

A Proposal of Architectural Framework for Self-Organizing Management Utilizing Multi-Layer Customer Value Chain Analysis

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ABSTRACT

In managing diversified organizations, problems have arisen that cannot be handled by conventional hierarchy-type organizations. Today's organizations need to actively and autonomously respond to changes in the environment. For this reason, in the management of the organization, the concept of "self-organization" is becoming important as a mechanism for forming a new order and creating new value by interactions among diverse individuals. Methods such as "Holacracy" and "teal organization" have been proposed, but they are limited to individual method proposals. If you have a theoretical meta-level framework, you can help customize the methods you need for your company based on that framework. In this paper, we propose an architectural framework to promote emergence and self-organization. With this framework, you can design self-organization management, and, if there is a problem with the organization, you can visualize where it is not going right.

Keywords: Self-organizing, Complex System, Customer Value Chain Analysis, Holacracy.

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1. INTRODUCTION

Since the announcement of the Scientific Management by Frederick Taylor during the Second Industrial Revolution at the beginning of the 20th century, the function-based management system has made a significant contribution to the development of industries of the 20th century. The pyramid organization of the system - subsystem structure called the hierarchy matched the complicated social system well.

However, in the 21st century, the social system has made a meaningful change. With

the spread of the Internet and promotion of globalization, what was until then a complicated society changed into a complex society. The systems called "System of Systems" which do not have a central management system, represented by the Internet have become widespread. The more systems become complex, the more managing the development of these systems becomes challenging (DiMario et al. 2008).

Along with the evolution of the system, the corporate management system is also being forced to evolve. It is impossible for one president to respond to all complicated situations. Management based on "self-organizing" and autonomously corresponding to each department of the company attracts attention. (Makino 2000, Bernstein 2016) However, research on complex systems and self-organization in business administration has only recently been started and has not yet systematized. (Iriyama 2013)

We propose a framework based on self-organization theory as to how self-organization and emergence will occur there. The novelty of this research is to visualize the interaction of stakeholders in the self-organization framework. In this research, we applied the connections between each layer from interviews with Zappos based on the proposed framework.

2. PREVIOUS RESEARCH

2.1 Previous Research on Self-organization

Research on self-organization has almost the same history as system research. Bertalanffy (1945) published the general system theory, arguing that society consists of systems in which elements interact in the same way as organisms. About the same time, Wiener (1947) published the cybernetics theory as a science of mechanical and equilibrating systems. The core of cybernetics theory is the feedback control theory. By incorporating feedback control into the system, it is possible to recognize and correct deviation from a defined objective.

Cybernetics control is a self-organizing system that uses negative feedback to achieve a defined objective. Maruyama (1963), on the other hand, focused on positive feedback system in which the interactive causal effects are deviation-amplifying.

Maruyama showed the development of a city in an agricultural plain as an example. An ambitious farmer starts a farm in this area. This behavior is the initial kick. Several farmers follow the lead, and several farms are established. One of the farmers opens a tool shop. Then, this tool shop becomes a meeting place for farmers. Food stands are built next to the tool shop. Gradually, a village grows. The village market facilitates the trading of the agricultural products, and more farms flourish around the village. Increased agrarian activity necessitates the development of industry in the village, and the village grows into a city.

On what part of the entire plain the city starts growing depends on where the ambitious farmer accidentally stabs a hoe. "Initial Kick" is named "fluctuation" in the current complex system theory. Prigogine (1977) theorized the process by which self-organization occurs from fluctuation by dissipative structure theory. According to this theory, the conditions for self-organization are "open system," "non-equilibrium" and "positive feedback".

A plain remains a plain unless a person comes from outside. The plain is a non-equilibrium because it has fertile parts and rough parts. A farmer who comes from outside creates fluctuations. People gather and interact, positive feedbacks are generated and evolve into cities.

Such a system exists everywhere: accumulation of capital in industry, the evolution of living organisms, the rise of cultures of various types, international conflicts.

