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Visualize the Organizational Cultures in a Japanese Manufacturing Company with Multi-Dimensional Scaling

How Do We Change Corporate Culture?

Research-in-Progress

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Abstract

There are many companies which try to change their organizational culture to adjust with their business environment and to win market, but most of them seem struggling with the initiative due to the invisibility of organizational culture. We proposed a method to visualize organizational culture, using multi-dimensional scaling analysis with 39 keywords extracted from Cameron and Quinn (2006). Applying the method to a Japanese manufacturing company, we tried to visualize a corporate-level organizational culture and 10 department-level organizational cultures. The results and the interpretation of them were evaluated as good by three employees in the company since they were described the cultures well. Thus it could be an effective method to visualize organizational culture.

Keywords: Organizational culture, visualization, multi-dimensional scaling, organizational culture change

Introduction

We are surrounded by changes in the business environment. We must change ourselves to the environment changes for survival. Company also change to respond to the changes in the business environment with the aim of becoming a going concern.

The change includes not only a change to the external business environment but also a change to the internal business environment. The former one is what happens outside a company including politics change, market change, economical change, administrative change, technology change, consumer behavior change, competitors' behavior, business partners' behavior, alternative replacement, new entrant to the market, and etc. The latter one is, on the other hand, what happens inside a company including tangible and intangible assets like organization capability, employees' skill, equipment, fund, brand and their shared value. Company, which is eager to survive in the rapid changing business environment, should optimize not only their strategy, organizational structure but also organizational culture including employees' mindset.

Organizational culture is however normally invisible to us so that we capture it through our sense. Not seeing it, we feel generally difficult to describe organizational culture in a company and we may

sometimes realize that one's recognition to the organizational culture is different from other recognition to it. When we try to change organization culture, we should know the current culture. It is however hard to describe it well because of the invisibility. Thus, the invisibility of organizational culture can lead us to fail organizational change.

Moreover, the invisibility can bring us inability of describing an aiming organizational culture so that we have difficulty to reach common recognition of the aiming organizational culture. A good leader of organizational-culture-change initiative would explain the purpose of the organizational change initiative, mentioning their current situation and their aiming situation to the member in the organization. The leader could show the direction in his/her own words so that his/her subordinates could understand the aiming organizational culture. We seldom show an organizational culture well in general for other persons to understand it, and thus the invisibility of organizational culture could also lead us fail organizational change initiative.

Authors have recognized that there are many companies which try to change their organizational culture to adjust with their business environment and to win market, but most of them seem struggling with the initiative. Authors also assume that one of the reasons why the companies struggle with the initiative is the invisibility of organizational culture, which brings those who change organizational culture the difficulties of common recognition of it. Hence authors in this paper try to visualize organizational culture to achieve organizational culture change.

There are a few methods to clarify an organizational feature (Quinn and Rohrbaugh, 1983; Quinn and Cameron, 1983). Authors however propose a method to visualize organizational culture with multi-dimensional scaling method in this paper. Then, authors try to implement the method in a manufacturing company in Japan to examine validity of it. Authors visualize not only the corporate culture but also the department cultures in the company with the proposed method. Consequently, authors conclude that the proposed method could describe well the corporate culture and the department cultures in the company, after they make a discussion with three employees who know the cultures well in the company.

The remainder of this paper is organized as follows: In the following chapter, we review existing literatures. Recognizing the existing studies, its contribution and future prospects, we show research questions. And we build research method for answering the research questions. Next, we propose a method to visualize organizational culture. And we implement the proposed method in a manufacturing company in Japan to verify. We introduce the company briefly. And, we show quantitative data collection method to analyze, and result. And we show the qualitative data, which includes opinions of an employee, a manager and a corporate director in the company. Then we discuss the data to verify the proposed method. Finally, we conclude the study, showing limitation of the study and future research prospects.

Related Study

What is Organizational Culture

Organizational culture and corporate culture have been used as almost same meaning, which were argued in 1980s. In general, the term organizational culture is used to refer to action patterns, collective norms, dominant values, etc. shared by organization members (Fujita, 2000).

Hofstede (1991) says that culture is a pattern of way of thinking, feeling and behavior. You keep learning patterns throughout your lifetime, but what patterns you have depended on the social groups and social categories to which you belong. For this reason, there are activity patterns shared only by members in a specific group such as national culture and corporate culture.

