Service Design Towards Sustainable Lifestyle in the Context of Mobile Internet

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Abstract. Mobile internet with infrastructures and services built around develops rapidly, creating an opportunity to reflect on and overturn the traditional way dealing with economy, culture and social structure. Under such a background, service-oriented solutions have been endowed with reforming power to access the sustainable way of living and producing. With diffuse social resources and personal capabilities highly mobilized, grassroots social innovation based on mobile platform has emerged as a new trend to engage people in a collaborative activity. Through the case study and key elements analysis, a service model is put forward to define structural features and dynamic interactions within the service system.

Keywords: Service design · Mobile internet · Sustainable lifestyle · Grassroots social innovation · Mobile platform

1 Introduction

Along with the high diffusion of mobile communication technologies (MCTs), the ways we are dealing with social issues have been changed a lot. Ubiquitous network as it spreads and overwhelms every corner of our lives has influenced how we behave ourselves in different situation, integrating and transcending the spaces geographically, physically and virtually, evolving into a hybrid space, Space of Auras, which serves as a catalyst for social relation [1]. On the other hand, although we all realize the peculiar role of Internet, reflective and analytical knowledge about the impact on our behavior and social activities has not been explained clearly, and there is still some undefined space for us to exploit [2].

This paper has focused on the service with a specific value orientation or objective, i.e. sustainable lifestyle, as a subject for which the implementation and outcome would depend significantly on people's behavioral change and interactive effect. In this particular situation, mobile internet acts as both an environmental condition and a service-enabling infrastructure, whilst mobile platform is put forward to be an

important medium constructing the whole system. According to the analysis of selected cases, with structural and paradigmatic concerns on the subject, dimensions such as actors, interactive relation and systematic cohesion are brought into discussion, which shed some light on the principles of how to establish and maintain the service as it is formulated. Subsequently, an ideal picture is given for the hypothetical scenario considering the social resources consumption and relational quality between the actors.

As a pilot exploration, the primary concern of this discussion is to articulate the mechanism of technologies promoting social innovation by creating the context and foundation for people gathered at a social scale, and affecting the way they interact with each other to solve the particular problem and at the same time strengthen social cohesion.

2 Service-Oriented Solutions in the Context of Mobile Internet

In recent years, service-oriented solutions are emerging as a response to the complicated aspects referring to environmental and social crisis, with a wide agreement that it's time to re-orientate the entire production and consumption system ecologically [3]. By dealing with these issues, the service-oriented solution has shown its dominance when it comes to integrating diffuse resources and connecting people regardless of physical obstacles, which has been more accessible and conducive with the utilization of mobile communication and ubiquitous network. In a social sense, we can see some characteristics and trends reflected through those phenomena, which provide a flexible foundation for service creation leading to social innovation.

2.1 Local Issues at a Social Scale

Looking deep into the social changes caused by technological development, we can still find some inherent characters existing behind the changes. To put it precisely, even though the forms of how it is taken and met differ from moment to moment, the social requirements have always come from the living experience which appear and converge at first at a local level, meaning that people would like or prefer to the services with a sense of belonging to the community, even though mobile internet has generalized it as a virtual concept. With the help of the enlarged network, the technological and social potentialities can be bridged in a new dimension connecting people who are not related in a traditional way.

Service design has a lot to do with this vision. By proposing a commonly recognized value and creating a particular scenario, issues can be managed in an organized way, in which situation people are invited or motivated to collaborate with others to achieve the positive results, reminding us of the expression creative community [4–6]. These characteristics and distinctions give us a look at the core of services built on and promoted by mobile internet, i.e. however diffuse and scattered the issues are, it is always necessary to hold people together with a positive value proposition and a social connection.

