

# **STAKEHOLDER CENTRED APPROACH TO SUSTAINABLE DESIGN: A CASE STUDY OF CO-DESIGNING COMMUNITY ENTERPRISES FOR LOCAL FOOD PRODUCTION AND CONSUMPTION**

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## **Abstract**

The demand for creating shared values has emerged as a new direction in a society in which the mutual prosperity of all stakeholders is often undermined and sacrificed for the benefit of a few. For a sustainable society, the ‘symbiosis’ of community members is one of the critical factors and shared values among them is essential to achieve sustainable development.

In this study, we suggest a design methodological approach aimed at the co-existence and well-balanced development of stakeholders. We named this specific approach the symbiotic system, ‘considerate design approach’ and introduce a business model development workshop as a case study applying it. This is a stakeholder-centred design which aims to draw a win-win strategy based on stakeholders’ needs by synthesizing the process using service design tools. As a result of this study, we will discuss the features of this considerate design approach, the features of the solution by it, and the relation with social sustainability.

**Keywords:** Service design, Social sustainability, Business models and considerations

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## **1 INTRODUCTION**

In the recent years, creating shared value has emerged as a new direction towards a sustainable and competitive economy. Defined as “policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates” (Porter and Kramer, 2011), shared value suggests to rebalance economic and societal values by addressing the needs and challenges of society in the centre of business activities. It thus redefines the concept of 'creating societal value' which is traditionally represented by activities that do not align with business competitiveness such as donations or voluntary services. Kaletsky (2011) also observes the emergence of a new paradigm of economy which pursues a symbiotic capitalist system, and argues that societies and enterprises can be sustained through win-win strategies. Howard (2007) emphasises the importance of building symbiotic relationship of stakeholders in the market and claims that one of the most important outcomes of this relationship is innovation.

Designing for symbiosis involves a systemic approach to cope with complex stakeholder interactions. Product-service system (PSS) can be a useful strategy because it aims at maximising economic added value and social well-being while minimising negative social impact (Tukker and Tischner, 2006). Several PSS related studies have thus explored approaches, methods and tools to analyse the needs, value and requirements from the perspective of various stakeholders. They include stakeholder analysis (Kang, 2009, Van Halen et al., 2005), stakeholders' need and requirement analysis (Arai and Shimomura, 2004, Baek, 2014, Burger et al., 2011), and co-design approach to product-service (ProSecCo).

Design for service is a perspective on designing services where the fundamental limitation of a designer to completely plan and regulate services is acknowledged. Instead, its capacity to potentially create appropriate conditions for certain forms of interactions and relationships to happen is considered (Meroni and Sangiorgi, 2011). It gives ordinary people more opportunities to participate in the design process and solve their problems. In this approach, designers have new roles to play, including facilitating and coordinating co-creation process and developing a platform and tools that empower people to solve problems.

Another stream of design research related to symbiotic solutions is co-design which draws its root from user-centred design (Sanders and Stappers, 2008). User-centred design, a widely accepted approach to designing products and services that gives an extensive attention to understanding the needs of end users, has an obvious limitation as it focuses primarily on the end users only. Co-design overcomes this limitation by engaging stakeholders in the design process and by taking into consideration their different expectations to improve the design quality (Pardo et al., 2005, Sanders, 2002, Sanders and Stappers, 2008). However, co-design is too broad a notion to represent an approach dedicated to designing symbiotic solutions, as it also refers to a user-centric process where designers empower users to develop solutions for themselves. In order to clarify and emphasise the design approach whose primary purpose is to develop systems solutions that contribute to creating shared value among stakeholders in business, we have coined the term 'considerate design'. We argue that in its core is the understanding diverse needs and capacities of stakeholders of the system.

In this study, we propose a methodology based on the analysis of stakeholder needs and resources, and examine its effectiveness through a case study to develop product-service systems for sustainable food production and consumption. We discuss how this approach contributes to understanding stakeholder needs in production and consumption of locally produced foods and vegetables, and what the features of design outcomes are. We conclude by commenting on its implication to sustainability.

