

Study on the Transformation of Traditional Manufacturing in the Era of Big Data—the Case Based on Haier Group in China¹

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Abstract

The purpose of business is to "create customer". In the era of the industrial economy, it was enterprises that lead users. But the Internet era, with the emergence of new business models of e-commerce and social networking, has changed the relationship between businesses and their customers, and that gives customers a louder voice in the commodity trade where user's needs are more multiple and complex than ever before. In the past as long as a business kept large-scale manufacturing, it could make profits, which has past. It is the key to "create customer" to grasp and meet the needs of users accurately. And it will come true with powerful tools including cloud computing technology and big data mining techniques. This article is to explore new opportunities to help Chinese traditional manufacturing break through the development bottleneck in the background of big data.

Keywords: Enterprise Change, Create Customer, Big data

1. The Basic Concept and Significance of Big Data

Since *Nature* launched special issue in 2008, Big Data has attracted people's attention successfully. At the end of 2008, CCC issued *Big-data computing: Creating Revolutionary Breakthroughs in Commerce, Science, and Society*, which revealed the meaning of big data applications and its far-reaching impact. From then on, big data has set off a new wave in all fields around the world. The world technology giants, such as IBM, Microsoft, Google, Amazon and Alibaba, have been investing in big data strategically. What's more, an increasing number of economic giants have published strategic level plans of big data nationally including the United States, Britain, Japan, France, Canada, New Zealand, Germany, and India, etc. In other aspects, academia has carried out extensive research in acquisition, storage, data mining and application. Internet, cloud computing, big data, depicts a comprehensive age based on information network, which is called the Third Industrial Revolution.

1.1 The Concept of Big Data

Nowadays, there is no uniform definition of big data. Literally, we always associate it with massive data. However, big data is definitely different from massive data because of volume and complex data structures. So that big data shows many new features. People put forward the 4V from the characteristics of big data. That is volume, variety, velocity and value. The author of *Big Data A Revolution That Will Transform How We Live, Work and Think*, Victor, pointed out that, thinking revolution comes first in the era of big data when the trend is that the data needed is from random sample to the overall data; and then imprecision is permitted but values is among datum; the third goal is to look for relevance ^[1]. All these meaningful thinking about big data will help to guide the business decision making.

1.2 The Significance of Big Data Study

The greatest value of big data is its resource properties. Basic resources of the industrial age is the human, financial, material, while in information age it's big data. Increasing marginal utility is the feature of big data. More quantities, more value. Big data will change the operation mode of the entire human society. For the country, big data will be an important strategic resource deciding the future of national economic development, security and stability.

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Take the USA for example, the government invested two hundred million U.S. dollars to start "big data research and development program" in 2002; For businesses, technological development has brought big data, big data in turn further promote technological development and the process of production methods, as well as lifestyle change, when a deeper and broader influence activate people's needs.

Enterprises, have to wrestle with a huge crisis, because in the business competition of the future, one will fail the competition probably just because of a lack of user data resources so that loss of "money votes", which will increasingly threaten the survival of enterprises. However, value from data mining can also bring a huge opportunity, with which enterprises are more likely to understand users' needs.

2. Characterizes and Business Inspiration in the Era of Big Data

2.1 The Era of Big Data to Build Relationship

Big data applications enrich the human methods of understanding the world, as well as to improve the thinking skills. In the past, people reveal the mysteries of the human world from the causal relationship, but in the big age, people can find common links between things by relevance to understand the world and with this link to guide human practice. Free from the shackles of causality out little by little, people greatly improves the ability to adapt to the natural world and society. Improve this adaptation ability and cognitive ability, which will help the government and business decision-makers forecast and grasp changes in society and in the market in time.

2.2 The Era of Big Data to Mine Networks

Big data provides a higher efficiency, lower cost method in mining a variety of relation networks of material world and human society. In the field of information technology, the Internet was a pure form of the original virtual community .But now, with the advent of e-commerce, social networking, big data mining technology, the Internet has evolved into real world from the virtual world. With the development of the times and technology, individual information in the network will be more and more plentiful and accurate. And even the people themselves cannot realize that they have certain characteristic and behavior. Therefore, the revolution can even create a new world where there will be new business opportunities and operation mode.

