Innovation of Family Business Management Mode under the Environment of Big Data and Artificial Intelligence

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Abstract. In today's era, the emergence and application of artificial intelligence and big data have become the main means for enterprises to improve economic benefits. It can be said that the application of artificial intelligence and big data in family business management is an information and digital enterprise revolution. Of course, in such an era of rapid development of new technology, the management model of family business has also been some unprecedented impact and impact. The traditional family business management mode cannot meet the needs of the further development of the enterprise at all. In order to promote the development of the family business, it is necessary to use the innovative thinking of artificial intelligence and big data to improve related work. The purpose of this paper is to take the management mode of family business as the research object, analyze and study how the management mode of family business can be innovated to meet the needs of social development under the background of artificial intelligence and big data. This paper will use case analysis, comparative analysis, etc., specifically analyze the family business in the management mode of the shortcomings and problems, so as to find a new approach to these problems. The research results show that family business management model does have its advantages and characteristics, but it is undeniable that in the context of big data and artificial intelligence, the shortcomings of the traditional management model are constantly exposed. How to innovate the traditional management model is the key to the sustainable development of family business.

Keywords: Big Data, Artificial Intelligence, Family Business, Management Mode

1. Introduction
Since the new century, China's family business has developed rapidly. As an important part of non-public enterprises, family enterprises have played an important role in achieving full employment, promoting economic growth and improving people's living standards. However, the development trend of family businesses in our country is not particularly optimistic. Although many family businesses
had a great time, they soon disappeared. Especially in the context of artificial intelligence and big data, the disadvantages of family business management mode are gradually revealed, such as making mistakes easily, not conducive to attracting excellent talents, narrow financing channels, increasing risks, etc., this management mode has been difficult to adapt to the needs of enterprise development. Therefore, how to effectively innovate the management mode of family business is an urgent problem to be solved in the development of family business. The significance of this paper is embodied in the following aspects: (1) provide theoretical basis for the sustainable development of family enterprises. (2) provide necessary reference and reference for the innovation of the management mode of state-owned enterprises (3) contribute to the development and improvement of the socialist market economy. (4) conducive to social harmony and stability.

As for the innovation of family business management mode, some domestic scholars believe that China's family businesses must carry out property right reform to meet the needs of enterprise development [1]. Many scholars in China have studied the professional management of family enterprises, and they have raised the professional management of family enterprises to the level of further survival and development of family enterprises. Many family business researchers in China believe that the further development of family businesses must rely on the establishment of a "modern enterprise system" with the separation of two powers, and they severely criticize the family governance structure generally practiced in family businesses [2-3]. Research on strategic management innovation: domestic scholars have done some research on the strategies of family enterprises in China, and most of them believe that family enterprises do not have a clear corporate strategy [4].

Innovation: (1) the paper summarizes the development process of family enterprises in China, and summarizes four family management modes, namely, paternalism, family management, family management and professional manager management mode [5]. (2) by applying the theory of management innovation and combining with the current situation of the management innovation of family enterprises in China, the management innovation mode suitable for the current situation of the development of family enterprises in China is designed. (3) combining theory with practice, this paper takes Harbin 100% foreign language school as a case to make an empirical analysis, so as to provide a reference for the management innovation of family enterprises in China.

2. Method

2.1. Core concepts

(1) Family business

Most family businesses are defined from two aspects: one is ownership, the other is management. The core characteristics of family businesses are family ownership and family control [6]. This paper holds that family business refers to an enterprise in which all or part of the ownership of the business is owned by a family or family, and the business decision right is directly or indirectly controlled by the family.

(2) Family business management

Refers to that family members own the ownership of the enterprise and directly control the major decision-making and management rights of the enterprise [7]. The definition of family business
management has two meanings: one is the ownership of the enterprise, which must be owned by family members based on family affection and blood relationship; Second, decision-making and management rights are controlled by family members [8].

2.2. Research methods
(1) Case analysis this paper will take specific family business Z family business as the research object, summarize the problems and challenges faced by family business through relevant data and statistics, so as to better find solutions [9]. (2) comparative analysis research method this paper adopts comparative research method to discuss the common laws and characteristics of family business management modes at different development stages and development levels, and then reveals the development trend and innovation direction of family business management modes in China [10]. (3) the use of history and logic unified method of history and logic unified method to study the family business and its management mode, mainly focus on family enterprises in different stages of development management mode of construction of historical inevitability, and the theory of management mode of family business in anatomy in the process of reflection behind the connotation of history, through the theory of reflection to find internal connection between family business and management mode, to the innovation of the family enterprise management mode of China provide methodological guidance [11-12].

3. Experiment

3.1. Sources of experimental data
In this study, 10 family businesses were randomly selected for investigation. These family businesses are located in different regions, with different types and development levels. The selection of these research objects is mainly based on the development status of urban development level factors, the combination of big data and intelligent application, the application of information technology, and economic factors, etc. Meanwhile, relevant experts and scholars are surveyed by questionnaires. Moreover, the representative family enterprise -- Z family enterprise is taken as an example to conduct a specific case analysis. The comprehensive consideration of these factors is conducive to the representativeness and typicality of experimental data.

3.2. Experimental implementation
Firstly, based on the summary and analysis of 10 family business management modes, the Z family business management mode is emphasized to make an example analysis. Through digital modeling and analysis of Z family business, the challenges and problems exposed by the traditional family business management mode in the environment of big data and artificial intelligence are scientifically summarized. Analysis of family business to the modern enterprise transition and move forward what path to follow. When choosing the dependent variable, with reference to most of the scholars in the analysis of the family business at home and abroad to select variables, a family enterprise management mode of innovation can comprehensively reflect an enterprise production technology level, management level and the comprehensive competitive power and so on various aspects of the situation, so it is important to measure whether the family business with persistent competitiveness
index.