## **2 THE CONTEXT OF STUDY**

The conventional food distribution system in contemporary society is highly unsustainable. It is a long supply chain consisting of several intermediaries between producers and consumers in which producers are often underpaid while consumers overpay for foods of low quality and safety. In addition, long food miles create an environment concern as well (Pirog et al., 2001). Fossil fuel energy use, pollution and GHG (greenhouse gas) which occurs in this process can be reduced by localising of the food system (Martinez, 2010). A movement to minimise food miles by reducing physical and social distance between producers and consumers has thus emerged and is called the local food movement. It not only reduces the environmental impacts, but also improves food safety and transparency of production (Kim, 2011). Furthermore, local food systems aim to be economically

viable for producers and consumers, use ecologically sound production and distribution practices, and enhance social equity and democracy (Hinrichs, 2000). In short, various social values — such as mutual trust, reciprocity, democracy and the sense of community — are created through local food production and consumption.

In promoting products and services related to local food, a community enterprise, i.e. an organisation owned and controlled by a community and such that undertakes business on behalf of the community, can be a useful form of organisation. Its utility is underpinned by the following reasons:

- Its strong locality renders it a relevant actor to promote local produce
- Its function of community building contributes to connecting producers and consumers, which is an important aspect of the local food movement
- Its emphasis on communal interest increases the chances of developing a symbiotic service ecosystem around the business
- The bottom-up approach to promote local food on the community level has been far more effective and resilient than the top-down one driven by the government in Korea (Hong et al., 2014).

For these reasons, a project was launched to develop community enterprise models that can promote and facilitate local food production and consumption. The project aims to develop symbiotic solutions in a form of product-service system to promote local food in Ulsan, South Korea. The design outcome is a community enterprise models that are technically feasible and economically viable.

By applying considerate design to the development of local food business models, we aimed to answer the following research questions:

1. How does considerate design approach contribute to designing symbiotic solution?
2. What are the features of outcomes of considerate design approach?
3. What is the implication of considerate design approach to sustainability?

### 3 A METHODOLOGY

To develop mutually beneficial solutions, methodologies and tools from PSS and co-design were adopted. Aforementioned the designers' role in co-design is not to create a solution per se but to build a platform for action and facilitate stakeholders' collaboration (Sanders and Stappers, 2008). Therefore the sufficient comprehension about stakeholder and available sources is considered necessary to build a fine design platform.

The general process was developed based on the double diamond model of the design process developed by the British Design Council which consists of four stages: discover, define, develop, and deliver (Design Council, 2005). Figure 1 shows the structure of the research and the tools which are used.

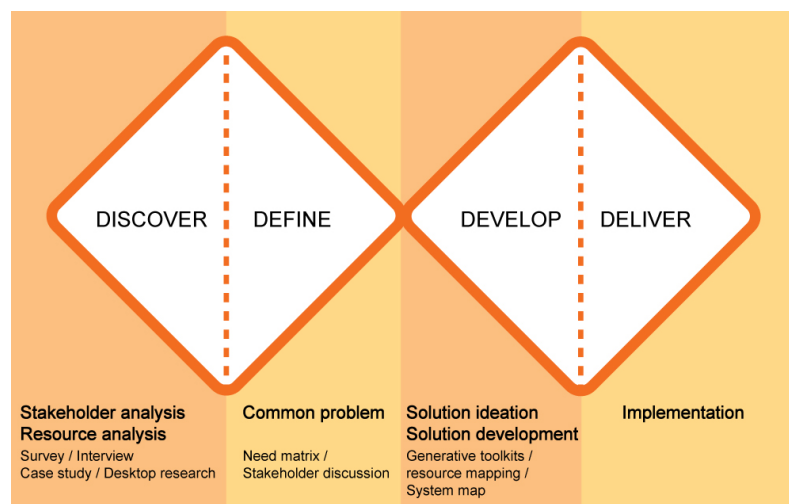


Figure 1. Research Structure

In this specified process, designers' preparation stage before workshop and stakeholders' design process in workshop both involve the discover and define phases. However there are significant

differences in terms of outcome and purpose of the process: The discover-define process conducted by designer aims at building a co-creative design platform while the one conducted by stakeholders aims at drawing common problem and developing concepts upon the design platform.

