

Applying Transformative Service Design to Develop Brand Community Service in Women, Children and Infants Retailing

Shian Wan, Yi-Chang Wang, Yu-Chien Lin

Abstract—This research discussed the various theories of service design, the importance of service design methodology, and the development of transformative service design framework. In this study, transformative service design is applied while building a new brand community service for women, children and infants retailing business. The goal is to enhance the brand recognition and customer loyalty, effectively increase the brand community engagement by embedding the brand community in social network and ultimately, strengthen the impact and the value of the company brand.

Keywords—Service design, transformative service design, brand community.

I. INTRODUCTION

IN the past 30 years, western economy has changed its structure and transformed from production-driven to service-driven. The service-driven industry plays an ultimate role in facilitating the economic growth. Especially finance, logistics and communications are most essential to all industries. The performance from service industry sector has become the leading indicator of economic growth and essence of economical dynamics to a country. Bustling service activities will boost up overall economy of a country.

Services constitute over 50% of GDP in low income countries and as their economies continue to develop, the importance of services in the economy continues to grow [1]. The service economy is also key to growth, for instance it accounted for 47% of economic growth in sub-Saharan Africa over the period 2000–2005 (industry contributed 37% and agriculture 16% in the same period) [1]. This means that recent economic growth in Africa relies as much on services as on natural resources or textiles, despite many of those countries benefiting from trade preferences in primary and secondary goods. As a result, employment is also adjusting to the changes and people are leaving the agricultural sector to find work in the service economy. This job creation is particularly useful as often it provides employment for low skilled labor in the tourism and retail sectors, thus benefiting the poor in particular and representing an overall net increase in employment [1]. The service economy in developing countries is most often made up of the following: The service economy represents the evolution of economic activities from pure products exchange to stage experiences and leave a

memorable and lucrative impression is now more relevant than ever [2]. With the rapid economic and technological development, the value and belief of human society have also fundamentally changed. People are not only satisfied with the usability and feasibility of products but also the sentimental experience received from using the products or services [3]. People emphasize more and more on interfacing themselves to the Product-Service System lifecycle and/or service experience eco-system. This accelerated economy development has transformed the traditional product centric design, manufacturing, optimization, innovation and marketing research to customer centric thinking, development and service design. Therefore, how to introduce service design methodologies to new product planning and online-offline linkage throughout industries are essential to facilitate the operational performance excellence [4]. Service design, sprouting around 1990, is a problem solving methodologies in combination of different expertise (including service management, engineering, marketing and design) and varieties of tools [5]. It is also a new way of thinking; through understanding the needs of consumers, people can create a service that is useful, attractive, efficient, and complete to customers, but also distinctive and efficient to service providers [6]. For instance, service design could be the crucial factors to determine the success of two adjacent coffee shops with similar business models [7]. Therefore, it is quite important to integrate inter-disciplinary expertise to build up the value of service design [8].

Currently, there is not yet a concrete definition for service design from either academic or industrial communities, therefore we adopt the definition from professor Sung in this study, “through the overall interaction, experience and relationships from co-creation network, together with internal and external stakeholders, we are able to efficiently and effectively deliver the value proposition to service receivers and also to achieve long-term strategic benefits.” Hence, the service design process is far away from the product manufacturing standardization. It requires the deep research of understanding user needs in order to generate the insights. The insights will be used to design the proper service flow to be in line with the goals for business innovation. Stickdorn and Schneider, therefore, propose five service design principles as [5]:

1. User-centered: Any service design should be user-centered and focus on user feeling;

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2. Co-Creative: During the service design process, it should include internal and external stakeholders, including service providers, service supports, service receivers, and non-personnel machine and equipment;
3. Sequencing: Service is consisting of a sequence of actions. Service flow should clear and easy understand.
4. Evidencing: should be able to visualize intangible service and experience;
5. Holistic: should convey internal and external environments into consideration.

In order to create proper service flow, service design not only needs to integrate user preference, external environment, brands and corporate culture, but also maintain highly relevant between service and service receivers, as well as utilize different thinking styles.

