Research on Social Responsibility Governance of Platform Enterprises Based on Algorithmic Embedding:
A Case Study of Meituan

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Abstract: The role of platform enterprises in economic and social development is becoming more and more important, but the phenomenon of social responsibility deficiency and alienation is frequently seen. In this paper, on the basis of the three levels of "social responsibility as an independent operating entity", "social responsibility as a commercial operation platform" and "social responsibility as a social resource allocation platform" found in the existing studies, we embed "social responsibility as a platform for algorithm development and operation". Based on the three levels of "social responsibility as a platform for algorithm development and operation", this paper embeds the fourth dimension of "social responsibility as a platform for algorithm development and operation", and makes an innovative definition of social responsibility of platform enterprises, and takes Meituan as an example to conduct a case study. Finally, this paper summarizes algorithm governance into two dimensions, including the rationalization of platform enterprises' disclosure of the potential impact of algorithm sources and decisions and the empowerment of stakeholders' responsibility.

Keywords: Algorithm, Platform Enterprise, Social Responsibility, Meituan.

1   INTRODUCTION

The benefits of digital transformation are becoming increasingly evident in the new wave of technological revolution. Technologies such as big data, block chain and artificial intelligence have reshaped a whole new economic form, and digitalization is empowering businesses in many ways.

However, it cannot be ignored that many social problems in the development of digital economy are, to varying degrees, associated with the lack of social responsibility and alienation of platform enterprises. On the one hand, platform enterprises have many social responsibility deficiencies or alienation problems in their own business behavior, which bring serious harm to economic and social development. For example, take-out platforms have serious problems of consumer information security, and a large number of social responsibility deficiencies of illegal leakage and dumping of user information have occurred. On the other hand, the lack of management of irresponsible behaviors of bilateral users by platform-based enterprises leads to the supply or consumption behaviors of bilateral users relying on the

platform to have adverse effects on the economy and society, forming the second level of social responsibility deficiency of platform-based enterprises. Prominent examples include the vetting mechanism of online ordering platforms for "three no-go" take-out merchants [5]. The proactive social responsibility of platform enterprises is an essential element to maintain their long-term development momentum, which is the key to continuously promoting social and economic prosperity [8]. In addition, algorithmic hegemony, algorithmic discrimination, and algorithmic black box in the process of algorithmic services of platform enterprises are endless [4]. Algorithmic governance has also become a prominent research topic for socially responsible governance of platform companies in the digital era [14].

Based on this, this paper focuses on three dimensions of CSR governance of platform enterprises in the digital context, and further analyzes the fourth new CSR governance dimension derived from algorithmic governance as a new CSR governance object. Specifically, this paper takes Meituan enterprise as the research object, analyzes the CSR development stage, and summarizes the CSR governance content from four dimensions to make up for the lack of attention to algorithm-embedded CSR governance issues in existing studies. It provides some guidance for the upgrading and development of emerging platform enterprises and the transformation of traditional enterprises, and lays the foundation for the ecological development of platform enterprises in the context of platform economy.

2   RESEARCH STATUS

Since Sheldon (1924) proposed the concept of CSR, the evolutionary logic of CSR has roughly gone through individual businessman-based social responsibility, stakeholder-responsive CSR, embedded social responsibility based on strategic competitive tool orientation, and platform value co-creation and sharing social responsibility based on value co-creation and value sharing logic orientation. With the gradual deepening of the penetration of "Internet+" into the economy and society, the traditional CSR content dimension is no longer applicable to platform enterprises, and the negative externalities of the platform economy on social responsibility seriously hinder the development of social and economic life [11]. Combining the development law of platform enterprise social responsibility and the characteristics of platform enterprises, Xiao Hongjun and Li Ping (2019) divide the content boundary of platform enterprise social responsibility into three levels: the first level is the social responsibility as an independently operating platform, and the implementation subject of its governance is the enterprise itself. Platform enterprises need to regulate their own behavior based on their own moral consciousness and the inner drive of self-awareness, and build relationships through the expression and response of each stakeholder's demands. The second level is the social responsibility as a platform for business operation. By exerting their own influence and control, platform enterprises play a role in the ecosystem, and all participants build a business ecosystem together based on the demand of value co-creation. The third level is the social responsibility as a social resource allocation platform. Based on their own characteristics, platform enterprises bring together various stakeholder subjects, bring into play the resource advantages of different subjects within the platform, build social-type platforms, integrate social resources and solve social problems.