To develop symbiotic solutions identifying stakeholders' capacities, needs and applicable resources is critical. Therefore, in this discover-define phase, an extensive attention is given to identifying those components. The stakeholders and resources are analysed through various tools as below:

The desktop research such as the literature reviews on local food, the research on the resources of the region and the case studies of community enterprises on local food can be conducted; the field research includes resource and stakeholder analysis through survey and interview. The result of analysis is elaborated in a form of a generative toolkit which can be used in stakeholders' design process.

The discover-define phase is conducted again in the co-creative workshop and the stakeholder identify their common problem through need matrix. Discussion also helps them to identify their different perspective to find the desirable point for solution.

In the develop phase, stakeholders' ideas become articulated and developed by using the generative toolkits which was designed by designers. The outcome of this phase is presented in a form of business models. The deliver phase is an implementation stage and the well elaborated concept business model may be adopted to the community enterprise.

The following case study adopts these methods and structure to draw mutually beneficial solution for encouraging local food.

### **3.1 Discover – Define phase**

As mentioned above, this phase consist of two sessions separately conducted by designers and stakeholders. The stakeholder need identification and Resource analysis are conducted by designers before workshop and stakeholder need analysis is carried out by stakeholders in the workshop.

#### **3.1.1 Stakeholder Need Identification**

The surveys and interviews investigating local food stakeholders' present situation were conducted in Ulsan. The surveys aimed at collecting the data about people's perception about local food and its present situation; the interviews intended to draw their needs and problems in terms of the process of production, consumption, distribution and administrative support. The research showed that there was a lack of spontaneous and stable business models in the local food market; the producers reported several difficulties they encounter when they sell their produce in producers' market. They have to spend whole day to sell their product in producers' market but it was a burden to spend much time in selling the product or expenditure by movement, especially as concerns smaller peasant producers. The labour shortage was the producers' another difficulty. Not only about farming, some of them wanted to develop farming educational programme but they were not affordable to employ people who can manage it.

Likewise, many producers did not have enough time and finance to spare other activities such as sales or running programme related to farming. The stakeholder analysis presents that the problem of local food market is caused by multiple reasons.

#### **3.1.2 Resource Analysis**

A resource analysis was conducted to identify potential resources – both tangible and intangible – in the region. The resources include human, tourism, and public resources. The data were collected through a literature review and field investigation. All needs and problems of the resources were drawn and the collected resources were integrated and visualized on a local resource map (see Figure 2). They were also fed into developing a generative toolkit for co-creative workshop. The toolkit provides information on the local resources, as well the characteristics and needs of stakeholders in a form of cards and a map (see Figure 3).



Figure 2. A map of local resources in Ulsan      Figure 3. Resource tool-kit for ideation

To design of product-service systems for community enterprises, a co-creative workshop was used. The workshop was held four times over two weeks targeting potential stakeholders of community enterprises and it took three hours each. Participants included producers, consumers, entrepreneurs, and administrators. The management consultants and designers participated in the design process as assistants to support their design activity. They were divided into four teams with management consultants and designers acting as facilitators. Stakeholders were encouraged to excavate ideas based on their needs in the manner of gamification using the toolkit and embodying the business model. In the end, business model concepts, including the service system and process, were developed.

### 3.1.3 Stakeholder Need Analysis

This analysis was conducted by stakeholders in the workshop to identify and articulate stakeholders' needs and capacities in detail. The stakeholder needs were analysed using the stakeholder need matrix (Baek, 2014) based on the data collected from interviews, surveys, and the workshop. During the workshop, a discussion among stakeholders was held, and the stakeholders shared their various stances and difficulties (Ayuso et al., 2006). The need matrix is consist of axis X and Y. The stakeholders were positioned on axis X and Y (e.g. axis X: producer, consumer, contributor; axis Y: producer, consumer, contributor). It aims at identifying stakeholders' needs toward other stakeholders. Their needs were identified according to the direction in the matrix filled with stakeholders in the system. In Figure 4, 'N11' is the need of stakeholder X towards stakeholder Y.

