

Research on Data Assetization Difficulties and Management Path

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Abstract: With the rapid development of the digital era, data has become an important asset for enterprises and individuals. Data assetization is the process of assigning corresponding economic value to data, which plays a crucial role in the development and competitiveness of enterprises. However, in the process of implementing data assetization, enterprises face a number of difficulties and challenges, including data quality issues, data privacy and security risk issues, data governance and organizational change issues. By studying the difficulties and management paths of data assetization, this thesis discusses the challenges and solutions faced by data assetization, aiming to provide guidance and reference for enterprises to realize data assetization.

Keywords: Data Assetization, Management Pathways, Data Entitlement.

1. Introduction

As a new type of production factor derived from the digital economy era, data has become an important economic factor that cannot be ignored, alongside production factors such as land, capital and technology. At present, China needs to release the dividends of data factors by comprehensively deepening reform, and the market-oriented allocation of data factors is also imperative. With the development of AI, 5G and IoT technologies, the scale and pricing needs of the data market are also increasing day by day. Only through rational pricing of data assets and clarification of ownership and transaction rules can the market order be effectively maintained and the orderly and healthy development of the data factor market be promoted.

2. Concepts Related to Data Assets and Data Assetization

2.1. Definition of data

Data are symbols and combinations that record the nature, state and interrelationships of objective things, which not only refers to numbers in a narrow sense, but can also be presented in text, images, audio and video. At the same time, data and information can not be equated, data is a reflection of the objective properties of the record, is a specific form of information. Data can only become information after processing and handling, and information can only be stored and transported after it is digitally converted into data.

2.2. Definition of data assets

Asset, as a term used in economics and accounting, is defined as "a time-limited economic resource controlled by a subject as a result of past events". The most basic attribute of an asset is that it has clear ownership and can bring economic benefits to the owner subject. As a kind of asset, data asset should firstly meet the basic definition of asset, and at the same time, as a new type of production factor, it also has its own characteristics. Data asset refers to the economic subject in the participation of social production activities created, acquired, accumulated, traded with a clear property rights relationship and can bring the owner of the expected economic benefits, and in the form of electronic recording and

expression of economic resources. Data assets should have four elements: (1) the assets originate from past production and operation activities; (2) the ownership relationship of the assets is clear; (3) they can bring economic benefits to the owner; and (4) they exist in electronic form.

2.3. Data Assetization

Data assetization is the process of transforming data into real economic value. Data assetization is not only an important goal of data management, but also a key link in the realization of data value. The process of data assetization includes data collection, storage, processing, analysis and application. Through data assetization, enterprises can realize the reuse, shareability and tradability of data, thus maximizing the commercial value of data.

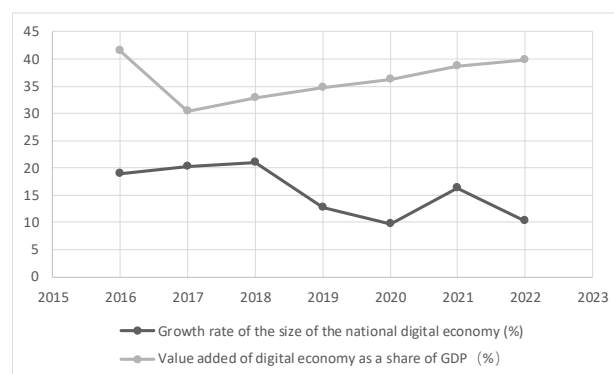


Figure 1. Growth Rate of China's Digital Economy Size and Contribution to GDP, 2016-2022

Source: Guizhou Provincial Big Data Development Administration

Data assetization is of great significance to enterprises. First, data assetization can help enterprises improve their core competitiveness. By making full use of data resources, enterprises can better understand market demand and consumer behavior, optimize products and services, and improve user experience, thus enhancing market competitiveness. Second, data assetization can improve the decision-making ability of enterprises. By analyzing and mining big data, enterprises can obtain valuable information and insights in a timely manner, make scientific decisions and reduce decision-making risks. Again, data assetization can

create new business models. By integrating and innovating data with other resources, enterprises can develop new products and services, expand new markets and channels, and realize the transformation and upgrading of business models.

3. Dilemmas and Challenges of Data Assetization

3.1. Complexity of data asset rights

Only data assets with clear ownership relationships can participate in production and circulation as factors of production. The issue of ownership is an unavoidable and urgent problem for the realization of data compliance and effective circulation[1]. The value of data lies in its mobility, the control and use of data does not have any exclusivity, and the value of data will not be completely lost because of its use, but will gradually diminish with the recurrence of time and scene. In addition, the difficulty of data ownership is also manifested in the problem of data silos, where data silos between different systems and departments make it impossible to integrate and share data, thus leading to low utilization of data. To sum up, the rights of data assets can not be completely applied to the logical paradigm of physical assets, but should be in line with the characteristics of the data assets themselves, so the data assetization requires the establishment of a new property right provision for data assets, which requires the cooperation of various departments as well as the cooperation of relevant technologies.

