

Research on Multi-Dimensional Differentiated Marketing Pricing Strategy of Big Data Products and Services

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Abstract:

Nowadays, the data elements have become the key factors of production with the explosive growth of data business. However, there are still some challenges to the application of traditional market segmentation theory to data pricing, such as market subject segmentation to be innovated, privacy protection segmentation to be strengthened, vicious pricing induced by supermarket segmentation, and absence of market feedback segmentation. Facing new opportunities and challenges, it is of great significance to introduce multidimensional market segmentation theory for pricing big data products and services. In this paper, the segmentation standard was innovated from a multi-dimensional perspective, and the main factors that affect the pricing strategy of big data products and services were studied by combining data statistics and classification, namely, market subject, data protection level, applicable scope of market segmentation and feedback information. Finally, aiming at promoting the development of big data products and services market, market segmentation was carried out according to the multi-dimensional attributes of products, and differentiated pricing strategies were put forward based on the differences in the utility of data products and services.

Keywords: *big data products and services; data pricing; market segmentation*

I. INTRODUCTION

The digital economy is related to the overall situation of national development, because protecting and utilizing data in a world where everything is data is to safeguard national security. In the "14th Five-Year Plan" for Digital Economic Development", it is proposed to initially establish a market system for data elements by 2025, strengthen the supply of high-quality data elements, accelerate the market circulation of data elements, and innovate the mechanism for the development and utilization of data elements. To this end, we need to make the data flow move, and truly make data a new kinetic energy to promote development. To make data flow move means to build a competitive, orderly, mature and complete data market and a reasonable pricing mechanism for data products and services. But so far, the market trading mechanism of data products and services with universal promotion significance has not yet been established. There are many obstacles that affect the smooth development of market transactions of big data products and services, such as the lack of effective pricing mechanism, which is an internal problem

to be solved in addition to some external obstacles of ethics and laws and regulations. According to the development of big data products and services market in recent years, some relatively fast-developing data markets have generated relatively stable supply and demand groups as a whole. However, due to the huge difference between big data products and services and traditional commodities, it is difficult to finally reach many big data products and services transactions under the guidance of traditional market segmentation pricing theory, or there is hidden irrationality in the final transaction price, which is not conducive to the industrialization development of big data products and services. A series of measures, such as enriching the traditional market segmentation pricing theory, strengthening the segmentation of the data market from various dimensions such as supply, demand, data type, privacy and application scope, and adopting differentiated pricing according to the segmentation results, can better promote the development of the big data product and service market.

II. RELEVANT RESEARCH STATUS

2.1 Market segmentation theory and its introduction

Market Segmentation, put forward by Wendell R. Smith, an American marketer, in the mid-1950s, refers to the market classification process in which marketers divide the whole market of a certain product or service into several consumer groups according to the differences of consumers' needs, buying behaviors and buying habits through market research. Each consumer group is a market segment that is a group of consumers with similar demand tendencies, who may have different product and marketing mix [1]. The purpose of market segmentation is to tap the potential market according to the differences of consumer demand, so as to allocate resources and obtain the optimal economic benefits.

Although the theory of market segmentation originated in the west, its concepts, principles and practical experience in the operation of many trendy brand industries in China show that it is intrinsically compatible with the formulation of pricing strategies for big data products and services. According to the concept of segmentation, big data products and their services, due to their own diversity and professionalism, can be used by different players. Market segmentation theory is closely integrated in big data products and their pricing strategies, regardless of the category of production or transaction of the data products. As China is stepping into a diversified society and the fission of customer demand is becoming smaller, major industries are beginning to realize the importance of accurate segmentation. For example, at present, the library field, as a place for cultural storage and information transmission, is keenly aware of the increasing number of data and groups of users who have constantly accurate demands, and establishes corresponding classification standards by introducing the market segmentation theory commonly used in the marketing field, so as to provide personalized and targeted information services for users and realize the effective integration and maximum utilization of resources.

