

# Thinking about the response and optimization of enterprise human resource management under the influence of information technology

## -- Taking the takeaway platform as an example

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**Abstract.** With the continuous development and maturity of information technology, its application scope in enterprise human resource management has become more and more extensive. However, most thesis currently holds overly positive views and expectations about the participation of information technology in human resource management. However, in fact, as the use of information technology continues to deepen, the excessive development of information technology for corporate human capital often leads to irreconcilable conflicts between the company itself and its employees. Therefore, this article will take the delivery platform as an example. Starting from real events, through the analysis of data, it is proved that the application of information technology has brought great efficiency improvements to enterprise human resource management. But at the same time, a series of problems have emerged, and we are trying to find reasonable solutions to these problems.

**Keywords:** Human resource management, information technology, takeaway platform.

## 1. Introduction

With the continuous development of modern social science and technology, information technology is gradually integrated into our lives and has an increasingly important impact on our lives, including in the field of enterprise human resource management, information technology. Especially the use of big data computing, compared with the traditional human resource management model, which relies more on personnel for management, it brings relatively low efficiency and high cost. Through the management of human resources of enterprises through information technology, it is no doubt that through the numerical value of the benefits generated by employees, the ability of enterprise employees can be brought into full play at a lower cost compared with the traditional model. However, in recent years, in the Internet companies that use information technology most extensively (especially the food delivery companies with the largest grassroots laborers), the application of information technology has generated various problems. It is particularly obvious that while maximizing the benefits of the company's employees, the work safety and even the safety of the employees have been severely challenged [1-3].

## 2. Current status of the application of information technology in human resource management of takeaway platforms:

### 2.1 Application of information technology in the delivery terminal of delivery platform:

China's food delivery economy has grown rapidly in recent years and has become an integral part of the sharing economy. At the same time, the acceleration of urbanization has provided sufficient labor for the sharing economy. The food delivery industry started around 2010 and ushered in a peak of development from 2015 to 2017. As of December 2018, the number of people employed in food delivery services in China has reached more than 3 million, the market coverage has expanded to more than 1,300 cities across the country, and the total production value has reached US\$40 million. As of 2018, China's food delivery industry has undergone multiple rounds of reshuffle and reorganization, and market operations have stabilized.

Although each take-out platform is one of the Internet companies in the new era, and its emerging sharing economy model has gradually come into the eyes of everyone in recent years, but in essence, it still has a very large number of grass-roots workers-that is delivery staff, a labor-intensive economy based. Under such an economic model, the relatively low efficiency of the traditional human resource management model of enterprises that do not rely on data for profit is more obvious. In particular, the nature of the takeaway platform is to provide logistics and transportation services. The extremely time-sensitive nature of the service determines that the traditional human resource management model cannot adapt to the operational intensity of this new business format. Similarly, as a labor-intensive industry, its huge grassroots staff makes it almost impossible for a takeaway platform to rely solely on corporate HR for corporate human resource management. Therefore, the use of information technology as part of human resource management by takeaway platforms seems to be a certainty. At the same time, the food delivery platform has become a touchstone for the use of information technology in the enterprise's internal human resource management [4].

In the takeaway platform, information technology continuously optimizes the algorithm to accurately determine the time required for the rider to deliver the goods. From the perspective of time, such as the floor where the restaurant is located, the average mealtime and the backlog of orders, the real-time data such as the time of the business district, the road section, the weather, etc... also, since each customer has varying degrees of tolerance for overtime, the platform system can calculate the customer's sensitivity to the expected delivery time based on the customer's past bad reviews and complaint records.

The platform system plans the meal delivery route, and also relies on many characteristic dimensions and historical data, such as the rider's order volume data, rider status, location and floor of the merchant, road traffic congestion in the business district, time of day, and customer location and floor data. Therefore, there are often hundreds of combinations of feasible delivery routes. In 2019, at the ArchSummit Global Architects Summit, Wang Shengyao, a senior algorithm expert on the Meituan distribution technology team, introduced the basic operation of this smart system-from the moment a customer places an order, the system starts to follow the rider's convenience. Location and direction determine which rider to send to take the order, Orders are usually dispatched in the form of 3 or 5 orders. One order has two task points for picking up and delivering food. If a rider carries 5 orders and 10 task points, the system will plan on 110,000 routes. Completed the 'Second level solution of ten thousand orders to ten thousand people.' and planned the optimal distribution plan.

