

# Analysis on Management Ideas of Decorative Glass Enterprises

## Based on "Design Chain" Theory

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**Abstract**—In order to strengthen the attention that enterprise managers pay to the innovation of decorative glass design, this paper explains the five links in the "design chain model" through the analysis of the "design chain" research theory, namely planning, research, design, integration, and improvement. This paper introduces the theory of "design chain" into the whole process of decorative glass product production and changes the production state of "design" and "production" in the past, thus forming a production process update with "design" as the core, an organizational structure update with "design team" as the core, and a design method update with "collaborative innovation" as the principle. In this paper, the analysis of "design chain" management ideas integrates the resources of design innovation, optimizes the overall process of decorative glass production, and has certain theoretical value and significance in obtaining the competitiveness of products in the market.

**Keywords**—design chain; decorative glass; enterprises; management ideas

### I. INTRODUCTION

In such an era when the market demand is diversified, foreign decorative glass companies are mostly made up of artists or designers, which meet the aesthetic needs of different audiences by creating their own brands and using ordering as the main selling method. However, the managers of decoration enterprises in our country still use the traditional way of pursuing the scale efficiency of products to reduce unit costs, ignoring the change of management idea from "production and manufacturing" to "product innovation" so that a large number of low-grade decoration glass products with mediocre design standards are unsalable. Therefore, the paper mainly focuses on product innovation, studies the integration of design resources between the interior and exterior of enterprises based on the "design chain" theory, and emphasizes that a "chain" management idea with design as the core should be established to improve the design quality of glass products. At present, the academic research on decorative glass is limited to several aspects such as technological techniques, history and culture, and decorative patterns and its representative works mainly

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include Wang Chengyu's "Artistic Glass and Decorative Glass" and "Design and Adjustment of Glass Composition", "Modern Glass Art Design" edited by Cheng Xiang and Xiao Tai, An Jiayao's "History of Glass" and Lin Huang's "Interior Glass Decoration and Pattern" and other related academic researches. Obviously, facing the marketization and commercialization of decorative glass at present, the research on the management strategy of decorative glass design has not been involved. Therefore, from the perspective of "design chain", the author tries to analyze the changes in the production process, organization structure and design method under the guidance of "design chain" theory in order to arouse the managers of decorative glass enterprises to realize that design plays an important role in the development process of enterprises, establish a management idea with design as the main driving force and accelerate the transformation of China's decorative glass products from "manufacturing" to "creating" industry pattern.

### II. THE BASIC THEORY OF "DESIGN CHAIN"

The "design chain" is a concept separated from the "supply chain", whose development is due to some key commercial topics not covered in the "supply chain", such as the overall demand of sales and markets, product research and development, and after-sales topics. Therefore, the "design key" mainly solves the problems of product development and innovation in the process of commercial progress through the transmission of design information and emphasizes the correlation between product design and upstream and downstream of the industrial chain. In March 2005, Technology Development Guidance Committee approved the business group in authority to develop the first "design chain" reference model, which divides the "design chain" into five links, namely planning, research, design, integration and improvement, linking the transmission, processing and improvement of product-related design information among various relevant organizations ("Fig. 1").

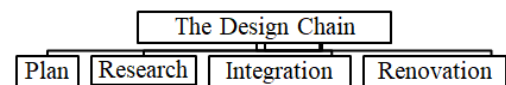


Fig. 1. Design chain reference model.

As a new management strategy, "design chain" has been successively used in clothing, electronic products and other fields to increase sales revenue. According to the application field of "design chain", academia has perfected and elaborated the connotation of design chain from different directions. Twigg believed that the design chain provided the necessary knowledge and professional capabilities for product development, design and was a special supply chain that involves inter-organization product design and research and development information transfer. O' Grady and Chuang stressed that the design chain was an integrated service system for enterprises to meet the needs of consumers. The design chain association (DCA) believed that the design chain supported collaborative research and development and design of products. With the help of information networks, tools and methods, it designs and ensures that new products are published in the right form at the right time by applying knowledge capabilities, requirements, standards, records and models. To sum up, the design chain is mainly located in the collaborative research and development design relationship between upstream and downstream enterprises. Unlike the supply chain, the main body of the design chain transmits mainly the research and development design information of products, and the design chain planning, research, design and integration are improved.

### III. THE UPDATE OF ENTERPRISE MANAGEMENT IDEAS UNDER THE GUIDANCE OF "DESIGN CHAIN" THEORY

#### A. Update of Production Process with "Design" as the Core

Decorative glass production has generally gone through the following process in China: raw material collection, sample production, advertisement promotion, customer ordering and sales, which can be seen that the production process ignores the characteristics of decorative glass as an artistic decorative product and only outlines the passive manufacturing process rather than the design process of the product. However, many foreign decorative glass companies are mainly composed of designers and artists. Their products can integrate art, technology and culture well. Therefore, the key strategy for the future development of decorative glass in China is to establish a management idea with "design" as its core.

Decorative glass products are closely linked to individual aesthetic needs as decorative artworks with practical functions. Therefore, unlike other mechanized mass production of industrial products, the domestic and international sales methods are mainly custom-made, which brings about two stages of product design for decoration or glass. The first stage of product design is based on product planning to research and develop technologies that cannot be realized. The sample design is mainly based on the aesthetic trend of designers and artists. In the second stage, the products ordered by customers need to integrate the experience of designers and the aesthetic needs of customers to further improve the products. In addition, according to the development experience of foreign decorative glass companies, apart from paying attention to the design of products themselves, design service chains such as

advertisement design and packaging design should also be established with "product design" as the core. These design service chains can effectively promote the transformation of the production process of decorative glass from the traditional "manufacturing" process to the "design" process.