At present, the research on market segmentation mainly follows two major ideas. First, it divides the differences between consumers' demand and purchase characteristics based on the analysis of consumers' consumption behavior from consumers' demand. Accordingly, the overall consumer market is divided into

various consumer segments, so that enterprises can set market targets according to the characteristics of different consumer segments. Second, the market is divided based on the characteristics of the products of the enterprise and the satisfaction characteristics and degree of the products to the consumption demand, with the purpose of counting the degree of consumers' demand for different products and the purchase difference, so as to select the target sales group for higher profits. Although the two market segmentation ideas have different starting points and different market segmentation standards, in the final analysis, they are a market segmentation based on enterprises as the main body of the market segmentation, and centered on the differences of enterprise products to meet the needs of consumers. Such segmentation follows the post-market concept, resulting in a lack of consistency in segment consumption, and can no longer address the pricing issues faced by the data industry as the lifecycle of data products and technologies becomes shorter.

2.2 Overview of research status of pricing of big data products and services

In April 2020, Policy was released, proposing to speed up the cultivation of the data factor market. Subsequently, regulations and methods related to data have been introduced in various places. Recently, many places have ushered in a boom in the construction of big data trading market. Based on the continuous prosperity of China's data market, more and more economic entities are involved, and people's demand for data is increasingly diversified, which bring greater opportunities for data distributors. To this end, the European Union, Britain, Japan, South Korea and other countries have formulated corresponding big data development strategies according to their own conditions to boost the economy. The G8 released the *G8 Open Data Charter*, proposing to accelerate the opening and utilization of data, indicating that the data value chain is becoming more and more mature. The pricing of data products and services is the consumption link of data value chain and the basic guarantee for the orderly operation of data market, but difficult pricing is the core issue of the existing cooperation in big data transactions[2]. At present, there are many researches on the pricing of data product in China, but few researches on the pricing of data product and service from the perspective of market segmentation. Only Liu Chaoyang stated in the summary of big data pricing strategy that multi-pricing is a kind of market segmentation pricing, which creates a variety of commodity types with different characteristics for sale by dividing and combining a commodity from different angles.

As the data pricing problem, a key link in the data transaction, has not been effectively solved, the transaction and circulation of data products are still in a relatively primary form worldwide, without a unified specification and channel[3]. Liu Chaoyang pointed out that the sustainability of big data transactions requires reasonable pricing, which requires a combination of pricing models and pricing strategies. Price range needs to be determined in pricing, but it is more important to standardize and make the big data trading market transparent through various pricing strategies, especially feedback pricing strategies[4]. Data pricing is the foundation of building a data trading market and a key link in treating data as an important factor of production. In order to promote the healthy and orderly development of the data trading market, Cai Li pointed out that the government, enterprises, research institutions and data trading centers should improve and develop from different aspects^[5]. Obviously, with the continuous attention paid

to data elements and the continuous stability of data supply and demand main body, the differences between consumer demand and product attributes in data transactions are becoming more and more obvious, and a brand new and reasonable pricing strategy is urgently needed. Many scholars are aware of this problem and put forward a variety of pricing methods, as follows:

In the research on pricing strategies of data products and services, Wang Wenping believed that the pricing strategies of big data transactions include platform predetermined price, fixed price, real-time price, agreement price and auction price[6]. According to the trading hours of several big data trading centers in China, Hu Yanling believed that there are mainly three charging modes, namely, time-based pricing mode, one-off pricing mode and matching pricing[7]. Chen Xiaozhen proposed that there are mainly cost method, income method, negotiation mode, bargaining game model, auction and feedback pricing for commercial big data, and cost method and Ramsey price method for government big data[8]. Chen Jianhua argued that the public information resources generated within government agencies are basically based on marginal cost pricing[9]. On the other hand, the research of pricing model is also an important part of pricing strategy research. The main methods of pricing model division are: model-based pricing proposed by Peng Huibo et al. according to academic research and operational practice[10], the Rubinstein bargaining model under the game mechanism by Liu Hongyu, et al. [11], and pricing model based on data ontology and profit maximization[12], etc.

