

# The Impact of Algorithmic Control on Human Resource Management in the Gig Economy

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## Abstract

The algorithm provides a technical guarantee for the gig economy platform to quickly match the needs of gig workers and customers, so that the platform can provide highly instant labor services, and at the same time, it also satisfies the individual labor needs of workers to the greatest extent, and improves the freedom of labor services. . While empowering gig platforms, algorithm control has also changed the traditional employment and labor models to a certain extent, and has had an impact on human resource management. This paper discusses the impact of algorithm control on human resource management in the gig economy from three aspects: employment relationship, task allocation and performance management, and proposes relevant coping strategies.

## Keywords

Algorithmic Control; Gig Economy; Human Resource Management.

## 1. Introduction

With the rise of new technologies such as big data, cloud computing, and artificial intelligence, the gig economy that quickly matches labor supply and demand through the Internet is booming. It meets the needs of practitioners for work autonomy and flexible employment of enterprises, and brings more employment opportunities. A report jointly produced by Ali Research Institute and Deloitte shows that by 2036, as many as 400 million people in China may join online labor platforms and become gig economy practitioners. In the context of the raging global COVID-19 epidemic, the gig economy has played an important role in maintaining social stability and ensuring people's basic living standards. It has become the main force in attracting employment during the epidemic, and has driven the sustainable development of new forms of employment, which has received unprecedented attention.

The Internet and mobile technologies are behind the gig economy, of which algorithm is a crucial part [1]. The gig economy platform mainly uses algorithms to automatically match the supply and demand sides based on statistical models or decision-making rules [2], and continuously tracks the behavior of practitioners, conducts real-time performance evaluation, and flexibly adjusts salaries. However, the current algorithmic control system is not yet perfect and is subject to controversy, mainly focusing on the excessive pursuit of speed, unreasonable dispatching of orders, and opaque performance evaluation. When algorithms bring better customer experience, how to take into account practitioners has aroused widespread concern in society.

The current research perspectives on the gig economy mainly include the opportunities and challenges brought by the gig economy, and the challenges and solutions brought by the gig economy to enterprise human resource management. In the gig economy, the online labor platform is the most closely related to practitioners. The core of its operation is algorithm control. The platform uses its technological influence to monitor, manage and control practitioners, to automate the relevant responsibilities and functions undertaken by human resource managers. Human resource management had a strong impact. However, the research

on algorithms and their impact mainly stays at the technical level. With the in-depth development of the gig economy, more attention needs to be paid to the impact of algorithm control on human resource management.

Therefore, this paper will start from the three aspects of employment relationship, task assignment and performance management, explore the impact path of algorithm control on human resource management under the gig economy, and discuss coping strategies.

## 2. Employment Relationship

The employment relationship means that the employee provides labor services to the employer, and the employer pays the corresponding remuneration to form a relationship of rights and obligations. The impact of algorithm control on employment relationship is reflected in three aspects: recruitment and training, employee relations and compensation management.

### 2.1. Recruitment

Traditional organizations usually strategically identify employees who match the organization and their positions to reduce labor turnover and retain elite employees. When employees' values align with the organization's values, managers can build close, trust-based relationships with employees, employees are more likely to be intrinsically motivated. After joining the company, the department usually formulates training plans such as cultural training and business training according to different positions, so that new employees can quickly understand the organization and be competent for their positions, and rely on the long-term training of their immediate supervisors to help employees grow and improve work efficiency.

In the context of the gig economy, the recruitment of most positions is based on algorithmic control. The platform uses automatic text processing software to screen resumes, allowing practitioners to enter jobs through rapid online screening. After the platform generates a dependency relationship between the two parties through algorithm control, it publishes an online video so that practitioners can simply understand the platform operation and management rules, and conduct remote training through the network from time to time.

Therefore, gig economy platforms can easily obtain labor sources and start work quickly [3], which can reduce some related labor and time costs to reduce recruitment and training costs, and improve efficiency in the short term. Taking the recruitment of food delivery riders as an example, the whole process is almost completely completed by the background algorithm. The practitioner only needs to download the relevant APP, register a mobile phone number account, real-name authentication, participate in online training and pass a knowledge test to become a rider. In the process of work, if the relevant rules change, the platform will release an explanation video on the APP for riders to learn and understand, helping riders to better complete the meal delivery task.

However, the platform ignores the consideration of the matching degree between the practitioner and the organization when reviewing the identity information and skill level of the practitioner through the algorithm, which makes the practitioner easily lack the awareness and sense of belonging to the organization, resulting in great labor mobility and inability to complete tasks on time and with quality. In addition, the platform also lacks the guidance of the work process. Generally, it only evaluates the keywords in the practitioner's problem statement, and interacts with the practitioner through the automatic reply of the email, lacks the ability to respond to subtle issues [3] and cannot meet the needs of practitioners.

