

## Investigating the tourism management of towns with cultural heritage

Jieh-Ren Chang and Tsung-Yueh Hsu,

National Ilan University, Taiwan

and

Mei-Chih Huang,

Nan Chiang Industrial and Commercial Senior High School, Taiwan

---

### Keywords

Tourism management, Towns with cultural heritage, Fuzzy set theory

### Abstract

*Tourism today has become the world's largest transnational economic activity. The goal of this study is to develop a model for investigation of the tourism management of towns with cultural heritage. It adopts fuzzy set theory as main analysis method for tourism industry to find the tourists' preference when they are visiting towns with cultural heritage. Eight factors were used to present the conceptualization of tourism destination image (TDI). Through the extraction of fuzzy rules, 198 rules were obtained, of which, 149 were "satisfied" with the tourism destination, accounting for 75.25%, and 15 were "neutral", accounting for 7.58%, while, 34 were "dissatisfied", accounting for 17.17%. On the basis of the results of this study, it shows that top management of towns with cultural heritage should put resources according to the priority as follows: (1) first priority: maintenance/integration of site architecture and historic-scenic wealth, (2) second priority: shopping and eating establishments, tourist-cultural management, and complementary tourist offer or infrastructure, (3) third priority: beauty of historic-cultural heritage and feelings generated by its perception, clean/peaceful atmosphere and feelings generated by its perception, as well as treatment of tourists/customer service and feelings generated by its perception.*

---

### Introduction

Tourism today has become the world's largest transnational economic activity. In early 21<sup>st</sup> Century, it has risen to become the top five export industries in 83% of the countries (Fayed and Fletcher). According to the statistics from UNWTO (2012), following the new political and economic behaviors brought by globalization, this has also changed the travel service preferences for tourists. Tourism planners must pay more attention to the new way of travelling, and focus on developing and exploring the new tourism trends of travel motivations and culture (Reisinger, 2008).

However, the invasion of globalization has downplayed the borders between countries. Along with bringing in a large number of foreign visitors, this phenomenon also means that the tourism destinations compete more intensely against one another internationally (Dwyer, Edwards, Mistilis, Roman and Scott, 2009). In order to enhance attractiveness of local travelling business, developing regional and local characteristics can raise the competitiveness against the wave of globalization. Cultural heritage is one of the choices of bringing competitiveness and innovation to a city or region (Sasaki, 2004 ; Alberti and Giusti, 2012). Although commercial exploitation of historical assets can promote the local social economic development, this will also cause the destruction of historical resources due to excessive commercial activities (Wang and Bramwell, 2012; Ho and McKercher, 2004). However, related studies have confirmed that a

mutual assistance cyclic mode could be formed between tourism and cultural heritage. In other words, cultural heritage brings profit for tourism, while tourism becomes the source of maintenance funding for cultural heritage (Alberti and Giusti, 2012; Holjevac, 2003; Li and Cai, 2008).

The goal of this study is to establish a model for managing towns with cultural heritage. The management of all tourism destinations should focus on enhancing their attractiveness and quality, as well as effectively using the limited resources in current environment (Crouch and Ritchie, 1999). Therefore, this study explores various towns with cultural heritage from the perspective of tourists. In addition, how these tourism destinations attract tourists and the tourists' evaluations on the towns with cultural heritage are also included in this study.

Being able to express the ambiguity part in human thinking is an important characteristic of fuzzy logic (Lin and Lee, 1999). In other words, fuzzy model is similar with the thinking model of human beings. This study therefore uses fuzzy model to analyze the preference rules of tourists who had experiences to visit towns with cultural heritage. Hereby, this research aims to develop a model for investigation of the tourism management of towns with cultural heritage. It adopts fuzzy set theory as the main analysis method for tourism industry to find the tourists' preference when they are visiting towns with cultural heritage. In the second part of this study, it does literature exploration on tourism destination image, and cultural heritage etc. The third section focuses on introduction of fuzzy set theory and fuzzy rules extraction algorithm. The fourth section gives a possible explanation for the results. Finally, the authors draw a conclusion and the suggestions for future research in the last section.