After identifying and coordinating the needs on the matrix, the participants were asked to find the relationships among the needs drawn and the needs were combined according to the relation. The symbiotic relationships were naturally drawn in this process. The relations were refined formulating some relation with other stakeholders' needs. At the end, the primary need to solve was selected and expressed in a problem statement.

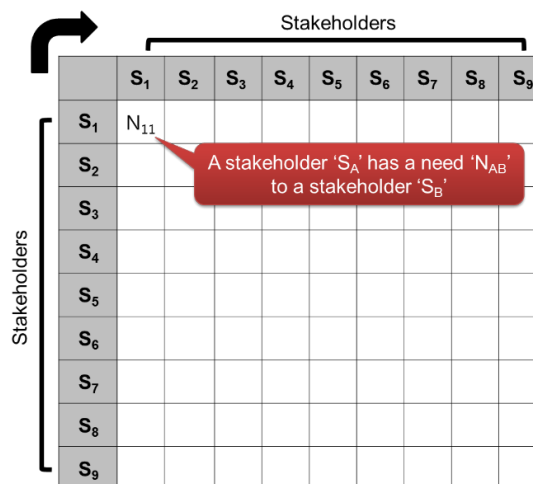


Figure 4. Needs categorization using the need matrix (Baek, 2014)

## 3.2 Develop phase

### 3.2.1 Solution Ideation

The participants generated ideas on synthesised needs between stakeholders based on the need matrix. During this process, they used the resource tool-kit to explain their concept and the ideas were organised by utilizing it. Through stakeholders' dialogue, all stakeholders who had different interests gave advice or expressed their opinion about the idea from the multiple perspectives and diverse knowledge (Wahl and Baxter, 2008). At the end of this phase, each team presented its solution ideas, synthesised them, and selected the best solution for implementation through peer evaluation.

### 3.2.2 Solution development

Designers were assigned to each team to facilitate development of ideas into the business models. In addition, they also helped the participants visualise their idea in the form of system map which illustrates the stakeholders and their interactions (Figure 5). In this phase, practical problems, such as channel or competitor, were considered and the concepts creating mutual prosperity became materialized.



Figure 5. Concept sketch for building a system map

Economic feasibility was tested via simulation. Through a profit structure, expected profit and loss by the business model were calculated.

At the end of the workshop, the concepts were developed by the feedback from two reviewers: a business consultant and a service design consultant. They gave advice about the concepts drawn from expert perspectives and the concepts which were not competitive in terms of business were deducted or revised. Through this process, the business model concepts were elaborated with a close consideration of competitiveness and feasibility.

## 3.3 Results

### 3.3.1 Four business models

Four business models were developed at the end of the workshop and are described below.

- Neighbouring producer community. It is a collaboration platform composed of producers who connect them to consumers more directly. It is run by a membership system and the producers sell bundle of farm products communicating with consumers through SNS or SMS. This system contributes the distribution network to be more efficient by direct trade and the fresh crops to be delivered without waste, because the producers produce only the ordered amount. It supports the producers to more fluently communicate with their consumers so that they know their consumer's needs better; in the meanwhile, consumers get more information from producers or instantly provide feedback about the products. Socially, it also contributes to job creation by outsourcing a bundle making job to senior citizens.
- Local food café. This café sells local food and the food made of it, as well as promotes local food/farming experience programs in connection with farms. It provides local food for reasonable price, because this business and farms are directly connected. The consumers are able to watch the growth of local food through a real-time camera and order the products or apply to the farm

experience program on those farms. This café plays a role of a mediator between producer and consumer; housewives can be business partners of this café: they make jam or bread using local production at home and sell them in the café.

- Farm mentoring institute. This is a mentoring platform that contains producers' own experience. Producers contribute to make farm-related consulting contents by providing their know-how and experiences. The target group of mentoring ranges from children to adults. Not only farm mentoring, but healing program in farming village for city people can be also provided. On this platform, university students are educated and dispatched to farms as instructors. The students, meanwhile, can receive some benefits such as a credit or some compensation. The farms make profit not only through the mentoring program, but also from the direct transaction of local food on the farm.
- Food community. This is a cooking research community involving a cuisine researcher. The housewives interested in cooking gather together and are educated by a professional. In this community, housewives are educated, but are also able to sell the foods they have developed. These foods are made from fresh local ingredients through the direct transaction with the farms connected to this platform.