A feature of the self-organizing system is that it does not have a defined objective like Wiener's cybernetics system.

In that case, what kind of boundary distinguishes it from others? Luhmann (1984), one of the most prominent sociologists in the 20th century, noted that social systems that self-organize distinguish themselves from others in the world by meaning.

Luhmann modified the functional structuralism that society consists of two layers of function and structure. He noted that "meaning" is the top layer and society is difference from other things in the world. There is a difference between the plain the farmer plowed and other plains. The difference is meaning. The meaning of a human being is defined by what differentiates him or her from the average human being (without "difference", people see no meaning and become "indifferent").

Furthermore, Luhmann noted that social systems differentiate and evolve as they communicate in three separate dimensions: the functional, the social, and the temporal (Lee 2000). The functional dimension identifies what appears in the world, such as things, theories, and opinions. The social dimension shows who will topicalize these things, theories and opinions. And the temporal dimension gives information on when something will happen.

For positive feedback, the previous position, the current position, and the future position are different. That means that the differences are processed continuously. Therefore, meaning is self-reference in differences.

2.2 Utilization of Self-organization in Corporate Organizations

Bernstein et al. (2016) stated that leaders seek reliability and adaptability in their organization, that balance is a necessity. Although managerial hierarchies can err in either direction, they most often skew in favor of reliability—and create rigidity and red tape. It isn't easy to know the right balance between reliability and adaptability—

and even if you do, it's hard to get an organization to perform accordingly. Hence the keen interest in having organizations "feel their way" toward the desired balance through self-organizing management.

They noted that self-management teams began with the process management of British coal mines in the 1960's and Japan's quality circles of the 1970s.

Many companies, mainly in the fields of manufacturing and service management, had breakthroughs by switching to teams of Self-Organizing Management. The Volvo plant in Kalmar, Sweden, reduced defects by 90 % in 1987. FedEx cut service errors by 13% in 1989.

They noted that if traditional organizations strive to be machines governed by Newtonian physics, precisely predicting and controlling the paths of individual particles, then self-managing structures are akin to biological organisms, with their rapid proliferation and evolution.

However, Makino (2002) stated that the two models are not entirely separate, but are coexisting in a single organization. Organizations have a double-loop nature, "organization as a mutual action space" where self-organization and emergence occur, and "organization as a device" where discipline and norms decided. The characteristics of an organization are determined depending on which model works more vigorously. Nowadays, Diversity has also attracted attention.

Foma (2014) stated that by building a diverse team of employees, a business will be better able to reach specific audiences. Staffing a company with one demographic would make it very hard to connect with anyone outside of that demographic but when a business addresses the issues and problems that are unique to their organization, diversity is sure to have a positive impact on their business. Diversity can achieve open system and non-equilibrium which are conditions of self-organization.

As mentioned above, the focus is on self-organized management as a new management model (Makino 2000). In business administration, that research has only just begun. There are several proposed methods such as holacracy, teal organization, etc. Since these are methods for the package, we cannot decide until the introduction whether the method fits depending on the organization. Besides, it is difficult to find organizational problems if these methods do not provide them. If you have a more abstract meta-level framework based on self-organizing management theory, it helps you to customize the methodology and visualize whether it is going efficiently or not.

3. CONSTRUCTION OF SELF-ORGANIZING MANAGEMENT FRAMEWORKS

3.1 Customer Value Chain Analysis (CVCA)

Positive feedback is required to expand the differences emerging from the fluctuations. In the example of urbanization, there is positive feedback where people develop business opportunities, and people gather by business opportunities (Fig.1).