Blueprinting is used extensively as the tool for outlining service design flow is due to its visualization power. Every touchpoint can be sequentially put in order; tangible service contents and operational functions can be clearly illustrated in the blueprinting [9]. However, according to field research and observations, experts and scholars proposed different point of views. British Design Council summed up the service design theories and proposed the Double Diamond Design Process [10], referred 4Ds, which consists of four phases: (1) Discover, using the customer journey map, market research, user research to identify problems, needs and opportunities; (2) Define, starting to analyze against previous exploration stage to define the services and activities for those can be offered. Available methods include persona, brainstorming and design guideline, etc.; (3) Develop: leading the design and development of solutions and conducting in-house testing, using the method comprising the service blueprint, prototyping and business model design; and (4) Deliver, rolling out the product or service to the market, establish evaluation and feedback mechanism, collect customer feedback to make adjustments, and meanwhile, also put stakeholders and corporate capacities into considerations to create a new service or products which will be creative, appealing, useful and easy to use throughout the exploration process.

Famous American design house IDEO define service design process as: (1) develop insight about the market; (2) create radical value proposition; (3) explore creative service model; (4) bend the rules of delivery; and (5) interactively pilot and refine the new service. European company Live□Work, established in 2001, unfold the service design activities by means of comprehending eight approaches including understand, imagine, design, create, validate, prove, test and monitor to unfold service design activities [3].

Institute for Information Industry (III) from Taiwan integrated IAO service engineering methodology by Germany ITRI, customer experience insight approach by America IDEO Design house, service design tool by Italian scholar Roberta, and Innovation Matrix service ideation tool by Dr. Li Jie, professor from University of Cincinnati and American Center for Intelligent Maintenance System (IMS), to develop "Service Experience Engineering (SEE)" in 2008. "SEE" has

five distinctive service process stages, including idea management, requirement analysis, service conceptualization, service implementation, and market launch, to complete service design blueprint [11].

Though very few studies focused on service design process and few systematic researches on key activities, Professor Sung [6] proposed a generic service design process, called IDEA Service Design Process (IDEA SDP). IDEA SDP is also equipped with feedback mechanism with four major phases (ideation, design, execution and assessment), five key milestones (service gap, co-creation, visualization, reflection and re-examination) and six execution steps (exploration, explanation, proposal, prototyping, verification and delivering), in the steps that has corresponding key activities and method/tools.

The core concept of IDEA SDP is interaction, experience and relationships oriented with strong emphasis on value co-creation, outside in, value in use, multidisciplinary and holistic service design process. It is a flexible service design process template with which different users can adjust accordingly to the content or features of their specific services.

To sum up, human is the center of all service design. Therefore, it is never overemphasized on the concept that "user" is the core of service design processes. It requires deep understanding of existing users and potential users and estimate what services they might need. However, from the experience of practices, it is always difficult to come up with a comprehensive consumer insight from the designers' own point of view. The real consumer needs are sometimes unknown even to the consumers themselves or they do not usually have the capabilities to articulate comprehensively. Sometimes, the situation could happen when the whole entities to consumers are not completely included into the definition. Therefore, this study would like to apply "Transformative Service Design" methodology to include all the relevant stakeholders to the service design process. By including the consumers in the process of service co-creation, we proceed with the empirical study on applying "Transformative Service Design to Develop Brand Community Service in Women, Children and Infants Retailing", with the expectation to accomplish a more decent and comprehensive service design project.

II. TRANSFORMATIVE SERVICE DESIGN

Service Design has been gradually enhanced to cope with the internal and external environments in our societies as a whole. Transformation service design was first developed by Burns, Cottam, Vanstone, and Winhall in 2006. The practice of transformation service design was defined as following [12]:

Because organizations now operate in an environment of constant change, the challenge is not how to design a response to a current issue, but how to design a means of continually responding, adapting and innovating. Transformation design seeks to leave behind not only the shape of a new solution, but the tools, skills and organizational capacity for ongoing change.

Traditional service design has always been focused on customers as the center of the design process. Design team initiates the process by field trip investigations and interviews to understand the target audience; however, their unmet needs and potential expectations are often ambiguous. Transformative service design, on the other hand, focused on the co-creation process between designers and customers in order to provide effective and innovative business solutions. Therefore, Kurt adopted participatory action research in experimental work of social democracy and organizational change. He integrated the theoretical studies and social practices to develop a cycle with four key steps to implement action research, including problem analysis, solution planning, execution implementation, and evaluation [13]. Action research is to resolve actual problems, so there will be different approaches responding to different problems under different circumstances. Chein, Cook, and Harding identified participant action research as the people who are to take action are involved in the research from the beginning, and this facilitates action taking and keeps recommendations workable. This concept provides transformative service design the foundation of transforming passive research participants to be actively involved in the research process as a change agent [14].