Shein (2017) says that organizational culture is not an observable behavioral pattern but a pattern of basic underlying assumptions, which is discovered and developed by group, learned when solving problems to accommodate the external environment, and to keep the members' participation and contribution.

Organizational Change Initiative

Enterprise transformation is enabled by “work process change”, which requires the “allocating of attention and resource” so that an enterprise can anticipate and adapt to changes with their resources to yield improvement (Rouse, 2005).

Regarding work process change, Hamel and Prahalad (1995) examine why many companies disband or dramatically downsize their strategic planning departments. This study brings them the concept of “business process re-engineering” proposed by researchers such as Hammer and Champy (1993), which involves deep redesign of business processes. Business process reengineering seeks to achieve dramatic performance improvement by radically redesigning an organization and its takes precedence over information systems development which has focused mainly on automating and supporting existing organizational procedures (Guha, Kettinger and Teng, 1993). These studies focus on business process change, and they do not mention organizational culture change.

Regarding allocating of attention and resource, Lewin (1947) defines change management process, and many distinguished researchers follow the process, but it does not suggest any way to describe organizational culture.

Method for Visualizing Organizational Culture

Many researchers have tried to visualize organizational culture on a case-by-case basis, using a variety of qualitative methods. Many quantitative methods were developed for the sake of assessment of organizational culture in 1990s. The commonly used methods are including Organizational Culture Profile (O'Reilly et al., 1991), the Kilmann & Saxton Culture-Gap Survey (Kilmann & Saxton, 1983, 1991), Competing Value Framework (Cameron & Quinn, 2006), and Organizational Culture Inventory (Human Synergistics,2017).

Cameron & Quinn (2006), for instance, propose a framework for classifying organizational culture types. They claim that four organizational culture types emerged with the framework: Clan culture, Adhocracy culture, Market culture and Hierarchy culture. They show two polarities by statistical analysis with data composed with thirty-nine indicators of effectiveness for organizations, that make the difference when it comes to organizational effectiveness. The two polarities mean horizontal axis for ‘internal focus and integration’ or ‘external focus and differentiation’ and vertical axis for ‘stability and control’ or ‘flexibility and discretion.’ Cameron states that:

“Leadership development experiences and executive education programs often focus on competencies and capabilities that reside in each of the four different quadrants of the Framework. The specific leadership tools and techniques that receive emphasis with leadership groups are often determined by the organization’s own culture, aspirations for change, competencies of the senior leadership team, or the data feedback that individuals receive from various assessments.”

Cooke and Lafferty, for instance, develop the Organizational Culture Inventory (OCI), which has been widely used culture assessment for measuring organizational culture, which breaks down the factors underlying performance effectiveness at individual, group, and organizational levels according to 12 behaviors or styles (Human Synergistics,2017). Human Synergistics Circumplex states that:

“The Organizational Culture Inventory is the world’s most thoroughly researched and widely used culture assessment for measuring organizational culture. The Organizational Culture Inventory goes beyond corporate culture, company culture, and workplace culture, as the cultural dimensions it measures apply to all types of organizations,” and “The Organizational Culture Inventory is invaluable for: (1) Signaling and/or validating the need for cultural transformation, (2) Supporting programs to enhance strategy implementation, employee engagement and inclusion, quality and reliability, and/or customer service, (3) gauging and improving organizational readiness for culture change, (4) addressing barriers to (and enablers of) agility, adaptability, and innovation facilitating mergers, acquisitions, and strategic alliances, (5) evaluating the impact of change efforts — using the culture survey again and again to measure progress and identify what’s working and what’s not.”

Both of the Organizational Culture Inventory (Cooke and Szumal, 1993) and the Competing Values Framework (Cameron and Quinn, 2006) are established methods for measuring an organizational culture from the pre-fixed perspectives. And both of these methods are characterized by organizational change in their intension. These two methods, however, do not provide an answer for the question like what kind of organizational culture make a company do well with organizational change initiative. Consequently, regardless the two respectful methods, we should create a new method for expressing and describing organizational culture.

Research Question

Referring the existing literatures, we create two research questions in this paper.

Research Question 1 (RQ1): What is a describing method for visualizing organizational culture?

Research Question 2 (RQ2): How well does the proposed method describe an organizational culture?

Research Method

In this paper, we mainly conduct a qualitative research, mixed with a quantitative analysis.