Two conclusions can be drawn from the existing literature: First, the research on the pricing of big data products has set off a boom, but a unified pricing method has not yet been formed; second, the current pricing basis is still relatively single, and the impact of multi-dimensional attribute differences between consumers and products on pricing is not explored.

III. THE CHALLENGES OF APPLYING TRADITIONAL MARKET SEGMENTATION THEORY TO PRICING BIG DATA PRODUCTS AND SERVICES

Since big data products and services are significantly different from traditional goods and services, with the characteristics of natural monopoly, value uncertainty, timeliness, intrinsic link, etc., there are some obvious mismatches when the traditional market segmentation theory is applied to the big data products and services market, such as the lack of coordination between data supply and demand entities and the consideration of data market security. Therefore, it is helpful for data distributors to provide personalized market services if they can segment, identify and obtain differentiated products based on multi-dimensional attributes of products and change the overall situation of consumers. Besides, it is also one of the new ideas of pricing in the data market to mine the segmentation standard by the advantage of the data statistics technology. In this paper, the data supply and demand subjects and product attributes will be divided from the classification process by considering multiple segmentation standards and data algorithms to get the utility differences of data products and services, so as to formulate differentiated pricing strategies.

3.1 Market subject segmentation to be innovated

According to the traditional market segmentation theory, consumers are divided into different groups with different demand characteristics according to certain standards of consumers. The key is to find out the differences in consumer demand. Factors contributing to the differences in demand vary, such as age, gender, income, geographical location, and user behavior. Since the market segmentation criteria and data classification criteria are too rough, it is not conducive to the in-depth understanding of the user group in the data market, or to the adaptation of the supply and demand main body to the market, resulting in the inability to develop a targeted gradient pricing scheme. Big data products and services have distinct flexibility relative to ordinary goods, which makes the traditional segmentation standard appear thin and weak.

The innovation of market subject segmentation standard is embodied in the in-depth study of users' demand and product comprehensive information, so as to maximize the economic and social benefits of data products and services. In the division of products, not only the price difference between different suppliers, but also the pricing difference between different data product types of unified suppliers should be considered. For example, the pricing of data products provided by the government can be divided into three categories: $P=0$, $P=MC$ and $P=C$.

3.2 Privacy protection segmentation to be strengthened

The key to market segmentation is to master the differences between consumers, to compare and segment the market through differences, to formulate production and marketing strategies, and to realize differential pricing of data products. When the distributors segment the market, they have a large number of users' personal information and corporate information, involving personal privacy and business secrets. On the one hand, distributors can segment and select the target market only when they have a good understanding of the basic situation and needs of users; On the other hand, data products themselves have natural privacy, recording the procedural results in a certain field and the results of users' use. However, at present, the data market is still in the initial stage of development, with the intensity of desensitization treatment to be further strengthened, and the traditional market segmentation theory is prone to "lemon market". For example, when enterprises collect data on users' purchase behavior, users do not know whether their behavior trend is exposure of data or what these data mean, and whether there is a backlash. It is difficult to trace the leaked information because the data is replicable and virtually transmissible. Once the information is leaked, it is almost impossible to trace the source of the leakage. According to the *Cyber Attack Trends: Mid-2021 Report* released by Internet security service providers in July 2021, cyber-attacks and even data extortion caused by data leakage have been on the rise in the United States, Europe, the Middle East and Africa, and the Asia-Pacific region. Frequent data leaks indicate that many technology companies with large amounts of sensitive data will face huge risks. However, the traditional market segmentation mechanism cannot effectively meet the challenges of the data market, and the data privacy needs a comprehensive protection mechanism. Therefore, the standard of data transaction in the data market is judged by both the seller and the buyer and the privacy of the data type. In order to promote the

healthy development of the data market, privacy protection segmentation should be strengthened.

