

Ukpeg" vjg" tgnvkvqpujkr" dgvyggp" vjg" ru{ejqnqikecn" hcevqtu" cpf" vjg" fgukip" ku" tgnvvgf" vq" jwo cp" rtegrvkqp" cpf" eqipkvkqp" cu" c" nkxkpi" dqf{." kv" ku" eqpukfgtgf" vjcv" vjg" relation is not greatly influenced by the type of the product and the targeted persons. On the other hand, the relationship between the production purpose and the psychological factors is related to advanced information processing, because it is about what kind of effect do those perceived from the product give human behavior. Therefore, it is considered that this is greatly influenced by the type of product and the targeted persons. In the elaboration likelihood model (ELM) [16], the information processing route for causing attitude change differs depending on the information processing ability and motivation of the consumer; the central route is reported as it uses more direct and logical information, and the peripheral routes are reported as they use rather indirect and sensory information. For example, in the case of a product catalog, some people may be motivated to purchase because of "easy-to-understand" catalog that explains the details of the product, and some people may prefer an "interesting" catalog that gives an image of the scene using the product. This also varies depending on the product type. The psychological factors required for product catalogs used in business and those used for an individual are expected to be different. This relationship is also influenced by the product type. For example, in the case of a service manual, it is considered that accurate and "reliable" information is written in an "easy-to-find" manner to achieve the production purpose. Usually, design patterns are infinite, and it is impossible to directly obtain the relationship between the production purpose and design for each type of product or targeted persons. However, in case of a psychological factor, it is possible to condense it to a statistically finite number using factor analysis, etc. In other words, in the case of relationship between production purpose and psychological factors, it is possible to organize by type of product or targeted persons. Furthermore, if connecting correspondence of psychological factors and design together, it is possible to explain the whole relationship between production purpose and design for each type of product or targeted persons.

4.3 Design management

By using psychological factors as mediators, design management using this is considered to be effective for the process of ordering design. So far, when ordering a production, clients had directly included specific design instructions such as layout and coloring in their requests. On the other hand, it may be sufficient to indicate by the psychological factors which are required for the product. In fact, clarifying the relationship between the production purpose and the psychological factors is conducted as market research. Therefore, it is feasible in the process on the client's side to determine what psychological factors will be focused on. On the other hand, designers who receive production orders often know the relationship between psychological factors and design as know-how. For example, in the field of color coordination, Nippon Color & Design research institute [17], which has spread the scale of "soft-hard" and "cool-warm," has a practical training program for educating designers in which learning the words representing image expressions corresponding to psychological factors and the corresponding colors. It may not be so difficult for designers to express something instructed by the psychological factors in a specific design. It is expected that an efficient production request process can be realized by instructing with psychological factors in the design work.

5. Experiment of design order evaluation

5.1. Ordering method in crowdsourcing

Up to this point, it was shown that instructing with psychological factors in design work could lead to the realization of an efficient process of ordering, but in actual crowdsourcing, we confirmed that there is no problem with this method. Using CrowdWorks [10], which is a comprehensive crowdsourcing website in Japan, ordered the actual design job in a competition type and asked the applicants to answer the questionnaire. As a result, we got 5 applicants. Also, the following answers are obtained from the questionnaire.

- 1) Production purpose is essential and should be more specific.
- 2) Production purpose is not sufficient.
- 3) There are two ways: leave everything to the designer or focus the client's image as much as possible.

As for 1), we got opinions such as *"It's easy to create if you present objective data such as the target audience, display place, and appeal points"*. There is an opinion that *"There are a wide range of design options, and it is expected that the concrete production purpose will be the criterion when making a concrete design. Because there are so many design options, it is expected that the specific production purpose becomes the criterion when dropping into an actual design."* As for 2), we got an opinion: *"There is an instruction saying to extract freely from HP and past works, but because it is a work of planners or copywriters, it will be more difficult and leads to decrease of the number of proposals"*. While production purpose is essential, it seems difficult for normal designers to drop into an actual design without other instructions. Furthermore, we got an interesting opinion as for 3): *"The method of leaving it to the designer is an effective way that emphasizes designer's ability and let them present unexpected expressions that the clients never imagine"*. We also got opinions such as *"When leaving it to the designer, the necessary information may be just words,"* or *"When focusing the image of the client, they need to specify the order (importance) of the words to be used, add pictures, colors, other posters to refer to, words to describe the poster image, and give more specific instructions."* When leaving to the designer, abstract instructions are required, and when focusing the client's image, more specific instructions are required. In the former case, there is a risk that the designers cannot handle the job depending on their skill, as described in the comment, and in the latter case, the job may be an operating task and reduce designer's creativity.