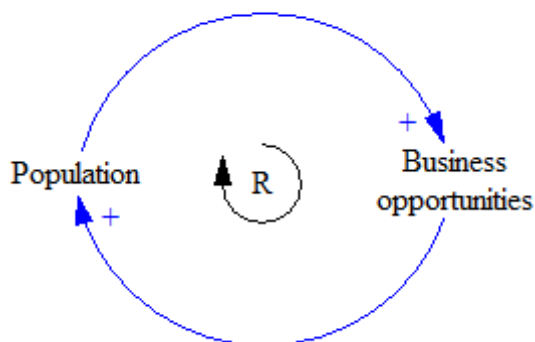


Fig.1 Positive Feedback

This positive feedback suggests that structure generation occurs when people interact with other people in business activities (value creation).

In other words, if it is possible to visualize the interaction of value, we can determine whether or not positive feedback emerges. Shima et al (2018) found that positive loops are caused by the matching direction of needs/wants on Customer Value Chain Analysis (CVCA).

CVCA developed by Donaldson et al. (2006) is a method for visualizing value exchanges among stakeholders to analyze existing social systems and designing new social systems. Fig.2 shows the case of urbanization.

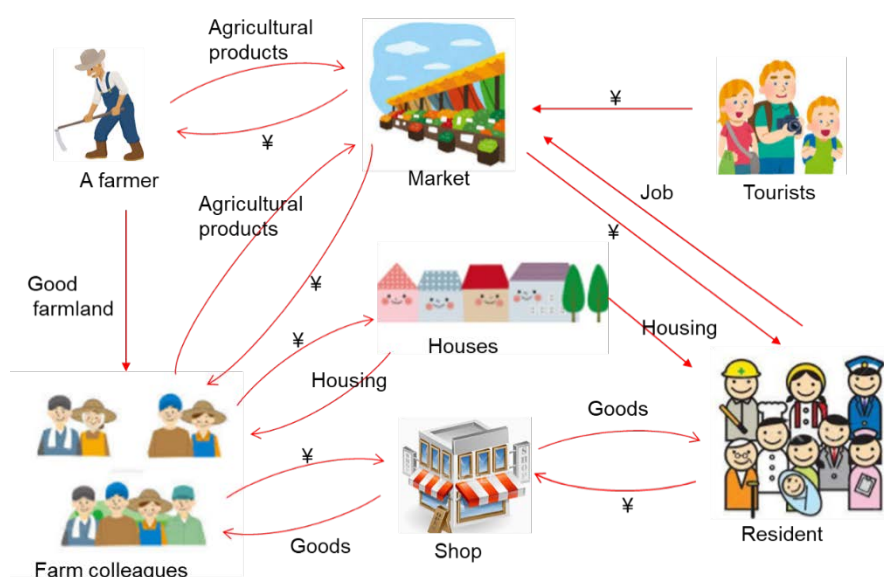


Fig.2 CVCA of the Development of a City in an Agricultural Plain

3.2 Developing a Three Dimension Framework

Imada (1986) noted that "the behavior of the organization as a self-organizing system" corresponding to the behavior of the individual stakeholder can be expressed as the behavior of the system dimension. The dimensional elements of the self-organizing system consist of meaning, function, and structure. According to Imada, the structure refers to the function, and the function refers to the meaning (Fig.3).

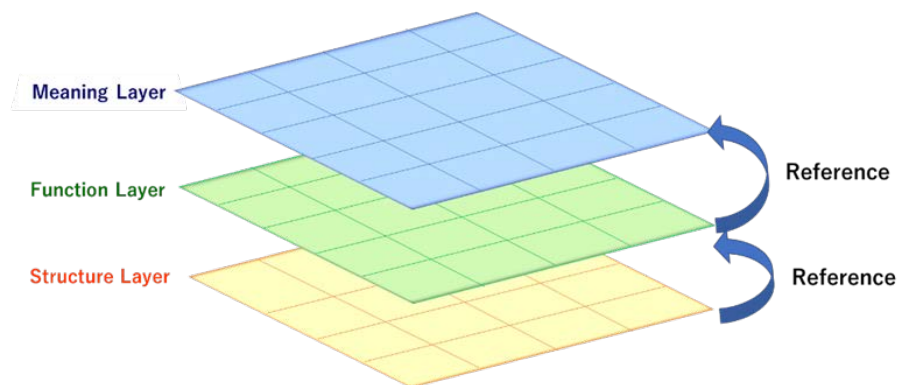


Fig.3 System Dimension Representing the Behavior of Self-Organization

Furthermore, Fig.4 shows Luhmann's "three dimensions of meaning" combined in Fig.3. The functional dimension applies to the system dimensions of meaning, function, and structure, and the temporal dimension refers to the life cycle of the system. Furthermore, we consider the social dimension as a spatial dimension of stakeholders.

