

Exploratory Research on the Impact of Interest Similarity for Products on the Origin of Information for Innovation

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1. Introduction:

Information and knowledge are quite necessary for activities toward innovation since innovation is the fruit of combining business resources as Schumpeter said (Schumpeter, 1912). Mark Granovetter created theories in the modern sociology, especially on the spread of information in social network. He discovered the fact that weak ties will enable to reach populations and audiences that are not accessible via strong ties in a lot of fields, such as marketing, information science, or politics (Granovetter, 1970). Although exceptions were also reported (Watanabe, 1992), his paper has left a large influence on sociology.

Granovetter has defined the strength of ties according to 4 aspects: intimacy, communication, emotional strength, and mutual beneficial activities: In other words, a tie is a bundle of these four relationships.

This kind of ties can act as the bridge to transmit the information. A lot of researches have shown that similarity is one of important factors that affect interpersonal attraction. Newcomb's experiment proved that people who have similar tendencies of subjective cognition or personalities tend to be intimate and communicate in a high frequency (Newcomb, 1961). Based on previous studies, we obtain the conclusion that the interest similarity acts as one kind of important factors to affect interpersonal attractions and the more similarities they share, the stronger ties emerge between them. Thus, we are also concerned with interest similarities as one kind of ties to transmit information and factors affect innovation activities.

2. Experiment

Considering the relationship between interest similarity and innovation activities, here we propose a social psychology experiment, with referring to card brainstorming game designed by Takahashi

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(Takahashi, 2002). Our experiment consists of four parts. (1) interest similarity evaluation experiment, (2) scenario creation experiment, (3) idea creation experiment, (4) idea evaluation experiment.

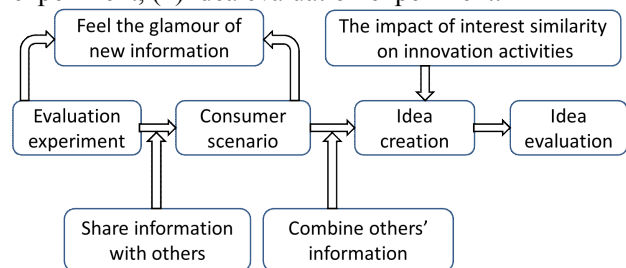


Figure 1 Contents of experiment

Figure 1 shows the process of our method to simulate the innovation activities. The impact of interest similarity on innovation activities will be reflected to the experimental process for evaluating ideas created.

Step1: Evaluation of interest similarities: Every participant reads a series of reading materials in a limited time (The reading materials were introductions of 11 kinds of coffee. Each material included the picture of the coffee and a brief introduction. After that, each informant was instructed to give a grade for each coffee from 0 to 10 points according to their opinions). Once they have strong desires to buy the kind of coffee, they will give high points; otherwise they will give lower ones. (10 minutes for this step1)

Step 2: Scenario creation experiment. The informants were asked to think about the scenario of drinking coffee. And the scenario what they were imagining about should be related with 5 attributes of coffee (Mellowness, Sweetness, Flavor, Sour, Bitterness). As soon as they have got the scenario in mind, they would write down the obtained scenario on the card. (10 minutes)

Step3: Idea creation experiment: Each member in the group was asked to look at others' cards and to remember the scenario written down by and imported from others. Then, they should create new

business strategies, such as proposals of menus for coffee bars. (20 minutes)

Step4: Idea evaluation: Informants were asked to give a grade for other group's ideas from 1 to 5 points in 3 aspects: Creativity, Usefulness, and Feasibility.

3. Result Analysis:

We can regard informants' rating evaluations got from evaluation experiment as vectors. Based on these data, we use Pearson's correlation coefficient to determine the similarity between these vectors.

Pearson's correlation coefficient, defined as ρ below, varies from -1 to 1:

$$\rho = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

While $1 \geq \rho > 0$, it means A and B share common interests and their interests vary in the same dimension. While $-1 \leq \rho < 0$, A and B have opposite interests and their interests vary in the opposite dimension. Forty informants were selected to take part in this experiment and they were randomly divided into 10 groups. As for result, we find creativity points of ideas created from cases where ρ ranged in [0.46, 0.55] is high, the average creativity point will be 3.608, while average creativity point of ideas of other periods was 3.17. Also, while $\rho < 0$, especially around -0.5, originalities of ideas also tend to be high. Since we only get one samples created from the information of $\rho = -0.48$, this time we take them as a sheer exception and not have a specific discussion about the result of the period while $\rho < 0$.

4. Conclusions:

The results suggest interest similarities act as one kind of ties to transmit the information during innovation activities and ideas got from innovation activities are affected by middle-range interest similarities. The impacts can be interpreted as follows:

- (1) Informants who share intermediate common interests to some extent will think out creative ideas easier by utilizing information got from each other. Two reasons may lead to this fact. First, interest similarities can also be regarded as one kind of tie. Weak ties can transmit simple but new information during social network. Meanwhile, strong ties also have advantages in spreading tacit and daily-use knowledge (Hansen, 1999).
- (2) If peoples' interests vary in different dimensions to some extent, appropriate amount of new visions can be offered from each other. This new vision may act as one kind of new materials for innovation. Once

the number of innovation materials is too large or too small, negative effects may happen due to the information over flow.

5. Future work:

In this paper, we designed an exploratory experiment to explore the relationship between interest similarities and innovation activities and got results. Nevertheless, we still have rooms to improve. First of all, we need some objective evaluation standards to evaluate the created ideas so that we can understand the qualitative effects of weak ties quantitatively. However, contents of ideas should also be taken into consideration in the further experiments, because novel ideas are hard to be evaluated on predefined numerical criteria. This hard dilemma is still an open problem for studies in creativity. Second, this time because of restrictions of objective conditions, such as time, areas and informants' personal terms, etc., we ask 40 informants to join in our experiment. In the further work, we shall increase the samples of experiment to eliminate randomness and fluctuations existing in our experiment and the effect of creative talents of people affecting on results of experiments. We hope our methods and attempts will bring new hints for methodology.

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