5.2. Classification of design ordering method

Here, we review the ordering method in the job related to design. As a method for ordering a design work, we propose three levels: production purpose, reader's feelings, and concrete design. It will be concrete in this order, but the amount of instructions will also increase. Also, if you give all the instructions at the same time, there is a possibility of conflict. The reader's feelings correspond to psychological factors in the former chapters. In order to simplify the instruction to the minimum required, it may be important at what

degree of instruction is included in the order. The targeted persons and concept of the product are included in the production purpose. The desired image and the desired color which are prepared on the current crowdsourcing website, are included in each reader's feeling and design.

5.3. Outline of design order experiment

We ordered the job related to design to the designers employed by Fuji Xerox group companies in a competition type. Because the designers were distributed in Tokyo, Yokohama, Osaka and Fukushima, they used email and file servers. We used a file server to provide and deliver materials and exchanged the order request and questions via email.

[Competition for production of a volunteer recruitment flyer]

Event: "Fuji Xerox Super Cup Volunteer of inviting children with intellectual disabilities"

Application due date: 15 December (Mon) - 26 December (Fri) 2014

Deliverable: A4 size (PDF)

* A gift voucher will be awarded upon adoption.

This volunteer event is called "Hasu (fraction) Club" and asks participants for the fraction (less than 100 JPY) of their salaries. An independent volunteer group that conducts activities with the contribution was holding the event. Therefore, it was suitable for this evaluation experiment as it was not subjected to design restrictions by corporate identity (CI). In fact, we called for approximately 30 designers working in the following 8 departments in 7 companies. As a result of recruitment, we got 10 proposals from 7 designers in 5 companies, and the deliverable obtained was satisfactory to a person actually planning events.

5.4. Details of the experiment method

In the evaluation experiment, the designers employed in the Fuji Xerox Group companies were ordered with different instructions, and evaluations of the designers about the instructions was compared. This time, the target was not the general crowdsourcing site, but the in-house designers of each group company in order to verify the same product by changing the ordering method. Because different ordering conditions will also be disclosed on a general crowdsourcing site, so it is considered that there is a risk that the contractor will apply only for the competition of the desired conditions and statistical comparison cannot be done. Ordered with different contents that combines three levels of instructions at random; production purpose, reader's feeling, and design. we also considered making 3 groups per each instruction, but because there was also a risk that the number of applicants could not be sufficient, we changed to verify multiple groups with small samples by combining the instructions. The specific instructions of three levels are as follows.

<Production purpose>

- To let many people apply for the event who had not participated in volunteer experience

<Reader's feeling>

- Prominent
- Interesting
- Feeling something possible done by own
- Feeling contribution to society

<Design>

- Please make the word "volunteer" bigger.
- Please use many photos.
- Please make the color noticeable.

The designer's evaluation of the ordering was measured by a Likert scale (appropriateness, easiness of understanding, specificity, and objectivity). The specific scales are as follows.

Appropriateness

(5: appropriate, 4: somewhat appropriate, 3: neither is, 2: somewhat inappropriate, 1: inappropriate)

Easiness of understanding

(5: easy to understand, 4: somewhat easy to understand, 3: neither is, 2: somewhat not easy to understand, 1: not easy to understand,)

Specificity

(5: specific, 4: somewhat specific, 3: not neither, 2: somewhat abstract, 1: abstract)

Objectivity

(5: objective, 4: somewhat objective, 3: not neither, 2: somewhat subjective, 1: subjective)

5.5. Result

12 designers answered the evaluation of the ordering method. An analysis of variance of appropriateness, easiness of understanding, specificity and objectivity was performed depending on whether the order content includes production purpose, reader's feeling and design. As a result, a statistically significant difference was found about appropriateness and easiness of understanding. Firstly, appropriateness was improved ($F(1, 8) = 6.40, p < 0.05$) when instructing reader's feeling (see Figure 4).