First, we do propose a scientific method to visualize organizational culture, employing the multi-dimensional scaling method.

Next, we conduct an experiment to examine whether the proposed method describe an organization culture well. In the experiment, we build a web questionnaire site for collecting data necessary for statistical analysis of the organization culture. Then, using the web questionnaire site, we conduct questioner survey to employees in a Japanese manufacturing company. Then we statistically analyze the collected data using the multi-dimensional scaling method.

Then, we discuss the results. The results are interpreted through our own discussion. The results with the interpretation are evaluated by the collaborators in the Japanese manufacturing company, from the viewpoint of whether the organization culture is well drawn.

Proposal of a Method with Multi-Dimensional Scaling

Multi-Dimensional scaling is a method of multivariate analysis. Like in principal component analysis, it is a method of expressing the relation of classified objects by the placement of points in low dimensional space. By using this approach, similar elements are placed nearby, and different elements are placed far away. A figure generated by the multi-dimensional scaling method is called cognitive map.

It is assumed that keywords used for analysis are selected by employing existing literature. In this paper, we select 39 elements constituting a corporate culture as keywords. Then we ask organization members through the web-based survey site for answering their recognition of the distance between every two keywords. We calculate the average of the collected data, and generate a cognitive map by describing the keywords in a two-dimensional coordinate space. Then, we show what the x and y axes indicate through the interpretation by researchers. Moreover, we discuss the cognitive map clarify the cultural characteristics in the organization.

Experiment

In this chapter, we visualize the organization culture of a case company to test the proposed method in the previous chapter.

First, we explain the case company. Next, we show the data collection method. Then, the collected data is analyzed and the analysis result is shown. Interpretation of analysis results is shown. Finally, we also refer to the results of discussions with the management members in the company.

The Case Company

The case company is engaged in the manufacture of functional integrated parts, the development of measuring instruments and robot systems, and the provision of environmental and equipment maintenance products to protect equipment from mist and dust in factories.

The company was founded in 1951, and located in an industrial area, which is famous for the automobile industry in Japan. The number of employees is about 300. They have an administrative office building and seven factories around the area.

Data Collection

We conducted a questionnaire survey from July 10, 2017 to July 28, 2017 in the company. We asked 132 employees in the company to answer the questionnaire through designated secure webpages on the Internet.

The questionnaire was composed with 39 keywords and 741 questions for visualizing the organizational culture. The 39 keywords were selected from Cameron and Quinn (2006). We set four keywords as organization's orientation element, like creation, market, co-work, and management & control. We also set 15 keywords as leadership element, like transformation, request, voluntary, adjustment, entrepreneur, scolding & encouragement, support, monitoring, forward-looking, productive, teamwork, enforcement, innovation, competition, and governance. We also set 11 keywords as value source, like market change, share, commitment, efficiency, agility, target achievement, communication, just-in-time, profitability, and homogeneity. We also set 9 keywords as definition of success, like unique, competitive advantage, anxiety, reliability, novelty, market leader, hospitality, delivery, and low cost. We measured distances between these keywords through the questioner survey.

Participants for the survey selected a number from 1 (very close meaning) to 10 (very far meaning) composed as Likert scale. As a result, 114 employees in the company responded the questionnaire correctly, which meant that we achieved a response rate of 86.4%.

Data Analysis and Result

Visualizing the organizational culture, we analyze the collected data with the multi-dimensional scaling method with statistical software named BellCurve for Excel, provided by Social Survey Research Information Co., Ltd.

We describe the corporate-level organizational culture and 10 department-level organizational cultures through the analysis with the statistical software, which include the administrative division, the sales division, the process design division, the quality assurance division and 7 factories in the company. There is limitation of space in this paper. Authors cannot help showing only 4 cognitive maps generated through the proposed method in this paper.

Interpretation of the Results

We interpret the results of the analysis. We first find that the keywords are grouped by category to which each keyword belongs, so that we give each cluster a name on the figures to easily interpret the results.

Figure1 shows the corporate level organizational culture in the company, describing market orientation, which means the willingness to respond customer's request, is located in the center of the figure and could be their core value dominating their mind. Figure2 is the Mother Factory's culture, showing market orientation could be core value as well as the corporate-level culture. Figure3 is the Quality Assurance Division's culture, showing that there is no center-located value, and it seems that the hierarchy and the market orientation clusters are divided into two groups. And, it is characterized by adhocracy that is distant from the center, which shows change orientation. Figure4 is the Sales Division's culture, showing the market cluster is located in the central part, and the hierarchy cluster is also located in the central part. It likely means that they meet customer's request with their management and control orientation.