Communication as defined by Luhmann refers here to value exchange among stakeholders. Each stakeholder describes value exchange defined at each layer among stakeholders using CVCA.

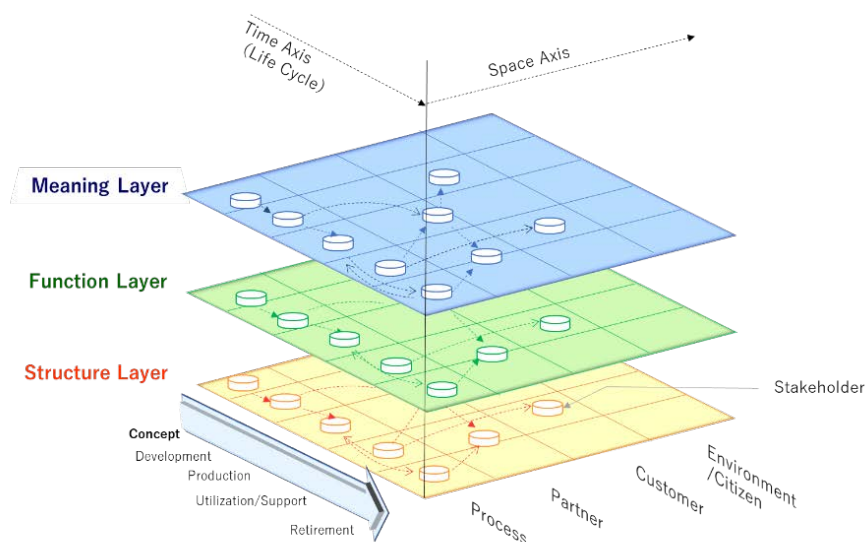


Fig.4 Architectural Framework for Self-Organizing Management

3.4 The procedure of the Architectural Framework

3.4.1 Decide the Time Axis (Lifecycle)

The horizontal axis of this framework is the management lifecycle. It shows the vertical relationship between the management and the employees, also the interdependence among departments. It can apply to the vertically divided (silos) problem in bureaucratic organizations and large companies. In Fig. 5, we show the example of the manufacturing industry. It can also be used in the service industry or other industries.

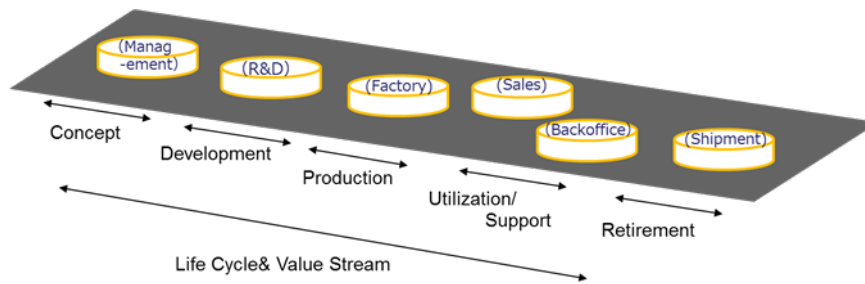


Fig 5 Life Cycle & Value Stream (Time Axis)

