



Research on Information Support Mechanisms for Flexible Employment Groups in the Digital Communication Ecosystem

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KEYWORDS	ABSTRACT
Digital Communication Ecosystem; Flexible Employment Groups; Information Support Mechanism; Algorithm Hegemony; Digital Divide	With the deep integration of the gig economy and digital technology, flexible employment groups have become a crucial part of China's labor market, and their survival and development are highly tied to information flow within the digital communication ecosystem. However, these groups face multiple obstacles in information acquisition, identification, and expression, which not only restrict the realization of individual rights and interests but also hinder the standardized development of the gig economy. Combining literature analysis and logical reasoning, this paper first analyzes the information dilemmas faced by flexible employment groups in the digital communication ecosystem, then explores the causes from technical, institutional, and social dimensions, and finally constructs a three-dimensional information support mechanism of technology empowerment-institutional guarantee-social collaboration. It provides theoretical references and practical paths for resolving the information dilemmas of these groups and promoting the high-quality development of the gig economy.
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1 Introduction

The iteration of digital technology has reconstructed the communication ecosystem and fostered the vigorous development of the gig economy. Flexible employment groups, such as food delivery riders, ride-hailing drivers, freelance designers, and self-media creators, are characterized by platform-based, fragmented, and flexible employment. Their core needs, including access to employment opportunities, protection of labor

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rights, and improvement of professional skills, all rely on information flow within the digital communication ecosystem (Chen et al., 2023). However, the digital communication ecosystem is not an inclusive information field: the filter bubble effect of algorithmic recommendations limits the breadth of information acquisition, the monopoly of core information by platforms exacerbates information asymmetry, and the lack of digital literacy among some groups reduces their ability to identify information (Li & Wang, 2022). This information imbalance not only traps flexible employees in a dilemma of passively receiving information but also triggers a chain of problems such as damaged labor rights and limited career development—for instance, food delivery riders are surrounded by order information for a long time but struggle to obtain resources for career transformation, ride-hailing drivers are unaware of the specific calculation logic of platform commission rates, and middle-aged and elderly flexible employees cannot query social security policies due to operational barriers (Zhang, 2021).

Existing studies mostly focus on the protection of labor rights for flexible employment groups or the technical logic of the digital communication ecosystem in isolation, paying insufficient attention to the information support issue at the intersection of the two fields: some studies focus on explicit rights such as salaries and social security, while others concentrate on communication laws such as algorithm optimization and media technology (Wang & Liu, 2020). However, few studies analyze how the digital communication ecosystem affects the information acquisition of flexible employment groups, and even fewer systematically propose adaptive information support solutions. Theoretically, filling this research gap can enrich the interdisciplinary perspective of communication sociology and labor economics, and provide a new theoretical explanation for the labor-communication interaction in the digital age (Zhao, 2024). Practically, constructing a scientific information support mechanism can guide the government in formulating special policies, platforms in optimizing information services, and social organizations in providing assistance. It helps flexible employment groups break through information barriers, achieve decent employment and sustainable development, and ultimately promote the transformation of the gig economy from scale expansion to quality improvement (Hu et al., 2023).

2. Information Dilemmas of Flexible Employment Groups in the Digital Communication Ecosystem

2.1 Information Acquisition: Dual Restrictions of Algorithmic Barriers and Platform Monopolies

Information flow in the digital communication ecosystem is driven by algorithms as the core, but the efficiency-first logic of algorithms creates significant barriers for flexible employment groups. On one hand, the personalized filtering of algorithms leads to short-sighted information acquisition: when platforms push information through user portraits, they only focus on content related to immediate work—intensively sending order information to food delivery riders and basic order-taking needs to freelance designers—while actively filtering long-term development-related information such as vocational skills training and labor rights policies. This traps groups in an information loop of only knowing how to work, not knowing how to develop. On the other hand, the monopoly of core information by platforms exacerbates information asymmetry: key information such as employment opportunities, salary calculation rules, and reward/punishment standards is controlled unilaterally by platforms, and flexible employees cannot proactively obtain complete content. For example, ride-hailing drivers can only see the dispatch distance and estimated income but are unaware of the specific calculation dimensions of commission rates; job information on part-time platforms often hides hidden costs, and groups can only learn about them after completing registration or even paying fees, falling into a passive and disadvantaged position.

