A Practical Experiment in Boosting Crowdfunding Projects by Cultivating Collective Intelligence

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1. INTRODUCTION

We conducted several case studies of vitalization in the rural and urban areas of Japan by using a combination of dialogue-based workshops and the crowdsourcing (CS) as a collective intelligence (CI) method [Takahashi et al. 2014]. Japan faces with many social problems, such as a declining birthrate, an aging population, and a lack of sustainable energy recourses. These issues involve different types of potential complexities--dynamic, social, and generative--that lead to problem-solving difficulties within existing processes and organizations [Kahane 2004]. However, solving them provides opportunities for innovation through the collaborations of multi-stakeholders, such as local governments, industries, educational institutions, non-profit organizations, and so on. The collective intelligence of a diverse group of people, including a few experts, may be more potent than that of just a few experts, when a specific expert cannot be found [Page 2008]. In our case study, even though local residents, who were non-experts, did not have solutions to a problem, they had much information about it and a future vision that they wished to achieve. We think that the collective intelligence of local residents and the crowds connected to them will engage in new approaches to resolve complex matters [Mitsui et al. 2014].

Crowdfunding has attracted attention as a method for fundraising from a large number of people [Belleflamme et al. 2014]. Research has indicated that crowdfunding was useful in solving social problems [Hansen et al. 2014]. Even though the usefulness of popularity, which increased, was examined, it was difficult for ordinary people to start a project on a crowdfunding platform. These snags may arise from the unclear purpose and social value of the project. In this paper, we propose a process to address this difficulty, conduct a preliminary experiment, and consider the results.

2. Experiment on Collective Support

We examined improving the quality of six crowdfunding projects for four days. These projects were related to the forest industry, agriculture, and civic communities. Each project owner was requested to provide the following input information: a project summary, a storytelling movie, and related pictures. Based on the input information, six supporters organized collective support in order to arrive at a final version of the project. The six supporters were students, aged $20 - 23$, who were non-experts in the project. As Figure 1 shows, the collective support that we proposed is divided into five steps: the reading of a project summary, written by an project owner; the viewing of an owner's storytelling movie; the calling of the owner; the making of a project poster that has the same format as one used in the crowdfunding platform; and the holding of a dialogue with a diverse group of people.
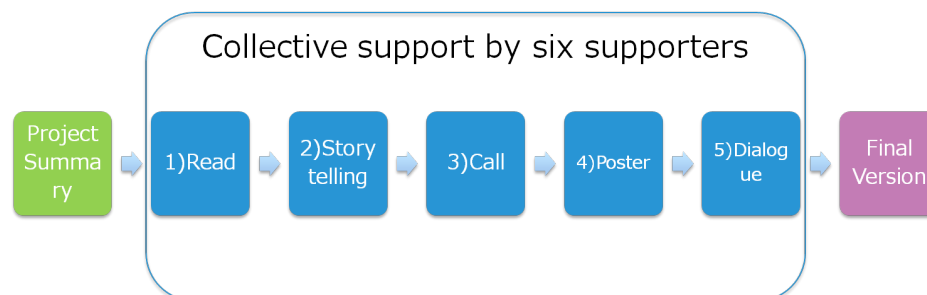

Figure 1 Steps for collective support

Table 1 shows the overview of the six support steps, including the each step's purpose, input, process, and output. In each step, supporters updated a project description of 1000 characters as the output of that step and the input in the next one. Five versions of six descriptions were respectively evaluated by crowdsourcing in order to estimate the project's quality. The crowd answered five questions, each based on a Likert scale of five, in each description of the project. The number of the crowd that answered each question was 100. Thus, the total number of answers that we received from the crowd was 15,000. The supporters used the crowdsourcing results as input information for step 3 to step 5. The sociological characteristics of the participants of dialogue-based workshop were of diverse occupations and ages.