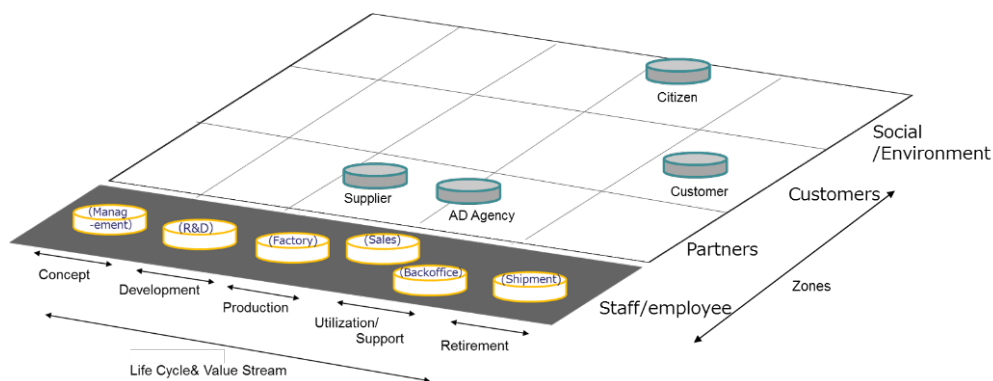
3.4.2 Decide the Spatial Axis

The axis of the depth shows the distance between the stakeholders.

The partners include the product development collaborators, suppliers, and sales partners. The Customers usually include the buyers of products or services and the user. In some cases, the buyers and the users are different, such as the private broadcasting company and Google. In such cases, the company determines who the partner is or who the customer is. Also, the external Social/Environment factors define the Zone of potential customers. With the current focus on corporate social responsibility, external Social/Environment factors are increasingly important.

3.4.3 Place the Stakeholders

Place the crucial stakeholders on the life cycle and zones map (Fig.6).



Fig, 6 Life Cycle(Value Stream)xZones

3.4.4 Connect the Stakeholders by CVCA

Describe the exchange of money and the information among the stakeholders in the business layer. The CVCA is an analytical measure to visualize what value is provided to whom (Donaldson et al.2006) (Fig. 7).

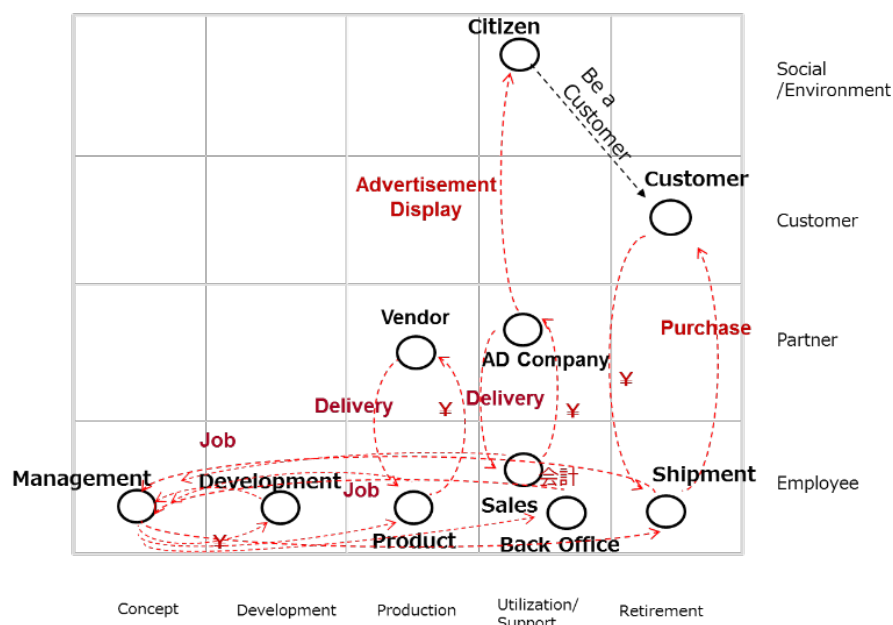


Fig.7 An example of CVCA

3.5 Develop CVCA for Each Layer of Meaning, Function and Structure

Meaning layer: Corporate philosophy, self-realization of employees, and living meaning for customers.

Function layer: Function to realize semantic layer. Goals and core values of the organization.