3.3 Vicious pricing induced by supersegment

With the increasingly fierce competition in the data market, data distributors are trying their best to segment the market from the original consumer groups to individuals in order to obtain a larger market, i.e. "one-to-one marketing". Under such a trend, this will meet the individual needs of customers, help enterprises to tap the users with great market potential, establish a brand-new database, and improve economic benefits. As a result, it will inevitably breed "discriminatory" transactions, that is, enterprises will target the target market at users who can bring more value to the enterprise to provide personalized services, or even violate the principle of fair trade in the market and infringe upon the rights and interests of other users. Targeting users in the market increases the risk of vicious pricing. In order to understand the needs of each user, database technology and statistical analysis methods are urgently needed to record and forecast the consumption records and trends of each user, which provides a realistic basis for the occurrence of big data-enabled price discrimination against existing customers. Producers with big data advantages can obtain almost complete information of consumers by virtue of their technological advantages, and then conduct targeted marketing to consumers in various forms, and realize a brand-new "price discrimination". The prevalence of this phenomenon cannot be separated from the operators' use of data algorithms to meet the individual consumption needs of users, thus making vicious pricing. Under the condition that "everyone has their own view", the malignant pricing mode has damaged the equal rights of users to a certain extent, resulting in consumption inequality and market price monopoly, and greatly undermining the market order.

3.4 Absence of market feedback segmentation

Consumer demand-centric market segmentation is a combination of statistics of user behavior from the perspective of distributors, viewing consumers as entities at various levels, such as price acceptance, functional demands, and related product cognition, based on the direct connection between enterprises and distributors. The cognition collection of consumer information by enterprises almost comes from the feedback from distributors, but the authenticity and integrity are in doubt, because the distributors who maximize profits are not the market agents of a data enterprise, and may act as the agent of more than two brand products at the same time. In the end, distributors will recommend the most profitable products to consumers, so the effectiveness of market feedback from distributors will be greatly reduced, which also leads to the cognitive deviation of data enterprises on market consumption and even violates the main principles of market segmentation. In addition, with the prosperity and development of the data market, the data resources have changed from linear mode to three-dimensional mode, which obviously weakens the impact of consumer demand on the data market. The continuous refinement of the market requires data enterprises to provide all-round customer service for all demand subjects with the help of big data computing technology and cloud service mode, starting from various segmented market feedbacks. Therefore, it is necessary to improve the relevant feedback channels, collect product feedback information from the perspectives of consumption, data dealers, data suppliers and intermediaries to realize the

maximum benefit of data products and services.

IV. PRICING STRATEGY OF BIG DATA PRODUCTS AND SERVICES BASED ON MULTIDIMENSIONAL MARKET SEGMENTATION THEORY

Market segmentation is carried out according to the multi-dimensional attributes of products. Differentiated pricing strategies are proposed on the basis of the difference in utility of data products and services, which is helpful to select the most profitable target market. In this paper, suggestions are made from four aspects: market subject segmentation, data protection level segmentation, standardization of market segmentation scope of application, and feedback information segmentation. The development of big data market requires the transformation from single consumer segmentation to comprehensive segmentation for differential pricing.

4.1 Market subject segmentation and standardization of segmentation mechanism

4.1.1 Segmentation according to the needs of consumer groups

Consumer demand orientation is the primary focus of data pricing. Demand-oriented pricing refers to the pricing of the same data product and service using different pricing methods based on the difference in demand caused by the difference in customer's demand level, use purpose and market positioning, such as the online ride-hailing pricing. However, different from e-commerce, online ride-hailing has more personalized pricing space because of its strong timeliness requirements. The Prophet platform launched by the fourth paradigm in July 2016 can finally optimize key indicators according to the different computing needs of current customers. That is to say, the fourth paradigm can provide personalized and customized solutions based on the Prophet platform, which is conducive to establishing the cooperative relationship between supply and demand sides and expanding the feedback mechanism to a certain extent. Specifically, firstly, different charging standards are adopted according to the demand degree of the demand subjects. To a certain extent, all citizens can obtain corresponding big data resources free of charge, but users whose demand exceeds the basic scope should be charged corresponding fees, otherwise, congestion in the process of using data products will be caused. Second, different charging standards are adopted according to the purpose of the demand subject. Based on the identity information of the demand subject, the usage trend is determined. Data products used for personal life services or development are free or at marginal cost. Demand subjects used for commercial production to make profits are charged at a gradient rate according to the pricing strategy.