#### B. Organizational Structure Update with "Design Team" as the Core

According to the "chain" management idea of design, the glass design team needs not only the designer of the product, but also the connection between the product and the market. Therefore, the company should set up a product planning department to shape the brand image according to the market demand in order to form a set of overall ideas for product design and development. For technologies that were not achieved in the earlier planning, the research and development department can open up new technical fields to remove obstacles to the realization of the design and at the same time enhance the technical competitiveness of the product market. The later design department uses glass as the material for design or artistic creation according to the planning results of the earlier period. However, in this process, since there are fewer talents with both aesthetic quality and process technology in China, the limited number of glass process talents cannot meet the needs of a large number of decorative glass companies, which requires the company to subdivide the design department personnel. Some of personnel have good artistic quality. Designers with little knowledge of glass process are responsible for conceptual design, while rich designers with knowledge of glass process are responsible for verifying and revising the design concepts so that the concepts with more originality and market development potential are more in line with the production requirements and standards. Finally, a complete design team composed of personnel from the product planning department, the research and development department and the design department is formed to complete various tasks and tasks of the design chain in order to improve the work efficiency of the company and the overall competitiveness of the market ("Fig. 2").

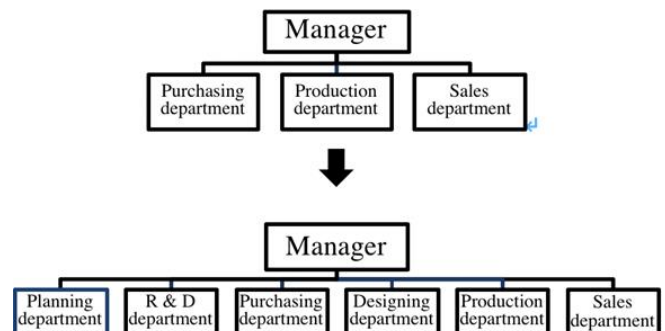


Fig. 2. Organization chart with "design team" as main body.

#### C. Design Method Update Based on "Collaborative Innovation"

The "design chain" theory extends the traditional product design to the upstream and downstream stages of the industry, linking different organizations into a whole with product design information, and requires communication and

coordination between the company's internal organizational structure and relevant external organizations to complete the final product design. The planning department draws up relevant design standards and requirements through observation of the market. The purchasing department shall purchase raw materials according to the material list of the planning department. If the required materials exceed the previous project budget, it shall communicate with the planning department. Afterwards, the raw materials will be handed over to the research and development department for the research work to be carried out, and problems arising in the research and development process will need to be communicated with the planning department and the management in time so that the project work can proceed smoothly. Afterwards, based on the research and development results, the designer creates and designs glass products according to the planning standards. During the design process, the designer needs to communicate with the planning department and the research and development department to achieve the most satisfactory degree. At the same time, it is necessary to discuss the feasibility of the design concept with the personnel of the production department so as to ensure the smooth realization of the design. The production department sends the finished product to the sales department and needs to report the shortage of materials to the purchasing department in time so as not to affect the remanufacturing of the product. Finally, the sales department should feedback the sales and market conditions of the products to the planning department, so that the entire design chain presents a network circular information communication mode instead of the traditional one-way information communication, which requires the company's managers to establish a good communication environment for the organizations to improve the design efficiency and quality of glass products ("Fig. 3").

market economy is not only the design competition of the products themselves, but also the competition of value creation efficiency between the internal organization and the external environment of enterprises centered on "design". The introduction of "design chain" can arouse the attention of the company's managers to design from the concept, break the gap of design chain in the glass production process and correct the misunderstanding of managers' competitive thinking from the theoretical level as well as the gap of design chain in the glass production process.

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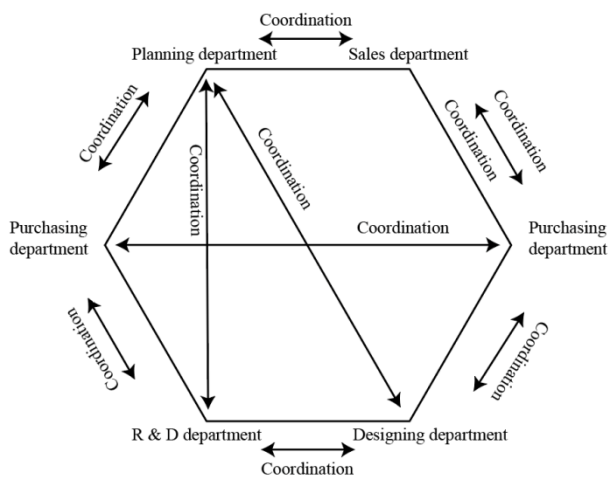


Fig. 3. Design method chart based on "collaborative innovation".

IV. CONCLUSION

Decorative glass, as a special industrial product with "decoration" as its main part, should take the promotion of artistic beauty and culture as the main means to increase the added value of the product. At the same time, it should be recognized that the competition under the condition of