

Introduction Strategies of Service-Oriented Product System Design for the Transformation and Upgrading of Small and Medium Manufacturers in China

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Abstract. With the global market competition intensified, Chinese manufacturers, especially SMEs now are facing the enormous challenges in sustainable development. Learning from other countries in the practical experiences of service design and industrial design, service-oriented product system design can be a solution. This will not only allow SMEs to accumulate their design powers, but also will enhance their competitive advantage. In this paper, firstly, the author analyzed and summarized the reasons for service design's coming-into-being in China through literature research. Secondly, based on the results of in-depth interview and fieldwork of a number of SMEs done by the author, several aspects such as design development status, service design awareness & demands, potential conditions of establishing product service system have been discussed. Finally, the author provided actionable introduction strategies for small and medium manufacturers to transform and upgrade their business model from "manufacture-based" to "design innovation-led".

Keywords: transformation and upgrading, service-oriented product system design, small and medium manufacturers, design strategy.

1 Introduction

From industrial society to post-industrial society, most developed countries have achieved great social and economic development based on services. China is definitely not an exception. After entering the new millennium, China has been seeking new modes of economic development. Design innovation has been heatedly discussed as a driving force of economic development in China over ten years. It is not until January of 2014 that design innovation has been officially incorporated into the policy of the economic restructuring. And design service, as Premier Li Keqiang has pointed out, 'has the high knowledge and added value, at the same time, the low consumption and pollution of our resources. It should be integrated deeply into related industries. And it is the core content of our economic restructuring, which will help us to improve the quality of products, meet different needs of our people, create a catalyst for change in industries, expand the employment and promote industrial upgrading.'(www.gov.cn, 2014).According to the existing studies on service design in China, there are mainly

three reasons for its coming-into-being. The first reason is the transition from ‘function economy’ to ‘service economy’, which, as Daniel Bell has mentioned in his book ‘the coming of post-industrial society’, is the main form of economy in post-industrial society. Due to the historic reasons and present situation of uneven regional development, there are mixed economy forms in China. In developed regions such as the Pearl River Delta and the Yangtze River Delta, there is a clear transition from function economy to service economy. While in undeveloped regions such as central and western areas in China, function economy is still the main form. In the former, industrial design has been successfully introduced and applied into local industries for over 20 years, but service design is still a new concept. Fortunately, through frequent communications with foreign design experts and numbers of design festivals, service design has abstracted some attention in local industries, mostly are big sized companies and enterprises. In the latter, industrial design has just been introduced to the local industries, only few companies and enterprises have benefited from it. So the prospect of service design’s development in China is not optimistic in this stage. The second reason is the most pressing needs in the voice of sustainable development for China. Some owners of manufactures commence to use design as a trigger to change the tradition definition of products and its whole lifecycle. But design, in their point of views, is just another tool which can be tried to make quick money. In fact, they do not care whether it is industrial design or service design that can contribute to their economic interests; all in all, they still base their business on producing physical products. Services, for them, are help to sell products, but should be within an acceptable cost. In this case, it seems that the application of service design concepts to China’s local industries cannot fulfill its born vocation of encouraging sustainability at this time. It still has a long way to go. The third reason can be seen in research in practical application of service design. It poses case studies that how service design helps to encourage new form of business model and social innovation with cultural purpose in several developed Asian countries and areas such as Japan, South Korea and Taiwan. In these researches, for the sake of reaching an agreement on the understanding of design values, cultural influences have to be taken into consideration. In most cases, traditional culture has been re-introduced by design and services, which seems to come back to life and can be transformed into economic and social innovations. What’s more, local culture has formed a new kind of industry, which is called culture and creative industry. Even though, many scholars cast doubts on the development of this new form of industry. As many so-called cultural and creative industry parks have been introduced and built up in big cities in China such as Beijing and Shanghai for almost 15 years ago. And a number of design experts with global reputation at home and abroad have been invited to open their offices or branches in these parks with the financial support from the local governments. Till now, it has not proclaimed any achievement on regional or city development. What we can often see in these parks are customized and small-production designed brands, which cannot definitely bring most manufacturers through their troubles. To make matters worse, a certain quantity of cultural and creative industry parks have been occupied by restaurants and clubs for entertainment. Design, itself has been pushed into the corner and acts as a tool for beautification. Not to mention service design! Service design is also facing an embarrassing situation: has it helped to create GDP? Yes, but very little. Has it helped to create new business models to help small or medium business? Yes,

