Design Review for Information Delivery in Direction Instructions of Lukang Sightseeing Area from Users' Perspectives

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Abstract: This study examined Lukang Sightseeing Area in the investigation of the relationship between direction instructions and directions seeking. A questionnaire survey was conducted on tourists of different age groups in order to collate the questions and needs of the users looking for directions. The purpose was to provide suggestions and feedback regarding the improvement of direction instructions systems and summarizes the spatial characteristics of Lukang Sightseeing Area in three aspects, which were human behavior, architectural design and information objects. Finally, this study provided suggestions for the design of new tourism information objects with a human touch in order to ensure the preservation of local cultural characteristics

Key words: walking tours for sightseeing, looking for directions, information delivery, Lukang

1. Introduction

"Tourism" is one of the important developmental policies implemented in Taiwan in recent years, with the view to making the domestic tourism prosper. The tourist policy, which covers four aspects, which are culture, biology, tourism and overall community development, has been formulated, and information technology is applied. For tourists of different age, gender, and nationality, tourist areas need to adopt creative thinking for the information communication development, so as to meet the tourists' varied demands.

With increase in the number of the tourists coming to Taiwan, Lukang was gradually transformed from a locally famous view spot into an international tourist region. For example, if the key word "Lukang" is typed into the search engine in Japanese, more than 470,000 pieces of tourist information related to Lukang will be shown, and a large percentage of them was successively uploaded and renewed in these years. Thus it can be seen that Lukang takes a positive and persistent attitude to the tourism. However, the actual survey of Lukang shows that so many complex indicators and the excessive commercialization have caused its rich features in culture and history to disappear gradually, and that the transitory tourist propaganda was also unable to preserve its essence. This study will focus on the basic tourists which may guide this study and provide relevant information, analyze the tourist's diversified demands, and discuss the present information communication system in Lukang, in the hope of presenting a human-oriented tourist pattern for Lukang doing better in cultural inheritance..

2. Research Method

PTo better understand and ascertain the problems and confusions confronting the users when they use the wayfinding information system of Lukang, the questionnaire survey was conducted of the users at different ages in this phase. A large quantity of questionnaires showed the users' problems and demands regarding the

wayfinding, and the suggestions for improvement of the wayfinding system were proposed. The closed questionnaire was adopted, in which the questions were based on the study hypotheses, and the interviewees were required to choose the most appropriate answers to these closed questions.

The questionnaire survey was aimed at the general users who had visited Lukang, and they were analyzed in terms of "basic data" and "spatial characteristics of Lukang". The statistical results of the survey were made into the frequency distribution table with SPSS software. The survey was designed to:

1. Have a better understanding of the relationship between the problems and confusions the users at all ages were confronted with when finding the paths and the wayfinding information system of Lukang.

2. Compare the study results obtained from highly objective analysis with the interview results in the aforesaid survey, by use of the statistical data, to find out the relevance.

2.1 Likert scale

For the "operation assessment scale" part in the questionnaires, Likert scale was used to show the users' subjective appraisals of the wayfinding information system of Lukang. Likert scale was a "summated rating scale", which was used to measure the attitude response (approval) of each interviewee, and the result of adding the scores of each interviewee in all items was his/ her attitude to the question incorporating these items. As shown in the figure, each interviewee was required to choose an option for every item in the 5-point scale to finish his/ her subjective appraisal, and the result could show the interviewee's scale rating to the item.

3. Field Survey

The wayfinding characteristics of the tourists could be expressed as the walking trace characteristics. Therefore, the close observation of the tourists' sightseeing course and behaviors could reveal their wayfinding characteristics in the tourist region, which were then compared with the present information system of Lukang, to find out the tourists' course and problems in reading and capturing the tourist information, as well as the tourists' physiological and psychological demands.

Table 3-1 Field Photos



Using DV and camera to record the wayfinding of tourists, totaling 14 tourists in 5 groups (including youth, middle-aged, elder, and foreign tourists)

With the consent of the ordinary tourists of Lukang (dominated by the walk-in tourists), their wayfinding courses in Lukang were recorded by follow shot. They were divided into five groups, totally 14 persons, including the young, middle-aged, elder and foreign tourists. The results of the follow shot were made into an analysis table in terms of "environmental factor" and "indicator". See Table 3-2 below.