3.2. Mixed quality of data assets

Data quality issues include the accuracy, completeness, consistency and timeliness of data, which affect the effective use and value realization of data. Accuracy in data quality issues refers to the consistency between data and the real situation. Data are susceptible to risks and impacts brought about by collection errors, entry errors, transmission errors, etc., which call the authenticity of the data into question. Completeness in data quality issues refers to the degree of data integrity, the realization of the value of data is highly dependent on the integrity of the data, the relative integrity of the data flow of its value coupling degree tends to be higher, more conducive to market transactions. Consistency in the data quality problem refers to the consistency of data in different domains or between different points in time. Due to the diversity of data sources and different processing methods, there may be inconsistencies between data. Also critical in the data quality issue is timeliness, which refers to the timeliness of updating and maintaining data, and in today's business environment, where information is iterated at such a fast pace, more current data tends to command higher valuations[2].

3.3. Inadequate data trading markets

In terms of data trading, the construction of the data elements market is not sound enough, the rules are not perfect, and the trading scale is small and inefficient. At present, most of China's trading platforms are in a semi-disabled state, over-the-counter transactions are chaotic, and the market lacks a unified transaction aggregation and pricing system. As there is no unified data trading market in China, it is difficult to establish a perfect trading trust mechanism, and it is difficult to assess the credibility of the trading parties. The market lacks a strong supervisory body, and it is difficult to define the scope of data use, which creates many problems.

3.4. Data privacy and security issues

With the growth and flow of data, data privacy and security issues are becoming increasingly prominent, and enterprises are facing risks such as data leakage and data abuse. In order to enhance their competitiveness, some enterprises in the current market pursue profit maximization, misuse the personal data they collect, violate user privacy, and jeopardize data security. In the process of data asset trading, data is often desensitized in order to protect personal privacy and sensitive information. Nevertheless, problems of compliance will inevitably arise in the process of data use, such as in the management and analysis of data and deep mining, the legality of which is questioned due to misuse by the user, which constitutes a loss to unrelated third parties. In addition, data assets contain great value and storage management is relatively centralized, which is easily attacked and stolen by third parties, leading to frequent data leakage incidents and increasingly serious harm. Therefore, the realization of data assetization requires the combined efforts of all relevant departments to continuously improve data governance capabilities [3].

4. Key Technologies and Management Paths for Data Assetization

4.1. Key technologies for data assetization

4.1.1. Data acquisition technology

Data acquisition is the fundamental part of data assetization, including the process of data collection, extraction, and cleaning. Commonly used data collection techniques include data mining, data crawling, sensor technology, etc.

4.1.2. Data storage technology

Data storage is an important part of data assetization, including data storage, backup, and recovery. Commonly used data storage technologies include database technology, distributed storage technology, cloud storage technology and so on.

4.1.3. Data processing technology

Data processing is the core aspect of data assetization, including data cleaning, transformation, clustering, classification, and prediction. Commonly used data processing techniques include data mining, machine learning, artificial intelligence and so on.

4.1.4. Data analysis techniques

Data analysis is an important part of data assetization, including statistical analysis of data, data mining, machine learning and so on. Commonly used data analysis techniques include data visualization, data mining, machine learning and so on.

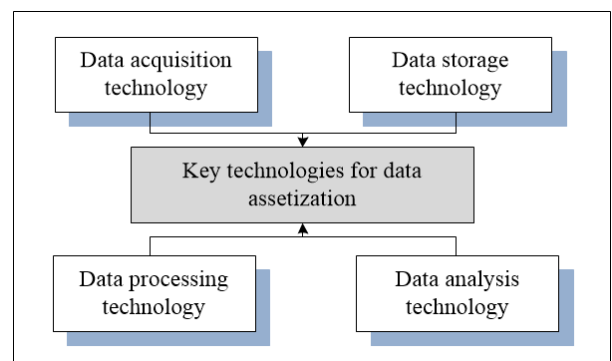


Figure 2. Key technologies for data assetization

4.2. Management Path to Data Assetization

4.2.1. Data aggregation

For the relevant data resources to be catalogued and organized, the distribution of existing data resources should be inventoried, and the specifics of the data storage technology, data volume and update cycle should be fully grasped. The catalog of data resources must follow the four principles of understandable, searchable, accessible and manageable. Data resources should be reasonably categorized and can be mainly divided into public data, social data and scientific data. Different types of data have different ways of releasing their value, which in turn leads to different ways of circulation.

4.2.2. Data validation

Indeed, the right to data involves both public and private rights, and requires the joint efforts of the State, society and individuals to weigh the distribution and rationalize the relationship between data production in terms of policies, regulations, institutional standards and other aspects[4]. With regard to the issue of data rights, the focus should be on solving the problem of the attributes of data rights, i.e. whether to recognize the property rights of data, and whether to give the data a matching protection mechanism. For data rights, we should insist on going back to the roots, thinking about the allocation of property rights from the source of data value formation, and allocating value gains according to contributions, while also considering practical factors such as feasibility, transaction costs, and social and public interests. Only by clarifying the content of the rights enjoyed by data subjects can the industrialized development of data be effectively regulated.