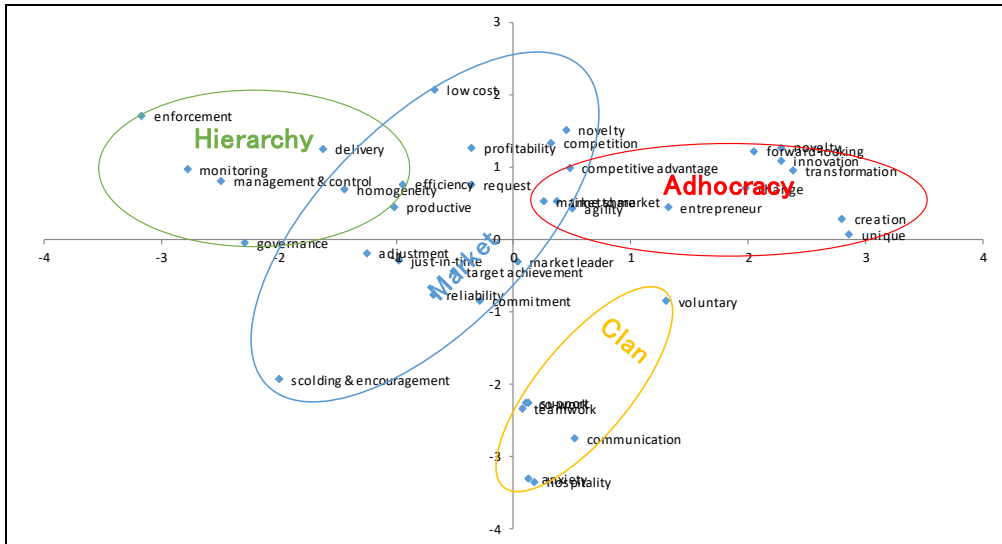


Figure 1. Corporate-level Culture

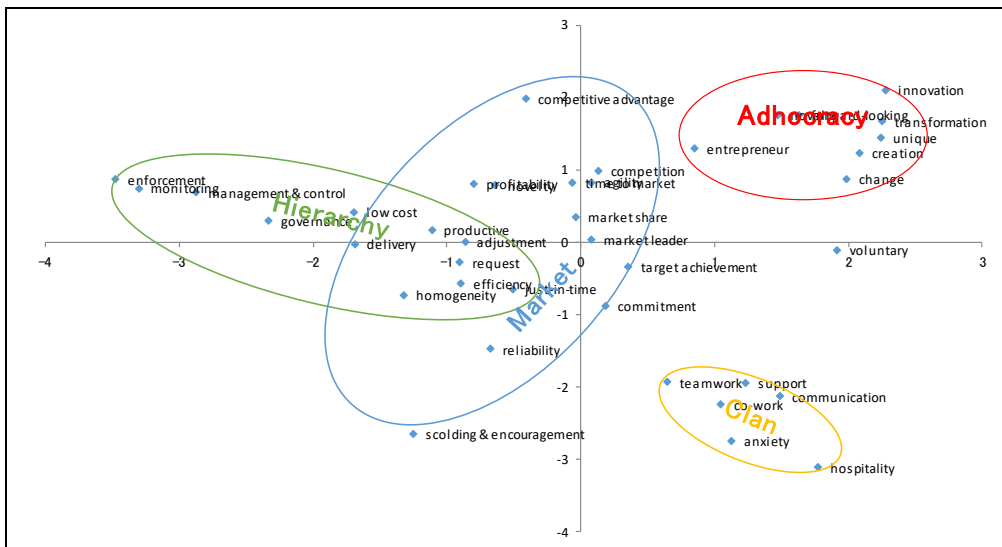


Figure 2. Mother Factory Culture



Figure 3. QA Division Culture

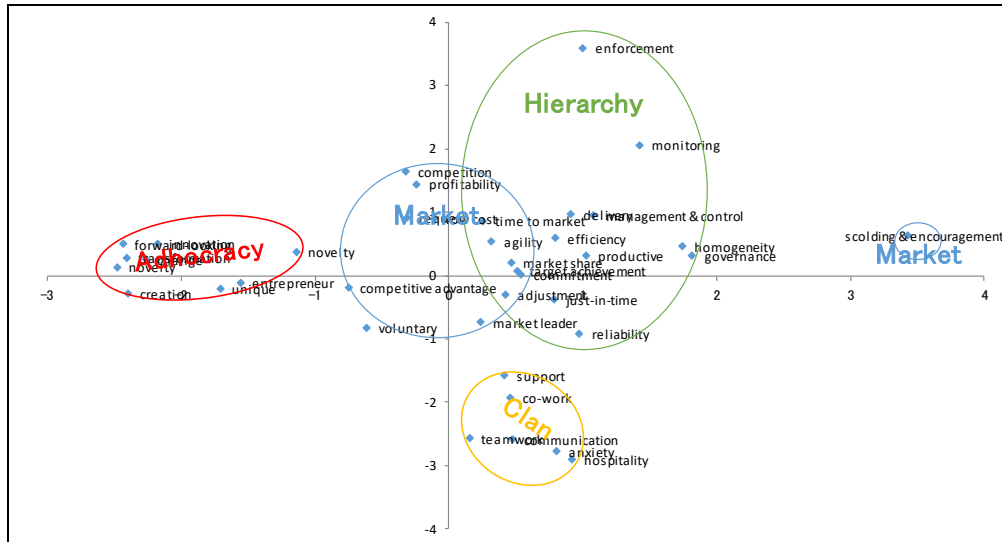


Figure 4. Sales Division Culture

Examine the interpretation through the interviews to employees in the company

We examined the interpretations of the results through interviews toward three employees in the company, including an executive director who was responsible for corporate administration, a senior manager who was the head of the administrative division, and an operational level leader in the administrative division.

They elaborated that they believed it important to faithfully respond to customer's needs using products and skills that we currently possess, and they did not have an intention to execute innovation. Thus they thought the corporate-level organizational culture shown in Figure1 drew their corporate culture well. Regarding the Mother Factory, it located close to the administrative office building, and they could be managed well. It could be said that it was a microcosm of the entire company. We took it for granted that Figure2 is similar to Figure1. Employees in the Quality Assurance Division sometimes worry that they were pinch between the factory members and their customers. This could be one of the reasons why Figure3 showed there were no keywords in the center of the figure. Regarding Figure4, it could be described well because it expressed sales persons' behavior.

Although the remainder of the analysis is not shown in this paper due to the space restriction, they were evaluated as good description by the company members.

Discussion

Answering the Research Question1 mentioned in the previous chapter, we employed the multi-dimensional scaling method to visualize the corporate-level and the department-level organizational cultures in a Japanese manufacturing company. The 39 keywords used at this time were selected from Cameron and Quinn (2006).

