

Generative AI and the Reconfiguration of the Digital Gig Economy: An Integrative Review Centered on Content-Generation Workers

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Abstract

Generative artificial intelligence is transitioning from a general production tool to the infrastructure of digital labor platforms, driving the digital gig economy to broaden from physically demanding services such as delivery and mobility to knowledge-based services. Drawing on analyses of digital gig work, algorithmic management, and AI-related employment governance, this paper further synthesizes the formation of content-creation labor, the restructuring of the labor process, and the associated risks. Synthesizing existing literature indicates that generative AI, owing to its low cost, openness, and efficient information-processing capabilities, lowers the entry barriers to tools for knowledge-production services and, in conjunction with the supply-demand matching mechanisms of corresponding platforms, provides technical support for the expansion of the knowledge-based gig economy. Meanwhile, automation of standardized content creation, task fragmentation, and algorithmic evaluation may intensify deskilling and value pressures on mid- to low-skilled content labor, driving changes in the cognitive labor value chain, occupational skills structure, and human-machine collaboration work paradigms. Future governance should be enhanced in areas such as data rights, competency certification, social protection, and income distribution.

Key words

Generative AI; gig economy; Knowledge-based gig work; Content-generation workers

1. Introduction

With the continuous development of technologies such as artificial intelligence and big data, an increasing number of workers have been supplied to labor service through digital service and trading platforms in their free time; at the same time, many enterprises have listed temporary positions on these platforms, and the platforms, guided by algorithms and enterprise requirements, quickly connect suitable workers. New digital platforms have created more jobs for the unemployed and underemployed, and many of these jobs are flexible in nature, better suiting the lives and interests of these individuals; thus, some employment problems have been addressed and considerable employment benefits have been generated. As big data models enter the field of content creation, the objects of platform gig labour have gradually shifted from schedulable physical labour and service capacity to digital outputs that can be generated, modified and evaluated by models. Existing research has not fully examined the effect of the continued development of generative AI and reduced adoption barriers on the digital gig economy for content-creation service workers. In light of the above, this paper reviews research on platform flexible employment, generative AI, human-machine collaboration, algorithmic governance and employment governance to address three questions: First, how does generative AI promote the development of the knowledge-based gig economy and alter occupational boundaries? Second, it studies how generative AI and algorithmic management together reconstruct the labour process and value chain of content production. Third, it presents the deficiencies in the existing studies and puts forward countermeasures to bolster the governance and protection of rights for content-generating workers.

2. Core Concepts and Research Trajectory

2.1 The Digital Gig Economy and the Knowledge-Based Gig Economy

The gig economy typically denotes an economic model in which workers, leveraging information, trans-

action, and evaluation services provided by digital platforms, allocate their time, skills, and labor to undertake short-term, independent, project-based tasks and receive remuneration [1]. In comparison with traditional flexible employment, the digital gig economy forms a tripartite structure comprising the demand side, platforms, and workers. The platform is not merely a venue for transactions; rather, it uses algorithms to perform information gathering, demand matching, price determination, risk control, and performance evaluation. In terms of labor delivery modalities, digital gig work can be categorized into offline on-demand labor and online remote labor. The former comprises tasks such as delivery, ride-hailing, housekeeping, and maintenance that must be completed at specific locations; the latter consists of tasks that can be delivered online, including data entry, translation, design, programming, consulting, text drafting, and image design[1]. The knowledge-intensive gig economy mainly belongs to online remote labor, placing high demands on professional knowledge, innovative capacity, and information-processing capability.

Existing research finds that occupational rigidity, subordination, skill requirements, and riskiness influence the degree to which occupations adapt to platform-based flexible work arrangements. The lower the rigidity of work, the more easily a profession can be integrated into platformized organizational systems[1]. In the traditional gig economy, low-skill, highly repetitive, and quantifiable tasks are more readily decomposed into platform tasks. However, the emergence of generative artificial intelligence has altered this trend; high-demand professional tasks that previously relied on specialists can also be decomposed into transaction steps such as model generation, human verification, stylistic modification, and client communication.

2.2 Content-Generation Workers

This article defines content-generation workers as knowledge-based gig workers who, with the aid of generative artificial intelligence, undertake tasks on digitized trading and service platforms, producing digital outputs as their primary work products. This group includes both independent creators and hidden labor, such as prompt designers, data collectors, content reviewers, and output revisions. It should be noted that “content-generation workers” is a concept introduced to

analyze what kinds of effects arise in knowledge-based gig labor under the conditions of generative AI. Its core features are: the workers' outputs are formed jointly by the workers' original knowledge reserves and the outputs of large models; they are subject to both platform rules and model capabilities; and labor value assessment is no longer determined solely by the time invested in personal service. Overall, the category of “content-generation workers” is analytically distinct from the triad of digital labor, platform labor, and knowledge-based gig work, yet it adheres to a clearly defined research orientation: digital labor emphasizes the deep influence of digital technologies on labor services; platform labor emphasizes that labor is organized and governed by digital platforms; knowledge-based gig work emphasizes that labor outputs predominantly rely on professional knowledge and skills; by contrast, content-generation labor highlights the changes in the labor production process, the modes of labor, and the mechanisms by which labor value is formed after the intervention of generative artificial intelligence.