According to the above findings, Sangiorgi proposed seven key design principles for transformative service design, including: 1) Active Citizens; 2) Intervention at community scale; 3) Building capacities and project partnerships; 4) Redistributing power; 5) Design infrastructures and enabling platforms; 6) Enhancing imagination and hope; 7) Evaluating success and impact. The following is the brief introductions to seven principles within transformative service design project [1].

1. Active Citizens: In the practice of transformative studies, active participation from citizens and citizens as “agents” are the two critical factors in the creation of social wellbeing.
2. Intervention at Community Scale: The focus of attention in the design interests expand from individual-user based to community-based scale. Community is considered as the right size to activate a large scale revolution in order to accommodate the drastic change of social dynamics.
3. Building Capacities and Project Partnerships: “Active citizens” and “Intervention at Community Scale” have potentially, “transformative” in common. As Cornwall claims, though, to be effective participation “requires changes in organizational culture, as well as the attitudes and behavior of state officials and service providers [15].
4. Redistributing Power: In the transformative service design process, the meaning of participation is not only the skill or methods applied, but also redistributing the actual power happening during the design decision process.
5. Enhancing Imagination and Hope: Service design requires rich imaginations about feasible scenarios. Designers must leave the old framework behind and think out of the box by providing new visions for the better future.

6. Building Infrastructures and Enabling Platforms: The ultimate goal of service design is to improve social wellbeing by radical transformation. It requires better considerations for people’s participation and engagement. The concept of co-creation is considered to be a more effective and personalized strategy for public services [16].
7. Evaluating Success and Impact: Effectiveness is, among all, a very critical issue for transformative service design. It is not an easy task to evaluate success and effectiveness in such a complex system. What are the dimensions of success? How to measure effectiveness? Quality in action research provides a feasible evaluation method which look at five types of validity: outcome validity, democratic validity, process validity, catalytic validity, and dialogical validity [17].

From the above, the main differences between transformative and traditional service design is that the stakeholders involved in the early designing process stage and tried to extend the intervention scale from a single user to the community level, and the target audience is no longer an individual but the entire eco-system. Transformative service design is emphasized on fulling the unmet needs for the customers and the complete design method will be formed by means of system thinking and design thinking. From our study, transformative service design is a radical interceptive innovation. It tried to explore the unfold issues from a broader perspective to seek the service opportunities and to introduce key technologies to provide solutions.

In this paragraph, we will illustrate transformative service design architecture and process. Transformative service design consists of four process stages, environmental analysis and problem definition, conceptual design, service implementation and service verification. We will further explain in details the working items stakeholders, tools and methodologies and service outcomes in each of these four stages in the following paragraphs.

A. Phase I. Environmental Analysis and Problem Definition

The strategies include value proposition and problem definition, domain knowledge analysis and needs assessment. The people involved in value proposition include service design team, service operators, interviewers; the people involved in the needs assessment include service design team, service operators, and methods and tools used in this stage include 3C analysis, expert interview, trend analysis, essential value proposition, design point of view, domain knowledge collections and analysis. The variety of value propositions in transformative service design are stakeholders, strategic directions and stages of customer empowerment, as following:

Followed by customer needs assessment by interview, there are steps like sympathy map construction, confliction definition, view point reconstruction, design reflection and insight analysis. All these processes will facilitate the design team to get valued customer insights and find out where the service gap is. The information retrieved from insight analysis process will help the team to construct the design consensus

(Point of View). This will facilitate the conceptual design stage to workflow smoothly. When developing empathy map, insights and analysis can assist the team to explicit the unclear language behind customer's real thinking. Any contradiction or conflict that may rise from the analysis may have the

chance to become the most important breakthrough service. This allows designer team to excavate customers themselves who may not be aware of the pain points or even their expectations. The design team can base on these requirements to develop solutions to the corresponding keys.