With the accelerated use of the new round of digital technology, both traditional enterprises and platform enterprises have to some extent used products or services related to embedded algorithms, and algorithms have become the direct products and services of AI enterprises to achieve deep empowerment of traditional enterprises and reshape the productivity of the whole industry and even society [1]. Due to the highly opaque and uncontrollable nature of algorithms, stakeholders who apply algorithms or algorithm-embedded products and services need to be better informed about the possible and potential negative consequences of algorithmic decisions generating negative social issues such as algorithmic discrimination, algorithmic bias and algorithmic monopoly, which cannot be trusted by the outside world [12]. This paper assigns CSR as a platform for algorithm development and operation to the content dimension of platform CSR and re-examines how algorithm-embedded platform CSR is governed in the digital context. Figure 1 illustrates the governance mechanism of the four content dimensions of platform CSR.
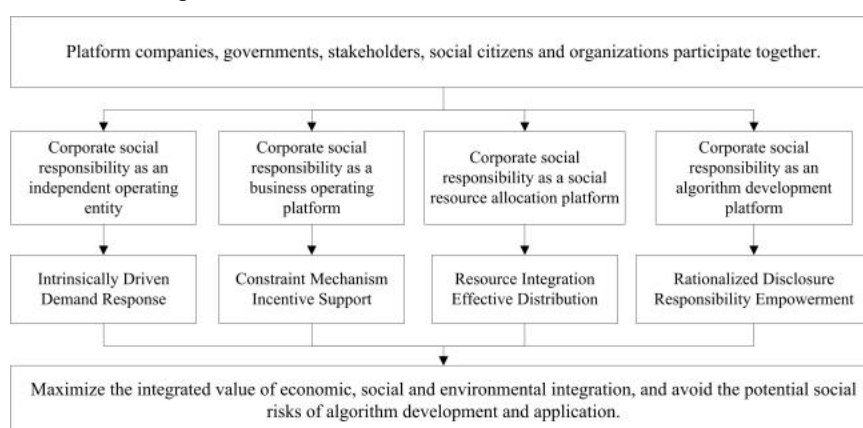
Figure 1: Governance mechanism of the four content dimensions of platform CSR.

3   CASE DESCRIPTION AND ANALYSIS

3.1   The Development History of Meituan and Key Events to Sort Out

Meituan was founded in 2010. As a life service platform company, Meituan has been diversifying its business to provide a series of services for the public, such as dining, entertainment, tourism, travel and shopping, which basically cover the basic areas of people's lives. Facing the rapid expansion of business and increasing social influence, Meituan keeps innovating and dynamically iterating its social responsibility strategy. In this paper, the key events of Meituan's social responsibility development are sorted out, as shown in the table 1.

Table 1: Key events in the development of Meituan's corporate social responsibility.

Time	Key events
2017.06	Release of takeaway green ten.
2017.08	Green Mountain Program launched, industry's first to introduce no cutlery option.
2017.09	Establishment of Social Responsibility Committee, Establishment of Meituan

	Takeout Environmental Protection Day.
2017.11	Launched "Cell Guard" applet.
2017.12	Take the lead in promoting takeaway confidence signatures nationwide.
2018.01	Held China's First Award Ceremony for Delivery Riders - "New Urban Youth - 2018 Meituan Delivery Rider Award Ceremony".
2018.03	Launch of Rider Care's New Urban Youth Program.
2018.06	Open number protection function, Meituan public welfare platform officially launched.
2018.07	Launch of the 717 Knights Festival.
2018.08	Launch of Green Mountain Partner Program.
2018.10	Cooperation to explore the recycling of plastic boxes.
2019.10	Carrying out CSR ecosystem construction.
2020.01	Cooperation with several social entities to participate in the fight against the epidemic.
2020.09	People Magazine published the article "Takeaway Riders, Stuck in the System.
2021.07	The General Administration of Market Regulation and other seven departments jointly issued "on the implementation of the responsibility of the network catering platform to effectively safeguard the rights and interests of take-away food delivery personnel guidance.
2021.09	Announcing rules for rider delivery algorithms.
2021.10	Fined 3.442 billion yuan for "choosing one over the other".
2022.03	50% commission reduction and targeted assistance for small and medium-sized merchants who have difficulties in operation.

3.2   Meituan Social Responsibility Philosophy

Building a social responsibility system plays an important role in Meituan's overall strategic planning. Meituan is committed to sharing its social responsibility philosophy across the entire ecosystem to promote the development and progress of all stakeholders and continuously create value for users, the industry and society. Meituan's social responsibility philosophy is practiced from three main aspects: users, industry and society.