## Literature Review

Regions with cultural heritage or historical monuments are filled with charm, just like when we hear about Paris, we think about the Eiffel Tower, monuments or heritage are often able to become the most remembered image representations at these tourism attractions. Historical sites often play a major role in the old cities, because they hold great significance for the living space of the people (Nicoletta and Servidio, 2012; Fredericks, 1993). At the same time, they are one of the foundations in building the tourism industry. In addition, as part of the cultural heritage, historical monuments can enhance the sense of belonging for and the collective memory of the citizens of that country (Park, 2010). Historical heritage highlights the unique cultural significance for the various countries or cities; therefore, it is often used to assist the marketing of international tourism (Li, et al., 2008).

Towns with cultural heritage are towns and villages situated in a rural area with full of historical and cultural value (Royo-Vela, 2009). In the cases of research objects, the towns and villages that can arouse the memories once again in the community are all included in the scope of this study, such as those that have historical monuments, old streets, and that reuse old space.

## TDI Management

Tourism destination image (TDI) has become an important issue in the research of the tourism industry, because it affects the choice and satisfaction of the attractions for tourists (Castro, Armario and Ruiz, 2007; Joppe, Martin and Waalen, 2001; Han, 1990). Many countries are promoting and achieving the goal of raising self-image through global marketing, and are competing against the tourism destinations of other countries or cities (Lin and Huang, 2009).

The tourism industry often uses the marketing of culture, heritage, or natural scenery to raise their TDI. For example, using the folk dance or special text of a certain country or region as tourism advertising materials, or using a famous landmark as the background of a novel or movie are popular in tourism promotion (Frost, 2006).

### The Formation of TDI and Related Research

The concept of TDI was originally proposed by Hunt (Hunt, 1971). Since then, the studies of TDI started to get attention. The development process of TDI can be divided into two categories, namely static and dynamic. The research of choices of tourism destinations and tourists' satisfaction are in the static category (Baloglu and McCleary, 1999).

However, "image" itself is a term that is abstract and vague. In the 40 years since the term TDI has been brought up, scholars continue to try to conceptualize TDI. Through interviews with professionals in the tourism industry and tourists, eight factors were obtained to present the conceptualization of TDI (Royo-Vela, 2009). These eight factors include (1) beauty of historic-cultural heritage and feelings generated by its perception, (2) clean/peaceful atmosphere and feelings generated by its perception, (3) treatment of tourists/customer service and feelings generated by its perception, (4) maintenance/integration of site architecture, (5) historic-scenic wealth, (6) shopping and eating establishments, (7) tourist-cultural management, and (8) complementary tourist offer or infrastructure.

### Establishment of Fuzzy Decision Rules

Fuzzy theory has been widely studied and successfully applied in various fields, which has got remarkable achievements so far. These fields include automatic control, image identification, artificial intelligence, medical diagnosis, psychology, management science, decision support, weather forecast, environmental estimation, etc. (Lin and Lee, 1999; Jang, Sun and Mizutani, 2011). The fuzzy set defined by Professor Zadeh is represented by characteristic function  $\mu_A(x)$  in mathematics, in which the value of membership function is the degree of element  $x$  belonging to a fuzzy set  $A$  (Zadeh, 1965; Klir and Folger, 1992). Therefore, the function matches the elements in the universal set to another set that is between 1 and 0.

$$\mu_A : X \rightarrow [0,1] \quad (1)$$

Where  $x \in X$ ,  $X$  indicates the universal set that is defined for the specific problem, while  $[0, 1]$  refers to the range of real numbers between 0 and 1. Assume  $A$  and  $B$  are both fuzzy sets, with their membership function  $\mu_A$  and  $\mu_B$  respectively. The operation notations frequently used with the union set and intersection set of fuzzy set are shown as below:

$$\mu_{A \cup B} = \max\{\mu_A, \mu_B\}$$

$$\mu_{A \cap B} = \min\{\mu_A, \mu_B\} \quad (2)$$

Owing to the easy operation, the union set and intersection set of fuzzy set have become the most common computing process (Wang and Mendel, 1992). Accordingly, this study will apply the two operating factors into the deduction of *if-then* fuzzy rules and membership function (Kim, Lee and Lee, 1993). The vague linguistics between "yes" and "no" could be all represented by membership function values, which is the basic concept of fuzzy set theory. It aims to illustrate fuzzy phenomenon by mathematic methods.

