

The Electronic Commerce in the Era of Internet of Things and Big Data

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Abstract-- Nowadays big data is being used to create wealth in many fields, in particular e-commerce is playing an increasing role in modern life and the role of big data in this sphere is constantly evolving. The demand for e-commerce is creating massive amounts of data all the time and traditional processing techniques and ways of thinking have been unable to cope with it. Thus big data methodology has the capacity to launch the e-commerce industry into a new era. This paper briefly introduces the theory of e-commerce and analyses the Chinese e-commerce industry's development. Then, it considers the future development of large data technology and the present state of big data. It also studies the impact of big data on the Chinese e-commerce industry and analyzes the current methods used by the industry on large amounts of data, using Alibaba.com as an example. Finally, the main impact of big data on the e-commerce industry is summarized, the challenges it faces in the future are considered and possible solutions to these problems are proposed.

Keywords-- Big Data; E-Commerce; Alibaba.com.com

I. LARGE DATA ON THE IMPACT OF E-COMMERCE INDUSTRY

According to the CNNIC statistical report, as of June 2016, the scale of Internet users in China has reached 710 million, Internet users in the proportion of online shopping has been 63.1%. For example, Taobao.com and TMALL.com, only 2016, "11.11" day, the volume of transaction over 120.7 billion, and it set a new single-day online transaction records. Business expansion and the growth in the number of business have brought a huge amount of data and information. The traditional electric business enterprises include Amazon, Alibaba.com and so are the beneficiaries of large data.

In the past small data age, people invented the statistics, sampling, probability and other mathematical tools, and through careful design of the extraction method, to obtain a small amount of data samples to speculate about the whole story. Therefore, it is often difficult to see the original appearance of things, and it is vulnerable to empiricism, personal bias, and the understanding of things are often biased and distorted. But in the era of big data, because of technological progress, people have the ability to obtain all the data object, and through the different dimensions of all the data analysis, from a different point of view a

comprehensive understanding of things to get the knowledge could not get in the past.

In the second part of the paper, five forces are discussed, which are entry barrier, substitute threat, buyer's price discourse right, sellers' price discourse right and competition intensity. These five forces influence the industry through comprehensive effect. In this part, the author studies the impact of the emergence of large data technology on the development of China's e-commerce industry by combining the five-force model theory of Professor Porter. Since the relevant data are difficult to obtain, the discussion in this section is based on empirical analysis and reasoning.

A. Improve access barriers

Large-scale data further reinforces the economies of scale. As China's online shopping market transaction size continues to grow, Taobao.com, JD.com and other electricity business giant in addition to their economies of scale advantage, the accumulation of large amounts of data become an unseen asset in the study of consumer demand, marketing, etc. Compared to no accumulation of data outside the industry, the advantages are enormous, and will make its own economies of scale to further strengthen the existence of the intangible which increase the barriers to entry of the industry. For example, for Alibaba.com, the Chinese middle class spending habits data is a huge treasure, and with the help of years of Chinese consumer spending habits collected data, Alibaba.com has the advantage will be more obvious.

Big data improves consumer loyalty. Taobao.com, JD, Amazon and other e-commerce companies with the accumulation of data on the platform of the user's preferences, shopping habits, brand preferences have a deeper understanding, and even more than consumers understand their own consumers. Which can be targeted marketing, such as accurate push advertising, gift consumers want coupons, or to show the history of consumption for the user, organizational feedback activities to increase user's preferences (such as Taobao.com time machine), thereby increasing consumer loyalty.

The demand for capital and technology increases the barriers to entry. Today's e-commerce industry, not only through the network to sell things that simple, and if you leave the big data's support, electricity companies will be eliminated by the market. In addition to the vast amount of

user's data, power providers must invest more in hardware infrastructure such as basic IT infrastructure, rapid data processing, and cloud computing capabilities to ensure data processing capacity, while requiring high capital to build, maintain and manage, and further improve the capital barriers.

B. Substitute threat reduction

Today E-commerce sells all-encompassing merchandise, and has long been limited to physical goods. But no matter what to sell, it is inseparable from the platform services, and that is e-commerce products business is service. With the emergence and application of large data technology, electronic business can be based on large data analysis, for businesses and consumers to provide different services to reduce the threat of alternatives. For example, Taobao.com provide a Taobao.com index for business, the seller, such as cloud 100 variety of data analysis products to help sellers to master the search hot spots, consumer trends, market segments. To provide consumers with a search Amoy, the breakdown of the product category, shipping methods, screening, etc. to enhance the consumer's shopping experience. Alibaba.com develops Internet finance, through real-time monitoring of small businesses to understand the repayment ability. JD.com analyses customer's shopping habits, such as the installation of the master introduced, home improvement city one-stop shopping, and with the purchase, gift shopping and other innovative shopping functions.