Table 3-2 Analysis	of Tourists	Problems	Observed
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Problem Type	Problem Problem Arising		Problem-affected Group
	There were over many complex crossroads in the touring route	The tourists might lose the sense of direction, and be confused about the definite positions of the view spots.	The middle-aged and elder tourists
	The toilets were not enough and invisibly located.	It might be difficult for the tourists to find the toilets when they need them.	The young, middle- aged, elder and foreign tourists
Environmental factor	The view spots were invisibly located.	It was not easy for the tourists to find the view spots, and they often needed to make detours or got lost.	Elder tourists
	The tourists turned to others around.	The most direct solution was adopted by the tourists when meeting with the difficulties in the wayfinding.	Elder tourists
	Over many indicators were given.	These indicators might be ignored by the tourists.	The young, middle-aged and elder tourists
	The indicators were not visibly located.	The indicators could be seen only by special attention when needed.	The elder and foreign tourists
	No adequate indicators were given at road junctions or variations.	The tourists might get confused when walking to another view spot.	The middle-aged, elder and foreign tourists
Indicator	Over much information was given on the indicators.	The tourists needed much time to understand the information given.	The middle-aged, elder and foreign tourists
	The indicators easily merged into the environment.	The indicators were very similar to the buildings in color, and could be clearly seen only within a very short distance.	The elder tourists and children

4. Questionnaire Survey of Tourists' Experiences

Based on the design considerations of the wayfinding information system of Lukang, the questionnaire survey of the tourists' experiences was designed to show how the tourists thought about and responded to the form of display and spatial allocation of the information on the indicators set in the tourist region, find out the problems, and propose the suggestions for improvement in the future. The questionnaires were handed out on the spot. A total of 220 copies were distributed, and 205 valid copies were collected.

4-1.Basic Data of the Interviewees

The first part of the questionnaires consisted of basic data of the interviewees, which were divided into such items as gender, age, educational background, relation and number of the tourists coming together, visiting times of Lukang and intended length of stay in Lukang. A brief description was given of the survey results of all items as follows:

Table 4-1 Basic Data

Basic Data		Number of	Percentage
		Interviewees	-
Caralan	Male	100	48.8%
Gender	Female	105	51.2%
	15-19	24	11.7%
	20-29	62	30.2%
1 00	30-39	36	17.6%
Age	40-49	35	17.1%
	50-59	35	17.1%
	Above 60	13	6.3%
	None	2	1%
	Elementary school	8	3.9%
Educational Loval	Middle school	28	13.7%
Educational Level	Senior middle school	55	26.8%
	University	77	37.6%
	Graduate school (or above)	35	17.1%
Relation of	Family members	91	44.4%
Tourists Coming	Friends	105	51.2%
Together	On their own	9	4.4%
	First time	37	18%
Visiting Times	2-3 times	129	62.9%
visiting Times	4-5 times	29	14.1%
	6 times or above	10	4.9%
Tuton de di Tomoth	Within 1 hour	3	1.5%
	1-2 hours	8	3.9%
intended Lengui	2-3 hours	19	9.3%
of Stay	3-4 hours	125	61%
	Above 4 hour	50	24.4%

4-2.Basic Data of the Interviewees

The second part of the questionnaires was designed to discuss the tourists' opinions on the spatial allocation in the tourist region Lugang and their possible effects upon the tourists' wayfinding behaviors, which covered the tourists' opinions on the location of the toilets and other public facilities in the region, whether they were ever lost in the region and their solutions adopted, and the factors which they thought might cause the difficulties in the wayfinding in the region. They were given brief description in the following:

Table 4-2 Spatial Characteristics of the Tourist Region Lukang

Spatial Characteristics	Characteristics			entage
Opinions on the location	Can be easily found	43	21%	
of the toilets and other	Can not be easily found	162	7	9%
public facilities in the				
region				
Opinions on the location	Can be easily found	156	76.1%	
of the points of interest	Can not be easily found	49	23.9%	
and the view spots				
Whether they were ever	ther they were ever Yes		73	.1%
lost	No 9		4.	4%
Solutions adopted when			Percentage	All tourists
lost		162	of the	

