culture in the historic area more complicated. In the mean time the redevelopment project should be paid more attention to balance with new and old style architecture for the historic city.

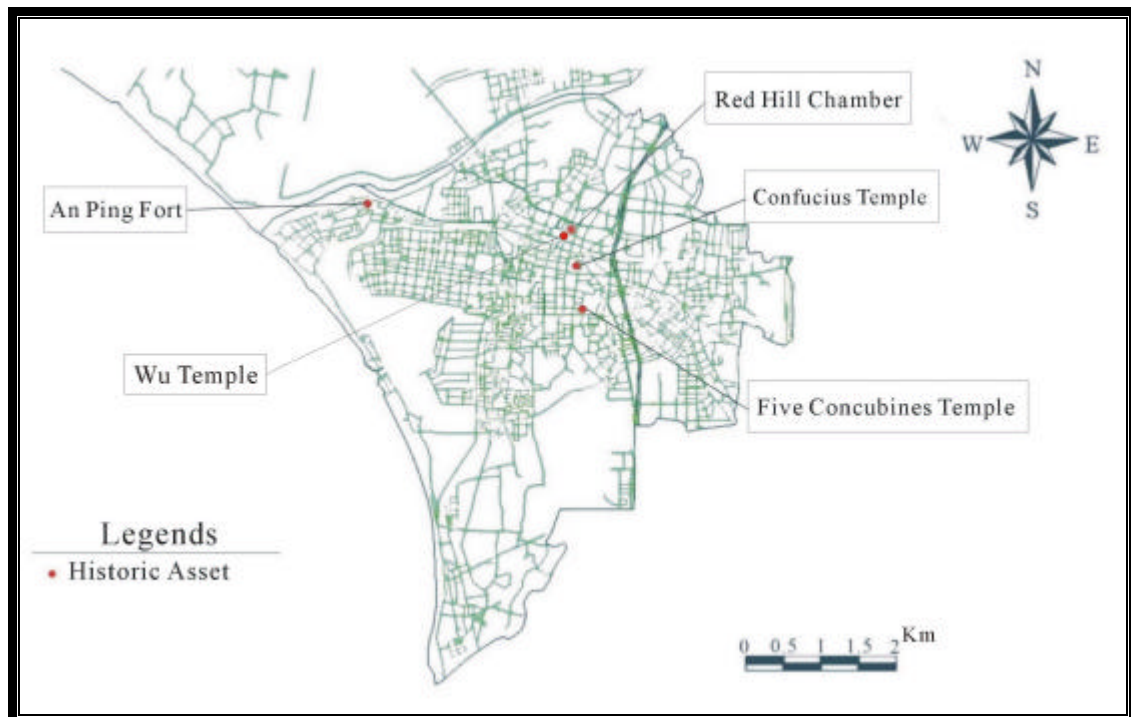


Figure 2.1 The Surveyed Historic Asset in Tainan City

3.The tourism development analysis in historic area

3.1 Tourism development evaluation process by the neighboring residents

Tourism development is a comprehensive activity, which is composed by tourist,

residents, resources, facility and government. However the well landscaping and traditional heritage can shape a good urban image that also play a major effect for the tourism development. Brown (1999) proposed checklist environmental functions, which was developed, and preliminary criteria established to permit rating the value (none, low, medium, or high) of a particular parcel of land with respect to each function. The evaluation model combines both economic and non-economic factors.

We design a structure questionnaire that effectively considered 26 different items for tourists and residents viewpoints regarding the existing tourism situation of the historic area. Likert 5 point attitude scales were applied with multivariate techniques for the evaluation of tourism development. We can categorize the major concerning factors that represent the different groups. Factor analysis is applied to obtain a pattern of loadings that can well explain the evaluation results. Cluster analysis is further used for identifying similar tendency with respect to certain characteristics of the groups. Taking these different groups as the external criteria for the discriminant analysis we can identify the best set of the respondents. Finally we would like to validate the most critical variables that different groups concern and clarify the key factors to success of tourism.