2.2 Convergence of Diffuse Resources for Personalized Requirements

In the last decades, MCTs have shown the advantage of integrating and deploying diffuse resources in the social range. The aspects are promoted with the development of Mobile Internet, leapfrogging from manufacturing of production to the era of individualization by making possible a variety of customerized services. It is gradually understood by the companies to pay more attention to "user experience", as the driving effect to the economy of the manufacturing or technology has been stagnated recently, while from the perspective of design, the focus is being diverted from the "design of products" to "design for people's purposes" [7]. With the arrival of the experience economy, diffuse knowledge and people's capacities are taken as a kind of resource, which helps reduce the cost of society being collected and utilized appropriately.

In such a circumstance, people's capability and initiative have been reinforced by the digital technology. Taking smart phone as an example, not only as a communication tool, more than this, it has been a platform with a set of functions, the particular composition of which is partially decided by users. In the form of App, surface of services are simplified and condensed into a finger's controlling area, with flow of material and information moving behind, leaving a flexible space for people to switch the activities they are taking a part in.

2.3 Collaborative Services Towards Sustainability

Different from the standard services which are based on asymmetrical interactions between active providers and passive users, collaborative services [8] found in the networks of contemporary society tend to be more symmetrical and ask for the direct and active involvement of all the interested actors [3].

Thanks to the "Internet Revolution", new forms and typologies of services have been developed to enrich the possibilities of actions. By creating a balance where users get access to the consumption passively, at the same time are free to choose what kinds of more creative experiences to engage in and how [9], mobile communication and ubiquitous network provide a new dimension as people participate in the activities with strong motivation, changing the processes and experiences of interaction in the collaborative services [10]. In view of value creation, this co-producing process features the experience and emotion feedback when people are integrated into the system with their enthusiasm, care and sense of achievement aroused. To be more precise, the users' role has evolved from "destroyer of value, to source of value, and finally to co-creator of value" [11], not only for the material and process requirement, but also for the systematic balance and the actor's self-improvement. That's why it matters a lot how we behave ourselves and interact with each other in an interconnected environment especially when it involves a social concern.

2.4 Social Cohesion in a Decentralized Structure

Since the service scenarios have been transferred, most of them, into virtual spaces, interconnection and interaction between the actors tend to depend more on the

infrastructures set up by the companies or initiators, i.e. a set of rules and technological supports would be needed to build an equal and liberal environment where the identity difference is removed and status repositioned. Nevertheless, however complex and volatile the situation is, The relational quality [12] is always considered a key element and the achievement of wellbeing is still based on interpersonal encounter. Through the flat structure of communication network, services based on Mobile Internet build a new form of social tie by ensuring users a multi-dimensional communicating experience and, to make it reliable and extensible, an organizational guarantee.

Therefore, a new body of common knowledge need to be established to reorient people's learning process and reorganize the social resources from a broader perspective, with highly motivated and mobilized actors interacting with each other. To further explain this, there will be different typologies and paradigms making sense for different situation, and the final vision is built on a basis of socialized connection, which relies to a great degree on the quality of the relational network and reliability of links between the actors.

3   Case Study

Sustainable lifestyle leads to conceptual and behavioral changes, as well as reconfiguration of the social structure. To achieve this, it has been an important way to exploit the diffuse social resources and redistribute them throughout the society, in which process personal capabilities would be fully mobilized. Eventually, in some way, the innovative approaches and situations relate closely to the expression grassroots social innovation, in the context of mobile internet which would play a larger role in the field of social innovation, especially in China [13].

To get a basic acknowledgement, and continually based on which to carry out a further analysis, a set of cases were collected making a picture of what is happening in this particular situation. Finally, four cases were selected as typical ones. There is the case, Chunyu Doctor which seeks to rebuild the relationship between patients and doctors, by improving the process of health inquiry online with recording tools for daily activities related to people's physical condition; And we also focus on a service helping people to book vehicles from personal owners (non-taxi drivers), as what Yongche.com is doing; In the case of Xiaozhu.com, similar to Airbnb, it makes an agent interconnecting people with vacant apartments and the ones who need to rent a place for a short term; Gudong is an App service collecting users' data when they are taking exercises, and further than that try to build a social network based on people's common interest in outdoor sports.