Table 1 Overview of collective support steps

#	Name	Purpose	Input	Process	Output
1	Read	Understanding the project	Project summary	Supporters read the project summary written by a project owner	V0
2	Storytelling	Understanding the vision	V0	Supporters view a movie of a project owner's storytelling	V1
3	Call	Understanding the detail	V1, and CS results of V0	Supporters call a project owner	V2
4	Poster	Making the project more impressive	V2, and CS results of V1 and V2	Supporters make a project poster including the pictures	V3
5	Dialogue	Obtaining various viewpoints from the experience of participants	V3, and CS results of V3	A dialogue-based workshop with 39 participants	V4

There are three types of CI support. As Table 2 shows, each type has a distinctive characteristic in term of its size and level of understanding. The size of CI may affect the level of improvement of the project. Because the supporters took a longer time than others to organize all the steps of collective support, their level of understanding can be thought to be high. As for a crowdsourcing, since each crowd took only a few minutes to answer simple questions, its level of understanding can be regarded as low. Dialogue can improve a project through the conversations of participants with diverse viewpoints. Because the process took three hours, the level of understanding of the project can be thought of as middling. It is also expected that the integration of different types of CI may have a mutually complementary effect.

Table 2 Type of CI support

Type of CI support	Size of CI	Level of understanding
Supporters	Small (6 participants)	High
Dialogue	Middle (39 participants)	Middle
Crowdsourcing	Large (15,000 answers)	Low

3. Results and Discussion

The crowdsourcing results were also used to evaluate the difference in quality of the previous project's description and that of the next one. Figure 3 shows the average rank of each version of the project description. These average ranks were calculated from all crowd answers. We conducted a non-parametric analysis, a Kruskal-Wallis one-way analysis of variance by rank, in order to confirm whether the samples originated from the same distribution. A Ryan test was used for multiple comparisons. As a result, statistical significance was observed between V1 and V2 ($p < 0.05$). Between V1 and V2, the supporters referred to the result of calling an owner and the first crowdsourcing evaluation in order to improve the project description. There are two kinds of explanation of this statistical significant difference. First, the supporters had a deep understanding of an owner's vision

through interactive communication with him or her. Second, the supporters objectively understood that the project that was based on the first crowdsourcing results had many potential customers. In any other pair of the versions, a statistical significance was not observed. From these results, we confirmed that collective support could be partly effective.
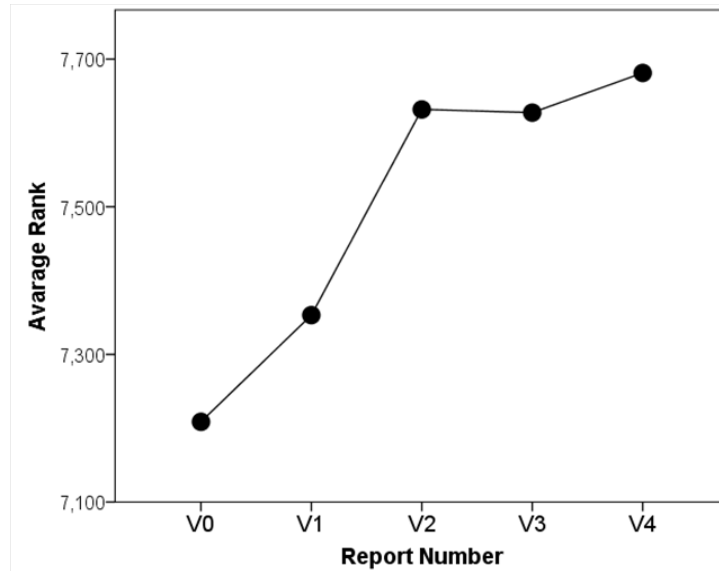

Figure 3 Average rank dependences of report versions

After finishing the collective supports, the project descriptions were returned to owners. We conducted interviews with all owners about how they felt about the revised descriptions. After the feedback, the owners recognized that the project description should include a right purpose, an understandable and reasonable social value, and a customer viewpoint. Examples of the importance of various CI supports are shown in Table 3.

Table 3 Examples of the importance of related type of CI support

Brief summary of Project	Draft	Revised by Owner	Importance	Type of CI support
Lively, elderly community, using traditional vegetables	"Traditional vegetable revival" was the main message	"Making an elderly community lively" will be the main message	Right purpose	Supporters
Agricultural activation	"Agricultural products" were rewards for investors	"Agricultural experience" were rewards for investors	Understandable and reasonable social value	Dialogue
Future community creation through paragliding activity	"Paragliding activity" was the main message	"Future creation" was the main message	Customer viewpoint	Crowdsourcing

These results indicate that each type of CI support deepened the owner's understanding. The owners decided to change their project descriptions through feedback. At present, one owner had already submitted a project to the crowdfunding platform to make it public, and the other owners were improving their projects.

We think that collective support may be useful for local resident actions. More studies are needed to clarify the effect of each type of CI on improvement and decision-making factors.

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