The Impact of Online-to-Offline Food Delivery Platform on Employment in China

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Abstract. 200 online catering vendors and 200 food delivery riders were surveyed to quantitatively analyses the double influence of O2O food delivery platforms on employment. According to data, the platform increased 37% average orders from merchants, driving up demand for positions like kitchen operators and digital marketing specialists by 50%, with 63% of merchants mastering digital skills. Among riders, 78% recognized flexibility in working time, 33% more than traditional services, while only 12% had work injury insurance, 2.3 times higher than traditional industries. According to regression analysis, 27.9% of customer satisfaction could be explained by platform dependence and income growth, while only 4.5% could be explained by work flexibility. The research calls for setting up a classified protection mechanism for platform staff and standardizing algorithm transparency to balance efficiency and fairness.

Keywords: O2O platform; gig economy; employment quality; rights protection; algorithmic governance

1 Introduction

China's online-to-offline (O2O) food delivery platforms have risen rapidly, reshaping the city's economy and employment patterns. From an early intermediary between restaurants and consumers to a full-chain service system that integrates payment, logistics and customer management, these platforms become infrastructure for city life through technological innovation and market expansion [1]. Companies such as Meituan and Ele.me use big data analysis to optimize delivery routes, activate consumer demand through dynamic pricing, and stabilize the basic employment base through "contactless delivery". Data shows that this platform spawned millions of food delivery riders and promoted food businesses from a single offline operation to a dual-track business operation. Moreover, it was forced to standardize kitchen conversion and supply chain upgrades. Along with technology penetration, AI-led order allocation and rider performance evaluation mechanisms have improved industry efficiency and "digital labor control" discussions. While riders enjoy flexible working hours, they face algorithm-driven work-intensity upgrades. At the same time, merchants rely heavily on platform traffic and rules [2].

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The impact of O2O on employment today is significantly two-sided: firstly, the gig economy model provides low entry threshold income channel for low skilled workers; in particular, it creates employment buffer space for rural migrant workers and urban youth; secondly, its legal status as "independent contractors" means that they are outside the traditional labor security system; they suffer from income fluctuation, occupational injury risk and lack of social protection. Online merchants struggle between platform traffic dividends and competitive pressure - participating in a platform can reach more customers, but frequent promotional activities and commissions have squeezed profit margins. Some small and medium businesses are in a dilemma, such as "without advertising, without advertising, without advertising", because of the lack of transparency [3]. Balancing platform economic innovation with labor rights protection and optimizing the employment governance framework has become a key issue in China's economic transition. The impact of this platform is evaluated by combining quantitative analysis with qualitative interviews to provide a theoretical basis for policy making and sustainable development.

2 Experimental Design

2.1 Data Collection Method

This study uses a multi-dimensional data collection method to analyses the influence of O2O food delivery platforms on employment in China. For online merchants, we surveyed 200 food and beverage companies nationwide that have settled on the platform. The questionnaire included 15 questions, such as platform dependency, income change, job growth and decline, and digital skills application, to quantify its impact on business operations and employment. In addition to online questionnaires, 200 valid questionnaires and 50 in-depth interviews were conducted in Shanghai and Chengdu, focusing on working hours, income fluctuations, occupational safety, labor rights awareness, etc [4].

It also integrates authoritative industry reports, government statistics yearbooks (such as National Bureau of Statistics employment data and Ministry of Industry and Information Technology Digital Economy Report) as well as platform public data (Meituan and Ele.me riders scale, order volumes, etc.) to make up a multi-source data system which is mutually supportive. For example, we analyses regional differences in employment absorption capacity by comparing the platform orders' growth rate with the city riders' changes.

2.2 Research Model Construction

To clarify the relationship between the employment index and the platform, a Structural Equation Model (SEM) was built. This model uses platform dependence, market competition intensity, technological innovation investment as exogenous variables, employment quantity, quality, stability, and so on. The data were fitted with AMOS soft-

ware to validate the hypothesis among the variables [5]. For example, this model assumes that increasing reliance on platforms would negatively affect job stability, while technology innovation would help create new jobs.

When analyzing factors affecting riders' income, we use a multivariate linear regression model to use working hours, number of orders, delivery distance, weather conditions and platform incentive policies as independent variables and revenue as dependent variables.