Looking attentively at the cases, we can see that four aspects appear as primary concerns to form a basic impression of the services, i.e. platform utilization, actors involvement, interactive relation and systematic integrity, corresponding to the particular phases when conceiving or developing a service-oriented solution (Table 1).

Table 1. Four aspects as primary concerns

| Cases	Platform utilization	Actors involvement	Interactive relation	Systematic integrity
Chunyu Doctor	App	Motivated/ Related	Expert-to-Ordinary	Weak
Yongche.com	App/Web	Engaged	Haves-to-Havenots	Strong
Xiaozhu.com	App/Web	Engaged	Haves-to-Havenots	Strong
Gudong	App	Integrated	Peer-to-Peer	Strong

3.1 Platform Utilization

Considering the services we are discussing here rely mostly on mobile applications, it is widely agreed that a mobile platform is needed to make a common space for communication and to equip the actors with appropriate tools, i.e. the infrastructures built within virtual spaces to enable a particular activity to exist [4].

Personalized, participative, configurable and expansible, mobile platforms have shown a variety of elementary characteristics when applied into the social area dealing with people's diversified and immediate demands. Taking Gudong as an example, the platform is made to be a personal exercise log, a GPS tracker as well as a social network, with dynamic feedback and interaction in real time. Such situation can also be found in Chunyu Doctor, which provides users a method to record one's physiological index and living habit, composing personal health database reflecting one's health condition. With accurate calculating and systematic planning, services are formed from users' experience and made to be universal, applicable and available. Different from the production or technology driven business with strong productivity supporting, social resources driven services are created, in which process mobile platforms play an important role.

3.2 Actors Involvement

Different from the traditional way involving actors in a service issue, in which situation more attentions are paid to the practical participation and it is hard to form a long term relationship away from the service scenarios, in the context of mobile internet, online connections open up new possibilities to define how and where people are involved into the activities. It is found that there exist four stages corresponding to the particular conditions of the general users taking part in the services, considering different complexity requirements of the activity, as indicated in Fig. 1.

In the first stage, people are "motivated" by the common value or basic acknowledgement, such as Chunyu Doctor, where the communication between patients and doctors are often on a superficial level related to slight illness or minor symptoms. That is, for the present situation, users only get supported from online information without physical encounters, and it takes little effort to be a part of it. Secondly, in the next stage, users become "related" in the service, with more concern on continuous improvement and interaction with others. We can still see that in Chunyu Doctor, users

degree of involvement
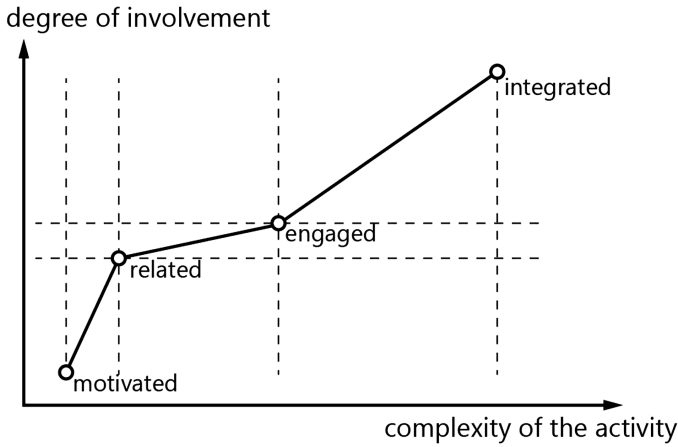
Fig. 1. Four stages of actors involvement

can get into a deeper level by establishing a long term relation with the doctors, i.e. putting them into a watchlist, or, if it's convenient and necessary, making appointments with them directly. For the third stage, the adjective "engaged" refer much more to the personal commitment and achievement based on a stable interconnection with each other which requests a trust relationship and reliable organizational support, such as Yongche.com and Xiaozhu.com. At last, as an ideal situation, actors are "integrated" as indispensable part of the system supporting the main body of the service, while mobile platform serves as basic infrastructures or enabling tools making users active subjects keeping the service running.