According to different large data analysis results, e-commerce enterprises can develop a unique shopping model, and greatly improve the originality of products and services, and reduce the threat of alternatives.

C. On the buyers and sellers the right to speak the right price

Buyer's right to speak lower prices. After analyzing the data of consumers' previous shopping habits and daily behavior, or even combining the information of home address, health record and family situation, the electricity supplier can analyze the users' needs and provide the goods which the users need in time. Able to provide consumers with a unique personalized service, user loyalty and user stickiness to a new height, and guide consumers to develop shopping habits, the formation of a dependence on individual electronic business enterprises. At this point, although consumers access to information is still convenient, but since the big data has made electricity providers "understand" consumers than themselves and costs have been increased, and reduced the price of consumer discourse.

Seller's Price Increases. Historical experience shows that businesses with a high irreplaceable can provide one-stop service, packaging services or complete solutions, negotiating the price of a higher voice. E-commerce companies will accumulate enough data in the future, and it will further strengthen the nature of the nature of the sale of services, that is, electricity companies will be transformed from the essence of retail nature of the service. Based on

large differences in product created by the data, power companies will increase the price of the right to speak.

D. Competition intensity increas

From the number of competitor point of view, Chinese current e-commerce industry is in a high concentration stage. The emergence of large data improves the barriers to entry further, and it will decrease the number of competitors in the field of retail network change.

From the perspective of foreign competitors into the market will undoubtedly increase the degree of competition. For example, Amazon entered the market in China is the acquisition of Joyo.

From the conversion cost perspective, for consumers, the e-commerce industry has a typical low-cost conversion characteristic, in place of electricity companies usually take a lot of subsidies, promotions, free shipping to retain old users, for new users, and making the market competition is increasing.

II. PANALYSIS OF THE APPLICATION OF LARGE DATA IN ALIBABA.COM

Alibaba.com Group is an international Internet company founded by Jack Ma. Since its inception, Alibaba.com Group has gradually developed and improved B2B trading platform, Ali pay, Taobao.com and Lynx, and has been developing in the areas of large data and cloud computing rapidly.

A. Attach great importance to large data

Not many people know the "big data" in 2008, Alibaba.com see the big data as the company's basic strategy. Alibaba.com Group Chairman of the Board Ma said Alibaba.com is not an e-commerce company, in fact, and it is a data company. Taobao.com, Lynx Mall, Ali Finance, rookie logistics and other products behind the real goal of Alibaba.com are data. Through different services or products to obtain the relevant data of the whole society, and it uses data to predict user's behavior and social development trends, and create value, and it is the ultimate goal of Ma.

B. Alibaba.com large data application strategy – Taobao.com

1) Data characteristics:

After years of hard work and development, Taobao.com currently has more than 30 million GB of e-commerce transaction data [4], and is still in 3 million GB / month growth. The entire Taobao.com, the product information is more than one billion, and the number of active user information is more than 500 million, and more than 80 million independent visitors per day. In Taobao.com all data, more than half of the data for the unstructured or semi-structured, traditional technology is difficult to handle, and data processing is extremely difficult, so that the improvement of data processing capabilities become increasingly urgent.

2) Data Sources:

Taobao.com data sources mainly in the following three channels: First, Taobao.com system generated data, such as

the sale of certain types of goods statistics, geographical trends in the purchase trend analysis, which is the largest source of data; Second, the user through the initiative to visit the site generated by the click, search and other data; The third channel from the outside, such as through web advertising, search engines, social networks, such as links and recommend the introduction of traffic and other means.

3) *Data processing:*

In order to effectively analyze the use of these data, Taobao.com set up a special technical department, the original data to standardize processing. At the same time it creates a kind of internal known as the "tree" -shaped data organization, making the display of data more intuitive, specific, so that users access to relevant, meaningful and complete information. This approach allows users to extract data more convenient and simple, but also it makes the data readability become stronger. Through the "tree" structure of the data obtained through various channels and in-depth analysis, according to sellers, buyers and other organizations of different needs, to provide a variety of data analysis results to help their decision-making.

4) *Data Utilization:*

Taobao.com converge the brand's flagship store, Taobao.com original shop, self-employed shop, second-hand market, poly cost-effective and other types of stores, for different businesses to provide services to provide consumers with goods. But in recent years, more and more competitive homogenization services, traditional retailers continue to erode the electricity market, Taobao.com is weakening the traditional advantages. In order to meet the continuous development of user needs, after years of exploration and practice, Taobao.com has made many changes, "precision marketing" is one of the most typical change.

