

## **The Making a Guide Line of Exterior Color Design for Color Coordination in The Commercial District**

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### **ABSTRACT**

The purpose of the study is to present the guide line of exterior color design in commercial district by the results of the analysis of the color characteristics on image types.

The process of this study is composed of four steps ; First, the color field surveys in commercial design data district are operated and their problems are grasped. Second, the characteristics of color environment and their problems are generally drawn by questionnaire analysis from a valuer point of view. Third, evaluation experiment is performed on well-founded color field survey, characteristics of color environment, and their problems according to the first and second steps. And the color characteristics on image types are analyzed by the multi-regression analysis and the quantitative evaluation structure is made out. Finally, the guide line of exterior color design in the commercial district is drawn up. The results of this study will be used for fundamental in case of exterior color design of the commercial district..

### **1. INTRODUCTION**

Color must be managed by a detailed guideline since it has much influence on the quality of scene because of its visual projectivity among other space elements that compose the scene. Nevertheless, since building exterior color plays yet as a major element that affects the scene because of the lack of color plan, the guideline to maintain the current scene shall be established. Accordingly, this study will express the characteristics of commercial district through an objective and quantitative method, create the design guideline of building color plan for the creation of pleasant scene color that the commercial district maintains will be in good order, contribute to guarantee a minimum level on building exterior color of commercial district and give the arranged order to the color system of urban scene.

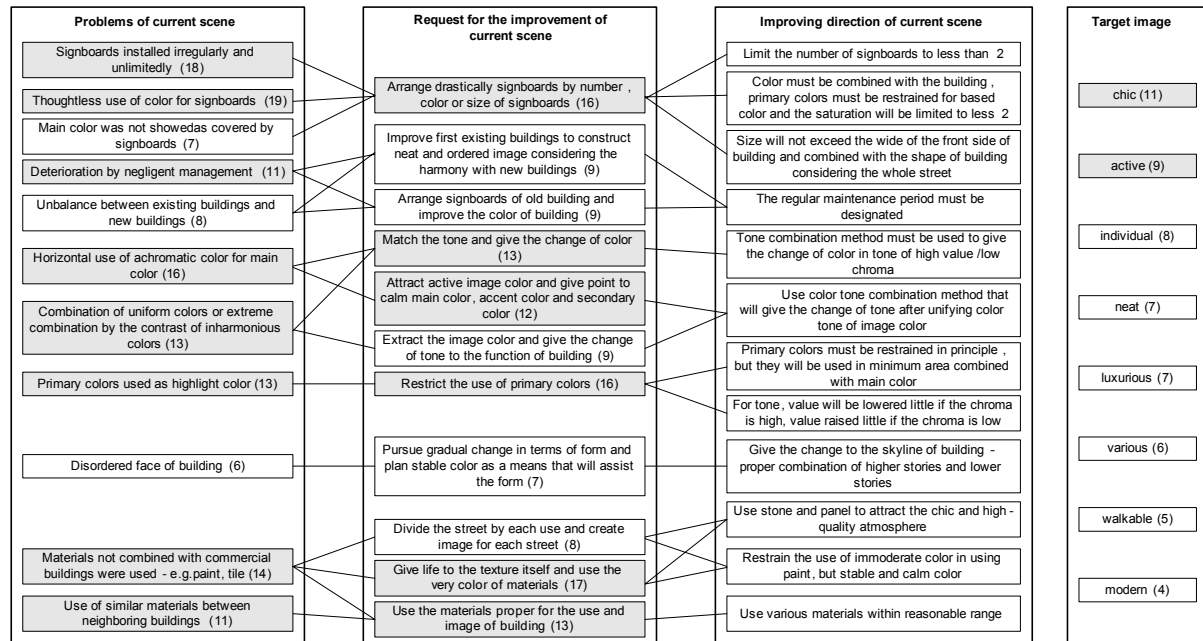
This study is composed largely of 4 steps; 1) extracting problems of the scene of commercial district and image analysis by photo evaluation experiment, 2) evaluation experiment for preparing color guideline of commercial district, 3) creating color characteristics network by urban scene, and 4) creating building exterior color arrangement guideline by image.

### **2. ANALYSIS ON COLOR ENVIRONMENT OF THE SCENE OF COMMERCIAL DISTRICT THROUGH PHOTO EVALUATION EXPERIMENT**

To extract more physically the problems of urban scene, photo evaluation experiment was performed by applying KJ method. 20 testees were selected around the graduate students in the department of architecture, as a group of professional.