3.2 The neighboring residents valuation results

There are 76 effective questionnaires of the neighboring residents. Kaiser's measure of all sampling adequacy for each indicator is applied in this study. High loading of a variable on a factor indicates that there is much in common between the factor and the respective variables. We use the cutoff value as 0.4 for representing the communality. According to the factor analysis results, that shown in Table 3.1, there are 8 extracted factor structures. The underlying dimensions that accounts for the evaluation results from the neighbor's viewpoints. The cumulative variance explanation rate amounts to 70.31%. It provides a clear look at the tourism development in historic area.

We still need to clarify the 8 dimensions that discriminate best between groups. And use the identified variables to develop functions for computing new variables that will parsimoniously represent the differences for the groups. The discriminant analysis results are shown in Table 3.2. We can find the Function 1 and 2 demonstrate 1) Management and facility, 2) Public service and parking planning and 3) Pricing and land use plan, 4) Transportation service level are seriously concerned by neighboring residents who take into considerations.

The tourism evaluation process by the neighboring residents tries to figure out a clearer look at the existing situation. We can also put these dimensions into our policy making. The transportation seems to be the most important thing to do for tourism development. And the historic assets require a more delicate treatment with new land use plan. The neighboring residents play a very important in the tourism development.

And the participation will also be integrated with the future.

Table 3.1 Factor analysis results of the neighboring residents

Variables Factors	Descriptions	Variances	
		Proportion ?	Cumulative ?
Local contribution	Amenity	13.91	13.91
	Efficient transportation		
	Population		
	Property price		
	Road maintenance		
	Community potential for development		
Management and facility	Environment cleanness	10.75	24.66
	Hotel service		
	Service quality inside the historic asset		
	Sanitation facility		
	Surrounding cleanness		
Transportation service level	Parking service	8.58	33.24
	Transportation network to the asset		
	Traffic improvement requirement		
Public service and parking planning	Traffic around the asset	8.43	41.66
	Parking service inside the asset		
	Public utility inside the asset		
Pricing and land use plan	Entrance fare	7.45	49.11
	Land use plan		
Local development	Entertainment facility inside the asset	7.22	56.32
	Immigration		
Community development	Community interaction	7.10	63.42
	Historic asset as a leisure place		
	Historic asset increase the property value		
Economic development	Tourist consumption locally	6.89	70.31
	Building remodeling beside the asset		

Table 3.2 Discriminant analysis results of the neighboring residents

Factors	Func 1	Func 2	F
	Discrimant score	Discrimant score	
Local contribution	-0.045	0.407*	4.260*
Management and facility	0.333*	-0.131	5.996*
Transportation service level	-0.113	0.689*	12.547*
Public service and parking planning	0.375*	-0.071	7.215*
Pricing and land use plan	-0.439*	-0.134	10.155*
Local development	-0.004	-0.041	0.044
Community development	0.224	0.206	3.585*
Economic development	0.007	0.134	0.454

Wilk's $\lambda = 0.249$, ⁺ means strong discriminating power, * means significant
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3.3 Tourism development evaluation process by the tourists

There are 82 effective questionnaires of the tourists. Kaiser's measure of all sampling adequacy for each indicator is applied in this study. High loading of a variable on a factor indicates that there is much in common between the factor and the respective variables. We use the cutoff value as 0.4 for representing the communality. According to the factor analysis results, that shown in Table 3.3, there are 6 extracted factor structures. The underlying dimensions that accounts for the evaluation results from the tourist's viewpoints. The cumulative variance explanation rate amounts to 70.79%. It provides a clear look of the tourists in the tourism development in historic area.

We still need to clarify the 6 dimensions that discriminate best between groups. The discriminant analysis results are shown in Table 3.4. We can find the Function 1, 2 and 3 demonstrate 1) traditional attraction, 2) advertising and 3) Price and management are seriously concerned by tourists who take into considerations.