Furthermore, the information silos between different platforms further narrow the breadth of information acquisition. Flexible employees often have the characteristic of cross-platform employment, but the information systems of various platforms are independent and cannot achieve data interconnection. Information such as high-quality worker labels, working hour records, and customer evaluations on one platform cannot be synchronized to other platforms, making it difficult for groups to obtain better employment opportunities based on past experience and seriously diluting the value of information.

2.2 Information Identification: Dual Interferences of False Information and Professional Barriers

The low-threshold nature of the digital communication ecosystem allows highly free information production and dissemination, but it also leads to the proliferation of false and low-quality information. The lack of information identification capabilities among flexible employment groups makes them the main victims of false information. On one hand, false employment information floods the market: some intermediaries and enterprises release false jobs with high salaries and low thresholds to attract users. Such information is mostly spread through social media and short-video platforms, and

deliberately avoids risk warnings. Due to the lack of information verification channels, groups are prone to falling into dilemmas of damaged rights and interests. On the other hand, the understanding barrier of professional information is difficult to overcome: information related to labor rights protection and vocational skills improvement is mostly presented in professional terminology and scattered across government official websites, industry reports, and other channels. More than half of flexible employment groups lack systematic information retrieval capabilities, and middle-aged and elderly groups even face dual gaps in operation and cognition—they cannot use government official websites to query policies or understand professional expressions, resulting in high-quality information being visible but unusable.

2.3 Information Expression: Dual Constraints of Weak Discourse Power and Lack of Channels

In the digital communication ecosystem, the right to information expression of flexible employment groups has long been suppressed, and it is difficult for them to convey their demands through effective channels. On one hand, the disciplining mechanism of platforms directly restricts freedom of speech: most platforms clearly stipulate in user agreements that flexible employees are prohibited from posting negative information, otherwise they will face penalties such as account restriction, account ban, and deposit freezing. This silencing rule traps groups in a dilemma of daring to be angry but not daring to speak, and reasonable demands cannot be conveyed through platform channels. On the other hand, the lack of public communication channels exacerbates demand silence: flexible employment groups lack unified organizations and thus cannot form collective voice. Mainstream media also mostly focus on work intensity in their reports on these groups, while rarely paying attention to information needs. As a result, the information demands of groups are difficult to enter the vision of public policy formulation, forming a mismatch between demand and support.

3. Analysis of the Causes of Information Dilemmas for Flexible Employment Groups

When exploring the causes of information dilemmas faced by flexible employment groups within the digital communication ecosystem, the selection of analytical dimensions must align with the ecosystem's inherently interconnected nature, where technical, institutional, and social elements operate as a cohesive whole rather than isolated parts. Technology forms the ecosystem's operational core: algorithmic logic directly dictates how information is produced, filtered, and distributed, setting the fundamental conditions for whether flexible workers can access diverse, relevant

content. Institutions act as the ecosystem's regulatory backbone, with government policies and platform rules defining the responsibilities of different actors, shaping the fairness of information flows, and determining whether workers' rights to transparent information are protected. Society, in turn, constitutes the ecosystem's human dimension—factors like digital literacy levels among workers and the availability of community support networks directly influence whether workers can effectively interpret, verify, and utilize the information they receive. These three dimensions are mutually reinforcing: algorithmic biases (a technical issue) often persist due to weak institutional oversight, and even well-designed policies (an institutional solution) may fail without social support to build workers' information-processing capabilities. Existing research on digital labor dynamics further confirms that single-dimensional analyses risk oversimplifying complex challenges, as information dilemmas rarely stem from one factor alone. By integrating these three perspectives, we can move beyond surface-level observations to unpack the layered, interdependent roots of the problem—ensuring that our analysis is comprehensive enough to inform targeted, effective solutions later in the study.