(1) Users: Share the good life

Focusing on creating value for users, we are committed to meeting the different life needs of users, providing them with high-quality, full-scene consumer experience and contributing to people's high-quality life.

(2) Industry: Prosperous and beautiful industry together

Continuously strengthen scientific and technological innovation, promote the supply-side upgrade of the life service industry, and promote the high-quality development of the industry through various initiatives to help cultivate talents in the industry.

(3) Society: Building a better society together

We actively explore the advantages of using technology and platform to help solve more social problems, create greater social value, and work together with related parties to build a sustainable and beautiful society.

3.3 Two Major Algorithms of Meituan

In the operation mechanism of Meituan's algorithm, the algorithm strives to achieve the optimal solution for the needs of riders, users and merchants together, which ultimately leads to the sustainable development of the platform.

Distribution algorithm. Fast delivery is one of Meituan Takeaway's core competencies. Behind the surge in corporate net profit is Meituan's continuously improved and optimized algorithm. Specifically, Meituan Takeaway uses big data to perform calculations that can provide consumers with the most optimized delivery path in the shortest possible time. In emergency situations, the machine has a strong learning capability and can adjust its strategy through various algorithms to make efficient millisecond dispatching of orders. Meituan Delivery continuously improves delivery efficiency and enhances market competitiveness through accurate delivery algorithms.

Recommendation algorithm. With the rapid expansion of user group size, Meituan has accumulated diversified user behavior information. In the new development stage, the double-wheel mechanism of data and algorithm can empower the platform technology innovation [2]. Data is the basis of algorithms and models, and these data provide essential conditions for the application and optimization of recommendation systems. After different types of user data are collected and classified, they are ultimately used in algorithms and models. Simple data is just byte stacking, while algorithms can grasp the principles and laws of the data through the calculation of the data, and bring the value of the data to the maximum. The core of collaborative filtering is to find and recommend "similar interests", which simply means to recommend information that users may be interested in with the help of their common hobbies and experiences to meet their needs for personalized services.

4 CASE STUDY

Compared with traditional enterprises in a general sense, platform enterprises have stronger public and social attributes, and the business ecosystem they build is more complex, so their social responsibility presents governance complexity [10], subject multiplicity [9], mixed content [6], and service sociality [7]. In terms of the function of the role of platform enterprises in society, they are both independent operating subjects with the characteristics of general commercial enterprises and commercial operation platforms linking bilateral or multilateral users and members of other ecological niches, as well as social resource allocation platforms with the potential to gather resources of a larger range of social subjects and algorithm development and operation platforms spawned by the digital economy.

4.1 Performance Role Analysis

This paper deepens the social responsibility ecosystem based on Meituan's fourfold role positioning as an independent operating entity, commercial operation platform, social resource allocation platform and algorithm development and operation platform, and identifies four levels of the social responsibility ecosystem and the corresponding social responsibility levels.

First, it is the social responsibility governance as an independent operating enterprise subject, focusing on the awareness of responsibility to the platform stakeholders, of which the

protection of consumer rights and interests can be a key initiative of Meituan.2021 CSR Report states that the main business scenarios under the Meituan platform have achieved user number privacy protection, and also established a strict data security management system to ensure that only authorized personnel Only authorized personnel can access internal information.

The second is the social responsibility governance as a commercial operation platform, focusing on the governance of merchants' social responsibility and the cultivation of other stakeholders to participate in the common governance awareness of social responsibility. Meituan has developed and built the "electronic file system for merchants in the network", and through the three links of "entry audit, registration in the network, and exit tracking", it manages the whole life cycle of the merchants in the network to avoid the inflow of black workshops into the market.As a "platform governor", the important goal of Meituan's social responsibility governance is to restrain and regulate the socially responsible behavior of bilateral users and maintain the standardized operation of the platform.

Third, socially responsible governance as a social resource allocation platform is reflected in improving the degree of social participation and enhancing the platform's ability to integrate social resources and solve social problems.In 2017, Meituan launched its first environmental initiative in the takeaway industry, the Green Mountain Plan, to explore the green transformation of the takeaway industry in cooperation with ecological parties. in 2021, Meituan will upgrade the environmental strategy of the Green Mountain Plan, not only increasing investment in green packaging for takeaway restaurants, but also emphasizing the deep integration of green and low-carbon concepts into all businesses and products, and widely uniting other platform stakeholders to Play the linkage advantage, and jointly promote the industry's environmental protection process.