The historic asset well preserved condition and comprehensive marketing plan is the key factor for success. We find in this study that 48.78% tourists are the first time visiting, and 52.12% tourists are repeated visitors. If the historic assets can be planned with the district development we think cooperating with the neighboring residents is a proper way. Pricing and management in historic area is most concerned by the residents and tourists. The value of tourism reflects the place development. More attractions can be made by the affluent culture activities in the historic area. People like to be aware of the idea revealed by the residents, activities, festival and so on.

Advertising is also a very important factor for promoting the historic culture assets to the public. Traveling is a very expensive expenditure and the tourists consuming power will do contributions to the local economics. The temporary stay includes the eating, living, walking and easy movement in this area. Besides the accessibility to the place means the transportation planning that do tourists and residents place all much attention. The transportation network seems not so efficient evaluated by the tourists. The historic assets locate in different places where offer no convenient traffic. This study also finds 65.85% visitors drive by their own cars and there are only 4.88% visitors take the public transportation. The complete network of transportation is an urgent work for improving the tourism of historic area in Tainan City.

The historic asset planning should be taken as a whole. Not only the asset but also the neighboring development should put together. The city government now proposes the idea of culture park planning. We think the economic value will be significant in the comprehensive plan for historic area. The following we will estimate the potential economic value that historic asset tourism produced. And the property market

performance in this area will be concerned also.

Table 3.3 Factor analysis results of the tourists

Variables Factors	Descriptions	Variances	
		Proportion ?	Cumulative ?
Traditional attraction	A spot of historic interest	17.73	17.73
	Historical building attraction		
	Historical relics attraction		
	Repeated visit intention		
Price and management	Entrance fare	14.52	32.25
	Attitude in attention to customers		
	Sanitary equipment		
	Accommodation facility		
	Surrounding spick and clean		
Transportation and public service	Parking facility	10.55	42.80
	Public service		
	Roadway communication		
Advertising	Sightseeing promotion	10.13	52.63
	Favorable land use plan		
	Recreational facility		
Folk customs	Folk activity	9.68	62.61
	Humanism and culture		
Collateral	Local snack attraction	8.19	70.80
	Landscape and ecological dispersion		

Table 3.4 Discrimant analysis results of the tourists

Factors	Func 1	Func 2	Func 3	F
	Discrimant score	Discrimant score	Discrimant score	
Traditional attraction	0.825 ⁺	0.025	0.052	29.339 [*]
Price and management	-0.170	0.228	0.640 ⁺	13.712 [*]
Transportation and public service	0.008	0.288	-0.047	2.815 [*]
Advertising	0.061	-0.675 ⁺	0.226	16.666 [*]
Folk customs	0.139	0.225	-0.120	2.900 [*]
Collateral attraction	-0.155	-0.089	-0.485 ⁺	7.442 [*]

Wilk's $\lambda = 0.498$, $^+$ means strong discriminating power, means significant	*
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4. The economic evaluation of the historic asset tourism development

This study aims to evaluate the social benefits of sightseeing development in surveyed historic areas. Travel Cost Method (TCM) has been used in many studies that are discussed with travel demand function using different kind of improvement in accurate time cost estimate. The consumer's surplus attainable from paying the single price P^* to consume Q^* units of output of a commodity is measured by the area under the demand curve and above P^* . In mathematical terms consumer's surplus (CS) is given by:

$$CS = \int_{P^*}^8 D(P) dP,$$

Where $D(P)$ is the demand function for good Q .

We develop the following equation for estimating the tourists visiting frequency of the Tainan City.

V_{ik} represents the annual visiting frequency (people * day / year).

$$V_{ik} = L_{ik} \times T_{ik} \times D_{ik} \quad (1)$$

V_{ik} : the frequency of city k visiting Tainan City (people * day / year).

L_{ik} : people i living in city k (persons).

T_{ik} : the frequency of people i living in city k visiting Tainan City (persons).

