Research on the Product Development Process of the Elderly Based on the Concept of Design Industrialization

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Abstract. Design industrialization refers to the deep integration of design into other industries in order to drive the development of enterprises by design innovation and open the whole industrial chain. The design industry chain includes product development, production and processing, logistics transportation, promotion and sales, which is different from the traditional design service industry and extends a single design field. Design industrialization is a system that takes innovation drive as the core, satisfies customers' needs as the goal and promotes sales as the motive force. It can make up for the defects of traditional design industry and create a brand-new concept of product design promotion. This paper takes the design industrialization system as the research direction, relying on the aged products, redesigns the development process of the aged products, and explores the practice and application of the design industrialization system in product design.

1. Introduction

As shown in the figure above, the core content of design industrialization consists of three modules: design marketing, design and marketing. Among them, the design module includes four steps: user needs, product design, manufacturing and production, and product object. It is the task category of traditional design company. From this, we can see that the design tasks contained in the design module are out of touch with the real product market and users. Marketing module is mainly operated by sales professionals. Salesmen will subjectively integrate and output product information before sales, and there will be some deviation of product information. Designing and marketing have their own advantages and disadvantages. Designing marketing integrates the contents of two modules and forms a more systematic design industrialization system.

In order to plan the process of product development for the elderly more specifically, this paper elaborates and analyses the product development for the elderly with an example. With the development of the aging society, a large number of products for the aged have sprung up in recent years, especially those for the aged bicycles which have functions, designs, technologies and a whole body. Therefore, it is more helpful to implement the product development process of the elderly by analyzing and researching the specific products of the elderly bicycle. The current product development process of the aged bicycle is generally as follows: the product manufacturer finds out the business opportunities of the user's needs, seeks the suitable design company to carry on the product design, checks the rationality of the concept product, produces the finished product through the product manufacture and processing, and finally completes the whole product design cycle. During this period, the design company designed more products to meet the needs and positioning given by the product manufacturer, to complete the design task. The design company did not connect with the real product follow-up marketing and users, resulting in a lot of good and bad old bicycle products in the market.
From the point of view of design industrialization system, the overall adjustment of the current development process of the elderly bicycle products can be divided into the following seven stages: 1. Market Research and user demand analysis stage; 2. product design stage; 3. product manufacturing and production stage; 4. product physical out-of-factory stage; 5. product marketing stage; 6. product logistics and transportation stage; 7. user feedback stage. The whole product development process should rely on the enterprise and the designer's participation in the whole process to complete the whole product development process for the elderly.

2. Market Research on the Use of Existing Products

2.1 Market Research and User Demand Analysis
From the user's point of view, the designer conducts market research on the use of existing products, sorting out the functions and requirements that the elderly really need for the surrogate bicycle. At this stage, we need to pay attention to the physiological, psychological and detailed characteristics of the elderly. With the increase of age, the physical function and psychological quality of the elderly will change and fluctuate greatly. For example, the decline of vision and hearing, the sensitivity of mental state, the change of preference for color, the change of behavior characteristics, the requirements of using environment and so on belong to the scope of market product research.

2.2 Product Design Stage
Summarize the market research results and design the appearance and internal structure of the bicycle which is in line with the aesthetics of the elderly. At this stage, we need to pay attention to several interacting factors: (1) in the design of the appearance, we need to pay attention to the products used by the elderly belong to the special groups, and the users have strong characteristics, so we need to meet the aesthetic standards of the elderly in the design; and (2) we should coordinate the selection of product materials, structure setting, functional requirements and so on with the average consumption capacity of the elderly as the standard. (3) Following the innovation and development of science and technology, prolonging the user cycle of Gongdai bicycle; and (4) paying attention to the safety of the
old generation bicycle in the design level. The old people belong to a special group, their physical function and execution ability are poor, and they are prone to potential safety hazards when the vehicle is running, so it is necessary to minimize the potential safety hazards in the design. After the end of the second stage, the design satisfaction of the docking users was investigated, and the satisfaction of the elderly on the appearance, price, material and function of the surrogate bicycle was collected, and then the design scheme was adjusted according to the feedback information.

2.3 Manufacturing and Production Stage
Designers should pay attention to the technical difficulties, production cycle, manufacturing costs and so on. The technical difficulty mainly includes the combination of software and hardware, the revision and combination of products in the later stage and so on. The difficulty of technology determines the production cycle and manufacturing cost of products. Therefore, it is very important to weigh the functional innovation of surrogate bicycle and control the manufacturing cost.

2.4 Exit of Physical Samples of Products
After determining the appearance, internal purchase and material of the substitute bicycle, the sample of the entity substitute bicycle product is discharged from the factory. Some tests and tests are needed after the actual sample of the substitute bicycle products leave the factory. For example, comfort and aesthetics of the substitute bicycle are tested, and information feedback from users is widely collected. The safety performance, function and quality check of the surrogate bicycle are tested to ensure that each set function can be truly realized and the quality of the product is qualified. For example, the roughness of the details of the bicycle housing, whether it can pass the preset standards smoothly, and so on. Designers through a series of detection and collection of use information, re-design smoothly, the final design of a reasonable elderly bicycle products, and then mass production.