The fourth is socially responsible governance as an algorithm development and operation platform, which is reflected in the promotion of transparent and quality operation of the platform. The algorithm development platform is the fourth role position of Meituan Takeaway, an intelligent platform that owns the development and operation of algorithm programs. As the social responsibility ecology of the algorithm development platform, the ecological partners of which join the algorithm as the subject of governance. For the Meituan takeaway rider delivery program algorithm black box problem, on the one hand, the platform enterprise itself algorithm transparency governance, Meituan enterprise itself through the algorithm source and governance system system disclosure; on the other hand, the joint various ecological partners, its governance responsibility empowerment, around the algorithm black box, discrimination, social responsibility issues, the establishment of supervision and management and public opinion guidance measures to maximize the transparency of the algorithm.

4.2 Algorithm-based Embedded Socially Responsible Governance Model

4.2.1 Rationalization of Disclosure

An algorithm can be understood as a specific mathematical computational model that implements a series of coding, procedural and logical rules for transforming data into the corresponding output results. A complete algorithmic system can be self-iterating and optimized based on a data set, a process also known as machine learning. Its formation and

operation consists of four main stages: "input-learning-output-application". The input stage is to collect and classify the corresponding data under the condition of defining the basic problem, to clean and categorize the data, and on the basis of this, the learning stage is to continuously train the data and the performance of the model, to output the series of results of the model to evaluate the accuracy of the output results, to ensure that the output results of the model can reach the established expected calculation and decision goals, and finally to achieve the optimal results. The algorithmic model is applied to the actual situation.

According to the research status of algorithm disclosure by domestic and foreign scholars, rationalized disclosure is mainly carried out at two levels: the source of algorithms and the consequences of operation. From the source level of algorithms, we mainly focus on the "input" and "learning" aspects. Currently, algorithm disclosure can be divided into three levels: primary disclosure, specific transparency and full disclosure. Our platform companies always maintain the principle of algorithm transparency and explainability, and emphasize the disclosure of the existence of algorithm automation decision, which can be regarded as the primary disclosure of algorithm disclosure. With the increase of requirements for transparency of algorithmic automated decision making, platform enterprises begin to disclose the model, operation logic, principles, rules, and specific algorithmic parameters of specific algorithmic automated decision making. It can be regarded as the second disclosure level of algorithm specific transparency. Besides, the proposal of disclosing the source code of algorithms in the United States, which requires the providers of algorithmic automated decision making services to disclose the source code and other relevant contents about algorithmic automated decision making, can be regarded as the full disclosure of algorithms. At present, the U.S. has not had any relevant disclosure behavior about the source code of the algorithm, and its practice only stays at the second disclosure level. From the perspective of the operational consequences of the algorithm, the "output" and "application" aspects are the focus of implementation.The uncontrollability and uncertainty of algorithm automation decisions dictate the need to strengthen the disclosure of the possible consequences of algorithm operation. At the internal level, we need to build a system of algorithm governance, such as algorithm disclosure system, algorithm transparency management system, and algorithm impact assessment system. In November 2021, Meituan disclosed the algorithm rules of "order allocation" at the source of the algorithm, introducing the logic of matching orders and riders. In May 2022, Meituan optimized its takeaway algorithm, adding a new response to "abnormal scenarios".Meituan mainly discloses the operation logic, purpose, principle and final effect of the algorithm's automated decision making. At the same time, Meituan expresses the operation rules of "order allocation algorithm" in easy-to-understand language, and illustrates and justifies the application of the algorithm in the form of icons, diagrams and examples, which is a powerful attempt of detailed disclosure of the algorithm in China.

4.2.2 Responsibility Empowerment

Under the dual attribute of platform, based on the platform business ecosystem theory, the social responsibility governance of platform enterprises is different from the traditional unilateral internal social responsibility management of enterprises or linearized governance of supply chain members, and platform enterprises form two types of ecological niches based on the unique platform business ecosystem structure (Moore J F, 1993). The first type of main ecological niche is based on platform enterprises as core members; the second type of

extended ecological niche, whose main covered subjects include other competing platform enterprises, government, social organizations and social public. This type of ecological niche has multiple roles of forming guidance, supervision and governance for the algorithmic behavior of the main ecological niche members. In this paper, we define responsibility empowerment as the main ecological niche members carry out traction and empower the governance responsibility of the expanded ecological niche subjects in the social responsibility ecosystem. It is mainly divided into two aspects: government regulation and social supervision.