Structure layer: Function allocated to the physical structure. Actual measures, management resources such as funds and personnel.

4. HOW TO USE THE ARCHITECTURAL FRAMEWORK

4.1 About Zappos

In this research, we'll apply the connections between each layer from interviews with a company based on this framework. We interviewed Zappos, a company operating an e-commerce website for shoes and clothes, whose head office is located in Las Vegas. They presented their Mission as "Delivering Happiness," and their management technique based on Ten Core Values: Deliver WOW Through Service, Create Fun, and A Little Weirdness, and so on.

Here, the Mission or the Core Value is not just a slogan. It is the code of conduct for the

employees. The employees are evaluated by these Core Values, for example, how much they can put the ideals of the Core Values into practice. Therefore, there are no sales targets in this company. Their sales for shoes, Zappos' core product, is the best in the USA. Zappos is called a company that makes the customers enthusiastic. Regular customers occupy 75% of the sales volume.

Tony Hsieh, Zappos' CEO, noted that every time the size of a city doubles innovation or productivity per resident increases by 15 %. But when companies get bigger, innovation or productivity per employee goes down. In cities, people and businesses are self-organizing and emergence occurs. That is why Zappos introduced self-organized management.

What we learned from the observation is that Zappos' management is based on their mission statement of "Delivering Happiness" and Ten Core Values such as "Deliver WOW Through Service". Many companies also have mission statements and core values. In most companies, however, they are merely slogans "for show".

According to Hsieh's words, for "Zapponians", the core values are not "Slogans" but a "Way of Life".

The core values management was introduced in Zappos in 2007, and they didn't add self-organizing management until its full penetration. The mission statement and the core values play the role of "organization as a device", and self-organization and emergence play the role of "organization of mutual action space". Furthermore, the corporate philosophy creates a unique culture for the company. Hsieh noted that a company's culture and a company's brand are just two sides of the same coin.

Their mission statement and core values differentiate them from other companies.

4.2 Meaning Layer

The corporate philosophy represents the significance of the existence of a company. For the corporate philosophy to penetrate employees and customers, it is necessary for the mission and their self-actualization to exchange value. CVCA can visualize it (Shima et al. 2016).

As mentioned above, in Zappos, various means are taken so that corporate philosophy and employee self-actualization interact to generate positive feedback (Fig.8).

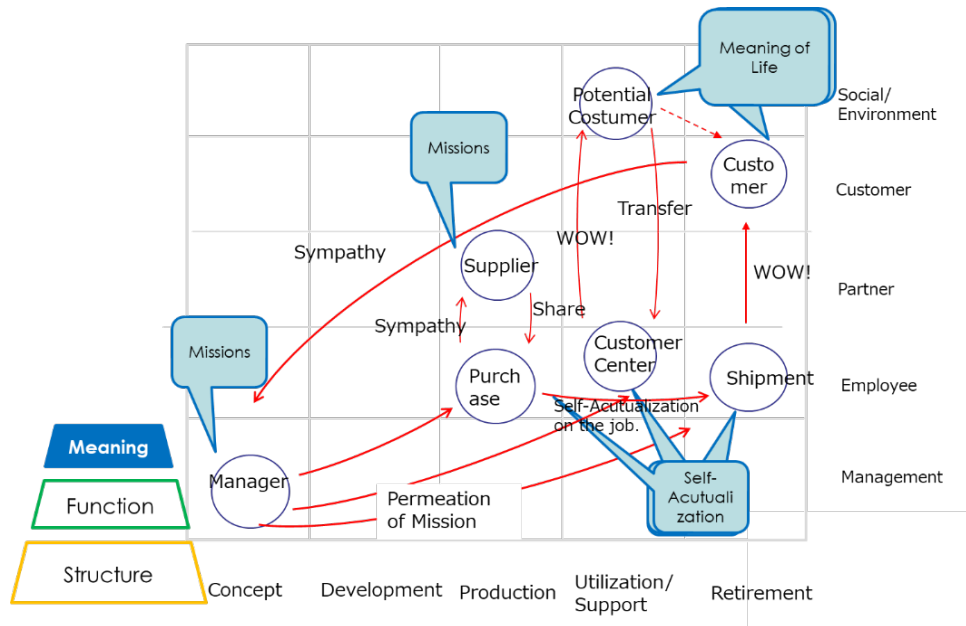


Fig 8 Meaning Layer

4.3 Function Layer

What kind of functions should the organization have to materialize the corporate philosophy and self-actualization of employees in the meaning layer?