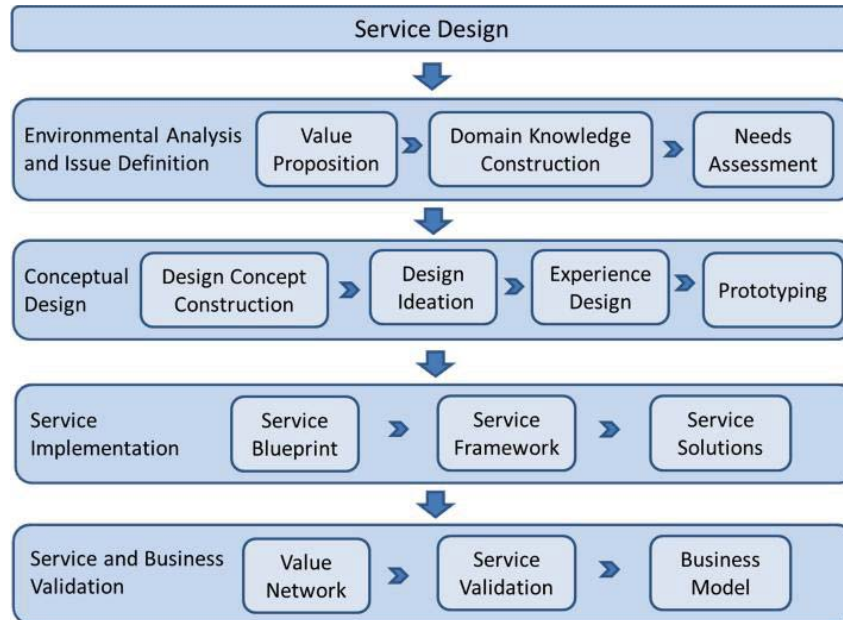


Fig. 1 Transformative service design process

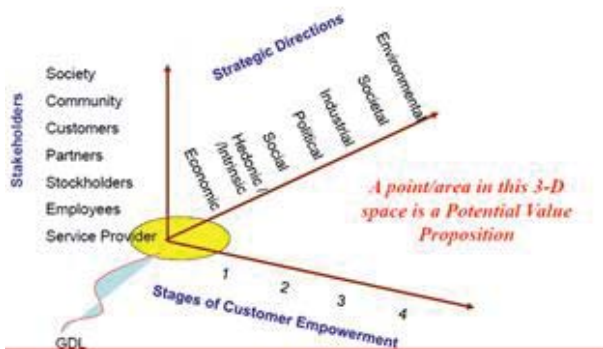


Fig. 2 Variety of Value Propositions [18]

B. Phase II Conceptual Design

Conceptual design includes design concept construction, service design ideation, experience design, and prototyping. In the design concept of the construction of stage involvement includes service design, service management industry and service users; in service design ideas hair to stage participants included clothing designers and service management industry; in experience design stage participants include service design, service management industry and service users; personnel participating in the prototype stage to service design, service management industry and the respondents. Methods and tools used in this phase include interviews analysis (VNS

established), empathy map, conflict defined conversion viewpoint restructuring, design concepts projection analysis, insight information analysis and design synthesis viewpoint defined (POV). Followed by the construction of the design concept, the service idea hair like (Ideation), UI / UX experience design, prototype (Prototyping) design process. Period also through internal testing, stress testing, user testing interviews, expert testing, etc., so that service users can participate in the process of constructing the prototype and give suggestions, feedback, so that the design and development team can quickly verify the design concept and prototype utility, and continued optimization services; In addition, the views of interested parties, practical side of the budget, service development time and associated policy factors should also be considered in order to ensure service viability. During this stage of the process a number of factors should be considered, its diagram below. Final output of the prototype should be as specific as possible, and turn into a development team of technical development executable specifications.

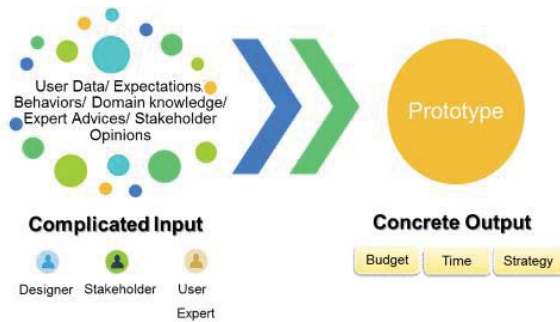


Fig. 3 Prototyping Design Considerations

C. Phase III Service Implementation

Services practice blueprint stage include service design, service and technology infrastructure to expand core solution development process. Personnel involved in the design phase of the service blueprint includes service design staff; personnel involved in roll-out phase in the service architecture comprises service design, service management industry, the respondents / person, service users. In the technical core staff involved in the solution phase include service design staff. At this stage will expand and confirm service architecture for enterprise technology solutions for inventory and assessment of technical feasibility, expand service blueprint (Services Blueprint) and service platforms.

D. Phase IV Service Validation

Services and business to carry out value chain, service validation and business operation model is built. Personnel to carry out stage in the value chain involvement includes service designers and service management industry; personnel participating in the service validation phase includes service design, service management industry, the respondents/person, service users. Staff involvement in business operation mode phase comprises service design and service management industry's personnel. The method used and the tool includes a service and business model validation and user testing.

