The Role of Design Management in the Transformation of Chinese Industrial Economic Taking the Design Management Practice of an Enterprise as an Example

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Abstract. It analyzes the background of design management and its theoretical evolution process, design management is taken as a necessary means for systematically solving problems in the process of business operation. The transformation of the consumer market has brought about a change in the status quo of the transformation needs of manufacturing enterprises. It discusses and improves the enterprises' brand strategy, product development, sales and service, and the collaborative creation model of each department as modules in the design management system. Illustrating the role of design management in the transformation and development of manufacturing enterprises through the illustration of design management practices in an enterprise, which exploring the value of integration of service design thinking and methods with design management and return to the essence of business operations.

1. Introduction
For more than half a century, design management has experienced continuous upgrading of the theoretical system, creating key values and comprehensive benefits for the development of the company. Chinese manufacturing enterprises continue to grow and develop, have distinctive Chinese characteristics, and breed national brands. In the new era, the transformation of the consumer market directly affects the traditional business model of the enterprises. People's demand for a better life leads to the transformation and upgrading of Chinese manufacturing enterprises.

Design management is the starting point and end-result of the theoretical research of this article, and it is also the main basis for designing management practice strategy formulation and tactical implementation. On the macro level, this paper combines the valuable experience in the brand, product, service and other aspects of China's representative manufacturing enterprises and summarizes their successful advantages. From the micro level, this article takes the door and window hardware enterprise transformation and upgrading as an entry point. Design management is used as a systematic strategy for solving corporate problems, and it is considered that the benefits of design management for the company are not only immediate, but continuous value-added in the development process.
2. Development background of design management

2.1. The Birth of Design Management
After the Second World War, as a set of "design problem solving" system, design management was born in the United Kingdom. At the beginning, it was concerned of the design itself. From the first industrial revolution to more than a hundred years after the end of World War II, the UK has maintained its position as a pioneer of design. However, with the saturation of the domestic market in the UK, many enterprises have lost the incentive to continue to grow. The strange international market wasn’t enough for most business owners. They also didn’t realize the role of design in marketing. Therefore, the design status of the UK was affected by other countries. The government also initiated a series of design support policies at this time, aiming to restore its design status. Design management was originally designed from the viewpoint of creation, and how it was used. This involved the first part of the design-discovery problems, the mid-end of design-technology research and breakthroughs, and the end of design-service and design value realization.

After the birth of design management, it had a profound impact on the corporate brand strategy, design education and design practice in the UK. This impact was three-dimensional, and it deepened into design organizations and departments, and even changed entrepreneurs' understanding of design. In 1966, Thomas Watson Jr. put forward his speech at the Wharton School of Business “Good Design is Good Business” [1].

2.2. The Theoretical Evolution of Design Management
In the 1960s, the UK designer Mark Oakley was considered as the first person who put forward the concept of design management more comprehensively. In his book "Design Management", he pointed out: “Design management is to define design problems and find suitable designers, and as much as possible to enable designers to solve design issues within a given budget in a timely manner” [2].

With the development of design management, the theoretical system has been continuously improved. Design management gradually shifted from focusing on the designers themselves to realizing the business to achieve the core values in particular during the operation of the company. Today, the most recognized definition of design management in the country is that design management is a planned and organized research and development management activity based on user requirements, effectively mobilizes designers’ creative thinking, and puts market and consumers' understanding of the transformation in new products, in a more reasonable and more scientific way to influence and change people's lives, and for the enterprise to obtain the maximum profit of a series of design strategies and design activities management [3]. In the development of design management, there has been a marked change in the design management theory. It is from the initial attention to a class of people to today's overall review of the interests of the overall system. The role of design management in the enterprise is also more persuasive.

From different stages of development, Professor Cai Jun summarized the knowledge of design management into three stages. In the stage of design management 1.0, the focus of design management falls on the three aspects of the design process, modeling and technology, which reflects the value of the design skills; in the stage of design management 2.0, the design management includes more aspects, from the basic design content to product development, sales promotion, after-sales service and brand management. The design management at this stage reflects the business benefits of the company and its complexity increases; at the stage of design management 3.0, design management emerged as a platform, integrating the cross-cutting advantages of various disciplines and social resources, and the design management is not only about the designer’s concern, and its focus is not only on business benefits, but also from the perspective of service design, eco-design, and social innovation [4].
3. The growth of national brands in the new era of design management

3.1. The Transformation of the Consumer Market
In the past 30 years, the market demand-supply overlap ratio has been reduced from 90% to 50%. Changes in the supply overlap rate indicate a thorough shift from the seller's market to the buyer's market. This change is a manifestation of consumption escalation and is also irreversible. The effective countermeasures for the arrival of the buyer's market will enable the company to be more confident in the long-term competition and development (Figure 1).

