Digital Economy Platform Construction and Operation Driven by Big Data

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Abstract. Digital economy is an industry of information production, circulation, consumption and value innovation by means of interconnection, which has become a significant trend of economic development in the 21st century. Based on digital technology, digital economy platform is an open online platform built by integrating manpower, capital, technology and other production factors to provide business models and value-added services under the competition of data. The digital economy platform led by big data drives the digital transformation and upgrading of traditional industries, promotes collaborative innovation among enterprises, and cultivates new industrial growth points in the market, which is an important driving force to improve production efficiency and market competitiveness.

Keyword: Big data Digital economy · Digital economy platform · Data products and services

1 Introduction

Any major social change in the history of human development will give rise to new factors of production, such as land in the era of agricultural economy and capital in the era of industrial economy. Nowadays society has entered the era of digital economy, and data has become the core factor driving economic and social development. With the great progress of data acquisition, storage, analysis and other technologies, the management, processing and application of large-scale data can be realized [1].

The digital economy thrives on the mass aggregation of data resources. "Digital economy has become a key force in global resource restructuring and competitive advantage shaping. It has a profound impact on the transformation of economic development mode and social structure by promoting the connection of market entities, promoting the flow of factors and accelerating the iteration and upgrading of technological models." As for digital economy, the G20 Initiative on Development and Cooperation in Digital Economy released in 2016 pointed out that digital economy refers to a series of economic activities in which digital knowledge and information are used as key factors of production, modern information networks as an important carrier, and effective use of ICT as an important driving force for improving efficiency and optimizing economic structure. Digital economy has become a "stabilizer" and "accelerator" of national economy. In

2021, the digital economy reached 45.5 trillion yuan, with a nominal growth rate of 16.2% year-on-year, 3.4% points higher than the nominal growth rate of GDP in the same period, accounting for 39.8% of GDP. Digital economy platform is an open platform supporting the development of digital economy. It provides a digital environment based on Internet and data technology, enabling various industries and enterprises to make use of data-driven business innovation and growth, mainly including data sharing, Internet of things, blockchain and other aspects. The typical representatives of digital economy platforms are Alibaba, Didi Chuxing, Panshi, Tencent, Meituan, etc. [2, 3].

2 Digital Economy Platform

2.1 The Composition of Digital Economy Platform

There are many types of digital economy platforms, such as e-commerce, online education, online finance, online tourism, sharing economy and so on. As shown in Table 1. Although the composition of different types of digital economy platforms may be different, in general, digital economy platforms are roughly composed of six aspects:

a) Platform infrastructure: including server, cloud computing, network equipment, host, etc., is the basis of platform operation.
b) Database: It includes user identity data, commodity data and transaction data, as well as external data such as government data, protocol execution mechanism and geographic information, which are the most important basis for platform analysis and operation.
c) Application program: refers to the core application of the platform, such as online mall, online course, online payment, etc., which is the window for consumers to use the platform.
d) Support services: necessary support services for the platform, such as customer service, technical support, marketing, etc., to ensure the smooth operation of the platform.
e) Partners: such as suppliers, payment service providers, logistics providers and other partners that cooperate with the platform to jointly establish the platform ecosystem.
f) Market management: Management of digital economy platform, including market monitoring, kpi monitoring, etc.

2.2 Business Model of Digital Economy Platform

The efficiency of big data analysis and utilization is directly related to the efficiency of digital economy platform operation.With the rapid development of emerging technologies such as cloud computing, 5G and the Internet of Things, the wave of digitalization has begun to spread from the consumption field to the entire production field, covering the whole process of goods from production to consumption. Digital economy platform has become the carrier of value exchange between the production end and the consumption end under the tide of digitalization, forming a convenient and efficient Plug &Play model. Many enterprises "plug in" the platform and provide value on the platform, and

Table 1. Composition of digital economy platform driven by big data

	Content
1 Platform infrastructure	Server, network device, host, etc.
2 Database	User data, commodity data, external data, etc.
3 Application program	Online mall, online courses, etc.
4 Support services	Customer service, technical support, etc.
5 Partners	Suppliers, logistics suppliers, etc.
6 Market management	Market monitoring, kpi monitoring, etc.
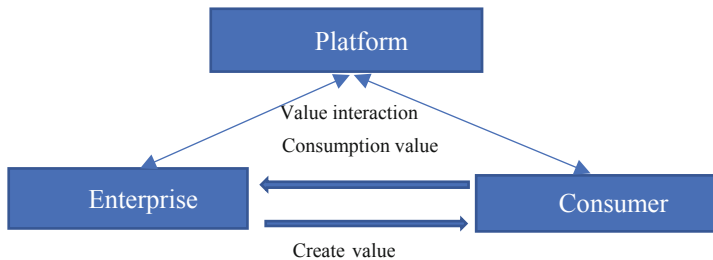
Fig. 1. Digital economy platform business model

consumers enter the platform to select and pay remuneration to complete the transaction [4, 5]. For example, publishers provide courses for online education platforms to be viewed for payment (Fig. 1).