4. Discuss

4.1. Property right structure at the beginning of the establishment of a family business

The property right structure at the beginning of the establishment of family business is the solid foundation for the survival and development of the enterprise. Z at the beginning of the creation of family enterprise property belongs to the partnership enterprise, the property right structure of family enterprise with strong blood, kinship, geopolitical, the relationship between "three yuan" in the enterprise founded at the beginning of the stability for the enterprise development plays a huge effect, but it is also for family enterprises in the development of further in the future is difficult to adapt to the market competition of the stage. Through the understanding of the family business at the beginning of the property rights structure. The property of the family business, the owner is mostly belong to the same family, business property and family property is almost equal, kaleidoscope in general or the family property, although such property model is beneficial to the early stage of the development of family enterprises, but in the long course of development of family enterprises, and this model is unable to overcome the shortcomings of its own. The specific state of industrial structure as shown in figure 1.

**Figure 1.** The property structure at the beginning of Z family business

According to the data in figure 1, we can judge that the property right structure at the beginning of the establishment of a family business has the following characteristics: 1. Family business is the property right of all natural persons owned by the family. The property invested by the owner at the beginning of the business takes up all the property of the current family business, and the investment of other family members results in the absolute highly concentrated property control, which inevitably leads to the absolute control of the family over the business. 2. Closure. In the family business, the vast majority of investors have a "blood relationship" or "kinship" relationship with the owner, while it is difficult for outside investors to understand the assets, liabilities, financial status and real operating conditions of the enterprise itself. External confidentiality is an advantage of family business in some
aspects, but when faced with external financing, such confidentiality limits its external information transmission.

4.2. Equity composition of family enterprises after restructuring

Z family business from start-up to experience in the development to a certain size, to adapt to the changes of The Times, the restructuring to become a limited liability company, for its internal equity allocation, not only assigned to the founder of the start-up capital contribution, and to give way to make the enterprise management and technical personnel also have a certain proportion of the shares. From the founder to the present development of the enterprise, its share composition is shown in table 1.

**Table 1. Shareholding structure of family enterprises after restructuring**

| Name of shareholder | Stake | With kind of investment to become a shareholder |
|---------------------|-------|-----------------------------------------------|
| Family Members     | 75%   | Capital and others                            |
| Companies          | 10%   | Fund                                          |
| Managers           | 7%    | Gift of technology shares                     |
| Technicist         | 5%    | Complimentary management shares               |
| Stakeholder share  | 3%    | Capital or otherwise                          |

Compared with the partnership system at the beginning of the establishment of enterprises, the reform of limited liability system has made a big step forward for enterprises. However, as we know from the table, after the development of the family business into a limited liability system, the equity ratio among the members of the family business is still not clearly defined, but only as a whole shows that the family still has a considerable control over the business. Moreover, shares in technicians and managers are usually given, which is only a symbolic share, and they have no claim on the enterprise.

4.3. Power structure of family business

The governance structure of different enterprises has different characteristics. The determination of the governance structure of an enterprise is the most important issue related to the development and survival of the enterprise. The following table tries to analyze the change characteristics of the governance structure from the beginning of the establishment of the board of directors in a family enterprise to the year of development, as shown in table 2.

**Table 2. Power structure of family business (%)**

|                          | Major operating decision | General management decision |
|--------------------------|--------------------------|----------------------------|
|                          | 2013 | 2015 | 2017 | 2019 | 2013 | 2015 | 2017 | 2019 |
| Major investors decision | 63.6 | 54.4 | 48.8 | 43.7 | 69.3 | 47.3 | 44.7 | 35.4 |
| Board decision           | 15.2 | 19.7 | 21   | 26.3 | 5.4  | 15.4 | 20.5 | 21.6 |
| The main investors and the main managers decide together | 21.2 | 25.9 | 30   | 29.1 | 25.3 | 37.3 | 34.5 | 41.8 |
| Full-time manager decision | —   | —   | 0.2  | 0.9  | —    | —    | 0.3  | 1.2  |

As can be seen from the above table, whether it is major business decisions or general management decisions, decision-making power is highly concentrated in the hands of the family. Combined with the previous analysis on the ownership structure of family enterprises, we can find that the ownership
and management of family enterprises are closely combined and highly unified in the hands of the owners. In the family business system, the investor and the business manager are unified in the natural person, the family is not only the capital investment, or the business manager of the enterprise, there is basically no principal-agent relationship. In addition, although Z family enterprises set up the new three associations, it is mainly a formalism, with no clear boundaries and division of labor among the associations. In addition, for example, the source of management personnel changes, but the involvement degree of external professional management resources is still very low.

5. Conclusion
Based on Z family enterprises as an example, this paper to study the current situation of the family enterprise management mode, through to the family firm founded at the beginning of the property right structure, after the restructuring of shareholding structure, governance structure, such as analysis, to summarize and analysis on the management mode of family enterprise advantages, such as with a strong cohesion, resource sharing and centralized use, environmental sensitivity, low cost, quick information communication in time, etc. As well as the existing problems and shortcomings, Such as oneness property structure restricts the development of enterprise, the seal of the property right structure is difficult to adapt to the need for the further development of enterprises, FengBiHua horizontal management and system restricts the development of enterprise culture, family, etc., then explore summed up in the big data and artificial intelligence under the background of family enterprise management mode innovation path, path of equity structure optimization; 2. Improvement of governance structure; Third, the adjustment of informal system; We should break the internal and external employment mechanism, establish an effective and fair authorization system, and give professional managers more room for growth and development. In the context of the booming development of big data and artificial intelligence, family enterprises must make great efforts in the innovation of management mode if they want to achieve better construction and sustainable development in the future, which is the key to the success of family enterprises.

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