### Problem Description and the Knowledge Acquisition Process

In this study, the tourism management of towns with cultural heritage is investigated. Eight attributes about tourism management of these towns were used for the study. In addition, fuzzy set theory is utilized to obtain the rules of tourist preference. This knowledge-based rules on the re-classification of tourist data improves the precision and enhances the effectiveness of decision-making. During the fuzzy deduction, we collect various data from complicated environments, and apply them in fuzzy deduction rules and membership functions to make the final decisions.

For the tourism management of cultural heritage towns, eight properties in these towns are investigated. Besides, the fuzzy set theory is also used to obtain the rules of tourists' preference. To sum up, the fuzzy system theory is scientific, advanced and practical, and can also provide correct guidance to our work. A new learning method for automatically deriving fuzzy rules and membership functions from a given set of training instances is proposed here as the knowledge acquisition facility. Notation and definitions are introduced below.

### The algorithm of fuzzy rules extraction

Data preprocess and fuzzy rule establishment are included in the fuzzy learning algorithm. A set of training instances are collected from the environment. Our task here is to generate automatically reasonable membership functions and appropriate decision rules from these training data, so that they can represent important features of the data set. The proposed learning algorithm can be divided into nine main steps:

- Step 1: data preprocess for the original data to avoid the disturbance of ineffective information;
- Step 2: the establishment and expansion of decision attribute linguistic terms;
- Step 3: cancellation of the residual conditional attributes;
- Step 4: clustering and fuzzification of the decision attribute;
- Step 5: construction the initial membership functions for input attributes;
- Step 6: construction of the initial decision table;
- Step 7: simplification of the initial decision table;
- Step 8: reestablishment of membership functions in the simplification process;
- Step 9: deriving decision rules from the decision table (Hong and Lee, 1996).

In order to avoid the disturbance of ineffective information, all the data should be preprocessed in advance.

### Results and Discussion

680 questionnaires used in this study were retrieved. Through the method of fuzzy preprocess, the eight condition attributes were reduced to five, and after screening, 536 of these questionnaires could be used. Through the extraction of fuzzy rules by the proposed algorithm, 198 rules were obtained, of which, 149 were "satisfied" with the tourism destination, accounting for 75.25%, and 15 were "neutral", accounting for 7.58%, while, 34 were "dissatisfied", accounting for 17.17%.

**Table 1: The number and proportion of the three decision rules**

	Satisfied	Neutral	Dissatisfied	Total
Numbers of fuzzy rules	149	15	34	198
Percentage	75.25%	7.58%	17.17%	100%

Speculation according to the rule proportions above, when the respondents were choosing the tourism destinations to fill out, they often respond using the most remembered tourism destinations as the representative. Therefore, most of the respondents respond according to the ideal tourism destinations that they have visited. Through the method of preprocess, this research has already transformed the ratings of 0~10 in the original questionnaire by fuzzy analysis into fuzzy linguistics, of which the linguistics of attributes A4 and A5 are segmented into 5 levels, namely "very good", "good", "barely acceptable", "poor", "very poor"; while attributes A6~A8 are segmented into 7 levels, namely "excellent", "very good", "good", "barely acceptable", "poor", "very poor", "extremely poor". The following table 2 shows the details of different levels of attributes mentioned previously.

**Table 2: Levels of attributes**

Attributes	Numbers of levels	Fuzzy linguistic terms of levels (form high level to low level)
A4: Maintenance/integration of site architecture A5: Historic-scenic wealth	5 levels	"very good", "good", "barely acceptable", "Poor", "very poor".
A6: Shopping and eating establishments A7: Tourist-cultural management A8: Complementary tourist offer or infrastructure.	7 levels	"excellent", "very good", "good", "barely acceptable", "Poor", "very poor", "extremely poor".

### The Deletion of Three Attributes

This study has undergone preliminary analysis and processing after the retrieval of the questionnaires. Due to the lack of identifying characteristics, the three attributes, A1, A2, and A3, were removed in the stage of fuzzy preprocess.