D_{ik} : the travel days to Tainan City of people i living in city k (days).

$$\bar{V}_k = \sum_{i=1}^n V_{ik} \quad (2)$$

V_k : the visiting amount of the city k

$$\bar{V}_k = (V_k / \sum_{k=1}^{23} V_k) \times (N / [P_k / 1000]) \quad (3)$$

\bar{V}_k : city k visiting frequency per thousand people.

N : the total visitors amounts of Tainan City.

P_k : the population of city k .

k : 23 cities and counties around Taiwan.

Generally speaking more visitors can make the value of tourism higher. The travel demand function of historic area in Tainan City constructed as the following:

$$V = \alpha \exp(-\beta TC_k - \gamma I_k) \quad (4)$$

TC_k : city k visiting general cost including travel cost, parking and staying fee, time cost and freight etc (NT\$).

I_k : city k average medium household income (NT\$).

Using the customer surplus method we estimate the value of the historic area tourism of Tainan City as the equation (5).

$$CS = \sum_{k=1}^8 V_k d TC_k \times (P_k/1000) \quad (5)$$

We took a field survey in the study areas for estimating travel cost data including consumption amount in this spot, transportation cost, entrance fare and income. The travel demand function for historic area of Tainan City is defined as the following:

$$V_{ik} = F(TC_k, I_k) \quad (6)$$

V_{ik} : represents the annual visiting frequency (people * day / year).

TC_k : city k visiting general cost including travel cost, parking, staying fee, time cost and entrance fare etc.

I_k : household income level in city k.

There are 82 questionnaires of the tourists surveyed. The general travel cost data and income level are collected. The annual visiting frequencies of the surveyed historic assets are collected from the Bureau of Tourism and the summary is shown in Table 4.1. The annual frequencies are regarded as the dependent variable for travel demand function estimation.

Table 4.1 the annual visiting frequency in the surveyed area

Historic asset	The annual frequency in year 2000 (persons)
An-ping Fort	380,764
Red Hill Chamber	347,714
Wu Temple	252,990
Confucius Temple	390,096
Five Concubines Temple	25,717
Amount	1,397,281

Remarks: Bureau of Tourism of R.O.C.

The travel demand function for the historic area in this study is estimated using linear function form. We use the OLS method and the result is shown in Table 4.2. We can read from the Table 4.2 the income variable seems insignificant at the 95% level of confidence. And the travel cost coefficient is significant at the 95% level of confidence.

According this we reproduce the travel demand function as the following equation.

$$V_{ik} = 4.619 - 0.00345 TC_k$$

We further apply this travel demand function of historic asset in Tainan City for

estimating the economic value using customer's surplus. Figure 4.1 demonstrates the application using the 82 samples plotting with the trend analysis. Each dots demonstrates more than one sample.

Table 4.2 the estimated travel demand function

Independent Variables	Coefficient	T - ratio	Description	Expected sign
Travel cost	-0.00345	-11.048	Surveyed from the questionnaires	< 0
Income level	-6.104E-06	-1.013	Surveyed from the questionnaires	> 0
Constant	4.619	21.515	-	> 0
R ²	0.63			
Adj R ²	0.62			