3.1 Technical Dimension: Suppression by the Instrumental Rationality of Algorithm Hegemony

Algorithms are the technical core of the digital communication ecosystem, but there is an inherent conflict between the instrumental rationality of algorithms and the value rationality of flexible employment groups, forming algorithm hegemony—the core technical root of information dilemmas. Instrumental rationality is oriented by efficiency priority and data-driven, while value rationality focuses on rights protection and long-term development needs. The contradiction between the two directly leads to imbalanced information supply (Zhang & Wang, 2022). Firstly, the data monopoly of algorithms exacerbates demand mismatch: platforms construct user portraits by collecting labor data of flexible employees, but only push information based on labor efficiency labels, completely ignoring development demand labels—defaulting that the core need of food delivery riders is to receive orders while failing to identify the career transformation demands of some riders; defaulting that freelance designers only need basic orders while ignoring their needs for access to high-end resources. This ultimately forms a passive situation where groups can only receive what platforms push (Gao et al., 2023). Secondly, the opacity of algorithms amplifies information asymmetry: the recommendation logic and data processing rules of platform algorithms are classified as commercial secrets. Flexible employees cannot know the reasons for information filtering or appeal against algorithm results, and can only passively accept the

information and rights distributed by algorithms, lacking the initiative to obtain information (Zhou & Chen, 2021).

3.2 Institutional Dimension: Dual Absence of Platform Discipline and Policy Lag

In the digital communication ecosystem, platforms are both intermediaries for information dissemination and managers of flexible employment groups. However, their inherent profit-seeking nature leads to the absence of institutional discipline, and policy lag further exacerbates information dilemmas. On one hand, platforms replace labor contracts with service agreements to avoid information dissemination responsibilities: most platforms clearly state in agreements that they are not responsible for the authenticity and completeness of information, shifting the responsibilities of information identification and risk bearing entirely to flexible employees; some platforms even allow enterprises to pay to pin job information without verifying information authenticity, making false information more likely to be pushed to groups. On the other hand, information service policies for flexible employment groups are seriously lagging: existing policies mostly focus on explicit rights such as salary guarantee and social security supplementary payment, but fail to incorporate information support into the policy system. Information release channels of government departments are also not optimized for the characteristics of groups—with complex interface designs, professional content expressions, and lack of popular interpretations—resulting in policy information being unreachable, incomprehensible, and unusable.

3.3 Social Dimension: Dual Insufficiencies of Digital Divide and Social Support

The existence of the digital divide and the weakness of the social support system are important social causes of the information dilemmas for flexible employment groups. From the perspective of the digital divide, there is a significant digital literacy stratification within flexible employment groups: young groups are familiar with Internet operations, have strong capabilities in information retrieval, identification, and utilization, and can obtain high-quality information through multiple channels; however, middle-aged and elderly groups generally face operation gaps and cognition gaps—they cannot operate complex government apps, cannot identify the characteristics of false information, and do not know how to obtain vocational skills information through search engines or industry forums. They completely rely on information pushed by platforms, further intensifying information dependence.

From the perspective of social support, the existing system mostly focuses on

material assistance while ignoring information support: government assistance policies mainly include temporary relief funds and employment subsidies; social organizations concentrate their services on job introduction and legal consultation; few carry out digital literacy training or information retrieval guidance for flexible employment groups. As grassroots service units, communities also fail to build exclusive information exchange platforms and only release limited information through bulletin boards, which cannot meet the personalized needs of groups. This forces groups to passively rely on platforms for information, forming a dilemma of single information acquisition channel (Hu & Wang, 2022).