2.5 Is the Category of Traditional Design, and Are Also the Work of Most Existing Design Companies
This is the end of the traditional design company's scope of competence. Considering from the stage of design industrialization, the first four stages only accomplish half of the task, while the latter stage is still very important. The ultimate goal of product design is to satisfy the economic profit of the retailer, whose economic profit comes from the product can be sold in batches on the market. At present, most domestic retailers belong to pure salesmen. They can't implement the characteristics, design inspiration and design intention of the product very well. Therefore, the retailers will appear certain information docking deviation when introducing users. The users can't really feel the design highlights, design purposes, design elements and so on of this product. It is very important for marketers to reform their marketing methods and platforms. In China, the channel of product sales is usually a combination of physical stores and Internet e-commerce platforms. But at present, the acceptance of online product purchasing by the elderly is not widespread among young people. Therefore, suitable and convenient marketing means for the elderly can bring good economic benefits.

2.6 Marketing Stage
This stage is an important stage to judge the success of product design. Market sales determine the economic capital recovery and economic profit of the product. At present, there are several channels for domestic product sales model: 1) physical store (experiential marketing); 2) Internet platform (network marketing); 3) micro-business platform (relationship marketing); 4) one-to-one marketing and so on. Domestic physical shop marketing is the most common. Its advantage is that it can tailor-made marketing strategies to meet the different needs of different local markets. The marketing effect is good, but the cost is expensive. Internet marketing mainly through the network method to achieve marketing design and operation, because it solves the cost of stores and logistics, the relative cost is lower. Micro-commerce platform is popular in recent years, also known as relationship marketing, through word-of-mouth mode, sales, more in line with China's national conditions of the human society, its publicity costs are low. One-to-one marketing
model centers on “customer share”, interactive dialogue with customers and “customization” is a high-service marketing model based on physical stores. Different marketing modes are suitable for unused product promotion. Older people have certain characteristics in their consumption characteristics, and there are certain limitations in the marketing methods of elderly generation bicycles. For example: the elderly are not familiar with the Internet, not accustomed to online shopping, so Internet platform sales can be removed. Entity stores, micro-business platforms and one-to-one marketing can complement each other. Older people have more time to understand the characteristics of products and the use of touch. Entity stores and one-to-one marketing should be retained. Wechat platform can ban the Internet platform. The mode of Wechat marketing depends on relationship marketing. Most of the consumers are friends and relatives around them. So the marketing mode of the elderly bicycle is based on the sales of physical stores combined with Wechat marketing and one-to-one marketing to achieve a better sales mode [5].

2.7 Product Logistics Transportation Stage
Logistics transportation is a necessary journey for product propaganda and reproduction, but logistics transportation will increase the corresponding sales cost of products, so reducing the useless logistics cost is an important problem to be solved at this stage. This stage can refer to the “millet company” approach. “Millet Company” mainly focuses on scientific and technological products. The sales mode adopted is pre-sale plus entity sale. This way can effectively reduce the inventory of its products and introduce useless logistics costs, and can improve the product's scarcity and strength, the false impression that the manufactured goods are scarce and expensive, and increase the sales volume of products [6]. Therefore, the way of pre-sale and entity sale can also be used for the elderly bicycles. The entity stores only provide vehicles that can be experienced. Users decide to buy them. The manufacturers take targeted delivery, which can effectively reduce the cost of logistics transportation. At the same time, in the case of economic transportation, we can choose the independent logistics mode of the product, and the brand can independently control the safety and cost of its transportation, but the previous operation investment is larger.

2.8 User Feedback Stage
What we need to do in the design of the user's use stage is to collect the feedback of the user after using the product. The feedback of the user is very important, which is helpful for the promotion and improvement of the product in the later stage, and prepare for the improvement direction of the next product design in advance. In daily life, the common way of feedback is through uninstalling a certain software or browser to record and summarize the network while browsing. However, it is unrealistic to collect virtual feedback due to the user's characteristics. Therefore, it is crucial to increase the inquiry and maintenance of the regular after-sales service for the users of the surrogate bicycle. It can not only get valuable feedback, but also improve the brand's after-sales service.

3. Conclusion
Through analyzing the existing problems of the aged bicycle in seven stages, and using the design industrialization system, redesigning the development process of the aged bicycle products, this paper elaborates on the improvement suggestions, forms a relatively systematic industrial chain, enhances the market competitiveness of the aged bicycle products, and achieves the goal of mutual benefit and win-win. Designing industrialization system is helpful to form industrial chain, to make the whole industry operate efficiently, to ensure the smooth transmission of information, to improve the creative value of designers, to stabilize the image of brands, and to promote the upgrading of industries. Generally speaking, the design industrialization system covers three modules: design, marketing and design marketing. Referring to the design industrialization system, the whole product system can be more integrated, efficient and economical.
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