## **2.2 Cost reduction and revenue growth brought by information technology**

According to the comparison of the operating profit of Meituan Waimai's 2020 mid-year financial report and 2019 mid-year financial report, it can be understood that compared with the first half of 2019, the profit amount for the first half of 2020 in the first half of 2020 increased by RMB 49,074,000 year-on-year. The growth reached 65.7%. Obviously, compared with the profits brought by other businesses, the profit growth of the food delivery part is significantly higher than the profits brought by other parts. Although there are many of them because of the new crown epidemic in 2020, it is difficult for people to go out and play, which has caused people to choose more takeaway ways to buy food, thus driving the profit of the catering takeaway industry to increase. But in the same way, Meituan mentioned in its mid-year financial report-"Because we have further improved the algorithm of the intelligent scheduling system and continuously optimized the operation capability of the distribution network. We further improved our Delivery efficiency in the second quarter of 2020. In addition, sufficient capacity and favorable weather conditions across the country have enabled us to reduce the number of seasonal rewards paid to delivery riders compared to the previous quarter. These factors together enable us to better control the distribution cost of each order year-on-year and quarter-on-quarter. "In addition, according to data released by Meituan, Meituan's takeaway orders reached 2.5 billion in the third quarter of 2019, and revenue per order increased by 0.04 yuan over the same period in 2018. At the same time, the cost per order was saved by 0.12 yuan year-on-year, which also

helped Meituan to earn a full 400 million yuan in Q3 2019. Also based on calculations, algorithm optimization has reduced the platform's capacity consumption by 19%. Meals that were delivered by 5 riders in the past can now be delivered by 4 riders. So it is not difficult to know that the continuous optimization and improvement of information technology in the platform has indeed successfully saved the cost of Meituan's human resource management and further contributed to the increase in its profits (Table 1).

**Table 1.** Comparison of operating profit between Meituan Waimai's 2020 mid-year financial report and 2019 mid-year financial report.

	June 30, 2020		Not audited for three months up to June 30, 2019		
	Amount	Percentage of revenue	Amount	Percentage of revenue	Year on year change
Food and beverage delivery	1,253,421	8.6%	756,347	5.9%	65.7%
To store, hotel and Tourism	1,891,563	41.6%	2,147,499	40.9%	(11.9%)
New business and others	(1,459,539)	(25.9%)	(1,645,735)	(35.7%)	(11.3%)
Unallocated items	489,200	Not applicable	(145,533)	Not applicable	Not applicable
Total operating profit	2,174,645	8.8%	1,112,578	4.9%	95.5%

### 3. The main problems currently facing:

Although the addition of information technology has greatly improved the efficiency of Meituan's internal human resource management, it has also saved the cost of human resource management. But it is undeniable that with the help of algorithms, more and more accurate time calculations also mean that the dispatchers themselves have less and less flexible time.

#### 3.1 Algorithm optimization leads to the reduction of estimation time per order

The algorithms in the food delivery platform are continuously optimized and upgraded, which has resulted in the estimated time for each order that can be allocated to the food delivery riders becoming shorter and shorter. The meal delivery time is also 3 kilometers. In 2016, the maximum time limit was 1 hour. In 2017, it became 45 minutes. In 2018, it continued to shorten by 7 minutes to 38 minutes. In 2019, the average delivery time of takeaway orders across the industry in China was ten minutes less than three years ago. In the setting of the entire distribution system, the delivery time is the most important indicator, and overtime is not allowed. Once it occurs, it means bad reviews, reduced revenue, or even elimination.