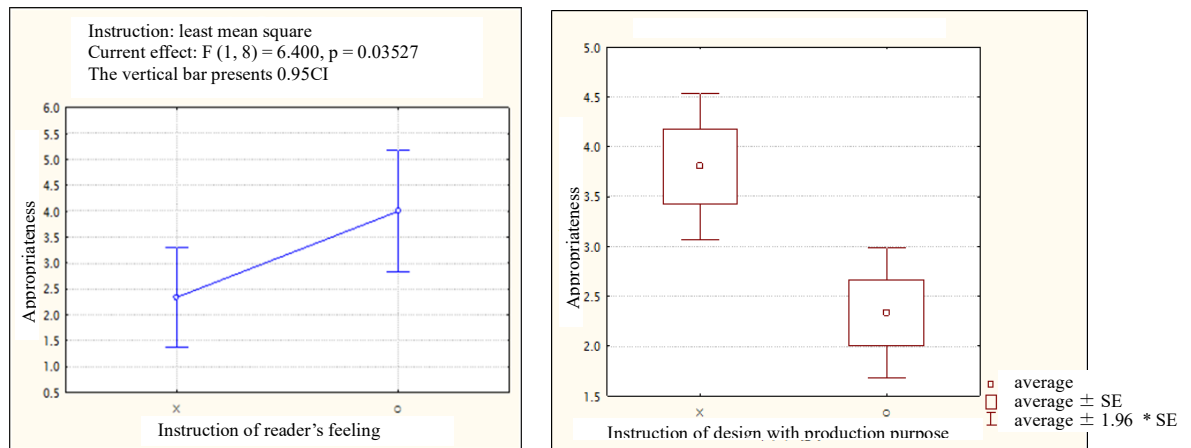


Figure 4: Difference in Appropriateness with/without instruction of reader's feeling

Next, easiness of understanding was improved ($F(1, 8) = 5.88, p < 0.05$) when instructing reader's feeling, in particular, in the absence of an instruction for production purpose ($F(1, 8) = 10.05, p < 0.05$) (see Figure 5). Herewith, it is considered that reader's feeling can complement production purpose in terms of easiness of understanding. Appropriateness decreased ($t = 2.64, f = 6, p < 0.05$) when instructing production purpose and design at the same time (see Figure 4). The cause of this is imagined at the moment, but it is thought that the design instruction may contradict the production purpose. The design instruction approaches the mere operation instruction, and thus may reduce the motivation to create. It may be noticeable when the contradiction is felt between the instruction of design and production purpose.

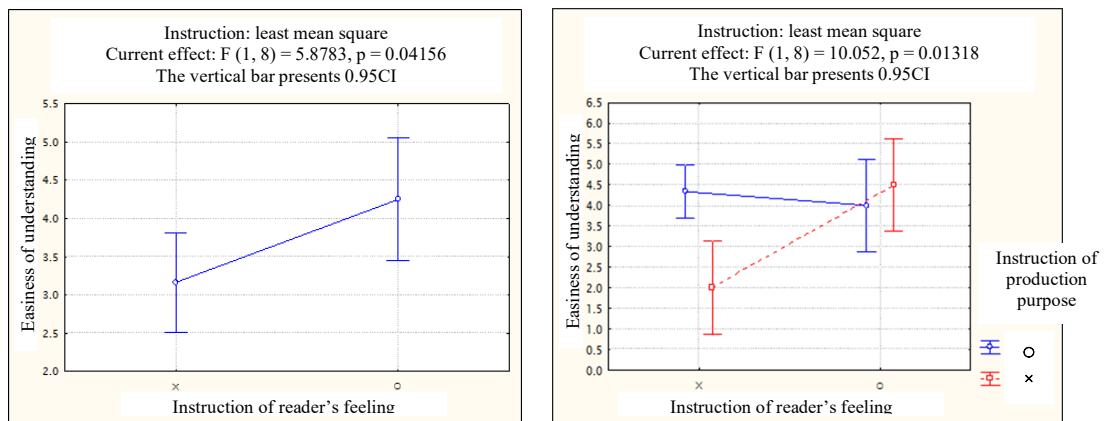


Figure 5: Difference in Easiness of understanding with/without instruction of reader's feeling

With regard to specificity and objectivity, no statistically significant difference was found at this time.

The designer's questions for confirmation that were exchanged from ordering to application were classified into three types: concept image, material usage, and output form. A group whose order contents did not include reader's feeling asked a question

about concept image, but no other group asked about this. The following comment was given from the designer who asked the question about concept image.