There are two points to be clarified as supplementary explanation: It is found that the degree of difference between every two stages varies with intensity of motivation, and to move into the next stage different level of complexity will be needed; The four stages are brought up to define a dynamic performance, by saying which it means actors involvement can be at different level even in one particular situation as the service condition or users motivation change.

3.3   Interactive Relation

Mobile communication and ubiquitous network has bought a new dimension into our view to differentiate and evaluate the role of actors and interactive relation within the system. At first, faced with the interface of services, are users from social area with their creativity and deliverability taken as a new form of resource. And there appear some different situations when it comes to the way how general users participate and interact with each other in a specific scenario. For example, in the case of Chunyu Doctor there exists a clear boundary between service providers and clients given that the supply-demand relationship is based on a highly specialized field and the doctors involved have to be qualified to give the advice, to define which we can call it as "expert-to-ordinary". While in other cases, it is difficult to distinguish between

providers and clients, such as Yongche.com where people can be both the drivers (which need a simple certification process) and passengers. What makes the difference is whether one gets the applicable possession or capacity for another in a particular situation, i.e. "haves-to-havenots". Same things can be found in Xiaozhu.com. In the case of Gudong, actors' role distinction has been further eliminated, and users are treated equally as both providers and clients, getting satisfied or supported by each other, where the relationship can be defined as "peer to peer".

3.4   Systematic Integrity

Services towards sustainability in the context of mobile internet have presented a range of possibilities to reach the social needs, opening up a new model by treating general users as providers endowed with resources and specialties. And Systematic integrity is to be achieved as an ideal result, with five dimensions particularly concerned: core value, infrastructures, relational ties, network and sustainability.
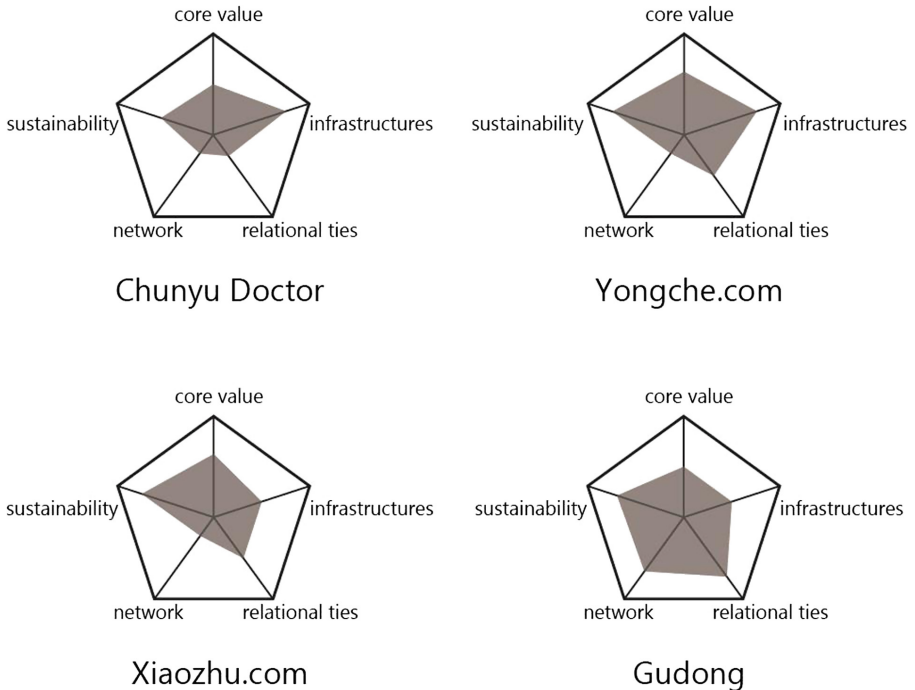