#### 3.2 Information technology has become a tool for companies to restrain employees

The application of information technology in the food delivery platform has gradually matured, and the time available for riders has been shrinking. At the same time, the food delivery platform has also carried out an accurate quantitative rating for each delivery man under the blessing of information technology algorithms. Since the takeaway platform is essentially a mid-term logistics and transportation company, the takeaway platform is highly sensitive to time like other logistics and transportation companies. This directly leads to very strict regulations on whether employees can deliver goods on time within the platform.

First of all, to stimulate the takeaway riders to be more active in completing orders within the specified time, the platform implemented a "Difference order pattern" management method for the

takeaway riders. It is to rate each rider based on the number of times the rider delivers the goods within the specified time

Riders with higher ratings will get more subsidies per order. Through this management method, while strengthening the degree of dependence of the takeaway rider on the platform, it also conveys to the rider the view that "I do better than others and can make more" (Table 2). In this way, the rider is motivated to deliver every order on time [5].

**Table 2.** Evaluation standards of a certain platform for delivery staff

Knight rank	Subsidy per order (RMB)	Required point
God Knight	1.5	6000
The paladin	1.2	4100
Diamond Knight	1.0	2800
Black gold Knight	0.8	1800
Golden Knight	0.5	900
Silver Knights	0.3	400
Ordinary Knight	0.1	NA

Similarly, for riders who are unable to deliver the goods to the destination following the scheduled time. The platform not only imposes very severe punishment on individual riders, but the most direct method is to deduct the corresponding salary according to the number of overtime delivery per month. And not only limited to the individual rider, the distribution station in the region to which the rider belongs is also not immune.

In this way, through the blessing of information technology, while encouraging riders to complete orders on time, strict penalties for exceeding the scheduled time are imposed. The platform allows the takeaway rider to deliver the goods to the customers in a more punctual manner through such a "forced" approach. It also binds every takeaway rider to the platform and its algorithm.

### 3.3 Takeaway rider's "Inverse algorithm"

Traditional research believes that employers and workers will inevitably have irreconcilable contradictions such as "regulation-resistance". However, the investigation found that the sense of resistance of workers under the take-out platform is not obvious. The essence is that after the intermediary factor of information technology intervenes, the originally traditional contradiction between "firm and labor" has gradually shifted to the contradiction between "technical and labor". Therefore, in the face of the continuous tightening of time caused by the continuous upgrade of platform algorithms, and the strict penalties formulated by the platform for exceeding the scheduled delivery time, This has directly led to the takeaway riders having to "find a new way", play their subjective initiative, and try to find ways to cope in other steps. This is the "Inverse algorithm".

In the face of increasingly precise algorithms, the free time is becoming less and less, and the takeaway riders have to choose speeding, red light, retrograde, etc. These takeaway riders' actions to challenge the traffic rules are a kind of "Inverse algorithm", which is the last resort of the riders under the control and discipline of the system algorithm. And the direct consequence of this "Inverse algorithm" is that the number of traffic accidents encountered by takeaway riders has risen sharply.

Realistic data strongly supports this judgment-in the first half of 2017, data from the Traffic Police Corps of the Shanghai Public Security Bureau showed that. In Shanghai, an average of one takeaway rider is injured or killed every 2.5 days. In the same year, 12 people were killed or injured in Shenzhen's takeaway riders within three months. In 2018, Chengdu traffic police investigated and dealt with nearly 10,000 illegal riders in 7 months, with 196 accidents and 155 casualties. On average, one rider was injured or killed every day. In September 2018, Guangzhou Traffic Police investigated and dealt with nearly 2,000 cases of traffic violations involving takeaway riders.

#### **4. Possible suggestions:**

It is caused by information technology. With the addition of information technology, the food delivery platform led by Meituan Waimai allows the delivery service platform, which is already extremely time-sensitive, to perform more refined calculations and estimates of delivery time. But because of this, the time that the takeaway delivery rider can control has become less and less, which eventually leads to dangerous means such as illegal driving in order to deliver the goods on time. Although the problem is caused by the application of information technology, information technology only exists as an intermediary factor. The essence of the problem is still the contradiction between the enterprise and the worker. In the end, if we want to solve this problem, we still have to start with the relationship between the enterprise-government-workers.