“I would like to know the details of the presentation of the planning concept, themes and requests, and the target group (who should I appeal to?).”

“Isn't this method difficult for design proposals as a solution to the vague needs and requirements of the client?”

“I would like you to describe in more detail the part of the person who has no experience as a production purpose volunteer.”

On the other hand, questions regarding material usage and output form were the same from all groups. In this experiment, because it was a competition type, there was no pre-contractual interaction like the project type, and the absolute number of questions was small, so statistical verification could not be performed. However, if the contents of the order include reader's feeling, it may be possible to reduce the number of questions asked by the designer for confirmation, especially regarding the concept image. In addition, this time, 2 designers have made multiple proposals. Both were designers of groups whose order contents did not include reader's feeling. Even if the ordering content includes the production purpose but does not include the reader's feeling, it is possible to assume that multiple images are produced, so it can be imagined that multiple proposals have been made in advance. Since this time it was a competition type, it is not a bad thing that many proposals gather, but in the case of a project type, it is effective to include reader's feeling in the order contents in order to reduce the effort of the contractor. From the results, it was not possible to statistically verify that the number of questions of the designer for confirmation decreases when the order is placed in the reader's feeling. However, there is such a tendency, and it cannot be denied.

6. Conclusion

6.1. Results and discussion

We presented that there are three levels; production purpose, reader's feeling and specific design concerning the ordering method of the jobs related to design. Among these, by ordering including reader's feeling, it was expected that the difference in the image of the deliverables of the client and the worker would be small, and the worker's evaluation on the order method would be high. In this regard, it was statistically confirmed that the appropriateness and the easiness of understanding improve when the order content includes reader's feeling. In particular, in the absence of an instruction for production purpose, the instruction of reader's feeling helps to enhance easiness of understanding. Herewith, it is considered that the inclusion of reader's feeling in the order has enhanced the worker's evaluation on the ordering method.

On the other hand, it is not yet known how the client's evaluation differs depending on the difference in the ordering method. We consider that the survey results of aforementioned "Promotion program of utilizing crowdsourcing at The Small and Medium Enterprise Agency 2016" [11] will become a good reference. In this ordering

experience program, the crowdsourcing producer was supposed to support the definition of requirements at the time of ordering from the following viewpoints.

- Clarify and specifically describe the purpose and outline of the production of the flyer with using templates.
- Specify the desired image, etc. with using U/I to tell the worker the image of the deliverable.

The former corresponds to production purpose and the latter corresponds to reader's feeling. Herewith, it is considered that if the crowdsourcing producer supports the definition of requirements from these viewpoints, the number of applicants and proposals might increase as the worker accepted it well. Further, 77% of the respondents claimed "placing order / defining requirement" as the part that they asked crowdsourcing producers for help. It was the highest ratio among other particulars such as "member registration (41%)", "correction request (32%)", "selection of worker (40%)", and "inspection of deliverable (16%)".

6.2. Limitations

The verified jobs were limited to the jobs related to design at this time. The characteristic is that the readers decide whether the production purpose can be achieved or not, and it is not by the client or the worker. For this reason, this survey does not mention the quality of the deliverables. The results may not be applicable to regular operations such as development or desk work that are different from design work. However, we consider that there is a possibility applied to the business of producing products that depend on customer's mind such as marketing.

6.3. Future perspective

With regard to the worker's evaluation, we examined what causes the satisfaction level of the client, based on the survey result of "Promotion program of utilizing crowdsourcing at The Small and Medium Enterprise Agency 2016" [11]. We asked people with actual ordering experiences whether the definition of requirements was successful or not. The result showed that the number of applicants and proposals increase and the satisfaction level of the client is enhanced as the definition is written successfully. From the contents of seminar of the ordering experience program, it is expected that the requirements have defined more successfully as the order includes more production purpose or reader's feeling. In order to clarify this, it seems to be necessary to individually confirm what kind of instructions the client has given. We intend to present the possibility of simplifying the instruction and enhancing worker's evaluation through ordering with reader's feeling. Also, the number of applicants and proposals will increase and the orders will be more effective ordering for the clients. In addition, we have not directly mentioned the improvement of the order acceptance ratio and avoidance of problems which are the current issues of crowdsourcing, but we hope that the results in this study will contribute to these issues.

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