Features of Patterns Found by Diagramming the Analytical Study of Researches

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Abstract: This paper is a basic step toward the construction of various routes for providing information on research contents in the field of design. To examine the flow and the analytical study of research, this paper intended to determine the features of the patterns of research contents, and as such it conducted the following 4 analytical studies: 1) classification of the current status of research contents; 2) classification of theme words, simplification of theses, and diagramming and analysis of research contents; 3) patternization of diagramming using the patternization of investigation methods and the patternization of analysis progress types; and 4) the relationship between research fields and patterns. As a result, this paper identified four pattern features from the diagramming and the patternization of research contents: 1) common investigation method and mixed pattern analysis progress type; 2) common investigation method and regular pattern analysis progress type; 3) individual investigation method and mixed pattern analysis progress type; and 4) individual investigation and regular pattern analysis progress type. Based on this result, this paper expressed the analytical study and the progress type of research contents in the form of simple diagrams and patterns, and clarified the research fields that show a regular pattern type, which made it possible to predict the overall contents of research and easy to understand their characteristics. Accordingly, it is expected that the method defined in this paper can be used as a basic step in an information search, as the information route through a classification system.

Key words: Diagramming, Patternization, Analytical study, Prediction, Features of pattern, Types of analysis

1. Introduction

1.1. Background and Purpose

We are now living in midst of a flood of information. This situation has an effect on the field of professional research, to the extent that many research contents are submerged in this “flood” before they are transmitted to those who need them. In addition, it is not easy to search for research contents, and is even more difficult to summarize them and then use them as information. For these research contents to be easily used and have an influence in the real world, they need to be systematized to the extent that not only researchers in related fields, but also those outside the field, can have easy access. This is particularly now, with the growth of multidisciplinary cooperation[1], which is the method of solving a problem through cooperation between academic fields. A smooth method of communication is required so that professionals from several fields can gather to efficiently solve a problem that could not be solved by professionals in a single field. In the required communication method, researchers both in and outside of a specific field should be able to conveniently find and easily understand the information they require, and should also be able to search for the information with a reasonable period of time and at a low cost. These objectives can be realized through the construction of the information supply route via a database.
This route should be able to supply information in several steps to suit various types of users. This paper deals with the basic step of constructing various routes for the provision of information on research contents in the field of design. In order to examine the flow and the analytical study of research, this paper examined the current status of research contents, and then classified, simplified, and diagrammed them. The aim of this process was to identify the features of patterning.

1.2. Research Method

As the cases for analytical study in this paper, a total of 91 theses were selected from the thesis collection of ‘studies on design’ published in the Journal of Korean Society of Design Science 19 theses from Issue No. 40 (A) in 2001; 28 from Issue No. 42 (B) in 2001; 21 from Issue No. (C) in 2001; and 23 from Issue No. 44(D) in 2001. These were then investigated and analyzed.

The method of investigation and analysis for the construction of the information supply route for research contents is as follows: (1) Classification of the current status of research contents, (2) Diagramming of research contents: Classification of them words (Common the me words, Individual the me words), Simplification of theses, Diagramming and analysis of research contents, (3) Diagram-based patternization: Patternization by investigation method, Patternization of analysis progress type, (4) Relationship between research fields and patterns.

2. Results of Research on Actual Conditions, and Analysis

To examine the current status of research contents, this research classified each thesis collection into 2001-Issue No. 40(A), 2001-Issue No. 42(B), 2001-Issue No. 43(C) and 2001-Issue No. 44(D). It also classified them by purpose, target, period, place, field, and research method, and then used them as the basic data for diagramming. Any research contents whose period and place were not clear were excluded.

To diagram the research contents suitably for the research flow, this study selected the me words and divided them into words for common use and individual use. For the diagramming of the research contents, the following steps were used. In Step 1, the details of investigation analysis on the research contents were simplified. In Step 2, legends for diagramming were made, and in Step 3, diagramming was done.