### **3.3.2 Evaluation**

At the end of the workshop, survey was conducted among the participants to evaluate the workshop. In addition, administrators in the local government who are in charge of community enterprise incubation and also participated in the workshop were interviewed. In terms of results, the drawn business models received favourable feedback. Their response was that the general outcomes are of a good quality in a comparatively short time and that some business models are particularly feasible as much as they can be realized in practice.

In terms of the process, the administrators gave high marks in that: (1) The preliminary research constructed a specific, well-organized workshop frame which made the process easier and it contributed to increasing participants' understanding; (2) The visual resources from preliminary research supported participants to substantiate their thought and concept in a specific way so that they could draw the concept more effectively within a limited period of time; (3) The idea process utilizing tool-kit increased the participation rate of the participants by intriguing their interests; (4) The team consisting of various stakeholders made the concepts richer by sharing opinions and discussing the issues from multiple perspectives

## **4 DISCUSSION**

### **4.1 Considerate design approach**

The considerate design approach is a stakeholder-centred design creating shared values. It adopts the approach of *design for service* but is specified to draw the symbiotic solution in a form of PSS.

To create symbiotic solution in co-creation process, design platform based on substantial resources is needed. It was found that the sufficient resources not only help designers to facilitate the design process better, but also enhance participants' understanding and support them to articulate their thought more effectively.

Contrary to the argument that a conflict created by different parties could open new possibility and innovation (Buur and Larsen, 2010), the considerate design approach pursues symbiotic solution among stakeholders. Throughout the stakeholder dialogue, it was observed that they developed a kind of mutual sympathy which could give rise to certain altruistic motivation while the stakeholders shared and listened to each other's stances and needs (Batson et al., 2002). It has been presented that empathic feelings arises altruistic motivation which value the other's welfare as an ultimate goal (Batson, 2014). Upon this formulation of sympathy, they were more likely to get actively involved in connecting their capacities and needs with others to provoke mutual prosperity.

In the design development process, the participants drew various ideas based on the needs which were novel, however it was found that those ideas had some shortage in terms of feasibility. In this point, professional can fill this gap by guiding them to trim and specify their concepts with consideration about feasibility. Through this process, the concepts became more specified and realistic as seen in the administrators' favourable evaluation about result.

## 4.2 Features of solutions

Through considerate design approach, the symbiotic solutions have been drawn in a form of a PSS business model. The solutions drawn in the workshop indicate the following features:

- The solutions enables mutual prosperity by containing cooperative relation among stakeholders (Lockett et al., 2011). For instance, the 'local food café' concept involves housewives as its business partners by allowing telecommuting for them. Housewives make jam or bread at home and sell them in the local food café; in the concept 'Neighbouring producer community', producers' local foods bundle are packaged by senior citizens in a senior centre. Likewise, stakeholders can produce mutual prosperity through cooperation. The housewives and elderly people could get extra income by working in their daily context, while the café and producers could save labour costs, simultaneously adding extra value such as job creation.
- The solutions were drawn by utilisation stakeholders' capacity. In this considerate approach, the entire stakeholders' resources or capacities were explored thoroughly from preliminary research to co-creative workshop. The participants were facilitated to find the way of linking their capacity with others in the design process. As a result, this widened the range of participation of community members such as housewives, senior citizens, or university students who used to just stay on the 'passive consumer' level. The solutions show how the stakeholders could be actively involved in the system (e.g. in the 'Farm mentoring institute' concept sharing producers' know-how and knowledge about farming to consumers and let them get actively involved in the farming experience; 'local food café' concept enabling the housewives supply homemade food using their proficient cooking skills).
- The solutions are relevant to the context and feasible, because they reflect the perspectives of the people who were directly involved in the issue and had specific information and experience about their own problems. For example, in Korea, housewives have a regular meeting of women's association of apartment community. Through the stakeholders' dialogues, it was revealed that they always had the trouble to find an appropriate meeting place. Buying healthy food was also their common interest and they wanted to buy the ingredients in the vicinity. Therefore, the concept 'local food café' was considered as an appropriate form of business securing their promising consumers' needs by providing relevant solutions to their context.