2.3 Ecosystem of Digital Economy Platform

According to Accenture's *China Digital Economy Development Report 2017*, mobile data communication, Internet of Things, data analysis and artificial intelligence, cloud computing architecture and servitization, as well as open source software and API have become five important driving technologies in the development of digital platforms. Digital economy platform is an economic model driven by big data technology, which forms a brand new ecosystem with multi-party participation (mainly including platforms, enterprise production users and consumer users, and government). In the internal ecosystem of digital economy platform, platform and users are the main body of value interaction, completing the whole process of supply and consumption of digital products and services, acquisition and return of data elements. As an important external factor for the development of platforms, the government has built an important external ecosystem of digital economy platforms in terms of policies, regulations, market supervision and other aspects (Fig. 2).
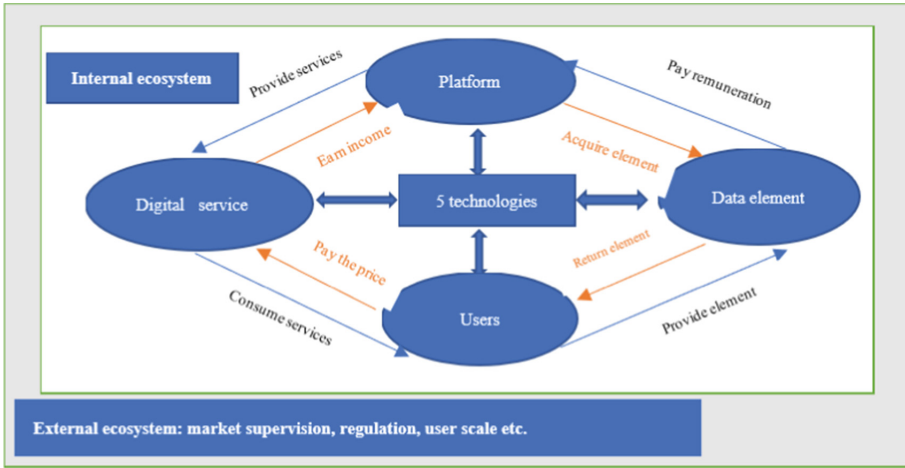
Fig. 2. Ecosystem of digital economy platform

3   The Driving Force of Big Data for Digital Economy Platform

By December 2022, China had 1.067 billion Internet users, an increase of 35.49 million over December 2021, and the Internet penetration rate reached 75.6%, 2.6 % points higher than December 2021, laying a solid foundation for the development of digital economy platforms. Driven by big data, digital economy platforms can not only more accurately understand user needs and optimize business processes, but also provide accurate recommendation services, optimize supply chain management and reduce risks through data analysis.

3.1   Accelerate the Docking and Integration of Enterprise Entities

The digital economy platform gathers a large number of enterprises such as manufacturers, logistics providers and service providers. Based on the scale effect, all kinds of business owners can quickly find the demand market, realize the docking cooperation and integrated development in the massive information, and promote the mode reconstruction of market players [6].

3.2   Improve Consumer Satisfaction

On the one hand, digital economy platforms analyze users' buying, searching and browsing data to provide personalized services and recommendations to users. On the other hand, digital economy platforms provide consumers with transparent prices and fair services, and consumers can reduce the information asymmetry in the purchase process through price comparison services.

3.3 Promote the Quick Flow and Optimal Allocation of Production Factors

Digital economy platform is the "connector" of digital economy, bringing together all kinds of enterprises and consumers. Through the market convergence effect of digital economy platform, capital, technology, data and other factors are fully flowing. The collection and analysis of big data can accurately match the supply and demand parties at both ends of the platform, optimize factor allocation, reduce resource mismatch, and improve market transaction efficiency.

3.4 Conduct Risk Management and Monitoring

Digital economy platform has a huge number of users and transaction volume, facing fraud, phishing, malicious attack and many other security risks. Through monitoring and analysis of platform data, big data technology can timely discover and deal with various risk events, help digital economy platforms to identify and troubleshoot risks, and enhance the security and credibility of platforms.