2.3 Analysis Process and Verification

After collecting data, the paper uses SPSS software to describe statistical analysis. Data from the questionnaire were then tested for reliability and validity. The Cronbach Alpha coefficient indicates that the reliability of the merchant questionnaire is 0.86 and that of the rider questionnaire is 0.82, which shows high reliability. Exploratory factor analysis extracted key factors such as platform dependence, digital transformation, working environment and rights protection to ensure good structural validity [6].

During the model analysis stage, path coefficient analysis for the structural equation model is used to determine its direct and indirect influence on employment dimensions. For example, it is found that platform dependence negatively affects merchants' employment quality ($\beta = -0.32$, $p < 0.01$), while market competition promotes platform innovation indirectly and positively ($\beta = 0.21$, $p < 0.05$). Regression analysis showed that there was a positive correlation between working hours and income ($\beta = 0.45$, $p < 0.001$), while bad weather significantly decreased unit time income ($\beta = -0.18$, $p < 0.05$). To ensure robust results, we performed a sensitivity analysis. The key conclusions are consistent after adjusting sample distribution and variable measurement methods, making the research more reliable and persuasive.

3 Data Analysis

3.1 Quantitative Analysis of the Impact on Online Merchants' Employment

Table 1. Regression analysis results of the impact of online merchants on employment

Variables	B	Standard error	β	t	Sig.	95%
Constants	2.63	0.31	——	8.57	0.000	2.02-3.23
Income growth	0.17	0.05	0.23	3.57	0.000	0.07-0.26
Job expansion	0.18	0.04	0.29	4.62	0.000	0.10-0.26
Skill improvement	0.10	0.04	0.17	2.66	0.008	0.03-0.18
Market competition	-0.02	0.05	-0.03	-0.45	0.654	-0.11-0.07
Platform dependence	-0.13	0.04	-0.19	-3.15	0.002	-0.21--0.05
Employee morale	-0.06	0.04	-0.10	-1.53	0.129	-0.14-0.02

This study studies the influence factors such as platform dependence, income growth based on 200 online merchants' survey data, market competition, etc. This model has

six independent variables, including "total employment satisfaction" as the dependent variable. Table 1 shows the results:

The growth of income ($\beta = 0.23$, $p < 0.001$) and employment growth ($\beta = 0.29$, $p < 0.001$) are key drivers to improve business satisfaction. For example, after joining the platform in Shanghai, orders rose 40%, adding new positions such as customer service and packaging specialists. Employee satisfaction rose from 3.2 points (1-5) to 4.1. Satisfaction decreased 0.19 points for every 1 unit increase of platform dependency ($p < 0.01$). SMEs rely heavily on platform traffic and are forced to participate in promotional activities. The compression of profits has resulted in a reduction in employee benefits. For example, one snack bar in Chengdu cancelled its employees' annual health checks because of the rise in its platform fees. Market competition does not affect satisfaction significantly ($p = 0.654$), showing that merchants attach more importance to platform rules than competition among peers, indirectly proving that platform monopoly profoundly affects employment.

This model explains 27.9% of the difference in satisfaction level ($F = 12.46$, $p < 0.001$), indicating that the platform-related variable is the key factor influencing traders' employment quality. In comparison, 72.1% still needs further explanation from other variables (e.g. industry characteristics and management level). Table 2 shows the results.

Table 2. Model fit and variance analysis

Model	R^2	Adjusting R^2	F	Sig.	Residual sum of squares
Online merchant model	0.279	0.257	12.46	0.000	101.19

3.2 Quantitative Analyses of the Impact on Riders' Employment

A regression analysis was conducted based on 200 riders' survey data to determine how factors such as job flexibility, income and job security affected their job experience. The results of the model are presented in Table 3 below:

Table 3. Results of regression analysis of riders' employment impact

Variables	B	Standard error	β	t	Sig.	95%
Constants	3.27	0.43	——	7.61	0.000	2.43-4.11
Working hours flexibility	0.13	0.05	0.18	2.46	0.015	0.03-0.23
Income opportunities	0.04	0.06	0.05	0.73	0.466	-0.08-0.16
Entry barriers	0.02	0.07	0.03	0.37	0.711	-0.12-0.16
Occupational safety	-0.02	0.06	-0.03	-0.34	0.733	-0.14-0.10
Legal protection	-0.07	0.06	-0.09	-1.22	0.224	-0.19-0.05
Employment stability	-0.03	0.06	-0.04	-0.49	0.625	-0.15-0.09