Government regulation. The government's scientific regulation of algorithms, the basic principles of inclusive and prudent regulation and graded and classified regulation, the construction of an agile governance-based dynamic and interactive regulatory system, and the promotion of more refined and targeted legislation and law enforcement while adapting to the characteristics of algorithm governance and the development needs of algorithm innovation. In recent years, China has attached great importance to legislation in related fields. The introduction of the Data Security Law, the Personal Information Protection Law, the Network Security Law and other related laws proves that China attaches great importance to ethics and governance in algorithm-related innovation. In the era of digital economy, the mastery of big data is the mastery of great power. As platform companies use big data, they are pushing labor alienation to the extreme. Takeaway riders lose control of their work and have to rely entirely on the platform's algorithm to distribute orders on an ad hoc basis. In a data- and algorithm-driven platform environment, continuous, forward-looking regulation is essential, and scientific government regulation of algorithms is a prerequisite to ensure the coexistence of market order and vitality, safety and development.In July 2021, the State Administration of Market Supervision and other seven departments jointly issued the "Guidance on the implementation of network catering platform responsibility to effectively safeguard the rights and interests of take-away food delivery workers", to protect the legitimate rights and interests of take-away food delivery workers to put forward a full range of requirements.

Social oversight. In addition to state power, news agencies, social organizations and individual citizens form an algorithmic governance community. All-round and deep supervision of practices and behaviors in algorithm applications that violate citizens' rights, affect market competition, social order, public safety, and national security can better achieve algorithmic good governance. News media supervision has promoted the iterative update of algorithms in some specific scenarios such as news recommendation and delivery time estimation. after an article titled "Delivery riders, trapped in the system" was widely disseminated through self-media in September 2020, the working status of online delivery workers under the control of big data algorithms gained the attention of all sectors of society. The community's concern for monitoring the algorithm-focused incident has generated extensive social discussion and has driven a positive response from lawmakers. Individual citizens often participate in algorithm governance through complaints, reporting, and filing lawsuits. At present, the overall system of citizens' digital rights in China is still relatively vague, and the protection of digital rights still needs to be improved. In the future, platform enterprises can establish to accept social supervision, set up convenient complaint reporting entrances, receive and handle public complaints and reports in a timely manner; establish user complaint channels and systems, handle user complaints in a standardized manner and provide feedback on complaints in a timely manner. These provisions are not only convenient for citizens to defend their rights, but also can form a social public supervision mechanism for platform enterprises.

5 CONCLUSION

Synthesizing past scholars' studies, there has been a great deal of research in academia on the new economic form shaped by digital change, the innovative changes of micro enterprises, and the continuous improvement of production efficiency. Meanwhile, elements related to CSR governance of platform enterprises have also attracted extensive attention [3].However, few studies have systematically analyzed the algorithm-embedded platform CSR governance. In this paper, the new content dimension of algorithm development and operation platform is given to the platform enterprises, and a systematic analysis and innovative framework for the new CSR in the digital context is sorted out.

This paper integrates the social responsibility of platform companies in four dimensions: "social responsibility as an independent operating entity", "social responsibility as a commercial operation platform", "social responsibility as a social resource allocation platform", and "social responsibility as an algorithm development and operation platform". This paper integrates CSR governance in four dimensions: "CSR as a platform for algorithm development and operation". In this paper, the algorithm governance under CSR governance is grouped into two dimensions, including rationalization of disclosure and responsibility empowerment. On the one hand, the disclosure of data sources, data collection standards and algorithm learning training standards (data analysis and processing process) of algorithms is strengthened at the source level of algorithms, and on the other hand, the disclosure system of potential impact and risk assessment of algorithm decisions is built, and finally, the responsibility disclosure system of algorithms, algorithm transparency management system and responsibility assessment of algorithm impact are built at the internal level of enterprises. In the end, the algorithm governance system such as the algorithm responsibility disclosure system, the algorithm transparency management system, and the algorithm impact responsibility assessment system are built at the internal level. From the perspective of responsibility empowerment, platform companies empower the governance responsibilities of each stakeholder in the social responsibility ecosystem, so that the rights and obligations of algorithmic governance can be specified and clarified.Through government guidance and social supervision, algorithm governance is promoted to create a "good" algorithm ecology.

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