Taking the travel platform as an example, drivers will encounter various problems and emergencies every day, such as unfamiliar with the order connection process, not understanding the new platform rules, or passengers who are drunk or have sudden illnesses and do not know what to do. Handling, etc., the platform's automatic reply can only solve basic

problems, and most of the platform's feedback on complex problems is nothing. It is difficult for drivers to get practical help, which is not conducive to the long-term development of drivers and the platform

## 2.2. Employee Relationship

Traditional organizations need to sign formal labor contracts with employees in accordance with relevant national labor laws and regulations, so as to confirm the rights and obligations of both parties, and handle the labor relationship between employees and organizations. Both parties can be protected by relevant laws. In the context of the gig economy, the platform establishes a close relationship with workers through algorithm control, and does not sign labor contracts. The relationship between practitioners and the platform is subject to the "service cooperation agreement" on the APP, not a labor relationship.

Therefore, practitioners can flexibly enter and exit the platform, and the platform can also freely decide whether to leave or stay with practitioners, and both parties will not face the risk of violating the labor contract.

However, due to the lack of labor contracts, the platform is not obliged to purchase social insurance for employees, and employees do not enjoy benefits such as work injury compensation, unemployment insurance, and pensions, nor do they enjoy the legally protected rights to join trade unions or collective bargaining.

Take a food delivery platform as an example. The food delivery rider speeds up the delivery according to the route planning and time requirements given by the algorithm. As a result, a traffic accident occurs during the delivery process, but the platform is not obliged to pay compensation for work-related injuries, and the rider is forced to bear part of the market risk and Uncertainty. Another example is the recent frequent incidents of in-car conflicts and sexual harassment caused by intoxication of online car-hailing passengers. Public opinion has paid great attention to the protection of the rights and interests of online car-hailing drivers. It is particularly important for the platform to optimize the algorithm to effectively intervene in complex drunken scenes for governance.

## 2.3. Salary Management

Salary management includes the design of salary system and the daily management of salary, which are closely related to the interests of employees. Traditional organizations will formulate clear salary systems and reasonable salary standards according to their development strategies. Generally, a monthly salary system is adopted, and employees are regularly paid relative fixed wages. In the gig economy, the salary of practitioners is dynamically variable. The platform automatically manages the salary through the variable algorithm pricing system, and provides dynamic salary according to the delivery area of the order and the time of the order. One order corresponds to a salary, which is accumulated in on the personal account, practitioners can withdraw cash to the bank card at any time.

However, the platform realizes the acceptable minimum wage for practitioners through algorithmic learning. Due to the opaque and highly complex system, the data that practitioners can collect is limited, and the information asymmetry may reduce the income of drivers, and at the same time promotes wage discrimination at the individual level [4], it is difficult for the platform to maximize the value of work by controlling compensation.

Taking the travel platform as an example, the platform uses supply and demand dynamics and big data prediction algorithms to dynamically adjust the price of drivers and passengers to achieve a balance between supply and demand. At this time, the price of drivers and passengers after deducting the platform's commission is the driver's order reward, and the reward generally varies with the mileage, current demand, weather and road conditions, etc. to dynamically adjust. In addition, when there is a surge in the number of taxis in a certain area

during a certain period of time, the algorithm evaluation will temporarily increase the fare of the geographical location to incentivize drivers outside the area to take orders to meet passenger demand. In addition to the basic income per order, drivers can also get additional bonuses through the platform's incentive measures, such as gold service awards, ordinary double awards, etc. Each award corresponds to different bonus amounts, and these incentive measures are also different in each city.

But the platform has unilateral pricing power, and the pricing system is not very transparent. Drivers have little knowledge of relevant pricing information, and are sometimes forced to accept low-margin orders. Moreover, the order service fee charged by the platform to the driver has also been criticized. On the one hand, the charging standard is also arbitrary and vague. Generally, 15% to 20% of the order amount is charged, but occasionally it may be as high as 30%, which is relatively large.

### 3. Task Assignment

Task assignment in traditional organizations is often achieved through manual scheduling. Direct supervisors allocate tasks by comprehensively considering personal abilities, interests, and job characteristics, and at the same time set a certain target difficulty to train employees, thereby improving work efficiency. In the gig economy, the automatic management and enforcement mechanism of algorithms creates a space for the platform to integrate supply and demand [5]. The dispatching system relies on algorithm control to monitor the trajectory data, feature data, and indicator data of practitioners. Seek rules in data, provide accurate basic information for scheduling decisions, achieve optimal matching of orders and practitioners, and quickly plan optimal routes.

Due to the intervention of algorithm control, the labor cost of task allocation under the gig economy platform has been reduced, and the speed of dispatching orders has also been greatly accelerated. But data-driven management decisions, made almost entirely by algorithms, may challenge existing ethical frameworks for human resource management practices.

Taking food delivery as an example, in manual scheduling, dispatchers need to consider order characteristics, rider capabilities, delivery environment and many other factors to match orders and riders. Since there are thousands of delivery areas on the food delivery platform, it will consume very high labor costs and time. cost. The order dispatching system uses big data technology and artificial intelligence algorithms to automatically calculate the optimal order dispatch and rider delivery routes. At the same time, every step of the rider's operations from taking orders, picking up meals, delivering meals to completing orders will also be tracked and recorded in detail by the algorithm in the background. With the increasing number of riders' orders, the deep learning function of the algorithm can achieve more efficient dispatch scheduling and give riders a better working experience.