![Figure 1. Market demand-supply overlapping ratio](image)

In the past, competition was often launched as a model for big fish eating the small. Large enterprises with capital operation advantages and core technological advantages expanded their own brand trees through acquisitions and other means, and their long-term development was laid out. The emergence of consumer upgrades, consumers' choices are more diversified and diversified, brand recognition and recognition, product itself, taste highlights, added value and other aspects can become a key factor in leading consumption. At this time, the competition in the market is not just about big fish eating the small, but more about slow fish eating the slow. Small businesses that can grasp user pain points, master user psychology, and understand user needs are likely to become rising stars and have a strong impact on large companies.

3.2. National Brand Growth Process and Analysis of Representative Brand Survey
The "brand" originally originated from the "branding" in Scandinavian and was subsequently derived from the English word "burned." The famous brand gurus David Aaker believes that a brand is a name or symbol (Logo, trademark, packaging, etc.) used by a business or a business group to consciously distinguish its product from a competitor [2]. In the course of continuous learning, imitation and innovation, Chinese national brands have gradually formed a unique category innovation mechanism, established their unique advantages in the domestic market, and gradually moved to the international market, resulting in a certain brand influence.

This paper analyzes three different types of manufacturing companies with good development momentum and discusses the highlights of their design management. Jiangxiaobai, as a clear stream in the highly competitive beverage industry, using products as the origin, users as the focus, and the Internet as the fulcrum, giving the product a sentimental color and the STP (Segmentation, Targeting, and Positioning) theory was properly used from its brand strategy level and technical implementation level, and the category Blue Sea was found in the competitive Red Sea. From the product's point of view, the internal differentiation was emphasized. From the product's point of view, it pays attention to its internal differences and links the user's emotions with the brand. Jiangxiaobai's success was achieved through the success of his brand's strategic positioning, efficient and consistent implementation.

Xiaomi is one of the smart technology companies. It takes only a few years from the brand establishment to the popularity of the world. While the mobile phone has achieved the highest cost-effectiveness, it has realized the creation of multi-category platforms for electronic products and entered the smart home industry. From the view of brand, Xiaomi not only pays attention to the promotion of the value of the main brand, but also cultivates multiple “unicorns” to become the branches of its brand tree; from the perspective of products, promotion and connection users, Xiaomi will “make explosives”, "Be a fan" and "Do self-media" as its strategy, and use open participation...
nodes, design interactions, and spread word-of-mouth events as its execution tactics [5]. Xiaomi's sense of participation in establishing the "Three-Three Principles" has attracted countless fans and achieved a co-creation model between their brand and consumers.

As a leading company in Chinese communications equipment technology, Huawei has been recognized worldwide as the core technology and has officially become the world's number one in the communications industry. Huawei has an admirable brand growth process, but what is more worth learning is its design management method. Huawei emphasizes the executive ability of the company from top to bottom. Whether it is day-to-day work or cross-border projects, Huawei has always promoted a "wolf culture" of self-learning [6]. Execution power is a direct verification of management effectiveness. Huawei strives to eliminate barriers between employees' superiors and subordinates to the greatest degree, which requires all employees to have priority and levels in their work arrangements.

3.3. The Role of Design Management in Brand Strategy

From the point of view of communication, brand attributes are composed of two dimensions: understanding and recognition. When consumers choose goods, they often reflect on the category and express their brand. In order to highlight the advantages of their products in business competition, companies must have a clear brand strategy. In fact, the brand includes a rich connotation, including as a carrier of corporate image, added value and values. Brand communication should not be limited to the sales department. Instead, it should be incorporated into the entire business process. Through effective design management can brand building succeed and enhance brand value. Through the design management to allow the brand concept to be recognized by the company's employees and become the standard of their work, can the company's corporate image be better recognized and accepted by the target customers [7].

The brand strategy plays a key role in the design and management design strategy. It is a magic weapon that embodies the company's characteristics, and it is also the focal point for enhancing the added value of the company [8]. The early stage of design management was mainly the repeated production of products. Today, people's demand for a better life and the pursuit of identity and taste reflect the challenges of product homogenization in the market. The brand is a representative of the category and is also a symbol that facilitates consumer identification. Therefore, the design management work of brand strategy is particularly important in the new era, which has also become an important manifestation of the company's core competitiveness.

4. Design management practices in door and window hardware enterprises

4.1. Survey Analysis: Market Environmental Analysis and the Use of Theory

After entering the 21st century, Chinese companies have seen significant stratification with the upgrading of the consumer market. Today, Chinese companies are divided into three levels: third-tier companies do services, second-tier companies do products, and first-tier companies do platforms. In China's future industries, the one-dimensional traditional industries are being pushed into reconstruction. The two-dimensional Internet industry has been divided by industry giants such as Baidu, Alibaba and Tencent, and the three-dimensional intelligent technology industry is rapidly forming.