4.2.3. Data authorization

The asset-authorized operation of data is an important support for data assetization. In order to realize the controllable and compliant use of data resources, it is necessary to rely on credible developers to operate public data trading platforms, and it is necessary to rely on market-oriented paid transactions[5]. The exchanges that have been put into operation in China mainly include: Guiyang Big Data Exchange, Shanghai Data Exchange Center, and Zhongyuan Big Data Exchange Center. At a time when there is a strong demand for data, but the assetization of data cannot be clearly defined, the authorizing body of the trading platform should make specific provisions on the operation content, service mode, division of powers and responsibilities, supervision and management, and data security of public data, so as to establish a whole-process management mechanism for the operation platform that is "transparent, recordable, auditable and traceable".

4.2.4. Data markets

Data assets must rely on a sound and efficient data factor market in order to circulate in a safe and orderly manner and to release their maximum value and potential[6]. Firstly, we should take the principles of open sharing, effective utilization, security and efficiency as the basis for unclogging the internal cycle of data circulation, which is mainly based on data exchange, sharing and analysis and application within the government, scientific research institutes, enterprises and industries; secondly, we should give full play to the decisive role of the market in the allocation of data resources, and gradually form a new model of data circulation with the participation of data trading agencies, data brokers, intermediaries and other market main bodies, with data

carriers commissioned and authorized by the government as the link. Second, give full play to the market's decisive role in allocating data resources, take the government-commissioned and authorized data operators as a link, and gradually form a new mode of data circulation with the participation of data trading organizations, data brokers, intermediary organizations and other types of market players.

5. Policy Recommendations for Data Assetization Management

5.1. Promotion of laws and regulations on data privacy rights

The determination of data ownership can clarify the rights and responsibilities of all parties to data transactions, so that all parties to data can consciously regulate their own behavior, thus resolving property disputes and forming a good trading order. Therefore, the state should establish a national unified data rights system, define the ownership of data in a hierarchical manner, and clarify the types and subjects of data rights. In terms of the legal construction of data rights, laws and regulations should be revised gradually with the continuous development of the data industry, combined with the relevant data legislation in foreign countries, taking into account the relevant problems encountered in our country, researching the laws and regulations related to data rights, and actively promoting the construction of laws and regulations on data rights.

5.2. Improving the level of open sharing of data

Maximizing the value of data requires the open sharing of data among different subjects. From the government's perspective, it should further promote the construction of regulations and laws related to data openness and sharing, such as formulating a nationwide Regulation on Government Data Openness and Sharing, and continue to actively promote government data openness and sharing, build a unified standard system for government data openness and sharing, and explore and improve the mechanism of data sharing between government and enterprises. From the perspective of enterprises, the first is to further establish and improve a unified benefit distribution system for data opening and sharing, and at the same time provide data technology services for small and medium-sized enterprises with a low level of informatization; the second is to open up the data interfaces between the government and enterprises and enterprises, and push forward the construction of a benefit distribution system for data opening and sharing among enterprises and public institutions.

5.3. Improving the data regulatory system

First, it should clarify the responsibilities of data regulators, clarify the rights and obligations of the main parties involved in data transactions, and strengthen data anti-monopoly law enforcement. It is necessary to increase the anti-monopoly efforts of data elements, clarify the scope of responsibilities of data regulators, establish a mechanism for monitoring data circulation and defending the rights of data transaction reports, strengthen the supervision of the data market, crack down on data fraud, data monopoly, and illegal transactions, etc., and realize the all-around supervision of the data market in a pre-post-post manner, so as to maintain the data market order and ensure the benign and healthy development of the market.

Secondly, while regulating the big data trading platform, the big data trading platform can be allowed to assume part of the regulatory responsibilities, thus forming a "government-platform" dual regulatory system. Government regulation can effectively prevent data monopoly, malicious competition and other behaviors, and regulate the entire data trading market.

5.4. Promoting high-quality development of data markets

First, the use of data technology to drive the research and development of digital scene applications, for the elderly, the disabled and other vulnerable groups, collect data information, integrate data technology, create ageing, caring digital application scenes, accelerate the improvement of their quality of life. Second, the use of data technology to boost the digital transformation of enterprises. For enterprises lagging behind in the transformation, they should take the initiative to learn the successful experience of leading enterprises in digital transformation, learn the experience of applying advanced data technology, tap the value of enterprise data assets, activate the kinetic energy of enterprise digital operation, and further narrow the gap between enterprises. Third, the use of data technology to empower digital China, the use of big data technology to promote innovation and development, and the application of data technology to government services, smart cities and other fields.

6. Conclusion

The core of data assetization is to realize the value endowment to the data in the whole process from data collection and pre-processing to data storage, and then to data analysis and application. Data assetization is a key step and link for enterprises to realize informationization and digital transformation. Through data assetization, enterprises can transform data into actual economic value, improve core competitiveness, improve decision-making capabilities, drive product innovation, and create new business models. With the continuous development and innovation of technology, the

application areas and methods of data assetization will be further expanded and deepened. In the future, data assetization will become the basic capability and core driving force for enterprises to realize intelligent and digital transformation.

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