4 major elements of photo evaluation experiment are (1) description on the image that each person think that urban scene must have, (2) description on the problem of current scene, (3) description on the correcting direction of current scene and (4) description on the request for the improvement of current scene.

The data were analyzed by applying KJ method; first, the details of questionnaire completed were arranged into simple sentences, which were arranged so that they can be viewed at a glance. Among them, 2~3 sheets that were considered to have similarity were grouped into small groups. Then, the details of small group were analyzed to create a typical sentence that showed its details and the frequency was showed according to its details after dividing them into most similar groups. As a result, the network was created as shown in Figure 1.



**Figure 1 : Results Analysis Network of Photo Evaluation Experiment for Commercial District**

The problems of commercial district were showed largely in 3; Color(combination between neighboring buildings, Color of single building) and materials including colors between neighboring buildings not combined with the color of signboards, number and amount of installation, high chromatic color for highlight color or color of materials not combined with commercial district. For the improvement of these problems, it is desirable to arrange number, color and size of signboards, to use tone combination method that will match to high brightness/low saturation and give the change of color or color tone combination method that will give the change of tone after unifying color tone system of image colors, and finally to use other materials to attract the polished and high-quality atmosphere. The target image was extracted into 8 images; “chic”, “Active”, “Individual”, “Neat”, “Luxurious”, “Various”, “Walkable” and “Modern”.

### 3. EVALUATION EXPERIMENT FOR CREATING COLOR GUIDELINE OF COMMERCIAL DISTRICT BY IMAGE

The purpose of this experiment is to extract proper coloring around combination type, to perform the evaluation experiment following the variables extracted the said photo evaluation experiment, finally to analyze the color characteristics by image type and to show the range of usable color by district in the quantitative evaluation structure.

For this evaluation experiment, the evaluation subject was produced by color simulation among the elevations of consecutive street scene based on the evaluation variables determined according to each property by combination type and district. And next, the color characteristics by image were analyzed based on the evaluation experiment by 7-step value method. For the analysis, factor analysis that is a method for technical statistics and Multiple regression were performed to analyze the evaluation structure of exterior color by district of urban scene and further the color characteristics by image type.

Commercial district was divided largely into general commercial district and business district. For the items of evaluation, all adjectives used for the previous study were extracted based on the target image extracted in the photo evaluation experiment and adjectives that were evaluated to have similar tendency were grouped. Among them, 19 typical adjectives that were considered to be appropriate for evaluating building exterior color of commercial district were selected.

The evaluation subject was produced in the point of view with the combination between neighboring buildings. For evaluation variables, 48 combinations of key colors were produced including 11 similar combinations, 6 color combinations, 13 tone combinations and 18 achromatic

combinations. Figure 2 shows an example of evaluation subject of general commercial district and business district.

30 testees were selected around the graduate students in the department of architecture, the group of professionals recognized to have perceiving and judging ability to building color.

As a result of factor analysis, general commercial district was summarized into 4 factors; factor 1 “modern”, “chic”, “becoming”, factor 2 “warm”, “smooth”, “active”, factor 3 “changeable”, “consecutive” and factor 4 “classical”. 4 factors of business district were summarized into factor 1 “modern”, “chic”, “becoming”, “consecutive”, factor 2 “warm”, “smooth”, “active”, factor 3 “classical” and factor 4 “changeable”.



a. General commercial district



b. Business district

**Figure 2 : Example of evaluation subject**

As result of multi-regression analysis, the multiple partial correlation coefficients of evaluation variables were shown in Table 1.

The color characteristics by image type were analyzed for each combination as follows;

For general commercial district, “modern” and “chic” image had much influence on similar combination with a cold color of high value/low chroma, PB of low chroma, R color combination, tone combination with liberal composition of high value/low chroma, and achromatic combination between high-value achromatic color and cold color of high value/low chroma. “Becoming” image had much influence on similar combination with warm color of high value/low chroma, R color combination of low chroma, tone combination with liberal composition of high value/low chroma and achromatic combination with a cold color of high value/low chroma. “Warm”, “smooth” and “active” image had much influence on similar combination with warm color and neutral color of high value/low chroma, color combination with YR. Y.N of low chroma, tone combination with liberal composition of high value/low chroma and combination between medium bright achromatic color and achromatic color with warm color and neutral color of high value/low chroma. “Changeable” had much influence on similar combination with neutral color of high value/low chroma, color combination with N, liberal composition of medium value/low chroma and combination between medium value achromatic color and achromatic color with high value/medium chroma. “Classical” and “grave” image had much influence on similar combination with warm color of medium value/low chroma, color tone combination with Y of low chroma, tone combination with contrast coloring of high value/low chroma and combination between high value achromatic color and achromatic color with warm color of medium value/low chroma.