theoretically. But not for sure when it comes into practical worlds. Has it done good to the local culture? Yes, and there seems to have more spaces to expand its influences. The rise of small brands from cultural and creative parks can afford expensive experience for small and medium manufacturers in China when they make up their minds to make a change. In this case, service design should move hand in hand with local cultures. On the whole, as the main form of China's economy is moving from function economy to service economy, manufacturing still makes important contribution to China's GDP. And more than 98% of manufactures are small and medium manufacturers (SEMs). Most of them have the awareness of design no more than making a beautiful logo. Some of them start to accept industrial design as one of powerful tool to change their products. Few of them have the knowledge of service design as we can see from the following paragraph in the third part. As a result, industrial design and service design cannot be introduced to them one by one as most western countries have done before. Together with other means of design, they should be introduced to SEMs in China in a package, which is service-oriented product system design.

2 Service-Oriented Product System Design

China has a long history in seeing the world, acting and thinking in a systemic way. Different from western philosophy, Chinese seldom discuss the universe with a dualism method. Instead, Chinese are accustomed to solve the problem in whole. As we all know, industrial design provides solutions to solve problems for mass production. And it is the way to create material objects. The transition from industrial society to post-industrial society requires SEMs to transform and update from OEM to ODM, even OBM. So in the process of transition, market competition will gradually shift from product competition, even brand competition to service competition. The common views of SMEs such as 'product is the source of profit', 'service is aimed at selling more products' should be developed into 'service is the main source of profit'. And the mission of industrial design should extend from shaping physical appearances of products to combine tangible products and intangible services in the total solution. Besides, service-oriented product system design should include service models which can lead to new business models, products, interaction and other necessary means of design. And service models including different services should be presented through different physical evidences such as websites, products, APP that can be experienced by the users. Most important of all, services should be regarded as the key factor to the success of the whole system. And they can help to realize the ultimate goal of design: solve problems for people in their daily life and at the same time, meet their needs in multi-levels.

3 Results of In-Depth Interview on Service Design

All the interview samples have been chosen randomly in the data base of SMEs in the national economic and information technology commission. As we can see from figure 1, there are 10 SMEs in the Pearl River Delta Region, 8 SMEs in the Yangze River Delta Region, 5 SMEs in Beijing-Tianjing-Tangshan Delta Region and 4 SMEs in the middle or west regions.

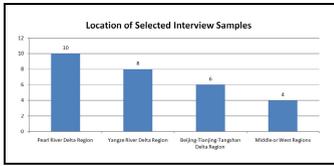


Fig. 1. Location of Selected Interview Samples

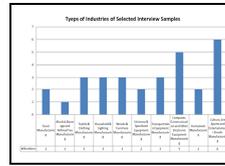


Fig. 2. Types of Industries of Selected Interview Samples

Based on 30 depth interviews with SMEs in China done by the author, the followings are the main results.

3.1 Time to Know about Design, Industrial Design and Service Design

As shown in figure 3 and figure 4, we can see clearly that after 2000, most of interviewees know about industrial design and have an idea of what design can bring to them. But there is still few interviewees do not have the recognition of industrial design. From the interview, there are mainly two reasons: firstly, there is no need for industrial design as one of interviewees from food manufacturing has said. Secondly, industrial design has been mistaken for mechanic design as one of interviewees from textile and clothing manufacturing has proved. Also one interviewee from middle and west regions is not aware of what is industrial design even if he shows to the author the changes that he is going to make for his products.

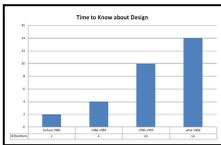


Fig. 3. Time to Know about Design

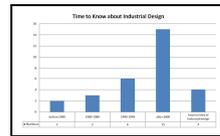


Fig. 4. Time to Know about Industrial Design

As we can see from figure 5, most SMEs do not know about service design. Among the few interviewees who claim to have an idea of service design, only 3 of them have a clear definition of service design, while others can only tell the differences between products and services. But fortunately, from the interview, the author finds out that around half of interviewees are managing to develop in a systemic way.

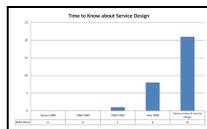


Fig. 5. Time to Know about Service Design

3.2 Design Development Status

The figure 6 shows that 50% of interviewees are purely OEM type. Only 10% of interviewees are purely ODM type. Around 36% of interviewees are mixed type, which indicates the trend from OEM to ODM or OBM. This arouse the hope of successfully introduce service design to SMEs.