2.3 Data Driving Decision Making in the Age of Big Data

The change of thinking driven by data reveals in many aspects. First of all, big data will help predict. By means of correlation, the establishment of early warning system, we can realize the accurate prediction of the exception event; through the analysis of historical data, we can predict the future and can guide people through practice mode. For example, the United States is successful to use big data analysis to solve crimes and prevention. In business, big data can be a powerful tool to grasp the market dynamics. Secondly, when judged by the, enterprises who want to adapt to the dynamic changes of the market economy, rapid response and decision, will need to introduce market competition and price mechanism into the enterprise. One of the external features of the market is data, market-oriented change should be oriented towards the result, and result is data-based. Therefore, business operations and decision-making in the age of big data should be digitalized. It is through data that we can combine business system and the external environment system to form an organic whole.

2.4 Value Recreation in the Era of Big Data

In the big data, the value of the data will not be unilateral. Its value depends entirely on the users. How to use the data to realize the strategic target is one of the questions for Managers. Furthermore, how the data can be used twice or even more times is the key of improving the marginal benefit and the competitiveness. Acquisition and analysis of data is still preliminary; multipurpose data and even the data sharing and integration is the key to data value.

2.5 Necessity of Enterprise Reform in the Age of Big Data

As mentioned above, the big data with the Internet, cloud computing and Internet of things not only brings the changes in technology, but cause the changes of the entire social ecosystem. China is undergoing the reform in market economy with information technology taken into account, our country whether it is state-owned enterprises or private enterprises, are facing more and more complex and dynamic business environment that has brought challenges and opportunities. Only through reform can enterprise adapt to the development of the external environment and market, so can enterprise grasp the fate of their own.

3. The Case Study of Haier Group Change

In each key period of the history of the development of China's enterprises during these thirty years, we can see Haier's successful business transformation. What's more, Haier is always in the forefront of the times when changing its structure.

3.1 The Purpose of the Enterprise Management

Whether enterprises should change or how to change comes from one core. It is that we should answer the question of the purpose of the enterprise management. For each industry, the eternal theme of the business is the creation of customer value. When the existing business models or the management process no longer adapt to the goal and even impede it, enterprises need to change. So do they when enterprises cannot adapt to changes in the market, or they lose the ability to create value for users. Overview the Haier group's business history, business history, all its strategic core is the creating customer.

3.2 Summary and Analysis on the Historical Transformation of Haier

3.2.1 The Reform Ideas under the Environment of Market Economy

Haier group took the market mechanism into the enterprise and put forward the market chain theory so that they can adapt to the market economy environment, realize the goal of internationalization, overcome the bottleneck of the development of large enterprise disease in 1993. So Haier took years to implement business process reengineering. Marketing ideas improve employee awareness that money come from the market, to improve the operation efficiency and the reaction ability of enterprise^[2]. In 2005, Haier first proposed the concept, "Integrating Order with Personnel". The reform of Haier was deepened by the concept. Its foundation is the logic that users determine enterprise's in the age of the Internet.

3.2.2 The Reform Ideas of the Age of the Internet

The Internet has three characteristics which are the personalized demand, marketing resource fragmentation, socialization. These characteristics put forward higher requirements on the creation of customer value. In 2007, Haier began a 1000 day process reengineering, its essence is the information revolution which truly realized the "Integrating Order with Personnel" model. "Integrating Order with Personnel" requires the enterprises to adapt to market needs of the users. To support this strategy, Haier had eighty thousand employees divided into 2000 independent operations and turn the organization structure into "inverted triangle" where one class management body is composed of front-line staff directly responsible to the user, the functions of two or three level management personnel turn into resource supporters helping staff to meet the needs of customers. The whole group has turned into a flat organization. In order to increase user satisfaction, Haier established a strategic goal that is the user experience of the whole process through the fusion of "virtual network solid" and "net to do deep"^[3].

3.3 The Big Data Strategy of Haier Internet Strategy

Haier has always been a company focusing on information construction. The importance of big data on business competition is beyond doubt. Although Haier has not made it clear that what their big data strategy will be, we can see the Haier data strategy clues according to various media reports and transcripts of the conversation from people in-charge of relevant departments. Haier electric general manager Ligeng Yang talked about how to introduce big data thinking and technology into BI and how to find their own position in the big data market in 2013Yimawisdom summit and the Fifth Integrated Marketing Forum². Clearly, Haier not only pays attention to the strategic position of big data in commercial competition in the future, but also face many challenges.