III. CASE STUDY

In recent years due to the rapid growth of mobile commerce, the rise in O2O consumption patterns and the influence of the Internet community, the retail service industry is facing unprecedented change. The key issues include:

1. The rise of mobile commerce, smart phones affect consumption: With the growing popularity of smart phones, consumers can use smart phones anytime, anywhere to find the most favorable information on consumption. For example, consumers will use mobile phones to find the store before shopping, confirm opening hours, to query promotional activities as well as parity price.
2. Integration of the O2O consumption patterns: Online-to-Offline, O2O, refers to the case that the consumers search and order the products in the Internet, then pay via internet or go to the shops to pay and pick up the products.

3. Consumer purchasing behavior has been influenced by the Internet community increasingly: When consumers make decisions, they are more likely to be influenced by the community or their own social network. Before make purchasing decisions, 75% of consumer will refer the comments on Facebook. In Taiwan, 70 percent of consumers before shopping, will acquire suggestions or comments by searching the Internet or to ask their friends and relatives face to face or by telephone.

IBM surveyed consumers in 16 countries found that 60% of consumer buying behavior will be subject to community impact. It shows that social marketing is more effective than traditional marketing. As a result, social marketing average market growth rate reaches 58% per year, and is gradually replacing traditional media advertising [19]. The local retail market of maternal and infant supplies in Taiwan has been erodes by international competitors, including the brands from Japan, South Korea, Europe and America with their superior design as well as the mastering skill in social community marketing. At the same time, the increasingly complicated consumers' patterns of behavior, also make it is more difficult to predict consumers. On the other hand, the channels to contact with consumers become more diversified than ever before. The traditional marketing methods are no longer applicable to today's multi-channel experience economy. Therefore, the use of mobile commerce, social networking and data analysis and other technology and retail value-added service industry innovation marketing applications become increasingly important. However, it is not easy to measure ROI the effectiveness of social media, so domestic retail chain system is unable to effectively use social media to enhance marketing effectiveness. And with the community influence growth and consumers' enhanced abilities in mastery of information, how to listen to the community and to find insight of unmet consumer demand as well as the behavior trends have become an important research topic in developing innovative marketing applications by new technologies.

A leading brand in domestic manufacturers in maternal and infant supplies retail industry has been chosen as the subject of case studies. In the above mentioned changes in consumer behavior trends, key issues are summarized as following:

1. International brand competition: the original customer base increased churn.
2. Transformation of consumer decision-making: the consumer decision-making affected by the community influence increase. Gartner forecast 2015 sales of enterprise network will have 50 percent is generated through its social media operations and mobile device applications. The traditional marketing approach has been difficult to develop new customers, and no effective way to understand and respond to the real needs of consumers [20].
3. Transformation of communication channels: customer hold the traditional image of the brand; the brand new connotation has not been effectively delivered.

In general, according to the purposes and operation method adopted by the brand community, the brand community can be

divided into commercial activity supporting and public nature two categories. To assist local leading manufacturer to solve the above-mentioned key issues, the policy of brand community is to provide service with public nature to gain the support and approval of the majority of consumers first. And then based on high-quality goods and services, the brand can make use of the scale of the community to support business practices. Guided by the public nature, the brand provides services to assist the novice pregnant women through pregnancy smoothly and pleasantly so as to reduce the anxiety of mothers with physical and mental stress, and promote community interpersonal and emotional communication, thus to create a friendly social environment and atmosphere. It even can affect maternal and child related industry ecosystem of hardware and enhance software support and atmosphere of the whole community.

This service is designed to meet the spirit of transformative service design. Therefore, the present study in collaboration with maternal and infant supplies retailers, through rigorous demands insight and using transformative service design methods in maternal and infant supplies retail, the brand community services can successfully deliver its brand value and enhance brand recognition. Furthermore, brand can continue to maintain long-term care and loyalty of existing users, then by the use of the customer relationship to expand the scope of the brand and the ability to help increase revenue as well as sustainable benefits.

This study attempts to explore important issues and compliance with the target customer (pregnant women) so as to propose innovative services based on key technology solutions. In this study, according to the aforementioned four-stage transformational service design approach to design and development of the brand community services, various stages are described below with the corresponding empirical process of service design output.