Answering the Research Question2 mentioned in the previous chapter, we discussed the analysis results with employees of the company. We found that we described their organizational cultures well, and we can interpret the cultures based on the description.

Based on the analysis, there is a possibility that we can visualize organizational culture through multi-dimensional scaling analysis with 39 keywords extracted from Cameron and Quinn (2006). There is also possibility that we can describe not only corporate-level organizational culture but also department-level organizational culture with the proposed method.

Conclusion

There are many companies which try to change their organizational culture to adjust with their business environment and to win market, but most of them seem struggling with the initiative due to the invisibility of organizational culture. We proposed a method to visualize organizational culture, using the multi-dimensional scaling method with 39 keywords selected from Cameron and Quinn (2006). And we tried to visualize a corporate-level organizational culture and 10 department-level organizational cultures, applying the proposed method to a Japanese manufacturing company. The results and the interpretation of them were evaluated as good by three employees in the company since they were described the cultures well. Thus it could be a new method to visualize organizational culture.

There is, needless to say, limitation in this paper. the study in this paper depends on a single case in the company. We need further study employing multiple cases, including anonymous cases.

Furthermore, we extend this study to the following studies in our future research. First of all, we conduct extensive study with not only multi-case data but also time-series data to generalize the findings in this paper. Second, we employed the 39 keywords selected from Cameron and Quinn (2006) for the multi-dimensional method, and there are other ways to extract keywords to express organizational culture – for instance, we extract keywords with text-mining in organization internal documents.

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