3.3.1 Strategic Layout of Big Data

Cloud computing and data are often referred together. This is mainly because the cloud computing technology is a powerful tool for mining large data value. Haier took two years to go through four stage—preparation, quick wins, promotion and enhancement—to establish private clouds platforms, set up the IT architecture that can meet the requirements of the times and the development of enterprise. At the same time the architecture also provides the hardware foundation for Haier to adapt to challenges in the year of big data.

²<http://net.chinabyte.com/448/12809948.shtml>

E-commerce giant Alibaba Group Holding Ltd signed a deal on Monday with home appliance maker Haier Group to form a joint venture, in a bid to build a logistics and service network to deliver household appliances and other large items across China in December, 2013. For Haier, a deeper meaning of the cooperation is with the help of the data and the information advantage from Alibaba to store logistics data. Grasping the user data can help Haier for more accurate prediction of marketing and enhance Haier's C2B mode.

3.3.2 Big Data Supports Business Transformation

As said above, the data can identify virtual individual in the network as real one in the world. Just by mining the individual characteristics, preferences and so on, data will help the enterprise carry on the accurate marketing. Ligeng Yang said that Haier group establishes Internet platform system of future by "Interactive plus Transaction plus Data plus Payment" mode where electronic commerce platform is the source and core of data and main application of big data as well. With the help of data analysis, in 2013, Haier's sales rose 340% with the same page views as 2012^[4].

3.3.3 C2B Mode under the Support of Big Data

One of the characteristics of the Internet times is individualized requirement, while the age of big data is an extension of the age of the Internet. How to identify and meet the needs of individual users need big data technology as the support, the Internet as a platform. Haier group put forward personalized customization in the C2B mode which is based on that business logic. C2B mode uses electric business platform as the user interaction platform and gets the user features, needs, users' creativity analyzed from data. This mode will find a balance between cost and order and meet users' demand for personalized products. On the 1111 shopping carnival day, Haier C2B model had a turnover of 175 million yuan, which was ranked second in Single turnover ranking.

3.4 Haier's competitive advantage and challenges in the age of big data

Since the turn of the century, Haier has put the marketization into enterprises, implemented the "market chain" reengineering and implemented a series of changes based on "Integrating Order with Personnel", which are in line with the strategic principle, help to adapt to the market and to improve the flexibility and adaptability of enterprises. All these are the brand advantage in the international market competition. Facing the big data era, Haier has acquired some achievements and has accumulated experience. For the manufacturing sector, the future competitive advantage is not necessarily dependent on manufacturing, but on data and the ability of acquisition, analysis and use. In manufacturing industry or the field of home appliances, Haier's influence and market share have provided the giant with the ability to obtain the competitive advantage.

Although Haier has made outstanding achievements in the past, facing big data era, Haier group still faces many challenges.

All the past enterprise reforming Haier have a common characteristic, which was the passive driving, the user demand response after the user requirements; The focus of the future will be more dependent on the active driving, through the prediction of user needs, early action, or at least a prompt action will be took. So that enterprises can adapt to the rapid and dynamic changes in user demand. From this point of view, Haier group's data sample size has not reached the high data requirements. Now the transformation direction of Haier group is mainly to Internet transition, and creating customer mainly relies on user interaction, ultimately to achieve precision marketing of user personalization, where the role of data in the process is analysis, classification, mining user characteristics and needs and making precision marketing. In fact, the access to data could be wider and more comprehensive for Haier. Haier intelligent home service can effectively improve after-sales capabilities if the applicants are combined with big data technology; In addition, one of the characteristics of intelligent home appliances is user interaction and autonomous regulation. With the collection and analysis of data as support, it will improve the quality of product and service for Haier.

References

- Viktor Mayer-Schonberger. Big Data A Revolution That Will Transform How We Live, Work and Think [M].John Murray.2013
 HuiwenSu. Haier's Managerial Innovation: Market Chain and Business Process Re-engineering [J].Nankai Business Review. 2001(01)
 Ruimin Zhang. The Analysis of Haier's Integrating Order with Personnel [J].New Thinking. 2013(3)
 Qi Liu. Haier: A Swoop in the Internet Revolution [J].IT Manager World. 2013(22)