A. Defining Issues

In the environment analysis and issue definition phase, social welfare oriented service entry point was adopted by the brand company. The present study design issues and core value proposition of the proposed brand community services is "to allow novice pregnant women can be happy and successful go through over pregnancy". In addition, through expert interviews, interpretation of data collection, to explore well-known pregnancy-related services by studying 16 benchmark research and analysis, the important design issues are defined including the archive of the physical, psychological, emotional management, knowledge issue, husband participation, caring of friends and relatives, in-laws relations, consumer decision-making, workplace relations and other psychological factors that will affect target audience. All this information can be served as the basic knowledge architecture and obtain better understanding of the target customers.

In order to understand the real needs of the potential target customers, 12 focus group interviews were held. A total of 75 novices from Taipei, Taichung, Kaohsiung have participated the interviews. The respondents have been grouped into four

types as the young house wives, senior house wives, young office ladies, and senior office ladies. By stepwise (laddering) Interviews methods the research team explored respondents' VNS (Value-Need-Solution), to understand customer value, potential demand, pain points, expectations, preferences and other information. By analyzing information aggregated from interviews, the following empathy map of respondents have shown the statement (Say), observed behavior (Do), the actual behavior, thinking (Think) and feelings (Feel) of the potential target customers.

TABLE I
CONSTRUCTION OF THE EMPATHY MAP (PARTIALLY PRESENTED)

Say	Think
<ul style="list-style-type: none"> When has symptoms or in doubt, will search the Internet for information or ask around to friends and family other than to ask the doctor. Do not want to bother her husband to accompany her to hospital for checks. However, will be unhappy, if see someone else with her husband. 	<ul style="list-style-type: none"> Although a lot of information from all sides, but sometimes do not know what really credible than those. When facing with difficulties, to take in self-adjustment is unavoidable compromise, but still hope her husband could help more in dealing with these situations.
Feel	Do
<ul style="list-style-type: none"> Even knowing that a bad mood can affect fetal health, sometimes could not get out from bad mood. 	<ul style="list-style-type: none"> Some husbands concern only child, do not care about the feelings of Mummy As long as husbands have shown concerns, even if they could not solve the problems or they just play trick, however, will be very happy.

In this study, we analyzed some of the psychological contradictions of the target audience, including, both novice mother need a desired amount of information, however it is not easy to figure out how much information is enough; husband's role is not clear, husbands are expected to understand more pregnancy related information so as to share mothers' pressure on the body and soul etc. Then, through the conversion of points of view can generate more insight and will affect the design issues (let novice pregnant women can happily and smoothly go through pregnancy).

By aggregated insight and analysis of information will achieve the final synthesis of a core design viewpoint (POV, Point Of View). This study obtained the following three important insights: (1) novice pregnant women and expectant fathers need reliable and personalized information and assistance to get through the various stages of pregnancy; (2) Novice pregnant women require the prospective father aware of their new identity as soon as possible, and thus to assume a positive attitude and face the problem; (3) In addition to her husband, novice pregnant woman also needs care and assistance from other important people and social systems, because care and support from these sources can give novice pregnant women courage to face the unknown challenges.

B. Design of Service Prototype

Based on insight from above information analysis and synthesis results, the POV of the service design is "Both novice pregnant woman and prospective father, need timely access reliable and personalized information and assistance as

well as both substantial and psychological support from social system, because as an early positioning of the prospective father with the care and support from all sides, allowing the young couple feel comfortable in a friendly environment to learn how to overcome challenges at different stages of pregnancy in order to greet the arrival of a new life."

According to this POV, the design team developed four main scenarios related to services, including: (1) How to make expectant fathers early cognitive new identity, (2) how to obtain personalized information, and (3) how to get social support and feel peace of mind in a friendly environment, and (4) to learn how to overcome difficulties in order to greet the arrival of a new life.

Based on the above analysis, the major functions of the service design for the brand community of pregnant women are shown as follows:

1. To acquire pregnancy knowledge
2. To keep records of checks in hospital
3. To record memorable moments by the use of images, sound, graphics or text etc.
4. To provide a tool for close interaction between expectant father and mother.
5. To have the support of expectant fathers, relatives, friends and social networks
6. To let expectant mothers share ideas and get psychological support from social community.

Then in prototyping process, all the information including domain knowledge, benchmark analysis, interviews and questionnaire analysis results are used in user interface (UI) and user experience (UX) design.