3.5 Unleash Consumption Potential

In the process of big data analysis and optimization, the digital economy platform can continuously innovate consumption patterns, improve consumer products and consumption environment, and stimulate the release of consumption potential. Affected by the COVID-19 epidemic, as of December 2022, the number of online office users in China reached 540 million, an increase of 70.78 million compared with December 2021, accounting for 50.6% of the total Internet users; The number of Internet medical users reached 363 million, an increase of 64.66 million compared with December 2021, accounting for 34.0% of the total Internet users; Online education and Internet medical users in rural areas accounted for 31.8% and 21.5% of the total rural Internet users, up 2.7 and 4.1% points from the previous year, respectively (Fig. 3).
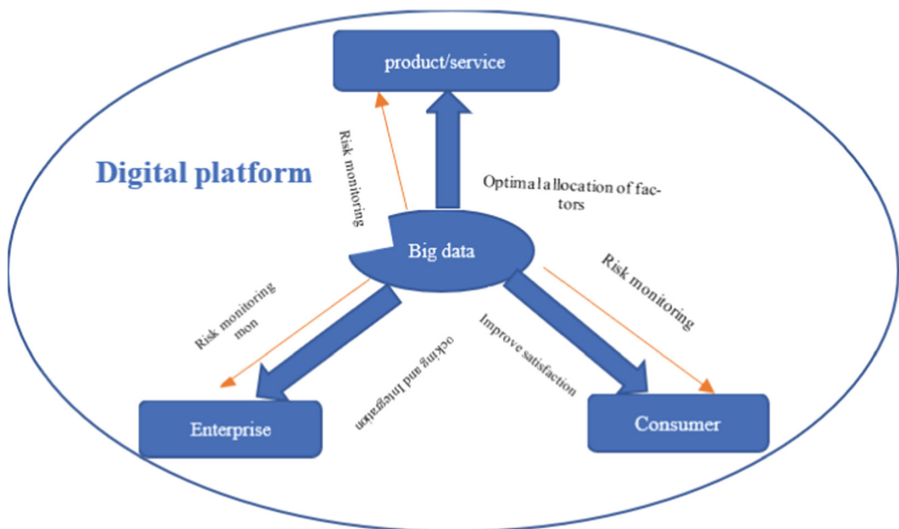

Fig. 3. The Driving Force of Big Data for Digital Economy Platform

4   Construction and Operation of Digital Economy Platform

4.1   The Operation of Digital Economy Platform

The operation of digital economy platform driven by big data provides support and services for platforms in the field of digital economy through big data technology and application, including data collection, storage, processing, analysis, application and other links. Big data technology provides ideas and support for the operation of digital economy platform, and guarantees the optimization and upgrading of platform and market competition:

a) Data collection and analysis: By obtaining user data and industrial data, the digital economy platform can more accurately grasp the market demand and user behavior, and provide more intelligent operation basis and decision support for the platform.
b) Intelligent operation process: Big data analysis technology helps the platform optimize operation process and service quality, thus improving the efficiency of the platform operation.
c) Data-driven marketing: Big data analysis of users' purchasing behavior and interest preferences provides the platform with more accurate user group portrait and publicity strategy, improving the marketing effect and conversion rate of the platform.
d) Personalized service: Digital economy platform uses big data analysis technology to accurately identify and position users' personalized needs and provide more personalized services and products, so as to improve user satisfaction and loyalty [7, 8].

5   Suggestion

The characteristics of bilateral market of supply and consumption of digital economy platform and the reality of low threshold of "insertion" of participants are very easy to bring transaction risk, privacy data disclosure risk, big data price gouging, monopoly operation and so on [9, 10].

6   Conclusion

Digital economy has become an important force in reorganizing global factor resources and reshaping the global economic structure, and plays an engine role in promoting post-epidemic economic recovery. Digital economy platform provides a convenient, reliable and efficient digital economy trading environment, is the bearer of digital economy value trading, and is conducive to the business development and innovation of digital economy. The digital economy platform driven by big data has changed the traditional industrial management mode and realized the informatization, digitalization and intellectualization of the supply chain and value chain, which determines the quality and efficiency of the development of the digital economy to some extent. The construction and operation of digital economy platform is related to the flow of data elements and the smooth circulation of digital economy, which is a strong support and driving force for the rapid development of digital economy.

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