The possible reasons why these three attributes lack identifying characteristics are as follows:

- ◆ Attribute A1 (beauty of historic-cultural heritage and feelings generated by its perception): When tourists visit towns with cultural heritage, with respect to the abstract historical events and story, the feelings and understandings of the tourists are limited by their own culture, national consciousness, differences in sense of identity, and these will cause considerable differences in the answers. Despite coming to a 1000 year-old ancient battlefield, if the tourist lacks specific historical object, such as relics, old monuments or buildings, the tourist will also lack susceptibility for this destination.
- ◆ Attribute A2 (clean/peaceful atmosphere and feelings generated by its perception): When tourists that love bustling and tourists that love tranquility take a tour in towns with cultural heritage, two different views will appear with respect to the destination's environment in terms of cleanliness and quietness. The evaluation of these two types of tourists often corresponds to their own preferences. However, when responses of both bustling and tranquility preferences appear on a questionnaire, this also causes this attribute to produce an identifying characteristic result that is relatively



inadequate. This means that attribute A2 does not really affect the result in decision-making.

- ◆ Attribute A3 (treatment of tourists/customer service and feelings generated by its perception): This study found that even though passenger reception/services may influence a tourist's evaluation on the tour of a town with cultural heritage, in the majority of the responses from the tourist questionnaires, the scores obtained for this attribute is comparatively smaller in terms of its impact on the overall evaluation. It was speculated that the majority of the tourists might refer the final responsibility of the services they get from stores and restaurants to the providers of this service/reception, and rather than from the towns with cultural heritage.

### Rule Analysis

According to the fuzzy rule obtained from this study, the following results can be obtained:

- ◆ Result 1: From the inference of the fuzzy analysis result, the two attributes, "Maintenance/integration of site architecture (A4)" and "Historic - scenic wealth (A5)" are more indicative than "Tourist - cultural management (A7)" and "Complementary tourist offer or infrastructure (A8)" in terms of the tourists toward the tours in towns with cultural heritage. The degree of preference for these attributes (A4 and A5) and the overall evaluation of these towns with cultural heritage given by tourists are highly correlated. Table 3 is a further explanation of the 9 major rules from the 198 rules listed. From the analysis of Table 3, a phenomenon can be seen: the tourists paid more attention to attributes A4 and A5 than A7 and A8, in their influence on the perception of the visits to towns with cultural heritage.

**Table 3: The 9 major rules from the 198 rules**

	A4 Maintenance / Integration of site architecture.	A5 Historic- scenic wealth.	A6 Shopping and eating establishmen ts.	A7 Tourist- cultural management .	A8Complem entary tourist offer or infrastructur e.	Evaluation
Rule1	good	good	poor	very poor	very poor	satisfied
Rule2	very poor	very poor	barely acceptable	very good	poor	dissatisfied
Rule3	good	good	good	extremely poor	poor	satisfied
Rule4	barely acceptable	barely acceptable	good	barely acceptable	good	neutral
Rule5	barely acceptable	barely acceptable	barely acceptable	poor	poor	neutral
Rule6	poor	very good	barely acceptable	poor	poor	dissatisfied
Rule7	very good	very poor	good	poor	very poor	dissatisfied
Rule8	good	good	good	good	good	satisfied
Rule9	barely acceptable	poor	barely acceptable	poor	poor	dissatisfied

While comparing Rule 1 and Rule 2, both rules have respectively received two “very poor” and one “poor” of fuzzy linguistic terms. However, the overall evaluations were very different, the resulting evaluation of high level of fuzzy linguistic terms in A4 and A5 for Rule 1 ended up being far superior to those only receiving high level of fuzzy linguistic terms in A7 and A8 for Rule 2.

From the comparison of Rule 3 and Rule 4, it can be seen that receiving high level of fuzzy linguistic terms in A4 and A5 is more important than in A7 and A8. Rule 3 received a “satisfied” evaluation although it received “extremely poor” in A7 and “poor” in A8. In Rule 4, both A6 and A8 received “good”, however, with the fuzzy linguistics of attributes A4 and A5 receiving only “barely acceptable”, they are still evaluated as being “neutral.” This also showed that A4 and A5 play decisive roles in the overall questionnaire rating. Therefore, it was believed that the evaluation scores received in A4 and A5 for a historical destination positively impacts the final evaluation that the tourists give for towns with cultural heritage.

◆ Result 2: In the fuzzy rules, for attributes A4~A8, if three or more attributes are rated as “poor” or lower level in fuzzy linguistic terms, this town with cultural heritage will most likely be evaluated as being “dissatisfied.” On the other hand, for attributes A4~A8, if at least three attributes are rated at a level of or higher than “barely acceptable”, this town with cultural heritage will most likely be evaluated as being “neutral” or “satisfied”.