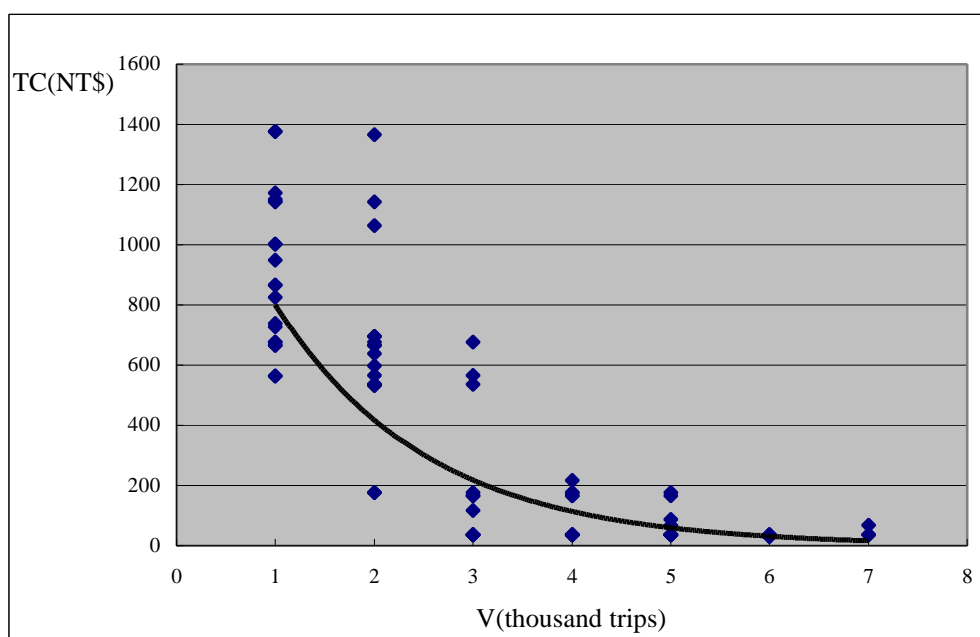


Figure 4.1 the travel demand function for the historic asset

Please refer the equation (5) we set the upper limit as the highest travel cost in the samples. And the bottom limit is calculated from the average travel cost in the samples. So we estimate the economic value for historic asset using customer's surplus as the following:

$$CS = \int_{439}^{1376} -0.00345dTC_k = NT\$2,922 \text{ (per person)}$$

We can also estimate the surveyed historic asset total contribution value from the tourism to the Tainan City. The total estimated benefits will amount to NT\$4.0982

billions per year (NT\$2,993 * 1,397,281 annual visitors).

5.The effects of the historic area on property market

Historic preservation is intended to generate positive externalities within historic area. Zoning and historic districting are always associated with negative restrictions on development rights. Considering the case of architecture, historic preservation laws require the review of urban design committee and commissions approve application for permits for their repair, modification or demolition.

As Asabere and Huffman (1991) found the net effect of historic districting on land value is significantly positive. And they also found that while residential parcels within historic districts attract huge price premiums of 131%. Lee (2000) surveyed in An-ping area (Tainan City) and found the historic area significantly affected the housing price negatively. This result shows the facts that lack of some active policy for the contemporary use in historic area that we have to take more consideration.

In this study we take 5 major places located the historic asset where demonstrate in the Figure 2.1 in Tainan City. Taking the rule of thumb we define the 500 M close to the historic asset as the neighboring district that historic will effect directly and compare with other places. For estimating the impact of the historic area in property market the hedonic price equation will be used as the following:

$$\text{Log } P = a_0 + a_1 (\text{Hdisct}) + \sum a_i X_i + e$$

Log P: housing price (natural log form)

Hdisct: dummy variable

1 : demonstrate the historic asset effecting area

0: demonstrate other places

X_i : represents the conventional effecting variables of housing price for neighborhood, lots size, housing characteristics.

a_0 : constants

e: bias

The impact of historic area on property values are expected to be positive in considering the net effects that people can reap positive externalities. Then the estimated coefficient on Hdisct would be significantly positive ($a_1 > 0$). In order to detect the partial effects of historic area, we also take into consideration the following control variables in the equation: 1) Street width, 2) Interior parcel, 3) Floor areas, 4) Lot size, 5) Commercial use, 6) Strengthen brick structure, 7) Housing age. The log transformation is applied for ordinary least square to estimate the parameters.

Data were collected on housing sales in the surveyed area for 1997 to 2000 from the major urban housing transaction information provided by the Ministry of Interior. There are totally 271 observations are used for this study. The OLS estimate result is

shown in the Table 5.1.