![Diagramming](image)

This paper diagrammed a total of 91 research theses. C-9 shows (Figure 1) the structure, which consists of a total of 8 steps, from purpose to conclusion. The 8 steps are (1) purpose; (2) target; (3) investigation method; (4) investigation factor by target factor; (5) by investigation analysis factor; (6) factor; (7) factor; (8) conclusion. In particular, in the case of step 5, only one of the two is connected to step 6. In relation to the diagramming of the entire research contents, 20 theses had a total of 6 progress steps, 49 theses had 7 progress steps, 19 theses had 8 progress steps, and 3
theses had 9 progress steps. 7 progress steps were found most often, and a similar number of theses had 6 progress steps (20 theses) and 8 progress steps (19). Only 3 theses had 9 progress steps, which was the highest number of steps. B-1 has the same investigation factor and the same analysis progress type (common) in the step of classification by investigation analysis factor. B-26 has the same investigation factor and a different analysis progress type (individual) in the step of classification by investigation analysis factor. As shown in the above results, the diagramming of research contents can express the analytical study, which is progressed in detail in step ④, target factor by target factor, in the common and the individual type.

3. Patternization of Diagramming

Patterns by investigation method can be classified into the common pattern and the individual pattern as shown on Figure 2. The common pattern uses the same investigation method, and analyzes investigation factors based on target factors (by target get factor). There are a total of 14 patterns. The investigation method that is used most is the investigation of materials. This is the investigation factor type by target factor. As described above, 61 theses (67%) had different research contents, but used the same investigation method, so a certain pattern was made among them. As an individual pattern, there are the cases in which the same method was used, but the step of investigation factor by target factor was different. In those cases, 7 theses (7.7%) used the same investigation method as was used for the common pattern, but target factor, by target factor, investigation factor, and by investigation factor were different. In addition, there were another 23 theses (25.3%) that did not belong to those cases that used each different investigation method. Therefore, it can be said that 68 (74.7%) out of 91 theses are composed of a pattern conforming to the above type of analysis of investigation methods. Research contents can be classified by analysis progress type, as shown in Figure 3. First, like D-1~D-23, this paper divided analysis progress types into the regular type and the mixed pattern type. The regular type is in which research contents are analyzed in the same manner in all steps – target factor by target factor.
target factor), investigation factor (by investigation factor), by investigation analysis factor, and factor -, and the mixed type is that in which research contents are analyzed in a different way in each step. Of all the research papers, 7 theses (7.69%) had the regular type, while 84 theses (92.31%) had the mixed type. In the case of the regular type, the analytical study for the following step of target factor (by target factor) was that the research contents were analyzed by investigation factor and by investigation factor. That is, both the common and the individual pattern by investigation method and by analysis progress type used the mixed type (94.12%, 64 theses) most (the regular type: 5.88%, 4 these), which means that in the analytical study of the research contents, irregular progress is used more often than regular progress.

4. Relationship between research fields and patterns

In order to clarify the relation between research fields and patterns, patterns were analyzed by research field and investigation method, as well as by analysis progress type. Of the research fields, ‘the product’ had the mixed and the regular analysis progress type by common pattern investigation method. ‘Design process’ had the mixed analysis progress type by common pattern investigation method. Other research theses of the same field used the same pattern type. It was found that such research fields showing a regular pattern type have a lack of diversity in terms of the investigation method, and have an irregular analysis progress type.

5. Conclusion

This paper classified and analyzed the collection of theses published in the Journal of Korean Society of Design Science for the purpose of examining the flow and the analytical study of research contents and of constructing information supply routes. As a basic step to re-organize the analytical study of design research contents, this paper diagrammed and patterned research contents, and obtained the following results.

Of a total of 91 research papers, 68 theses were classified by pattern, and 4 features of patterns were found, as per the below: (1) Common investigation method and mixed analysis progress type, (2) Common investigation method and regular analysis progress type, (3) Individual investigation method and mixed analysis progress type, (4) Individual investigation method and regular analysis progress type.

In terms of the relationship between research fields and patterns based on the above 4 features of patterns, this paper could clarify that particular research fields show a regular pattern type. Through the features of the patterns of research contents, this paper could express the analytical study and the progress type of research contents in the form of simple diagrams and patterns, which will make it easy to understand the research features of all research contents. This can therefore be used as the information route through a classification system and as a basic step for content search. Through classification on the patterns of the research analytical study and its use, it will be possible to predict new research contents. For more stable diagramming and features of patterns, a comparative analysis of cases by nation will be made, and its result will be reported.

References