We will compare all the rules in Table 3, those rules that received “satisfied” and “neutral” are Rule 1, Rule 3, Rule 4, Rule 5, and Rule 8. Besides Rule 1, all these rules have received at least three positive fuzzy linguistic terms for the attributes A4~A8. Comparatively, out of the rules that received “dissatisfied,” Rule 2, Rule 6, Rule 7, and Rule 9 all received more than three negative fuzzy linguistics terms for the attributes A4~A8. Although not all the rules comply, this phenomenon was still able to be used as a rough reference for the evaluations of towns with cultural heritage.

### **Conclusion and the Suggestions for Future Research**

From this research, a fuzzy rule database of towns with cultural heritage is established to provide a fuzzy system inference decision-making model. This decision-making rule model can be provided to the tourist managers as a reference to establish tourism management. Tourism planner can use the eight attributes of TDI conceptualized by Roy-Vela as a reference.

However, the budgets of towns with cultural heritage are often limited. This research simplified the eight constituent elements into five, and in the end choosing two key attributes. While the budgets are limited, the tourism industry could use the resources in the most crucial attributes to create comparatively large benefit.

From the rule analysis, it can be speculated that when tourists visit towns with cultural heritage, they value “Maintenance/integration of site architecture (A4)” and “Historic-scenic wealth (A5)” of this area. With this phenomenon, the study proposes the following two interpretations:

**For “Maintenance/integration of site architecture”:**

In towns with cultural heritage, monuments play a major core role in the entire historical space (Nicoletta and Servidio, 2012), and also shape the atmosphere of ancient history. However, if during planning towns with cultural heritage, the surrounding buildings cannot effectively integrate with the historical monuments and shape an overall sense, then it is hard for tourists to have the perceptibility of being in the historical space, nor can the tourists figure out whether they are in the middle of a town with cultural heritage or just in a chaotic environment.

**For “Historic-scenic wealth”:**

Similarly, rich historical background and beautiful scenery increase the connotations of towns with cultural heritage. It is the main dividing line between towns with cultural heritage and other tourism destinations. Compared with A1 which was deleted during fuzzy pretreatment, A5 is a more concrete, visible, historical object representation. If a town with cultural heritage lacks this element, it is hard for tourists to feel that they are at a historical destination. They might even feel that they have just arrived at a place that is similar to their original space of living and activity, and consequently lose the sense of surprise brought from tourism.

On the basis of the results of this study, it shows that top management of towns with cultural heritage should put resources according to the priority as follows:

- First priority: “Maintenance/integration of site architecture and historic-scenic wealth”,
- Second priority: “Shopping and eating establishments, tourist-cultural management, and complementary tourist offer or infrastructure”,
- Third priority: “Beauty of historic-cultural heritage and feelings generated by its perception”, “Clean/peaceful atmosphere and feelings generated by its perception”, as well as “Treatment of tourists/customer service and feelings generated by its perception”.

From result 2, it shows that in order that a town with cultural heritage may receive positive image, it is necessary to let at least three of the above five attributes (A4-A8) to receive high level fuzzy linguistic terms. This allows limited resources to perform to its maximum effectiveness for the positive evaluations by tourists at towns with cultural heritage.

Lastly, this study still has parts that can be further researched or improved. In terms of the fuzzy linguistics, A4 and A5 attributes are of 5 levels, while A6~A8 attributes are of 7 levels, and 198 rules were produced. If the levels of the attributes are further simplified, fewer and more focused rules will be obtained, which will assist in providing management of towns with cultural heritage more simplified reference rules. In addition, further study can focus on different demographic groups to research on finer preference rule analysis. At the same time, this can help decision-makers to make future development plans for towns with cultural heritage that they manage, so as to cater to the preferences of different ethnic groups.

**References**

- Alberti, F. G., &Giusti, J. D. (2012). Cultural heritage, tourism and regional competitiveness: The Motor Valley cluster. *City, Culture and Society*.
- Baloglu, S., &McCleary, K. (1999a). A model of destination image formation. *Annals of Tourism Research*, 26, 868-897.