3. Literature Review

Focusing on the impact of digital technologies—namely the digital gig economy, algorithmic management, and generative artificial intelligence—on the labor market, existing research has primarily identified three principal trajectories: (i) the relationship between digital technologies and the structure of employment; (ii) the effects of platform algorithms on gig workers; and (iii) the reconfiguration of knowledge work induced by generative AI.

3.1 Employment Creation and Job Displacement Effects of Digital Technologies

These studies generally hold that digital platforms reduce information-gathering costs and transaction costs, and break the temporal and spatial constraints of traditional employment, thereby generating employment-creation effects and offering new prospects for non-standard and flexible employment. Based on empirical analyses of occupational attributes and platform-based flexible work, Jiao Hao, Cui Yu, and Luo Qiao find that the subordination of occupations, skill intensity, risk, and rigid-

ity significantly influence the degree of platformization; among them, the lower labor rigidity, the easier it is to adapt to platform-based flexible employment models[1]. This line of research shows that platformization does not operate equally and uniformly across all occupations; rather, it preferentially absorbs occupations with clearly defined task boundaries, service outputs that are easy to quantify, and relatively low dependence on organizational structure. Gu Dongdong, from the perspective of high-quality full employment, argues that digital technologies can promote employment growth by expanding job opportunities, optimizing the employment structure, and improving the employment environment, but their positive effects require conditions such as digital skills training, public employment services, and protection of workers' rights[2]. These studies systematically reveal the employment-promoting effects of digital technologies, but mainly focus on macro-level employment quantity and occupational fit, with relatively less attention to the internal processes of labor service within platforms, labor pricing, and workers' bargaining power.

3.2 The Impact of Algorithmic Management on Gig Workers

Contrary to the view of platforms as neutral transactional intermediaries, some scholars argue that platforms, through their algorithms that perform dispatch, supervision, performance evaluation, task pricing, and reward/punishment mechanisms, actually assume part of the functions traditionally performed by organizational managers. Complementing the normative critique, Wood et al. provide empirical evidence that platform-based algorithmic governance can coexist with a perceived sense of flexibility and autonomy, while simultaneously generating irregular hours, overwork, and exhaustion, owing to workers' structural dependence on platform rating and ranking systems[3]. From an analysis of the concrete mechanisms of algorithmic governance, Wei Wei and Liu Beini start from two pathways of algorithmic governance—“controlism” and “decisionism”—and find that, on the controlism pathway, algorithmic governance operates by enhancing digital gig workers' perceived control, thereby reducing their platform commitment; on the decisionism pathway, by providing decision support and facilitating work redesign, it increases platform commit-

ment[4]. Thus, algorithms are not solely instruments of domination and control; their effects depend on whether the algorithm can provide workers with clear information and advantageous decision guidance. Pei Jialiang et al., studying three dimensions of workers' perceived algorithmic control, argue that algorithmic tracking and evaluation suppress working autonomy, leading to overwork; behavioral constraints induce work insecurity and thus overwork; whereas normative guidance may serve as a technological support resource to mitigate the negative effects of algorithmic control[5]. Beyond the direct effects of algorithmic management, some studies have begun to investigate workers' behavioral responses to algorithmic control. Guo Tongmei et al. introduce the concept of an 'appeasing algorithm,' arguing that workers cope by dissecting platform information, analyzing historical data, taking on additional labor, monitoring platform feedback, and conducting self-experiments to obtain more platform resources[6]. This finding suggests that physically demanding gig workers formulate strategic adaptive behaviors around the algorithm. However, this agency does not imply that workers can alter the platform's existing rules; their behavior is more about seeking a tilt in resource allocation within the fixed algorithmic structure. Guo Tongmei and Guo Qiuyun's work on apparent conformity further indicates that algorithmic control may compel workers to formally comply with platform norms without genuine value alignment, and may, to some extent, reduce service performance[7]. Taken together, the literature suggests that the effects of algorithmic management are not unidirectional but arise from the joint interaction of platform control, worker cognition, and behavioral strategies.

Related research on algorithm aversion further indicates that individuals exhibit negative reactions to AI-enabled decision-making, which may stem from naive beliefs about algorithms, algorithmic errors, privacy concerns, human overconfidence, erroneous attribution, and threats to self-efficacy; the intensity of these reactions is jointly influenced by individual, contextual, and algorithmic factors [8]. In addition to resistance, gig workers also construct the meaning of their labor around algorithm-mediated work. Cameron's four-year qualitative study of ride-hailing drivers identifies two core "games"—the "relational game" and the "efficiency game"—centered on customer ratings and earnings per

unit time; both types of games can sustain workers' immediate engagement, but they foster different platform relationships and have opposite effects on worker retention [9].