C. Empirical Results of Proof of Service

Services Practice

In this study, the handheld devices including smart phone and pad have been chosen as the main user interface. The function diagram of service system is shown as follows:



Fig. 4 Function diagram of the service system

In order to assure that the functional architecture of service can meet the needs and expectations of the pregnant mothers, a survey by electronic questionnaire has been undertaken. According to the survey results of the 346 respondents from the sampled target customer group, the detailed APP functional planning and design have been completed. Then through internal testing, stress testing, user testing interviews, expert testing, etc., suggestions and feedback can help the project team to quickly validate design ideas and prototype so as to optimize services continuously. Some of the interfaces of the released version of the App service are shown as follows:



Fig. 5 Examples of Interface showing Intimate interaction between couples



Fig. 6 Examples of Interface with personalized information

D. Preliminary Results of Service Validation



Fig. 7 “好孕邦” (Hua Yun Bang) App received a high evaluation of 4.7 points in Google Play Store

In December 2014, two versions of the service App have been officially released to App Store and Play Store respectively. At the same time, the leading retailer company in Taiwan began to launch the service at 190 sales points as well as the e-commerce platform. At the end of August 2015, the number of App downloads was up to 32,600 (pregnant women). It is estimated that future downloads can be up to 80,000 people per year (about 20 million pregnant women each year in Taiwan). In September 2014, after the adjustment and optimization, the revised App has been elected Best New App by Apple Store, while in Play Store also received high evaluation of 4.7 points. This preliminary validation results have shown that through appropriate service design process, the applications can meet user demand more appropriately,

therefore to improve the stickiness and loyalty of the target users [21].



Fig. 8 “好孕邦” (Hao Yun Bang) App has been elected “Best New App” by Apple Store in 2015

IV. CONCLUSIONS

This research discussed the theory and the importance of the service design methodology, and developed the framework of transformative service design. Focused on the various needs of the pregnant women, this service provides many customized functions to support them during the pregnancy. Different from other existing services for the pregnant women, we put many efforts to offer mental support to the target customers to make their pregnancy going well. Therefore, except for regular supporting functions, the intimate interactions between the couple as well as the care from the relatives and friends is designed in the service.

The front end of the service is an App, which has been downloaded over 72,000 times within one year, and scores 4.7 in Google Play Store. We keep refining the user experience of the system to strengthen the quality and the uniqueness of the service. Also, we dedicated to integrate this service with other social technologies and tools, leverage marketing resources of both physical and digital channels, and verify the business model in the field. The goal of this stage is to enlarge the impact of the brand, and find a profit-gaining sustainable model of the brand community service.

Findings and Future Work

By applying the transformative service design, some dramatically innovation can be done for the organization and the society. The most important step is to get the involvement of the decisive stakeholders. Their attitudes and understandings towards the design concept and value have significant impact on the success of the service design. If the decisive stakeholders cannot realize and appreciate the value of the designed service, they can neither understand nor support the incoming changes of their existing systems, organizational culture or business strategies. Then, there is no way the innovation can be realized. Therefore, it is inevitable that the transformative design methodology can be more successfully applied to an organization with positive, open and innovative culture.

Nowadays, the emergence of new technologies and new business models become much faster and unpredictable. How to build a procedure that can help the organization unceasingly react to the market change, modify and innovate their products or services become a critical issue for most organizations. Thus, the traditional service design methods must be modified. That is, we have to use Customer Dominant Logic (C.D.L.) instead of Service Dominant Logic (S.D.L.) to design and deliver our services. And by transformative service design, we can make the organizations, industries; even societies become more collaborative, innovative and wonderful.

Most Apps focus on one or a few simple functions, so that it can be easy-to-use. However, due to our target customer, pregnant woman, is quite special and need various supports in their pregnancy, many functions are developed in our App in order to meet the customers' needs. Therefore, our App make a great differentiation from other competitors. In the meanwhile, the back-end system is much more complicated and difficult than the competitors' Apps, which cause the developing process time longer than Apps with simple functions. During the developing stage, repeatedly back-and forth communication with the stakeholders are very important and must be applied. Also, the high involvement of the stakeholders can significantly enhance the efficiency and impact of the collaborative design/develop process. In the other hand, the user interface (UI) & user experience (UX) design must be carefully implemented in this case due to the complexity system and the high standards. The perfectly-show-up instructions and hints, user-friendly operations, easy-to-understand and pretty interface...etc., are all important issues in the service design process which matters to the success of the service.