Fig. 2. Systematic integrity analysis of the four cases

It is the core value that brings people together and makes a common base to set off the activity, which often encompasses common concerns, positive objectives or benefit drivers. And infrastructures, here mostly in virtual sense, refer to digital technologies and organizational conditions that help to establish and facilitate the services and

transform the common recognition into action. While relational tie highlights the fundamental basis when establishing relationship, to which such procedures as identity authentication, mutual evaluation and, if necessary, interpersonal encounters can make a difference. With socialized connection built within the system, a kind of network is being formed, i.e. social interaction based on mobile platform plays an important part in the service process, making an open and multi-dimensional communication environment. Different from all the issues mentioned above, sustainability has more to do with ecological benefits of the services, concerning the way how services are conceived and developed, not only in an environmental sense but also as a sociology category involving such factors as behavioral experience, self-achievement, relational quality, and so on.

As indicated in Fig. 2, we make an evaluation to the systematic integrity of the four cases by establishing an analysis diagram with the five dimensions placed around the pentagon at each point, and some interesting points can be found.

4   Service Model

A model is put forward (as Fig. 3) to depict an ideal picture of the dynamic system, which features the service based on mobile platform built to gather users, mobilize the interaction, and finally realize a systematic integrity.
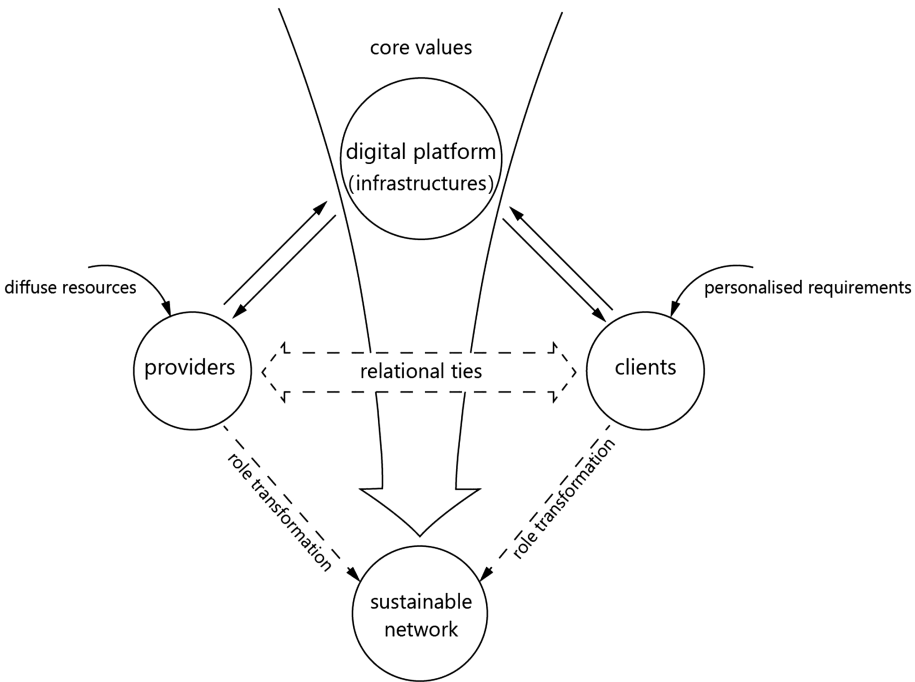

Fig. 3. Service model analysis

As we can see from Fig. 3, the mobile platform acts as a bonding agent as well as a driving force. Looking horizontally, it holds together the users with core values, while dividing them into two groups: the group of people who serve as providers by transforming idle resources or personal capacities into applicable services; and the ones acting as clients with personalized needs and requirements. By providing or being satisfied, the users are involved into a symbiotic relationship forming varieties of relational ties. And from the vertical perspective, it is found that the core values are embodied into specific infrastructures to achieve proposed objectives. Through building comprehensive scenarios and enabling users with appropriate tools, mobile platform enrich the contents of the interaction, pushing the actors involvement into a different level. That is, finally, a sustainable network is established where the users are integrated into the system as equal parts, co-producing the main body of service with their potentialities fully exploited considering personal knowledge or skill complementarity. In this way, social problems and needs are addressed by a low-cost solution where personal performance is treated as input as well as output while technology facilitates the activity fundamentally and peripherally.