In Zappos, managers have functions to spread the corporate philosophy and to support employees' self-realization. To that end, they set the Ten Core Values. Employees also have the function of supporting customers' meaning of life. Specifically, it has unique functions such as the establishment of a customer support center operated 24 hours, a 1-year returnable system, and so on (Fig.9).

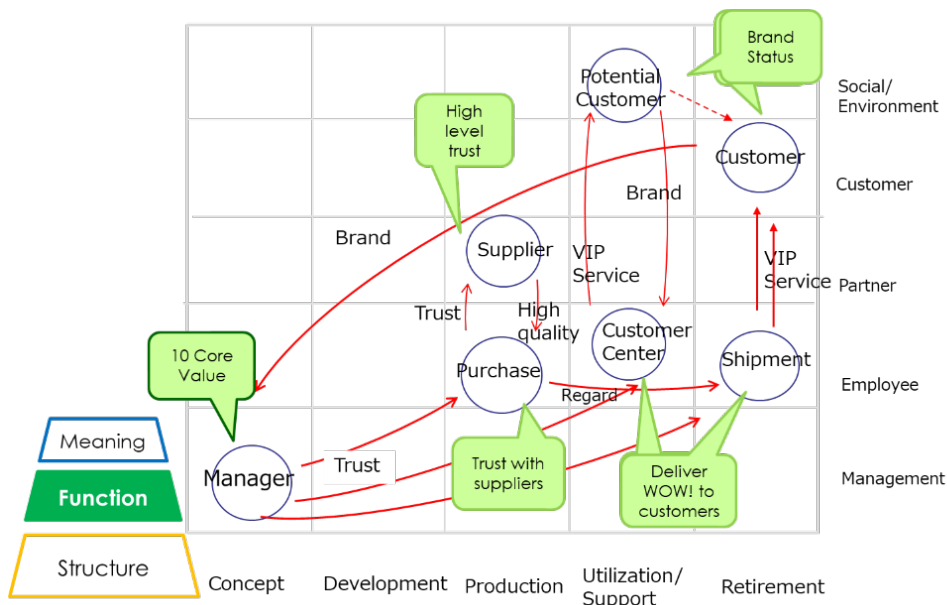


Fig 9 Function Layer

4.4 Structure Layer

The structure layer (Fig.10) realizes physical design for the meaning layer and the function layer. Management needs to build a personnel system based on core values, but, in Zappos, personnel are evaluated exclusively on their capability of realizing the core values and other factors such as sales do not influence the review. Maintaining welfare benefits that allow employees to work in comfort can also be a critical issue for the management team. The customer support center has a 24-hour system that responds to the customers' requests. Zappos initially started in San Francisco but moved to Las Vegas in 2003. To realize the customer's 24-hour response function, they selected Las Vegas that has a large number of residents who are willing to work night hours and fulfill overnight shifts.

Furthermore, to realize the function of picking your favorite shoes, they have a structure that allows you to return goods within one year. With this system, customers can order many shoes and select shoes that are easy to wear from among them.

Such a system is voluntarily devised by employees to realize the meaning and function of customers.

Zappos is known as a company with customer centers, thoroughly satisfying the customer's desire. There is no sales' quota, and the only job is to "fulfill the customer's desire". As such, if the goods that the customer desires are not in stock at their company, they will search for the item on e-commerce sites of other companies.