	 Turning to the indicators set in the region Turning to service personnel in the region Turning to other tourists Finding the way by themselves Referring to the introduction to the region Others 	38 106 159 77 3	tourists lost 82.6% 19.4% 54.1% 81,1.% 39.3% 1.5.%	79% 18.5% 51% 77.6% 37.6% 1.5%
Factors which might cause the difficulties in the wayfinding in the region	 Complex architectural space Poor design of touring route Invisible indicators Insufficient guiding indicators Wrong information given on indicators Poor sense of direction of the tourists Others 	67 81 187 105 120 41 2	32.7% 39.5% 91.2% 51.2% 58.5% 20% 1%	

4-3. Comparative Survey of Tourists' Experiences

The tourists were analyzed and compared as to the degree of approval, so as to find out the touring satisfaction of all users. Further, the analysis of variance (ANOVA), mean value of descriptive statistics and Scheffe' test were used to evaluate the overall degree of approval, based on the multiple comparison and analysis of the users and the wayfinding information system.

4-4. Conclusions of Tourists' Experience Survey

The questionnaire survey was aimed at the tourists at all ages, and designed to discuss the physiological and psychological difficulties and confusions the tourists were confronted by in the tourist region Lukang, understand and evaluate the design factors of the indicators set in the region, and further propose the suggestions for improvement and the solutions to the problems existing in the indicators.0020The basic data of the users and the field survey showed that on an average, most tourists spent 3-4h on the sightseeing in the tourist region, and that they moved and found their way depending on the indicators set in the region.

The survey results showed that the tourists considered that under the effect of the architectural patterns developed in the early days, so many road junctions, winding paths, etc arranged in the tourist region Lukang added to the touring difficulties and confusions for the tourists. The results also showed that the spatial form had some effect upon the age. The elder tourists were more affected by the factors. It was presumed that the tourists' ability of recognizing the spatial form of the tourist region Lukang declined with age, and that the elder tourists could be more easily lost.

In the "Setting Relation", all tourists thought that the indicators designed for the wayfinding purpose could be easily shut out from view by other indicators or the stalls. The survey results showed that the tourists between the ages of 20 and 29 had higher degree of approval with "the contents of the indicators not exactly consistent with the actual directions". This suggested that the tourists at the ages considered that the contents of the indicators in the tourist region Lukang needed to be corrected. In the "Information Content", most tourists said that the font and color of the indicators could cause the information to be easily read. As for "the match of letters and background colors contributes to easy and clear identification", the tourists aged between 15 and 19 showed higher degree of approval, which indicated that the younger tourists were more satisfied with the setting of the letters and colors. In the "Form of Expression", most tourists considered that the indicators should be given the uniform style, and that over much information given on the indicators could cause difficult reading by the tourists. At last, as to "the reading of the indicators can cause discomfort and weariness", the tourists above the age of 60 showed higher degree of approval, which indicated that the reading of the indicators could produce more physiological discomfort in the elder tourists than in those at other ages.

Generally speaking, the tourists at different ages met with different problems and confusions while visiting the tourist region Lukang, and most of them were ever lost or deprived of the ability of direction judgment briefly, and then always turned to the wayfinding information system in the region. It was thus seen that the indicators set in the tourist region were what the tourists relied on for finding their way. The complex buildings and streets in Lukang could really cause the tourists to lose their way, so an effective and complete wayfinding information system should be designed to meet the demands of the tourists at all ages.6. Examples Citations

5.Conclusions

The survey showed that the present wayfinding information system of Lukang had many problems in it. These problems were associated with the design of the early buildings and of the wayfinding information system of Lukang. In the following the architectural space, wayfinding system and human behaviors are respectively discussed:

Architectural Design

Apart from the wayfinding information system, the good spatial planning could also assist the tourists in acquiring the spatial information to solve their wayfinding problems.

Wayfinding Information System

As for the wayfinding information system built in the region, the survey showed that most indicators were integrated with the surrounding, and could not be distinctly distinguished from its environment. Further, the repetitive information was given in the touring route which itself could easily cause confusions within the tourists, so many indicators of different styles involved in the region.

Human Behaviors

Most tourists always resorted to the indicators when getting lost in the tourist region. It thus followed that the complex spatial design could easily lead to the tourists' wayfinding problems, which should have been prevented by the former overall building planning or remedied or improved by the wayfinding information system. However, the design and layout of the points of interest and the buildings could not be modified freely, so it was more advisable to improve the wayfinding information system, which required lower cost.