After an App is on-line exposed, the stickiness index, which is defined as the ratio of the daily active user to the monthly active user, becomes a new challenge to the service operator. According to the research of Localytics in 2014, 20% Apps has only been used once; if one user does not use this App again within one week, there is 60% chance that he will never use this App [22]. Thus, how to raise the stickiness index and how to the conversion rate are equally important to the service operator. Besides keep refining the UI/UX of the App, relevant marketing strategies and activities should also be taken action. While dedicating to promote the App service to new customers, we also have to find out how to stimulate the stickiness index to keep the existing user active. Localytics recommend four tips to raise the stickiness index: (1) Value the user experience to ensure the quality of the App; (2) Frequently update the content and functions, try to generate customized content; (3) Care about the extreme user, find out how and why they repeatedly use the App; (4) Observe and analyze user behavior and remain interactions with them [23].

There are four key performance indices to evaluate a brand community, including (1) Brand-related purchase behavior (stickiness index); (2) Community membership duration; (3) Community recommendation behavior; (4) Community participation behavior. Put efforts on monitoring and analyze these indices, it can help the service operator to refine the

App, plan marketing strategy, performance evaluation and manage the social relationship. These are important issues for developing social community. The conversion rate of our App service has reached more than 5%, and we will keep working on refining the user experience, enhance the service content and enlarge the social community impact. We will integrate this service system with other social and ICT technologies to innovate new service models for the pregnant woman and new customers, the parents. Hopefully, we can build up an ecosystem of this industry, and create a transformative service in the near future.

REFERENCES

- [1] D. Sangiorgi, Transformative services and transformation design, *International Journal of Design* vol.5 no.1, 2011, pp. 29-40
- [2] B. Joseph Pine II and J. H. Gilmore, *The experience economy* (Rev. ed.). Boston, MA: Harvard Business Review Press, 2011.
- [3] C. Sung, *Journal of Design*, Vol. 19, 2014.
- [4] J. Wong, Service design – Strengthen Taiwan Small and Medium Enterprise Soft Power, *Taipei Economic Quarterly*, No.10, pp. 23-30, 2012.
- [5] M. Stickdorn and K. Schneider, *This is service design thinking: basics, tools, cases*, 2012.
- [6] B. Mager and T. Sung, Special issue editorial: Designing for services. *International Journal of Design*, 5(2), 1-3.
- [7] 31 volts service design, <http://www.31volts.com/en/service-design>, 2015.
- [8] W. Xu, From designing service to service design – Social and industrial innovation driven by design in UK, *HR Express*, http://itriexpress.blogspot.tw/2012/03/blog-post_3910.html
- [9] G. Lynn Shostack, "How to Design a Service", *European Journal of Marketing*, Vol. 16 Iss: 1, pp.49–63, 1982.
- [10] *Service Experience Engineering*, IEEE, DOIT, MOEA, Taipei, 2008.
- [11] C. Burns, H. Cottam, C. Vanstone & J. Winhall, RED paper 02: Transformation design. London: Design Council, 2006.
- [12] M. Horne and T. Shirley, *Co- production in public services: a new partnership with citizens*. Cabinet Office: The Strategy Unit, 2009.
- [13] K. Lewin, "Action Research and Minority Problems." *Journal of Social Issues*. Vol 2(4), pp. 34-46, Nov. 1946.
- [14] I. Chein, S. W. Cook, and J. Harding, "The field of action research", *American Psychologist*, Vol 3(2), pp. 43-50, Feb 1948.
- [15] A. Cornwall, *Democratising engagement what the UK can learn from international experience*. London: Demos, 2008.
- [16] M. Horne and T. Shirley, *Co- production in public services: a new partnership with citizens*. Cabinet Office: The Strategy Unit, 2009.
- [17] P. Reason and H. Bradbury-Huang (Editor). *Handbook of Action Research: Participative Inquiry and Practice*. Bennett Books Ltd, 2001
- [18] S-T. Yuan, Transformative service design workshop materials, prepared for ITRI, 2014
- [19] IBM survey reveals new type of energy concern: lack of consumer understanding, <http://www-03.ibm.com/press/us/en/pressrelease/35271.wss>, 2011.
- [20] Gartner Portals, Content and Collaboration Summit, <http://www.gartner.com/newsroom/id/1826814>, 2012.
- [21] Business strategy recommendations for brand community service (report in Chinese), ITRI, Hsinchu, 2015.
- [22] The 2015 App Marketing Guide by Localytics, <http://www.slideshare.net/jordannlegal/the-2015-app-marketing-guide-by-localytics>, 2015.
- [23] Is your app sticky enough, Localytics, <https://www.localytics.com/wp-content/themes/localytics/pdf/is-your-app-sticky-enough.pdf>, 2014.