But the delivery distance calculated by the algorithm is a straight-line distance, which is different from the distance of the actual delivery route. During the delivery process, the rider will turn and wait for a red light. Occasionally encountering temporary road conditions may cause the actual route to be very different from the planned route, resulting in failure to deliver on time. Da, many riders will choose to avoid overtime by violating traffic rules such as speeding, running red lights, and going the wrong way. At the same time, every time a rider successfully avoids overtime, the algorithm will learn a possible shorter delivery time, which directly leads to takeaways. The number of riders in traffic accidents has risen sharply, raising ethical questions about algorithms.

## 4. Performance Management

Performance management is the core of human resource management. Managers at all levels of traditional organizations will determine performance goals according to the organization's development plan, strategy and organizational goals, and establish an effective performance management mechanism. assessments, etc., to improve individual and organizational performance. The core method of performance management in the gig economy is algorithm control. The platform will formulate various measurement indicators according to each practitioner's performance plan, rely on various electronic technologies to continuously monitor and track practitioners' behavior [3], and at the same time pass the anonymous customer rating system. Obtain the customer's perception evaluation, and finally integrate various data to conduct real-time performance evaluation for practitioners.

The real-time performance evaluation of the gig economy platform has greatly improved management efficiency. However, due to the low transparency of algorithm control, practitioners' performance reports are easily affected by complex and unknown factors, and they can only rely on self-motivation and self-organization to improve performance, and algorithm-controlled performance incentives may fail [3].

For example, the travel platform will monitor the speed and position of the vehicle through GPS systems, etc., while tracking the driver's various operations, and recording real-time data as part of performance appraisal. After the trip, passengers can use the platform's anonymous customer rating system to give star ratings and text evaluations to the driver's services. The system will automatically convert the driver's passenger praise rate to scores, and the score value is directly linked to performance. The bad review mechanism is also very strict, and the system will fine drivers or even deactivate their accounts based on passenger complaints. In addition, the system's evaluation page will suggest that passengers give low or high ratings to certain behaviors of the driver, so that the driver's service process can reach a standard level.

Taking food delivery as an example, the algorithm divides riders into different levels. The higher the level, the more order rewards. However, the grading rules under the control of the algorithm are intricate and complex, including the number of orders, the favorable rate, the on-time rate, etc. It is difficult for the riders to obtain the specific details of the relevant indicators from the background. In addition, the customer evaluations in the anonymous customer rating system are not necessarily objective and fair. It often happens that customers deliberately pick on the rider's food delivery service because of their bad mood. The anonymous system allows riders to only report customers' dissatisfaction to the platform. Fair evaluation, but the platform often lacks an appeal procedure, which greatly reduces the performance incentive effect of algorithm control.

## 5. Conclusion and Implications

The emergence and rapid development of the gig economy has brought a new economic form to society, and the increasing digitization of human resource management practices has drawn attention to the development and application of algorithmic controls.

Algorithmic control has replaced manual supervision and assumed the traditional responsibilities of human resource managers, which has had a certain impact on human resource management in the gig economy. The employment relationship and task assignment have become more flexible and efficient, and the efficiency of performance management has also been greatly improved. However, it is difficult to protect the rights and interests of practitioners. The low transparency and complexity of the algorithm may lead to salary discrimination, causing ethical and moral issues. Conducive to the long-term development of practitioners.

Therefore, it is worth pondering how platforms, governments and practitioners themselves should deal with related challenges.

The platform should increase technical investment, continuously optimize algorithms, and continue to promote the healthy and sustainable development of the gig economy. For food delivery platforms, algorithms improve the speed of dispatching and delivery, but blindly pursuing speed is not conducive to the rider's work experience, and many ethical issues arising from technological progress also need to be resolved urgently. The platform needs to make good use of the power of the algorithm to technically ensure the stability and accuracy of the system, provide riders with a better working environment, and provide better platform services. In addition, the platform should improve the transparency of algorithms, make performance-related data public, and allow practitioners to obtain more information, which can be closely integrated with compensation, thereby stimulating their inner motivation and sense of achievement, and realizing the self-management of gig workers.

The government should actively improve relevant laws and regulations, include gig economy practitioners in the category of regular and legal labor groups, clearly stipulate labor security such as medical insurance and endowment insurance for gig economy practitioners, resolve relevant labor disputes in the gig economy, and protect practitioners' legitimate rights and interests. At the same time, the government needs to use technical means to strengthen the supervision of the platform and promote the healthy development of the gig economy.

Practitioners should change the traditional concept of employment, continuously improve their professional skills, and at the same time learn more algorithm knowledge to better adapt to market demands and job changes brought about by emerging technologies such as big data and cloud computing. At the same time, the current legal protection system for gig workers is not yet perfect, and practitioners need to enhance their awareness of rights and safeguard their legitimate rights and interests.

In a word, algorithmic control is a double-edged sword. While bringing efficiency and convenience to human resource management in the gig economy, it also caused many problems. Platforms, governments and practitioners must perform their respective responsibilities to jointly promote the further development of the gig economy.

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