

## RELIABILITY QUESTIONNAIRE RESULTS BASED ON DIFFERENT SYSTEMS OF GIVING INFORMATION<sup>1</sup>

Ayako Mori

Graduate school of engineering, HOKKAI-GAKUEN University  
S26/W11, Chuo-ku, Sapporo 064-0926 Japan  
6300113a@eng.hokkai-s-u.ac.jp

**Keywords:** Consciousness investigation, Information-giving

**Summary:** *This study analyzes the degree of change in AHP questionnaire results based on the difference in the examinee's knowledge of the evaluation object. First, the AHP questionnaire is administered three times to the identical examinees. For each administration, the system of providing information differs. The three systems for imparting information are ① a text description; ② a text description, a photograph and a map; ③ and a field inspection. The comparison of the questionnaire results showed that evaluation based on a text description and a photograph had almost the same value as the evaluation based on the field inspection.*

### 1. INTRODUCTION

For evaluations with AHP, it is ideal if the examinee knows the object in question well. However, when this is not the case, information about the object is presented to the examinee, and the evaluation is performed. It is assumed an evaluation in which the examinee knows the object well will be different from one in which the examinee does not know the object well. In this study, the AHP questionnaire is administered with varying quantities of information, and the degree of change in the estimated results is analyzed. The reliability of the questionnaire results is determined from the results themselves.

### 2. CREATING THE HIERARCHY

In this study, the object under evaluation was the sightseeing and commercial area in OTARU City, HOKKAIDO.

The five different alternatives were identified by means of field inspections and questionnaire results. The four criteria were selected via brainstorming and the KJ method. The hierarchy comprising these two groups is shown in fig.1

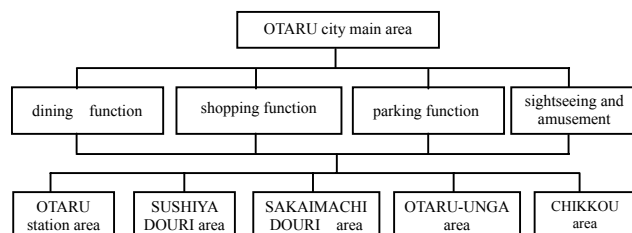


Fig .1 The hierarchy

### 3. ADMINISTRATION OF THE QUESTIONNAIRE

The group of examinees had minimal experience with Otaru City. They responded to the questionnaire in three administrations; each differing in the amount of information provided. For all three administrations, the questionnaire contents and the examinees remained the same.

#### 3.1 The first questionnaire

For the first questionnaire, only a table of text information was presented to the examinee with the questionnaire. The following is an outline of the administration procedures:

Date of administration: December 4, 2000. Place of administration: HOKKAIGAKUEN Univ.

<sup>1</sup> Acknowledgement: The author wishes to express deep gratitude to Professor Hideo Igarashi, Dr. Eng, of Hokkai-University, for his generous guidance.

Examinees: 10 people from the general population. Reference materials: Written descriptions of each area. The outline is shown in table 1.

### 3.2 The second questionnaire

Images as well as text were presented to the examinee with the questionnaire. Here is an outline of the procedures:

Date of administration: December 5, 2000. Place of administration: HOKKAIGAKUEN Univ. Examinees: The same as in the first questionnaire. Reference materials: The same written description from the first questionnaire, plus a map of OTARU city and photographs of each of the five areas were presented. An explanation was provided.

### 3.3 The third questionnaire

The field inspection was conducted by the 10 examinees, who then filled out the questionnaire. The following are the procedures: Date of administration: December 6, 2000. Place of administration: Each area in Otaru City. Examinees: The same as in the first and second questionnaires. Reference materials: Field inspection. In addition, materials from the second questionnaire (the written information and the map) were provided to the examinees.

Table 1 Outline of text information

① Dining function : number of the restaurant · type of the meal · features ② shopping function : type and number of retail stores ③ parking function : Available spaces times the parking multiplier · Average charge for 1 hour. The OTARU city parking lot list was also presented ④ Sightseeing and amusement : Facilities for recreation · representative facilities of the

## 4. ANALYSIS AND COMPARISON OF THE RESULTS

### 4.1 Comparison of the total weights

The comparison of the total weights of each questionnaire is shown in fig.2. The rankings for the second and third questionnaires are the same. However, the rankings in the first and third questionnaires are different.

### 4.2 Correlation coefficient of every examinee

The correlation coefficients of total weights of each examinee are shown in fig.3. The following facts were proven from fig.3. ① the correlation coefficients of the first and third questionnaires had maximum and minimum values of 0.990 and 0.510, respectively; ② the correlation coefficients of the second and third questionnaires had maximum and minimum values of 0.995 and 0.750, respectively; ③ for nine of the 10 examinees, the second correlation coefficient is higher than the first.

It was demonstrated that even when an examinee does not know the evaluation object very well, questionnaire results based on written and visual information are close to those based on the field inspection.

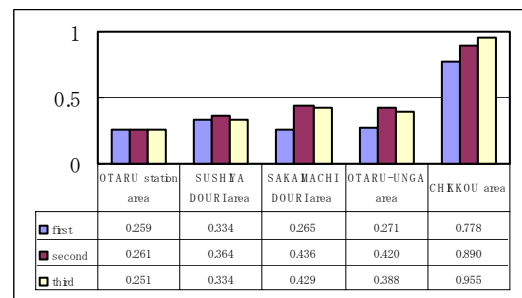


Fig.2 The comparison of the total weights

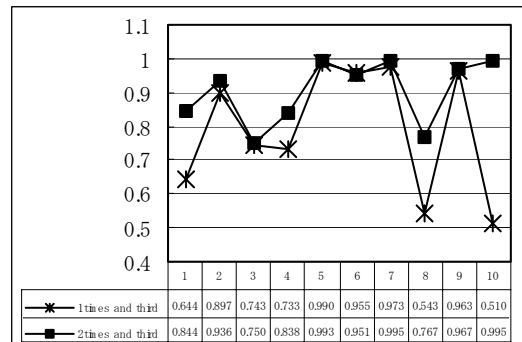


Fig. 3 The correlation coefficients of each examinee.

## 5. CONCLUSION

The main results of this study are: ① An evaluation based on visual information, such as photographs and maps, closely approximates an evaluation when the object is well known; ② If sufficient information is provided, the evaluation results are almost consistent, whether or not the examinee has knowledge of the object; ③ High reliability can be achieved even when only a moderate amount of information is provided.

When utilizing the results of this study, one should pay careful attention to the choice of photograph presented as visual information. For example, it is normal for the evaluation results to change if there is a difference between the object's appearance in the photograph and the actual object seen during the field visit. Therefore, it is best if people who know the field site well examine and select the photograph.