4.1.2 Segmentation by supply groups

The classification of big data products is mainly based on different suppliers, which is also the basis of pricing big data transactions. Under the socialist market economy, the government plays a leading role in the pricing process of big data products. However, the government can only intervene in the price within the scope of the price application to prevent the destruction of the market price mechanism. According to

the data provided by the government itself, government big data involves a wider range of individual information and is more confidential compared with commercial big data. Therefore, the government can adopt the following pricing methods according to the specific situation: First, free, i.e. $P=0$, which means that some of the government's big data as a pure public product does not charge all citizens for the right to use the data products, which is only suitable for some data products, rather than data involving citizens' tight privacy or data with large storage costs. Secondly, charge at the marginal cost, that is, $P=MC$. In this case, the government charges an equal amount of money and manpower to store and manage some of the government data. Thirdly, cost recovery pricing, i.e. $P=C$, which calculates all the costs by the government in the process of collecting, sorting and storing data, such as production costs and external costs, and carries out average pricing on this basis. Fourthly, market-oriented pricing, that is, only a variety of pricing strategies or pricing models can bring the maximum benefits to the government. However, as a public sector, the government has public power and is prone to monopoly pricing.

According to the data provided by enterprises, pricing should be carried out in the competition mechanism, so as to promote enterprises to improve production efficiency, reduce production costs and improve resource allocation efficiency on the basis of ensuring the break-even of the industry. The natural monopoly business should be regulated and priced by the government.

The pricing of data products may form a hidden monopoly if it depends solely on the government or the enterprises. Therefore, the government should strengthen consultation and cooperation with enterprises to promote the formation of a reasonable pricing strategy and promote the healthy and stable development of the data trading market.

4.1.3 Segmentation by product attributes

Relevant entities should adopt flexible pricing method based on the actual market conditions and specific conditions when pricing big data products and services.

First, a free strategy for non-monopoly basic data.

The free supply mechanism of data products and services will cause congestion in the data use process, but government big data is supported by national finance, which is the main reason for advocating data charging. However, at present, there are "double lows" in the process of basic data transactions in China. First, there is a stage of low demand for data products and services by ordinary citizens, and the other is that the government or enterprises have a low enthusiasm for providing basic data. As the citizens' demand for data and the government's or enterprises' willingness to provide basic data are at the "double-low" stage, it is necessary to adopt a free pricing strategy for some basic data.

Secondly, a strategy of multiple charges for non-basic data of monopoly nature.

Completely free of charge for some data products with high production costs will aggravate the financial burden of the government, increase the pressure of deficit, and discourage enterprises from producing, which is not conducive to improving the quality of data products. Suppliers should adopt a

market-oriented pricing strategy for such data and charge fees based on direct costs incurred in the production of data products and services under the guidance of the government. In this way, the government's supervision of the market can be guaranteed, which can motivate the government and enterprises to participate in the data trading market at the same time and stimulate the vitality of the data trading market. Specifically, from the demand point of view, it is beneficial to maintain a reasonable consumption structure to charge for certain data products which are used during peak periods on a gradient basis. For example, there is a clear trend of weak and strong demand for electricity data. The peak-load pricing method is adopted for these products, i.e., high price is adopted during peak load and low price is adopted during trough load, which is conducive to easing the tension between supply and demand[13]. From the perspective of market competitiveness, the market price of data products with high price and insufficient market vitality should be appropriately lowered, but the production cost should be taken into account to ensure the normal supply of products. For data products with low prices and high market competitiveness, the product quality requirements should be appropriately improved.