The explanatory power of the regression is 0.6 in terms of adjusted R Square. The dummy variable for historic area produces significantly negative results. The sign of the Hdisct is not as expected as the hypothesis. Historic area in Tainan City appears to have tremendous negative external impacts on property value.

As shown in the Table 5.1 the conventional variables that 1) Street width, 2) Interior parcel, 3) Floor areas, 4) Commercial use, and 5) Strengthen brick structure were found to be significantly different from zero at the 95% level of confidence. The variable lot size and housing age were insignificant at the 95% level of confidence.

Table 5.1 Estimated regression result: Dependent variable is sales price in Log

Independent Variables	Coefficient	T - ratio	Description (Units)	Expected sign
Historic area	-0.122	-2.027	1 In 0 Not in	>0
Street width	0.01152	2.259	M	>0
Interior parcel	-0.257	-4.209	1 Yes 0 No	<0
Floor areas	0.00103	5.134	M ²	>0
Lot size	-0.000432	-1.161	M ²	>0
Commercial use	0.475	6.625	1 Yes 0 No	>0
Strengthen brick structure	-0.290	-3.782	1 Yes 0 No	<0
Housing age	0.00102	0.726	Year	<0
Constant	15.673	194.553	-	>0
R ²	0.62			
Adj R ²	0.60			

The finding of Asabere and Huffman (1991) in the case of Philadelphia, where regulations or restrictions on development of vacant land, imply historic districting can produce positive external benefits. Other influential factors held constant, the effect of historic districting on the value of federal certified parcels, not encumbered by rules, is positive. In USA the general zoning ordinances also restrict uses and signage in historic districts and for historic property. The 1985 ordinances allow the city to specify special zoning districts including one that regulate land uses in the Independent Mall area, a district of major historic significance. This study seems to be consistent with the results of Lee (2000). We have to further consider the value of

tourism that could be generated from more complete historic preservation act and strategy in Taiwan.

6.Conclusion

The tourism development of historic area in Tainan City is in the beginning. This study evaluates the situation from the viewpoints of residents and tourists. We can find 1) Management and facility, 2) Public service and parking planning and 3) Pricing and land use plan, 4) Transportation service level are seriously concerned by neighboring residents who take into considerations. And we can also find the 1) traditional attraction, 2) advertising and 3) Price and management are seriously concerned by tourists. Considering in the both side we think the comprehensive tourism planning is the critical factors for success. Tainan City is a very traditional city. Compared with the Kyoto City we can find there is some resembles. We can learn from the experiences that some other city had made. We assume that the economic value exists in the development of tourism. So customer's surplus analysis will be surveyed for the estimation.

Tourism bears highly potential revenues in terms of customer surplus. This study also estimates the economic value of the surveyed historic assets total contribution from the tourism to the Tainan City. The total estimated benefits will amount to NT\$4.0982 billions per year. ($NT\$2,993 * 1,397,281$ annual visiting persons) When we consider the existing tourism situation surveyed by residents and tourists, the results reflect many subjects concerned by residents and tourists. In other words if the sufficient improvement done by a series of tourism supply actions the potential economic value could be realized. So it is worthwhile to invest more budgets for the historic area. Although the improvements are considered important we still have to take a look at the property market in the historic area. Because the more strict land use control imposed in the historic area the property value will be restricted by the market constraints. We furthermore take into consideration of the existing property market.

The tourism development can improve the property market efficiency. But compared with some historic areas that are regulated very strictly we find the net effect of historic districting on land value is significantly positive. The results of this study shows that the historic areas are not as expected as the hypothesis. Historic areas in Tainan City appear to have tremendous negative external impacts on property value. We can have a clearer picture that the tourism development of historic asset is not successful in the mean time, but it is highly potential in terms of economic value if the critical factors that evaluated by the residents and tourists are fully considered and implemented.

Tainan City does have the potential to be a famous tourism spot for her good heritage. The way we have to go is making a deliberative plan and integrated with the public

participation activity. The surveying results are a good step for the city to be successful in the future.

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