## 4.3 Implications to sustainability

Considerate design approach proposed in this study aims at engaging people to improve the society into a more sustainable way, namely:

- Many definitions of social sustainability are fundamentally about people (Valdes-Vasquez and Klotz, 2010) and are related to 'social well-being' which indicates a healthy society (McKenzie, 2004). The stakeholders' mutual prosperity is intimately related to this social wellbeing in that it pursues mutual rather than individual happiness. Considerate design approach supports establishing cooperative and symbiotic relations among stakeholders producing shared value (e.g. In the farm mentoring platform, university students could earn credits through activity as instructors in the farm, while the farmer can get economical benefits by their support; In the food community concept, the housewives who are interested in cooking get proper cooking class from cuisine researcher in community and the food which is made by housewives are sold and get profits to the researcher and community). It would make the system healthier and more sustainable.
- Participation is widely known as an essential component of sustainable development (Bass et al., 1995). Compared to the traditional service design approach where a professional designer designs the solution, this design approach would more easily foster their participation, because the solutions were drawn from the people who are owners of the problem (Meroni, 2007). It also engages stakeholders to take a more active role in the system utilizing their capacity. The more the solution is relevant to their daily life, the more likely they participate (e.g. consumers get the local food information from the café nearby. They can observe growing agricultures through real time monitoring system and buy the fresh production in café directly; producers play a role as a farming mentor by handing over their knowledge and know-how in their context; senior citizens take part in the local food system by packaging products in the senior centre they are used to go every day).



- Trust is one of the significant attributes of social capital which facilitates coordination, and cooperation for mutual benefit (Putnam et al., 1994). The high levels of trust, symmetrical reciprocity and co-operation within and without the community enhance the sustainability of society (Carpenter et al., 2004). Considerate design approach helps participants to build a symbiotic platform so that their trust could be developed (e.g. local food communication platform where consumers could develop more trust towards producers, while producers could learn better what their consumers need and get their immediate feedback; farm mentoring platform for education where consumers can get farming experience and buy products in the right place where the foods are produced). Building trust among stakeholders would make the structure of system circulate virtuously and sustainably.
- As a bottom-up approach to promote local food on the community level, it can be more resilient and effective than the top-down one driven by the government. The solution drawn and developed by stakeholders is likely to be connected with the sustainable development of grass-root initiatives in society (Maase and Dorst, 2006)

## 5 CONCLUSION

In this paper, we introduce considerate design approach and apply it to developing community enterprise models to promote local food. The solutions generated from this approach are characterised as follows: (1) It formulates collaborative relation among stakeholders; (2) It utilises stakeholders' capacity; (3) It is relevant to stakeholders' context.

Considerate design approach contributes to social sustainability in that: (1) It enables the development of symbiotic solutions; (2) It draws more participation with relevant solution to their daily life; (3) It builds a platform developing trust among stakeholders.

Through the case study, it was established that this approach is appropriate to draw symbiotic solution among stakeholders. Moreover, one of the community enterprise models conceived during the workshop is currently being implemented as a local enterprise in practice. It shows that this approach has much potential to be developed and applied practically in the future. Through the co-creative workshop, it was shown that this need-oriented platform is likely to evoke sympathy among stakeholders and it is an effective way to draw symbiotic solution. Considering that participants' motivation for cooperation could be related to their psychological state like this psychological consideration would be worthwhile to be studied with this kind of design approach.

There have not been many studies suggesting specific ways of design to create mutual prosperity of stakeholders even though their symbiotic relation is regarded significantly in terms of social sustainability. We expect that considerate design approach would open further opportunities for developing new platform design or approaches for stakeholders' symbiotic solution. As the scope of this study is confined to the development of business models, the proposed approach was evaluated through the reflection of its premature outcomes. It remains as a future work to validate the effectiveness of the approach by observing how the business contributes to mutual benefits of producers and consumers in the region.

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