First of all, Taobao.com upgrades the search engine features, and the use of search engines to consumers need to be classified. Second, the development and design of a number of open platform to encourage consumers to write shopping experience in such a platform, "Sun" Amoy to the baby, or upload Taobao.com experience. Through the data on the platform and product evaluation, want to chat a large number of unstructured data collection and analysis, combined with consumer browsing records, page retention time, to determine the consumer wants to buy the goods, and the appropriate Advertising pushed to the front of consumers. This targeted marketing, and further increase the amount of shop transactions.

C. *Alibaba.com's large data experience and inspiration*

- Started earlier. Alibaba.com Group is the first batch of electric business enterprises, and it has realized the importance of large data as early as in 2008, and it is the first company to be involved in large data. Alibaba.com has been developed for nearly 10 years in the field of large data , and has accumulated a lot of experience in the relevant research and application , and has trained a number of key personnel.

- Attach great importance. Alibaba.com Group made big data a strategic height, Ma has a clear future development strategy, from information technology (IT) drive to data technology (DT) drive. And set up a chief technology officer to strengthen the construction of the data management department, and invested heavily in research and development, acquisition and so on.
- Mutual benefit and win-win situation. In addition to large data for internal analysis and decision-making, Alibaba.com also developed a number of large business-oriented data tools, such as data cube, the seller cloud map to help businesses grasp the market trends and understand user's needs.
- Standardize internal management. Using large data tools to effectively strengthen the internal management of the Group, for example, to help management quickly make decisions, the internal staff of the objective assessment of efficiency.

III. COUNTERMEASURES FOR THE DEVELOPMENT OF CHINA 'S ELECTRONIC COMMERCE INDUSTRY UNDER THE BACKGROUND OF BIG DATA

A. *Change the way of thinking*

In the era of large data, electronic business enterprises should tap the value of large data, and use the thinking way of large data to look at the problem. Oxford University, Professor Viktor Meyer pointed out that the three most important things of the Big Data era are data, technology and thinking. Nowadays electric business enterprise has massive data and advanced processing technology, and the most important way is thinking change.

B. *Innovative business models*

The development trend of large data technology is to enhance the service. According to the massive information, electric business enterprises collected consumers, so as to grasp different groups or even different individual needs, and targeted to provide personalized service. The mass of consumer data electric business owned is base to grasp consumer behavior. Use large-scale data technology to analyse it, and electronic business enterprises can improve advertising strategy, accurate, personalized advertising and marketing, and create a new business models that has lower cost than the traditional form of advertising and promotion. At the same time, analysing large data in-depth and the electricity business enterprises can find more ways and means in increasing user stickiness, the development of new products and services, reducing operating costs, and so on.

C. *Promote differentiation competition*

After years of development, Chinese e-commerce is facing two bottlenecks: one is cost war subsidies caused high cost, the second is the product homogeneity competition. In the context of large data, companies can find new development ideas, including the characteristics of products and accurate to the individual forms of service, and constantly enhance their competitiveness.

In addition, the Internet financial business is also the power of business innovation and application of large data. Although Chinese commercial banks try to seize the opportunities in the Internet finance, but limited by the business model, and they lack of data accumulation of enterprises, especially small and medium enterprises.

Strengthen the training of data analysis talents, especially computer, statistics and mathematics talents. At the same time, company should strengthen the communication between the industry, industry and universities, and provide practical opportunities.

D. Strengthen the cluster effect

Industrial Cluster (Industrial Cluster), refers to the same industry in a particular industry or a collection of a number of enterprises, they are closer to the geographical distance, communication and coordination of high efficiency, complementary and has some commonalities, and has obvious Professional features, together around an industry to provide all the services on the industrial chain or product, through the cluster development strengths and weaknesses in the industrial competition to occupy a favorable terrain.

Under the stimulation of application demand, e-commerce has played an important role in promoting the transformation of industrial development mode, innovating economic model and increasing employment, and has promoted the rapid development of related derivative services. As large data applications for Chinese e-commerce business is not yet mature, and the future development of large data needs to strengthen industrial clusters, and strengthen the large-scale data technology to enhance the role of promoting the industry as a whole.

E. Speed up the training of large data professionals

Compound talents that master of a variety of skills and knowledge are the most valuable resource for enterprises. Large data experts need to master mathematics, probability, statistics and other aspects of knowledge, and they have should a keen insight and strong spirit of innovation, and the spirit of exploration. At present, Chinese large data professionals are still quite scarce, and the number of employees, quality, etc. can not meet the requirements of the rapid development of industry and we should strengthen the training of large data professionals.

F. Develop cloud computing technology vigorously

For e-commerce enterprises, cloud computing technology plays a very important role in enhancing data computing capabilities, reducing information security risks, improving economic efficiency, etc. On the basis of the independent development of enterprises, our government should give support in many aspects, such as system, law, policy and so on.

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