Working time flexibility was the only significant positive factor ($\beta = 0.18$, $p < 0.05$). 62% of riders believe that "free choice of work time" is a main reason they take up this occupation. There is no significant difference between occupational safety ($p = 0.733$)

and protection of legal rights (p = 0.224), which may reflect that riders' 'tolerance' towards lack of rights or lack of data fully reflects the experience. After a traffic accident, for example, one rider did not have insurance against work-related injuries. He paid 80% of his medical expenses himself, but he still believed this platform was more liberal than traditional work. Income opportunities do not significantly affect satisfaction (p = 0.466), possibly because riders' income depends heavily on orders (average 15-30 orders per day, with a 50% income range).

This model explains only a 4.5% satisfaction difference (F = 1.52, p = 0.175), which shows that the rider's employment experience is greatly influenced by variables such as social identity and career development expectations. Table 4 shows the results.

Table 4. Model fit and variance analysis

Model	R^2	Adjusting R^2	F	Significance	Residual sum of squares
Rider Model	0.045	0.015	1.52	0.175	146.29

3.3 Comparison of Employment Impacts on Online Merchants and Riders

After cross-analysis, they found significant differences between the two groups (Table 5). After an old restaurant in Beijing joined the platform, online orders accounted for 65%; however, due to increased commission rates from 15% to 22%, employees' performance bonuses shrank, and the turnover rate increased from 10% to 25% [7]. Shenzhen rider Master Wang earned 8,000-12,000 yuan per month working 10 hours on average every day, but he did not have any social security insurance and was fined 200 yuan because of bad reviews from the platform. He lamented, "I earned my hard-earned money with no way out."

Table 5. Comparison of employment impact dimensions

Dimensions	Online merchants	Online merchants
Core driving forces	Income growth, job specialization	Income growth, job specialization
Main risks	Platform dependence leads to profit compression	Platform dependence leads to profit compression
Policy sensitivity points	Fair competition rules, algorithm transparency	Fair competition rules, algorithm transparency
Technology penetration depth	Digital operation capabilities (such as data analysis)	Digital operation capabilities (such as data analysis)

O2O platform's influence on employment shows "efficiency and risk co-existing". Online merchants expand their market share through platforms to create professional jobs; however, over-reliance on platforms leads to lower resistance to risk. Riders enjoy flexible employment opportunities, but face an "institutional vacuum" regarding rights protection, and occupational vulnerability is significant.

4 The Two-Sided Impact of Platform Employment: Positive Effects and Potential Risks

4.1 Platform-Driven Employment Growth and Structural Upgrading

O2O Food Delivery Platform positively affects employment by expanding employment scale, improving job specialization, and upgrading skills. This platform significantly broadened merchants' market boundaries by integrating food merchants and consumer resources, thus creating new jobs [8]. Data showed a 37% increase in orders from merchants connected with this platform, driving demand from kitchen operators, online customer service providers, and digital marketing specialists. For example, a chain restaurant in Hangzhou increased its online order share from 25% in 2023 to 58% in 2024, adding 23 new packing and delivery coordinator positions and 40% more employees. Job specialization has become an outstanding characteristic in the platform economy. Merchants gradually divided into menu development and user operations to meet online business needs. In Shanghai, there was a "data analyst" position where users' preferences (such as top 10 hot dishes, buyback rate, etc.) were used to optimize their menu structure, and their signature dishes were increased by 28%. At the same time, employees' skills become digital. 63% of merchants reported mastering new skills, such as Order Management System Operation and Online Customer Complaint Management. Some food and beverage companies even include "digital literacy" in their recruitment evaluation criteria.

The flexible job opportunities created by the platform are a major attraction for riders. According to the survey, 78% of riders believe that "being able to arrange work hours independently" is the main reason for choosing this profession. Among them, students and migrant workers make up 21% and 34%. Low-threshold features of the platform (requiring only transportation and identity documents) provide a source of income for low-skilled workers. Riders earn 6,000 to 9,000 yuan per month on average in Shenzhen and Chengdu, higher than those working in traditional service industries (for example, restaurant servers earn 4,500 to 6,000 yuan per month on average) [9].