Some tourists might get somewhat acquainted with the spatial layout of the region, in that they had visited the region. This did not mean that the wayfinding information system could be given less regard, because there were many tourists coming to the region for the first, who were not familiar with it, including the young, elder and even foreign tourists. For this reason, the wayfinding information system for the region should be the users oriented and designed to satisfy the tourists at all ages, who have different demands, which is also the task for the future design and improvement of the wayfinding information system. In the following the suggestions for future design of the wayfinding information system for the related factors of the system obtained from the survey.

5-1.Suggestions for Improvement

This study, based on the survey conducted on the tourist region Lukang and the problems existing in the present wayfinding information obtained from the survey, proposed the suggestions for improvement (see Table 5-1), and made an attempt to summarize the design principles for the wayfinding information system for Lukang, Which included three parts, the information, the way to perform and the installment relations. About the information, the orientations should meet the internationally accepted specifications, make the tourists from different countries be enabled to understand the information easily and become the context with understandability. About the way to perform, Lukang should preserve its own features and combine sense of beauty. About the installment relations, the use features of the tourists should be taken into account, as many obstacles as possible should be removed for them, and to have both friendliness and safety. They are in detail described as follows:

Category	Item	Factor	Problem	Suggestion for Improvement
Wayfinding Information System n Cont		Layout	 So much information was given, causing poor communication. The information contents were not modified to accord with the renovated view spots. 	 The indicators should provide necessary information only, be free from unnecessary repetitions, and be supplied with the symbols for better communication. The information contents should be renewed on a periodical basis.
	Informatio n Content	Font	• The fonts were tangled and not uniform.	• The uniform fonts in both Chinese and English should be used.
	5	Color	 Main colors of the indicators were dark brown for background and white for font, so the background lacked identifiability. 	• The fonts should be in sharp contrast with the background in color.
		Symbol	• The present design lacked the symbols embodying the cultural features of Lukang.	• The indicators should embody the culture of Lukang, and be provided with suitable pictures, so that they can be easily

Table 5-1 Problems of the Present Wayfinding Information System of Lukang and Suggestions for Improvement

			 identified by the tourists. The internationally accepted symbols should be used in the indicators, so that they can be easily recognized and understood by the tourists.
	Arrowhead	• The arrowheads disagreed with the actual places.	 The internationally accepted arrowheads should be used. The arrowheads should not be used for the view spots which can not be distinctly pointed to.
Form of	Style	• The indicator styles were tangled and not uniform.	• The uniform indicators should use the uniform style.
Expressio n	Size	• The wall-hung indicators could not attract attention well.	• The ability of spatial identification of different tourists should be taken into account.
Setting Relation	Location	 The indicators were not visibly located. No striking indicator was given at road junctions. 	 Due to the special architectural pattern of Lukang, the striking indicators should be set at the turning points and road junctions in the region. The height of the indicators should be suitable for different tourists, and their extension should also be improved.
	Quantity	• So many indicators were set.	• The indicators containing the same information should be reduced.

6. References

- [1] Lynch, Kevin, 1960, The Image of the City, Cambridge. Mass. Mit press.
- [2] Passini, R. ,1996, Way finding design: logic, application and some thoughts on universality. Design Studies, 17, pp. 319-331.
- [3] O'Neill, M., 1991, Effects of Signage and Floor Plan Configuration on Wayfinding Accuracy, Environment and Behavior 23, P192. [4] Schlosser, A. E. (2003) *Experiencing Products in the Virtual World: The Role of Goal and Imager in Influencing Attitudes versus Purchase Intentions*, Journal of Consumer Research, vol. 30, no. 2, pp 184-198.
- [4] Nicolas, F., Canete, I., Tuladhar, S., 1992, Designing for Pedestrians: A CAD Network.

- [5] Carroll, J. B. (1993). Human cognitive abilities : A survey of factor-analytic studies. New York : Cambridge University Press.
- [6] Chris Calori, 2007, Signage and Wayfinding Design, John Wiley & Sons, Inc, P4. [7] Nicolas, F., Canete, I., Tuladhar, S., 1992, Designing for Pedestrians: A CAD Network.
- [7] Ericsson K. A. & Simon H. A., 1993, Protocol Analysis: Verbal Reports As Data. Cambridge, Mass: MIT Press.
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