For manufacturing enterprises in China, the one-dimensional traditional industry is its "founding ground", and the two-dimensional internet industry is its "source of promotion". The three-dimensional intelligent technology industry is its "core of innovation". Compared with the low dimension, high-dimensional always has its inherent advantages. Most manufacturing companies are also rising to higher dimensions in the process of growth. Mr. Shi Zhenrong, founder of Acer Group, proposed the famous "Smiling Curve" theory for "reconstructing Acer" to serve as Acer’s strategic direction. (Figure 2). From the smile curve theory, it is easy to see that the company's profit space mainly comes from the product front-end R&D, intellectual property and back-end sales, brand
management, and after-sales services. The front and rear ends are precisely the parts with high added value, high difficulty, and the most difficult to duplicate.

![Figure 2. “Smiling Curve” theory](image)

4.2. Product R&D: Product R&D and Product Family Genes Laid

For product development, the following aspects need to be focused:

1) Designer's Creativity: Generally speaking, the four aspects of knowledge, ability, intuition, and experience will become the key factors that dominate the designer's creativity. Intuition is the insight that a designer possesses, and the designer's creativity is more derived from the acquired learning and promotion. It also comes from the cultivation of aesthetic qualities;

2) Time-to-market control of products: In addition to the successful design of new products, the time to market is directly related to whether the company can achieve better commercial returns (Figure 3). After a good product completes research and development, it is necessary to minimize the time to market. Relatively speaking, this may increase the input cost for the enterprise, but the commercial return will be higher, and it will be more conducive to seizing the market and forming a lead;

3) Product gene building and product family genes laid: Products must establish their own style, provide systematic solutions for consumers, prevent plagiarism, and form the inheritance of classic elements. The creation of product genes is particularly important. In daily life, whether it is a motor vehicle or an electronic product, it can be clearly seen that the family genes of different brands are laid, such as the lighting part of the JEEP, the engine exhaust hole of the BMW, the “Home” button of the iPhone, and the front camera of the Samsung mobile phone etc. [9]. In the design practice, the author completed the design of three window handles, extracted the design genes of the products, analyzed the modeling style of the products, and formed a series of designs based on the product form and function requirements of different products, and realized the creation of product genes and product family genes laid (Figure 4).

4) Intellectual property protection of products: In the Chinese market, the responsible persons for product development of some companies have the phenomenon of poor awareness of intellectual property protection. This phenomenon is more common in Chinese traditional manufacturing enterprises. The end result is the same product in the market qualitatively, the price war is fierce, and it is not conducive to its own development within itself, which are not conducive to the growth of national brands abroad. Doing a good job of product intellectual property protection is an effective
guarantee for the company’s long-term sustainable profit, and it is also an inevitable action for big brands [10].

Figure 3. Time to market and input-output relationship of new product

4.3. Process Optimization: Systematic Co-creation Model of Multi-sector Parallel Collaboration

For manufacturing companies, from products development to sales require the participation of multiple departments throughout the company. Design management needs to coordinate the cooperation between various departments, so that the work is both smooth and standardized, also has the implementation of standards (Figure 5). Design management exists mainly in two aspects in manufacturing enterprises: one is process optimization management; the other is design department-based management, and the management of collaboration of other related departments [11]. Therefore, design management is an overall management and execution path for maximizing the benefits from the standpoint of corporate efficiency.

Figure 5. Systematic co-creation model of multi-sector parallel collaboration
To achieve the successful development of new products, there are two factors that are crucial: one is to have a keen sense of the market and do the right project, and the other is to do the right thing [12]. This not only requires the company's various departments to maintain a high degree of information fluency, but also requires that all departments have efficient cooperation and efficient execution methods when completing product development.

During the transformation of Chinese manufacturing enterprises, design management should at least be the leader of the company's strategic level in terms of project management, organization management, resource management, and innovation management. Planning, organizing, coordinating, planning and supervising the entire process of brands, products, and services, coordinating various resources, and ultimately enabling the design to achieve the desired results, affecting the company's various departments to strengthen collaboration and achieve co-creation [13], [14].

5. Conclusion
The rise of Chinese national brands has already pushed their manufacturing and wisdom to the international arena. Different consumption and personalized consumption resulting from the upgrading of consumption in the new era require the rapid transformation of traditional Chinese manufacturing enterprises. The existence of a company not only emphasizes economic efficiency, but also social benefits and industrial benefits are pursued in the development of the company. Whether it is a brand, product or service or consumer experience, design management is a magic weapon for companies to enhance their added value. Innovation means that companies must first break the existing traditional thinking style before they can better adapt to new methods and new methods. Therefore, the value and substantive changes brought about by design management may not be fully presented in a short period of time, but it will surely continue to appear along with the progress of the company.

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