4. Construction of Information Support Mechanisms for Flexible Employment Groups in the Digital Communication Ecosystem

To address the above dilemmas and causes, it is necessary to break the mindset of single subject solution and construct a three-dimensional information support mechanism of technology empowerment-institutional guarantee-social collaboration. Through the collaborative efforts of multiple subjects, information empowerment for flexible employment groups can be realized.

4.1 Technology Empowerment: Breaking Information Barriers through Algorithm Optimization and Tool Innovation

Technology is the core driving force of the digital communication ecosystem. It is necessary to transform technology from an information barrier to an information bridge through algorithm optimization and tool innovation, and restore the initiative of flexible employment groups in information acquisition (Zhang et al., 2023). Platforms need to break algorithm hegemony and establish a dual mechanism of algorithm information disclosure + independent preference setting: on one hand, platforms should be required to add an algorithm explanation module in their apps, using plain language to explain the basis for information pushing, and regularly release the Algorithm Transparency Report to disclose the pushing ratio and filtering standards of different types of information; on the other hand, flexible employees should be given the right to set information preferences, providing functions of information type selection and pushing frequency adjustment to allow groups to independently choose to receive information such as work orders, social security policies, and skills training, avoiding algorithmic filter bubbles (Li & Zhao, 2023). At the same time, a third-party algorithm audit mechanism should be introduced: government departments or industry associations designate third-party technical institutions to regularly check whether platform

algorithms have information discrimination or filter rights-related information, and issue rectification notices to non-compliant platforms. This approach is consistent with the research results of Wang and Liu (2020), who pointed out that third-party supervision can effectively reduce the abuse of algorithm power by platforms and improve the transparency of information dissemination.

To solve the problem of information silos, the government should take the lead in collaborating with major flexible employment platforms to develop a National Information Sharing Platform for Flexible Employees, which realizes three core functions: first, the interconnection of professional credit files—integrating labor data of groups on various platforms to form unified files and recognizing past qualifications and evaluations across platforms; second, the aggregation of employment information—collecting job information from various platforms, verifying its authenticity, and pushing it by category labels to avoid the trouble of cross-platform retrieval; third, the intelligent pushing of policy information—connecting with the government's policy database in real time, pushing new policies through popular forms such as voice broadcasts and graphic interpretations, and providing a one-click call for volunteer assistance function for middle-aged and elderly groups to solve the problem of incomprehensible policies (Gao & Chen, 2022).

4.2 Institutional Guarantee: Consolidating the Bottom Line of Information through Policy Standardization and Responsibility Definition

Institutions are the ballast stone of the information support mechanism. It is necessary to clarify the standards of fairness and security for information dissemination through special policy legislation and platform responsibility definition (Hu et al., 2023). The government should incorporate information support into the flexible employment policy system and formulate the Measures for the Administration of Information Services for Flexible Employment Groups, clarifying the information supply division among government-platform-social organizations: the government is responsible for policy-related information, including social security, taxation, and labor laws; platforms are responsible for employment-related information, covering job needs and salary rules; social organizations are responsible for service-related information, providing resources such as skills training and legal consultation. At the same time, it is stipulated that information should meet the requirements of authenticity, timeliness, and popularity—job information on platforms should clearly indicate salary ranges, working hours, and hidden costs, and avoid vague expressions. This policy design is in line with the research conclusion of Zhao (2022), who believed that clear institutional

provisions can clarify the responsibilities of all subjects and ensure the orderly supply of information. In terms of channel construction, the government should upgrade the flexible employment service section of government apps to simplify the operation interface; platforms should set up an information service section on the homepage to centrally display various types of information; communities should be equipped with information query terminals and volunteers to assist middle-aged and elderly groups in operations.

Dual constraints of laws and industry standards should be used to strengthen the information responsibilities of platforms: on one hand, establish a lifelong accountability system for platform information review—requiring platforms to conduct full-process review of job information and salary rules, include issuers of false information in the industry blacklist, and hold platforms liable for joint compensation if they fail to fulfill review obligations and cause losses to groups; on the other hand, protect the right to information expression of groups—stipulating that platforms should set up a demand feedback section to respond to reasonable demands within a specified time limit, and regularly summarize group needs to form a Demand Report, which is submitted to the government and industry associations as a basis for policy adjustment. Suppression of speech in the name of affecting platform image should be prohibited.