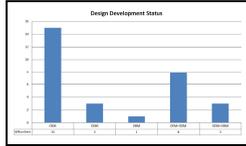


Fig. 6. Design Development Status

3.3 Role and Types of Design of Assisting in Expanding Market

It can be included from figure 7 that design has an effect on assisting in expanding market for most interviewees.

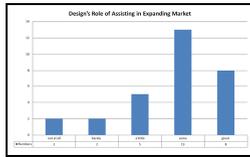


Fig. 7. Design's Role of Assisting in Expanding Market

As is shown by figure 8, we can see that package design is the most in need by interviewees. The next is VI system design followed by web design. Product design and exhibition design shares the equal importance to most of interviewees. Service design, defined by most interviewees in common sense such as after-sales services, is needed by half of interviewees. Other type of design such as textile design is needed by only a few numbers of interviewees.

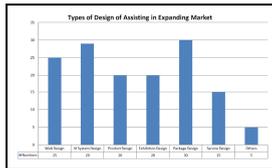


Fig. 8. Types of Design of Assisting in Expanding Market

3.4 Importance of Design in Product Development

As shown in figure 9, more than half of the interviewees think design is important in their product developments. According to the interviewees, design can help them to 'think widely and freely', 'create small changes to products but in a profitable way', and in most cases design can 'beat competitors because design can make products more attractive'. And we find out from several interviewees that design can bring something unpredictable to product development. One interviewee from OBM SME told us that design completely help the factory transform from a manufacturer to a local organizer. Their case is quite special because they give up almost half of the manufacture, rent the space to other smaller manufactures and provide management help such as quality control for them.

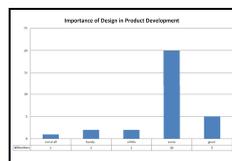


Fig. 9. Importance of Design in Product Development

3.5 Present Designer Status

Figure 10 shows the present designer status of interviewed SMEs. We can see that more than half of interviewees have the in-house design capability. And the rest choose to look for outside design cooperation, which are schools, independent designers and design companies.

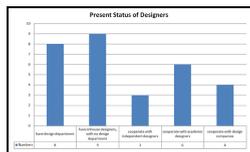


Fig. 10. Present Designer Status

3.6 Demands in Service Design

In the last part of interview, the author gave a presentation on service design to each interviewee. After the interviewee finally understand the meaning of service design. The author asked them their opinion on whether it is needed to introduce service design to their enterprises. According to figure 11, half of the interviewees cannot decide at that moment. But almost half of the interviewees have specific needs on service design.

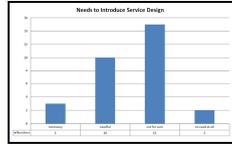


Fig. 11. Needs to Introduce Service Design

3.7 Potential of Establishing Service-Oriented Product System

Although most interviewees think it is not easy to establish service-oriented product system in their business, they do have the wish to have a try if given suitable circumstances.

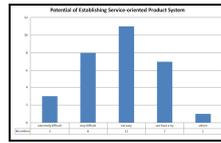


Fig. 12. Potential of Establishing Service-oriented Product System

3.8 Conclusion of the Depth Interview

From the interview, the author found out the advantage and disadvantages of introducing service design to SMEs. One advantage is that manufacturing in Pearl River Delta, Yangtze River Delta, Beijing-Tianjin-Tangshan Delta have a huge number of SMEs. These SMEs are developing from OEM to ODM or OBM and they have considerable needs in different types of design. Another advantage is that there is also potential to introduce service design to SMEs in these regions. Electronics, digital products, furniture, household utensils and medical equipments can be updated with a longer lifecycle and with new innovations that led by flexible services. The final advantage is that in these regions, there are numbers of professional design companies and design schools, which can be the important human resource for introducing service design. But there are also disadvantages. One is the lack of the understanding of service design. Service design, as the new born design thinking in China in recent years, has just begun to be accepted by professional designers. Head of SMEs need to be educated to understand this design thinking and should be educated to overcome the gap of different perceptions of design and business. The other disadvantage comes from SMEs themselves. They can neither build up a more comparatively complete R&D department nor restrain designers with talents as most large enterprises do. Not to mention service designer is completely new types of design profession in China now. But in the coming future, no more than 5 years, the whole situation will have a great change.