For business district, “modern”, “chic”, “becoming” and “consecutive” image had much influence on similar combination with cold color of high value/low chroma, color tone combination with N, tone combination with liberal composition of high value/low chroma and achromatic combination of high value achromatic color and cold color of high value/low chroma. “Warm”, “smooth” and “active” image had much influence on similar combination with warm color and neutral color of high value/low chroma, color tone combination with R of low chroma, liberal composition of high value/low chroma and combination between medium bright achromatic color and achromatic color with warm color and cold color of high value/medium chroma. “Classical” image had much influence on similar combination with achromatic color of high value/low chroma, color tone combination with N, tone combination with liberal composition of high value/low chroma, combination between high bright achromatic color and achromatic color with warm color of medium value/low chroma. “Changeable” image had much influence on similar combination with neutral color of medium value/low chroma, color tone combination with YR of low chroma, tone combination with

liberal composition of high value/low chroma, combination between high bright achromatic color and achromatic color with warm color of medium value/medium chroma.

Figure 3 is an example that shows the above result of color characteristics by combination into network and color pallet around partial correlation coefficients.

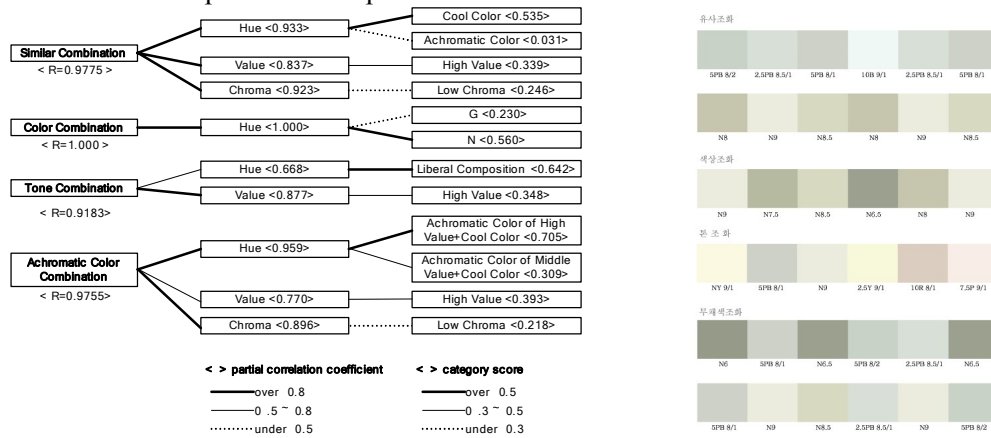


Figure 3 : Example of predictable model in becoming image

#### 4. COLORING GUIDELINE OF BUILDING EXTERIOR COLOR BY IMAGE OF COMMERCIAL DISTRICT

In this chapter, the coloring guideline of building exterior color by image of commercial district was created by synthesizing the above results. First of all, general commercial district must be more modern and polished than other places because it plays as a commercial center, where the active and changing image must be presented. Color guideline and applying pallet by each image are shown in Table 1.

Table 1: Color guideline of each image

	becoming	chic	modern	active	changeable
Coloring combination	Similar combination	Similar combination	Similar combination	Color tone combination	Achromatic Color
Hue	2.5R□2.5Y 5PB□10PB N	2.5R□10R 2.4PB□10PB N	2.5R□10R 2.4PB□10PB N	5YR□2.5GY N	5YR□2.5GY N
Value	Over 8.5	Over 7	Over 7	Over 8.5	Over 6
Chroma	Under 2	Under 2	Under 2	Under 5	Under 5

#### 5. CONCLUSIONS

It is expected that the result of this study will contribute to constituting higher quality and comfortable urban scene along with the guarantee of minimum level at the preventive level against disorder of building exterior color as this study will be used as basic data of systematic design for comfortable color scene by providing color image and pallet suitable for the characteristics of each image in basic plan for the constitution of urban scene of commercial district.

Future research tasks to further this study are the problems of signboards that almost cover the whole exterior wall of building within commercial district must be addressed systematically and scientifically and additional experiment on exterior color of apartments that occupy the large part of urban scene, through which more practical data must be obtained.

#### References

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