4.2 Employment Risks and Challenges under the Platform Economy

Although employment has increased, significant structural risks are associated with expanding platforms. Online merchants face more and more intense competition and reliance on the platform. For the sake of the traffic competition, the merchants were forced to participate in the platform promotion, resulting in reduced profit margins. Data from a Sichuan snack bar in Beijing show that after participating in this platform's "full reduction activity", the average price rose 15%. At the same time, gross profit margin dropped from 55% to 42%. At the same time, merchants lack speaking rights in the platform's traffic distribution system. A tea shop in Guangzhou had to lay off three employees because of a 35% drop in exposure and 28% in orders due to changes in the platform's algorithms. Riders face double pressures of job instability and insufficient rights protection. The platform classifies riders as "independent contractors" and prevents them from enjoying traditional labor rights. Only 12% of riders are insured

against work-related injuries, while 35% pay full medical expenses for accidents or sudden illnesses. There was a positive correlation between work intensity and safety risks: 67% of riders had average delivery times over 8 hours per day, 2.3 times higher than those in traditional industries (data source: Traffic Police Department of a city in 2024). The power imbalance between platforms, merchants and riders further exacerbates this risk. It is difficult for merchants to build an independent customer system through commission rates (18% -25% on average) and data barriers; riders face implicit control of algorithms - the platform implements performance rewards and penalties through indicators such as "punctuality" and "good review rate". A rider received a 30% reduction from his daily income because of a delay in delivery due to heavy rain, but he could not appeal through effective channels.

5 Conclusion

This paper systematically reveals the double effect of O2O on the employment market in China. For one thing, the platform significantly improves the scale and structure of employment through digital empowerment: on average, 3-5 professional positions are added by merchants affiliated with the platform, and employees' digital skills reach 63%. As a result of its flexible employment model, the average monthly income of riders is 33% higher than that of traditional service jobs. At the same time, system lag leads to deep-seated conflicts: merchants' high reliance on the platform (job stability is down 23% among merchants' online revenue is down 23%) has squeezed profit margins, and riders as "independent contractors" face serious rights and interests' gaps (88% do not have social insurance while 41% of practitioners with over 3 years' experience change jobs because of occupational injury). Quantitative analysis shows that when platform dependency increases per unit dependence, merchants' job satisfaction decreases 0.19 points; however, the flexibility of riders' working time improves satisfaction significantly ($\beta = 0.18$, $p < 0.05$), but institutional responses are still insufficient to deal with such risks as income volatility and occupational safety. Typically, a restaurant chain lost 17% of its net profit because of platform commissions. At the same time, one rider paid 18,000 yuan for medical expenses for work-related injuries, highlighting the mismatch between existing labor frameworks and digital forms of employment.

References

1. Choi, E. J. (2021). Current situation of the food delivery Online-to-Offline platform industry and policy suggestions. Journal of Channel and Retailing, 26(1), 171-197.
2. Wang, O., & Scrimgeour, F. (2022). Consumer adoption of online-to-offline food delivery services in China and New Zealand. *British Food Journal*, *124*(5), 1590-1608.
3. Su, Q., Xiong, Y., Cui, T., & Xiao, J. (2022). Research on the differences of location characteristics between offline and online catering spaces under O2O E-commerce. *Environment and Urbanization ASIA*, *13*(1), 153-167.

4. Yao, W., Zhao, H., & Liu, L. (2023). Weather and time factors impact on online food delivery sales: a comparative analysis of three Chinese cities. *Theoretical and Applied Climatology*, *153*(3), 1425-1438.
5. Huang, Y. (2021). The factors affecting perceived value and customer satisfaction: online to offline (o2o) food delivery service in China. *World Scientific Research Journal*, *7*(10), 12-24.
6. Zhao, X., Lin, W., Cen, S., Zhu, H., Duan, M., Li, W., & Zhu, S. (2021). The online-to-offline (O2O) food delivery industry and its recent development in China. *European journal of clinical nutrition*, *75*(2), 232-237.
7. Han, Z., Wood, S., Coe, N. M., & Alexander, A. (2025). Platform Business Groups and the Omni-Channel Transformation of Food Retailing in China. *Tijdschrift voor economische en sociale geografie*, *116*(1), 4-25.
8. Van Doorn, N., Ferrari, F., & Graham, M. (2023). Migration and migrant labour in the gig economy: An intervention. Work, Employment and Society, 37(4), 1099-1111.
9. Freedman, J. (2020). Employment status, tax and the gig economy—improving the fit or making the break. King's Law Journal, 31(2), 194-214.

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