4 Introduction Strategies of Service-Oriented Product System Design

4.1 Government Level

Due to China's special social pattern, the introduction of service-oriented product system design should firstly be advocated by the government at all levels. Not only the supporting measures should be made and carried out, but also the government should share information database in public social media among similar manufacturers. In addition, the government units such as economic and information commissions in different regions should offer specialized consultancy to help SMEs to solve their problems. Furthermore, exhibitions to display and present service-oriented product system design should be held to extend the influence and get SMEs be educated. In the end, the government offer financial help to SMEs for their attempt to make a change. At the same time, the government should continue to standardize the design market. The system of professional qualifications authentication on designers should be build up. Then the price for design can be regulated. So the long existing vicious circle between SMEs and designers at all levels can be ended.

4.2 Academic Level

Design schools should act as the pioneer to research and practice service-oriented product system design. To begin with the identification of the content of service-oriented product system design for SMEs is important. Design schools compared with design companies, have disadvantages in the design service price and fast reaction to the project. But design schools have great advantages in systemic research and design for innovations. They can cooperation with related areas such as business schools and information technology schools on product planning, user analysis and so on. Next, for the sake of long-time cooperation with SMEs, design schools can start the work in single, easy projects, such as logo design and package design. Then if the SME is satisfied with the previous work, they can move on a single product design project. After at least two or three years' successful experience, SMEs can set up confidence on design and their cooperation's with design schools. In the end, they can grow up together with a full range of design: service-oriented product system design. This win-win relationship of both sides will break the choke point that design school is lack of practical experiences in manufacture, at the same time; SMEs can be educated of service-oriented product system design. In the third place, design schools should offer low-cost training program for SMEs on service-oriented product system design. In-house designers can work with students from design schools on a real project provided by the SMEs. It can be held in workshops, research studios or even a competition! Academic experts can go to SMEs for teaching. Design students with educated knowledge of service-oriented product system design can go for an internship in SMEs.

4.3 SMEs Level

All in all, SMEs should change themselves. They have to force themselves to transform from product sellers to service providers. They have to set up a long term research on the development of their enterprises. In this case, they have to research on users with inner or outer resources. They have to research on new product development other than copying from others. They have to stop to have a think on their future developments. Based on the knowledge of service-oriented product system design, they can plan their future development. They can set up milestones step by step. And they should overcome the difficulties of raising capitals by seeking support from local governments and cooperate with design schools. Finally, SMEs can have a try on other ways into the market such as e-business. E-business is more than setting up a website and just sells things. E-business is the quickest way to get to know the final users and understand what they need. Starting with the users' needs, SMEs can improve the services. Then the improved services can be expressed by products, websites, APPs and so on.

5 Conclusions

From products to services, competition in the market of the 21st century has been moved from product and brand competition to service competition. The changes in concepts have helped China transferred from an industrial society to a new stage of development. At this stage, the economic structure changes from the commodity-producing economy to a service-based economy. This is bound to be a re-definition of traditional industrial design. Along with the fusion of service design, now industrial design will change into a service-oriented product system design, which is believed to be one of the future trends. Manufacture is an important part of China's economic development, representing China in the world's core competitiveness. With the global market competition intensified, Chinese manufacturers, especially SMEs now are facing the enormous challenges in sustainable development. On the one hand, the world economy slows down, market demands shrink, wages of the labors rise, the prices for the raw material rise, RMB appreciation turns worse... all of these facts result in the further compression of profit margins of SMEs. On the other hand, SMEs in China share almost the same business model, and their design innovation ability is weak, therefore, the upgrading and transformation of s SMEs are imminent. Although service design as a new concept has been discussed a lot by Chinese scholars, it still has not been integrated into manufacture industry of China. Service design in China should be targeted at achieving commercial innovation instead of social innovation first. The latter has been introduced by the first group of Chinese scholars who has studied abroad. Due to its sensitive nature and ineffective performance in local industries, social innovation has been misunderstood by Chinese government and excluded from mainstream design fields in the past few years. By applying the main idea and methods of service design and product design, service-oriented product system design can be an effective way to provide integrated design solutions for commercial innovation. Applying service-oriented product system design to SMEs will not only allow those manufacturers to accumulate their design powers, but also will enhance their competitive advantage.

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