4.2 Segmentation of data protection levels, strengthening product segmentation differences

Data privacy protection is a complex issue. If all data are protected indiscriminately, the efficiency will be reduced and the economic benefits of data products will be affected. In 2021, the *Outline of the 14th Five-Year Plan (2021-2025) for National Economic and Social Development and Vision 2035 of the People's Republic of China* was officially promulgated, proposing the implementation of the National Strategy for Big Data as the national strategic direction, and clearly pointing out that it is necessary to continue to improve the classification and classification protection system for data to promote the safe and orderly flow of data. After discussion in the industry, it is proposed to open up the sharing mechanism between government data and private data, so as to reduce the production cost and increase the efficiency of data use through sharing. But at the same time, it highlights the urgency of data protection, including business secrets of enterprises and personal privacy data. Implementing the principle of hierarchical protection and providing different protection strategies for different levels of data information can not only conform to the information sharing trend in the data age, but also effectively protect users' privacy. Therefore, the sensitivity of personal information should be layered. Low sensitive information is classified as general data, medium sensitive information is classified as important data, and high sensitive information is classified as private data. In addition, the information can be subdivided according to the standards of industry and region, and on this basis, different rights and interests can be set according to the level difference of information. For example, general enterprises can obtain general data with low sensitivity and some important data with moderately sensitive information, because these data can be shared by trusted government agencies and trusted enterprises with allowed security policies[14]. The collection and use of highly sensitive and identifiable information by enterprises through special means should be resolutely resisted. In the specific practical process, the big data platform architecture of operators is re-layered, and divided into four different hierarchical structures, i.e., acquisition layer, storage and processing layer, service layer and application layer, according to the logical division, so as to protect sensitive information of different layers according to different hierarchical structures[15]. The data acquisition layer refers to the distributed acquisition layer deployed at the data source side before the nodes

that collect data for realizing multivariate data, so as to ensure that data containing user sensitive information is not damaged by illegal intruders during the transmission and storage process of the big data platform[16]. The data storage and processing layer is responsible for collecting and desensitizing the data. The service layer is used for facing a large number of users. The application layer controls the operation of data access rights to obtain data only when the rights permit, so as to effectively block the leakage of sensitive data information. Strengthening the cooperation among the four levels and the differentiation of product segmentation can be a beneficial idea to solve the risk of privacy leakage in the era of big data.

4.3 Strengthening algorithm supervision and standardizing the applicable scope of market segmentation

Big data algorithms and supersegment provide choices for personalized pricing and maximize the efficient allocation of data resources. However, it is undeniable that the data market has made vicious pricing when mastering consumers' consumption behavior and intention demand, resulting in price discrimination. As the vicious pricing caused by segmentation will have different effects on different subjects, more innovative measures must be taken to regulate the applicable scope of market segmentation and guide the pricing mechanism to become reasonable.

First, technical means is the primary choice for effective regulation, which can solve the balanced relationship between data suppliers and demanders. Data providers are covert relative to the transparency of consumers, providing planned products and pricing to different consumers based on the information collected. To counter this information asymmetry, technical means are preferred, such as popularizing Internet technology and expanding information dissemination channels, which make the regulators more likely to understand the relevant expertise of price discrimination and realize the information exchange between the supply and demand subjects.

Second, the legal regulation should be strengthened to standardize the vicious pricing behavior of price discrimination by using big data algorithm and hypermarket segmentation. The "portrait" of users should be avoided in data transactions, and the huge commercial value behind all "data crumbs" should be valued. Therefore, it is possible to start with the protection of personal information rather than a unified protection to prevent individual "portraits". But the regulation of algorithm is still in the protection mode due to the late start of data algorithm in China. Relative to domestic legislation, foreign countries are more mature in algorithm supervision, regulatory pricing, etc. Therefore, the experiences of foreign legislation can be drawn on in combination with the current legislative basis and algorithmic dilemma in China. First, in data protection, data subjects should be given the right to collect data while focusing on data protection, especially the processing of personal data, in order to balance the relationship between personal interests and public interests. Secondly, in terms of algorithm supervision, the strategy of combining external supervision with internal supervision should be adopted. External supervision refers to government supervision, mainly after-the-fact supervision. In the *Data Security Law* and *Network Security Examination Measures* issued on September 1, 2021 and February 15, 2022, respectively, new requirements are put forward for consumer personal data security and network security. Anti-monopoly regulation departments