- Castro, C. B., Armario, E. M., & Ruiz, D. M. (2007). The influence of market heterogeneity on the relationship between a destination's image and tourists' future behaviour. *Tourism Management*, 28, 175-187.
- Crouch, G. I., & Ritchie, J. R. B. (1999). Tourism, Competitiveness, and Societal Prosperity. *Journal of Business Research*, 44, 137-152.
- Dallert, B. G. C., Etterma, F., & Lindh, C. (1998). Multi-faceted tourists travel decisions: A constraint-based conceptual framework to describe tourists' sequential choice of travel components. *Tourism Management*, 19(4), 313-320.
- Dwyer, L., Edwards, D., Mistilis, N., Roman, C., & Scott, N. (2009). Destination and enterprise management for a tourism future. *Tourism Management*, 30, 63-74.
- Enright, M. J., & Newton, J. (2004). Tourism destination competitiveness: a quantitative approach. *Tourism Management*, 25, 777-788.
- Fayed, H., & Fletcher, J. (2002). Globalization of economic activity: Issues for tourism. *Tourism Economics*, 8 (2) 207-230.
- Frederick, M. (1993). Rural Tourism and Economic Development. *Economic Development Quarterly* 7:215-226.
- Frost, W. (2006). Bravehearted Ned Kelly: historic films, heritage tourism and destination image. *Tourism Management*, 27, 247-254.
- Han, C. M. (1990). Testing the role of country image in consumer choice behaviour. *Tourism Management*, 19(4), 313-320.-320.
- Ho, P., & Mc Kercher, B. (2004). Managing heritage resources as tourism products. *Asia Pacific Journal of Tourism Research*, 9(3), 255-266.
- Holjevac, I. A. (2003). A vision of tourism and the hotel industry in the 21st century. *International Journal of Hospitality Management*, 22(2), 129-134.
- Hong, T. P., & Lee, C. Y. (1996). Induction of fuzzy rules and membership functions from training examples. *Fuzzy sets and systems*, 84, 33-47.
- Jang, J. S. R., Sun, C. T., & Mizutani, E. (2011). *Neural-fuzzy and soft computing*. PHI Learning Private Limited.
- Joppe, M., Martin, D. W., & Waalen, J. (2001). Toronto's image as a destination: A comparative importance-satisfaction analysis by origin of visitors. *Journal of Travel Research*, 39, 252-260.
- Kim, M. H., Lee J. H., & Lee Y. J. (1993). Analysis of Fuzzy Operators for High Quality Information Retrieval. *Information Processing Letters*, 46, 251-256.
- Klir, G. J., & Folger, T. A., (1992). Fuzzy sets. *Uncertainty and Information*.
- Li, M., Wu, B., & Cai, L. (2008). Tourism development of World Heritage Sites in China: A geographic perspective. *Tourism Management*, 29(2) 308-319.
- Lin, C. T., & Lee, C. S. G. (1999). *Neural fuzzy systems*. Prentice-Hall (Singapore) Pte Ltd.
- Lin, C. T., & Huang Y. L. (2009). Mining tourist imagery to construct destination image position model. *Expert Systems with Applications*, 36, 2513-2524.
- Nicoletta, R., & Servidio, R. (2012). Tourists' opinions and their selection of tourism destination images: An affective and motivational evaluation. *Tourism Management Perspectives*, 19-27.
- Park, H. Y. (2010). Heritage tourism: Emotional journeys into nationhood. *Annals of Tourism Research*, 37(1), 116-135.
- Reisinger, Y. (2008). International Tourism. *Butterworth-Heinemann Ltd*.

Royo-Vela, M. (2009). Rural-cultural excursion conceptualization local tourism marketing management model based on tourist destination image measurement. *Tourism Management*, 30(3), 419-428.

Sasaki, M. (2004). The role of culture in urban regeneration. *Quarterly Journal of Economic Research*, 27(3), 29-35(Osaka City University).

UNWTO. (2012). *Tourism Highlights, 2012 Edition*.

Wang, L. X., & Mendel, J. M. (1992). Generating fuzzy rules by learning from examples. *IEEE Transactions on Systems, Man, and Cybernetics*, 22(6), 1414-1427.

Wang, Y., & Bramwell, B. (2012). Heritage protection and tourism development priorities in Hangzhou, China: A political economy and governance perspective. *Tourism Management*, 33, 988-998.

Zadel, L. A. (1965). Fuzzy sets. *Information and control*, 8, 338-353.

---