4.3 Social Collaboration: Building an Information Network through Digital Literacy Improvement and Community Support

Social collaboration serves as the supplementary force of the information support mechanism, addressing the gap between technical accessibility and individual capacity to ensure information in the digital communication ecosystem translates to practical benefits for flexible employment groups (Chen & Li, 2023). Social organizations, in collaboration with governments and enterprises, must develop customized digital literacy training that avoids a one-size-fits-all approach: for young workers like self-media creators, training should focus on advanced skills such as using big data to analyze user demand (Sun, 2022), while middle-aged and elderly groups—such as older delivery riders—need hands-on guidance for basic tasks like querying social security or identifying false job postings (Wang, 2022). Delivery methods should also be innovative: online, short-video platforms can host 2-minute lightweight teaching clips (Zhao & Li, 2023), and offline training points in communities or platform hubs can accommodate non-peak work hours, as offline sessions build trust and enable immediate problem-solving (Zhang & Wang, 2022).

Equally critical is constructing a community information network that combines

self-organization and hetero-organization. Self-organized groups—like WeChat groups for ride-hailing drivers or designer meetups—let workers share practical tips, such as high-paying order strategies or reliable client contacts, with trust maintained through rules against false information (Gao et al., 2023; Li & Zhang, 2023). To enhance these networks, social organizations (the hetero-organization layer) should provide professional support: lawyers can host monthly rights-protection clinics to answer questions about algorithmic penalties, and training institutions can share free skill-upgrading resources (Zhou & Chen, 2021). This hybrid model fixes the limitation of purely self-organized groups—their lack of authoritative information—and turns informal sharing into structured support, ensuring workers not only get information but also tools to act on it (Hu, 2021). In turn, social collaboration bridges the last mile of information support, making technical and institutional solutions tangible for workers' daily lives and careers.

5. Conclusions and Prospects

The digital communication ecosystem provides employment opportunities for flexible employment groups, but also brings information challenges. This paper finds through analysis that these groups face multiple dilemmas such as algorithmic barriers, platform monopolies, false information interference, and weak discourse power in information acquisition, identification, and expression. The causes can be attributed to algorithm hegemony at the technical level, platform discipline and policy lag at the institutional level, and digital divide and insufficient support at the social level. Based on this, the constructed three-dimensional information support mechanism of technology empowerment-institutional guarantee-social collaboration breaks technical barriers through algorithm optimization and tool innovation, consolidates the institutional bottom line through policy standardization and responsibility definition, and strengthens social support through digital literacy improvement and community construction. It forms a solution characterized by multi-subject collaboration, accurate supply-demand matching, and effective rights protection.

This study still has limitations: it does not verify the effectiveness of the mechanism through empirical data. In the future, research can be conducted on specific groups to collect first-hand data through questionnaires and interviews, testing the practical adaptability of the mechanism. At the same time, with the development of new technologies such as generative AI and metaverse, the digital communication ecosystem will undergo new changes, and the information needs and dilemmas of flexible employment groups may present new characteristics—for example, generative

AI may exacerbate the proliferation of false information, and metaverse may provide new channels for information dissemination. Future research needs to further explore the impact of new technologies on the information support mechanism to promote its continuous optimization.

In general, resolving the information dilemmas of flexible employment groups cannot rely solely on a single subject or method. It requires the collaborative efforts of technology, institutions, and society to transform flexible employment groups from passively receiving information to proactively obtaining information, effectively using information, and reasonably expressing demands. Only in this way can information empowerment be truly realized, enabling flexible employment groups to obtain fair development opportunities in the digital age and promoting the gig economy to develop in a more fair and sustainable direction.

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