5 Design Proposal: Baby Plan

Baby plan is a service proposal based on a mobile platform, defined as "an supporting network for pregnant women to deliver a healthy baby", whose purpose is to engage new mothers and the pregnant women into a collaborative community, where the new
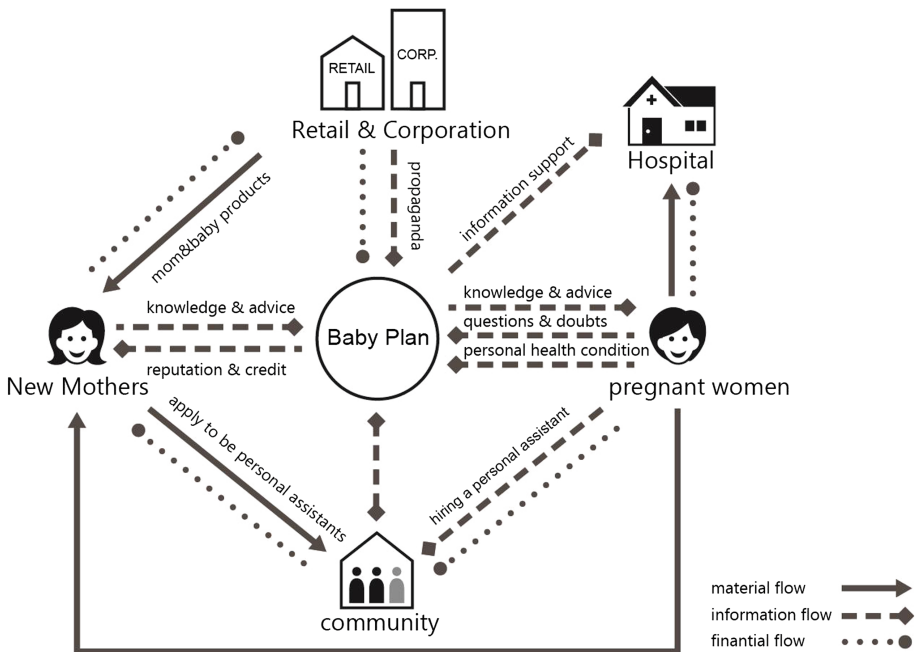

Fig. 4. System map of Baby plan

mothers are endowed with a new role: the adviser or assistant of the pregnant with their personal experience and knowledge. And as the pregnant women turn out to be new mothers, it's natural for them to switch the role (Fig. 4).

Baby plan provide a better access to the personal knowledge for young pregnant women especially who have no such experience before and normally get themselves supported through internet or directly going to hospital. It also helps to relieve their fear and anxiety when communicating with the ones who have just gone through it. By informing and supporting pregnant women, new mothers would be rewarded in form of reputation or credit, earning them a better chance to get a discount when buying mom&baby products. On the other hand, the mobile platform is established based on interpersonal links formed around the shared activity, which support registration, validation and the rules to motivate people to be engaged, with links to the periphery commercial resources. In addition, the service has also tried to build an online community where the pregnant woman can seek to establish a long term relationship with a particular mother as her personal assistant who will be paid monthly in return.

6   Conclusion

Such explorations and hypotheses help us to take a further step when considering the potentialities using latest technology to solve social problems from the perspective of design. Digital social innovation as a recent label to include and describe the activities motivated or driven by the digital technology, indicates a socialized movement in a flat structure towards the sustainable society, where both public engagement and personalized capabilities should be of significant value. By defining the particular situation and making an exploratory depiction of the service innovation in the context of mobile internet, the way of how to understand the dynamic system and further to conceive a feasible solution are fully discussed, bringing us a new angle of view to look at the ideas of collaborative community, interpersonal interaction, enabling infrastructure, and so on. As a result, what has been discussed above prove the convergence of technological innovation and social engagement, and more attentions should be paid to this field to facilitate an ideal society.

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