The company achieved a 75 % year-on-year increase in operating profit in 2015 as a result of those strategic moves.

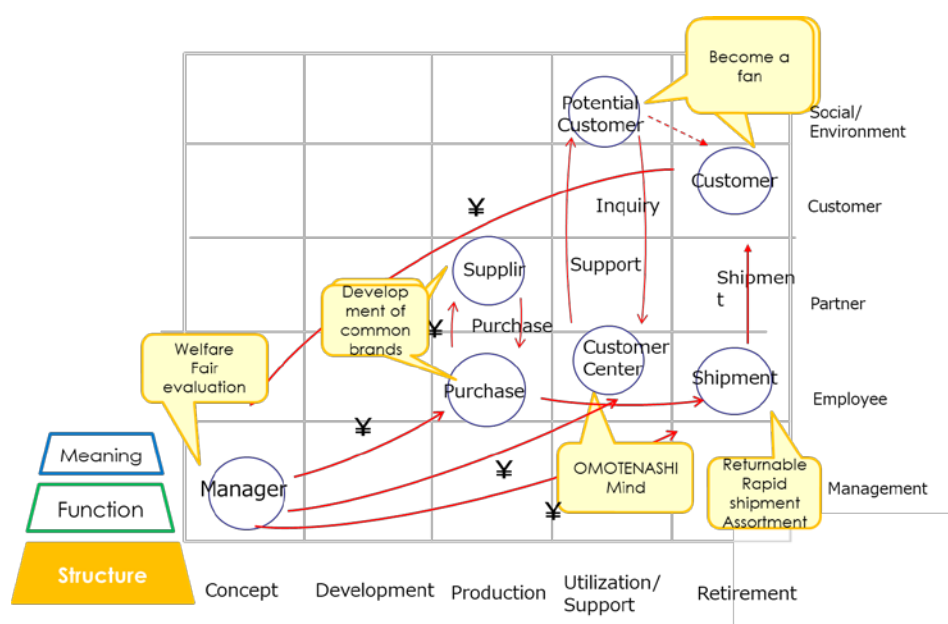


Fig. 10 Structure Layer

As shown above, we applied the framework to Zappos. It is possible, with a successfully promoted self-organizing management, to implement CVCA among stakeholders at every layer in the company. Hence, we can visualize the Value Chain.

If a CVCA is missing, it is possible that this is due to organizational problems. Through this framework, we can render visible the problems and future tasks of the company.

5.CONCLUSIONS AND FUTURE RESEARCH

5.1 Conclusions

How can members of the organization behave autonomously based on the management philosophy? On the issue of self-organization and emergence, we proposed a framework for creating Self-Organizing Management Utilizing Multi-Layer Customer Value Chain Analysis. The findings obtained from this research are as follows.

- Self-organized management can be designed based on the proposed framework.
- It is possible to visualize what is working in management based on corporate philosophy as well as where it isn't going too well.

As a future task, it is necessary to confirm the validity of this framework by performing validation before and after introducing the methodology.

5.2 Future Research

There is a possibility for expanding the Architectural Framework with the following:

1) Designing an organization that innovates

Organizations need innovation. This innovation is the process of emergence from fluctuation by positive feedback. This framework also helps to create innovation that is not limited by existing structures by exploring the desires of the customer on a higher level of abstraction.

2) Solving social issues - CSV and CRM -

At a time when environmental destruction and global warming have become a commonly recognized issue, it is necessary for companies to prioritize sustainability regarding the environment, as well as in regards to employees and customers. Within this framework, we include the society and the environment as stakeholders. As such, it is useful to encourage Corporate Social Responsibility, the Common Shared Value, and Cause Related Marketing.

3) Application to other uses such as urban planning

This framework can apply to other methods such as city planning as well as company

organization. The important thing in town planning is how stakeholders can self-organize and create new mechanisms.

Drawing a connection between stakeholders with CVCA in this framework allows synergy to be born more easily and can help to promote emergence and self-organization.

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