need to strengthen the algorithm review, so as to improve the transparency of algorithm development and operation, and avoid the vicious pricing decision that the data "portrait" discriminates against users. Due to the technical nature of the algorithm and the flexibility of the market, external supervision is often restricted. Therefore, internal supervision, i.e. industry self-regulation can be strengthened to guide the industry to enhance its awareness of the rule of law. The case of "Alibaba and Netease Accusing Tencent Music of Violating the Anti-Monopoly Law" was finally resolved under the coordination of the National Copyright Administration, indicating that the effective implementation of legal norms to a certain extent requires the joint participation and active cooperation of various parties. It requires not only strict performance of duties in accordance with the law by external supervision, but also voluntary compliance by data operation providers, and administrative intervention under special circumstances.

4.4 Improving service quality and strengthening market feedback segmentation

Enhancing service effectively is a prerequisite for strengthening market feedback segmentation. With the competitive development of the data market, data providers focus not only on the quality of data products, but also on the feedback from users and a series of services related to products. Improvement of service involves two aspects: user service and product service. Nowadays, the Internet is closely integrated into people's lives, presenting a situation of data-based life, making life more convenient. However, the subsequent black transaction of personal data has brought endless problems in life, such as big data-enabled price discrimination against existing customers, crank calls, malicious pushes, junk mails, etc. Therefore, the first solution to increase users' online experience is to improve users' services. For example, the personalized shopping guide service derived therefrom can meet the personalized and precise requirements of users by providing shopping guide services to users, and at the same time provide design inspiration for data companies to design personalized services, thus providing differentiated services. In addition, it is also possible to readjust production plans and product prices by providing demand from customers in the market through supply entities. In the face of large-scale demand entities that make profits from commercial production, market trend signals should be provided in a timely manner. Beijing Jixing Property Management Co., Ltd. anticipates customers' needs through multi-dimensional segmentation data and information collection, communication in transactions and after-sales feedback, and eliminates connection barriers caused by information asymmetry with customers in combination with its own management and service capabilities. It also clearly points out that customers' needs should be subdivided, potential customers and profit-increasing customers should be distinguished, customers with big differences in needs should be introduced in time, and customers' specific needs should be met by customized services through further consultation and careful judgment.

Market feedback refers to the return of information generated in the operation process to production to form a complete management system. Faced with the fierce market environment, data enterprises must collect, sort out, analyze and compare various types of market information in time to find differences, so as to provide the basic conditions for the next step of production and marketing strategies of data enterprises. The digital warehousing technology should be used to classify the feedback information and integrate the results for empirical analysis to improve the pricing efficiency. First, the feedback subjects should be

subdivided, starting from the data feedback process, in which the basic subjects involved are data distributors, data consumers and data storagers. In the traditional distribution model, distributors are the bridge of market feedback. However, due to their profit-seeking principles and their own literacy, they cannot provide true and timely feedback information. Therefore, multiple feedback behaviors are collected by subdividing the feedback subjects, and finally feedback opinions of each feedback subject are collected by the feedback platform and fed back to the corresponding processing subjects. Secondly, the feedback content is subdivided, which involves data products, including data integrity, timeliness, etc. When users put forward opinions on product quality, the feedback subject should accept and adopt them modestly, which will not only improve the product quality, but also cultivate users to form a habit of continuous feedback. As for users, according to the survey on feedback platforms, the cumbersome feedback process will greatly reduce users' satisfaction with feedback, thus negatively affecting market feedback segmentation. Therefore, in order to timely convert the effective feedback content into the kinetic energy to improve the service quality, the feedback process should be simplified to increase the user feedback frequency.

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