In enterprises and workers, due to the asymmetry of information, workers are often at an absolute disadvantage. And both have the tendency to maximize their own interests, so the contradiction between the enterprise and the worker is often not solved by the communication between the enterprise and the worker alone. Therefore, it is necessary to require the participation of a third party, that is, the government, in order to balance the interests of both parties. Therefore, if you want to resolve the contradiction between the takeaway rider and the platform itself caused by information technology, you should start from the perspectives of the enterprise and the government [6].

##### **4.1 Companies should optimize algorithms and optimize management mechanisms**

Among the problems exposed by the takeaway riders' repeated accidents during the transportation of goods, the riders' complaints about the platform algorithm and the endless traffic accidents can already prove that there is still much room for improvement in the information technology algorithm. Whether it's the more precise calculation and planning of the route, or adding a certain amount of flexibility to the algorithm for the takeaway rider, even the traffic conditions and estimated waiting time during the delivery are also added to the quantification of the algorithm. No matter which method is ultimately used, optimizing the algorithms of the food delivery platform in a more humane direction is already very important and has become a top priority. Second, companies must adhere to the people-oriented management principle.

As mentioned above, the biggest difference between the food delivery industry and other emerging Internet companies is that it is still a labor-intensive industry.

Every takeaway company has an extremely large number of grassroots workers-takeaway riders. If you want to manage such a large number of grassroots workers reasonably, there is a certain inevitability to combine their information technology and enterprise human resource management. However, while focusing on maximizing benefits, protecting the legitimate rights and interests of workers is also conducive to the long-term development of the company from a long-term perspective. In fact, as of the beginning of this article, Meituan Waimai organized a rider talk meeting and finally formulated a "same boat plan" to improve rider experience from four levels: job security, experience improvement, career development, and life care, and targeted the estimated delivery time. The problem of too little and no flexibility, it is proposed that eight minutes of flexibility will be reserved for the rider.

These measures are all very good attempts to solve this problem. But it is also a pity that only Meituan Waimai, a food delivery platform, has proposed corresponding measures. I also hope that other takeaway platforms can make corresponding attempts to this problem.

##### **4.2 The government should strengthen supervision and formulate relevant measures**

As mentioned above, the contradiction between enterprises and workers is often not resolved by the two alone. At this time, the government, as the regulator and supervisor, must participate in the reconciliation. First of all, the purpose of the existence of an enterprise is to maximize its profits. Therefore, it is obviously unrealistic to require enterprise managers to protect the legitimate rights and interests of workers on the premise of sacrificing certain short-term profits. At this time, the

government needs to intervene, and as a supervisor, enterprises are required to protect the legitimate rights and interests of workers. Strengthening the supervision of various take-out platforms and providing feedback channels for unreasonable dispatch of platforms are all feasible solutions. At the same time, the government can take the lead in formulating relevant industry regulations, and provide corresponding policies and regulations for the specific use of information technology in the industry. This is also a solution.

## 5. Conclusion

Faced with new things that contribute to the development of human society and increase productivity, they often receive quite positive reviews at the beginning of their birth. This is not a bad thing, because it represents the positive psychology of human beings to explore new things for the goal of "making life better", but we must realize that, First of all, any technology should not be separated from the essence of its "tool". At the same time, the use of information technology essentially strengthens the connection between the company and its employees, allowing the company and employees to form a closer whole. Therefore, companies should clearly understand the boundaries of the use of information technology, and should not obscure or even ignore the scope of their technology in pursuit of efficiency improvement and profit increase. The goal of maximizing its benefits should not be based on the excessive development of human capital within the enterprise so that the basic life safety of employees cannot be guaranteed. While using information technology, it also adheres to the people-oriented management principle. This is true when facing information technology now, and the same is true when facing new technologies in the future.

At the same time, this article is limited by the research methods and cannot be more objective. It proposes more refined and specific solutions and suggestions for the above problems by combining actual conditions.

I also hope that there will be more articles in the future that can be more refined and provide specific solutions to these problems.

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