3.3 The Impact of Generative AI on Knowledge Work

Generative AI differs from traditional digital technologies, which generally only collect and process information. By contrast, generative AI can directly generate text, images, code, and audio-visual materials, enabling it to engage directly in knowledge-based work. Generative AI can boost production efficiency and optimise the labour process for industrial upgrading on one hand, and at the same time, it will also restructure the cognitive labour value chain and explore new models of human-machine cooperation [10]. In short, the previous studies have already laid a certain foundation for the investigation of the employment-promoting effects of digital technologies, platform algorithmic mechanisms, and the impact of generative AI on skills and occupational structure, thereby exploring the knowledge-based gig economy. Based on the research mentioned above, this paper presents a combined analysis system to explore how generative AI interacts with digital service and trading platforms, and consequently changes in workers' skill structures, behavioural strategies and earnings distribution. Focusing on content-creation workers expands the scope of traditional research in the gig economy and helps to explore how knowledge work under the conditions of generative AI is shifting towards task modularisation, human-machine collaboration and value chain stratification.

4. Reconfiguring Content-Generation Work

4.1 Lowering of Entry Barriers to Knowledge Work and Expansion of Occupational Boundaries

Generative artificial intelligence has begun to be applied in knowledge-work services, blurring the boundaries of tasks, and even untrained workers can use

these models to perform platform-delivered work. For data-centric tasks, even workers without deep domain knowledge can use models for data organisation and cleaning. Generative AI is thus expanding the labour scope of the knowledge-based gig economy and providing technical support for attracting more gig workers. Lowering the barrier to entry for technology does not mean that one is no longer required to have professional skills. The model outputs may contain factual inaccuracies, errors in the chain of reasoning, and biases; nevertheless, users must verify and revise them using their existing knowledge, and this stage can be regarded as an invisible labor undertaken by workers after AI intervention, i.e., AI-mediated labor or verification labor. Generative AI primarily substitutes for repetitive and procedural work, whereas in creativity and emotional interaction, humans remain indispensable, and human-machine collaboration can complete the bulk of repetitive work, enabling workers to focus on high-value-added production stages[10].

4.2 Transformation of Modularized Tasks

Generative AI is driving the decomposition of the knowledge-work service chain into executable, discrete modules. Traditionally, content production has been carried out by a single person who is responsible for all stages of work, such as information collection, design, content creation, quality control and revision of results. With the development of Generative AI, a service can be divided into several steps: requirement input, design direction, content generation, text verification and client communication. This division of labour has created new roles, such as AI trainers and data annotators; at the same time, it has made the knowledge-service output more suitable for platform standardisation and quantification. The platforms will grade and rank the workers based on the speed of task completion, client feedback, and thus convert tasks that previously required professional knowledge and skills into distributable digital tasks.

4.3 Human-Machine Collaboration and the Differentiation of Skill Structures

Content-creation labour is being gradually changed

from individual, lone production to human-machine collaboration. Foundation models in AI are used for data organisation, content creation and routine tasks; workers provide the purpose of the task and verify the accuracy of the results before finally submitting them. Although this division of labour can improve production efficiency, it may also make the workers overly dependent on the model; at the same time, a significant number of workers who are unable to adapt to new technologies may face skill obsolescence and be displaced from their jobs [10]. The platform divides the difficulty of tasks into several levels based on the technical skills required by these tasks, and then content-generation workers select jobs according to their own knowledge and skills to fall into one of the three categories: Stage one includes talents who have mastered cutting-edge knowledge and are skilled in innovation; they are mainly responsible for breaking down difficult problems and polishing results. Stage two comprises competent human-AI cooperation workers who primarily operate models and communicate with users. Stage three consists of auxiliary staff who conduct data annotation, content filtering and repeated corrections. Therefore, it can be seen that generative artificial intelligence will not automatically reduce knowledge-based gig work but may instead push the gig economy towards a new division of labour, thereby changing the structure of industrial talent.

5. Conclusion

Integration of generative AI and platform algorithms results in a number of observable phenomena that require attention. First, with a decrease in application thresholds and improved baseline content-production efficiency, market supply expands, and prices for simple tasks may fall; thus, there is a risk to workers without resources or an established client base. Second, workers need to keep learning about the model, adjusting prompts and checking the results of generation, maintaining platform ratings, some tasks are not easy to measure directly and may constitute a new form of invisible labour. Third, worker outputs, prompts and modification histories, as well as client feedback, can be used as data resources for platform or model optimisation. If data is used without prior consent, the employees will be unable to use the resulting knowledge products freely and

will not receive the corresponding economic benefits. Furthermore, when the model generates content that is factually incorrect or biased, the worker bears the direct responsibility, but they do not have access to the model's training data or operating logic and thus cannot be held accountable. To reduce the above risks, platforms should increase the transparency of task recommendations, rating systems, and payment models; establish human review and appeal mechanisms; and, regarding the use of workers' works, prompts, and interaction data, provide prior notice and clearly define the scope of permission. In terms of labour protection, the public employment service department should cooperate with first-class enterprises to build a new-era training platform for modular courses, such as intelligent assistance system operation and maintenance, human-machine collaboration workflow optimisation, to improve workers' technological adaptation ability. Thus, the effect of generative AI on the digital gig economy is a double-edged sword. Future research will use interviews, surveys and the collection of platform data to explore changes in income, working hours, skill acquisition and career mobility for all kinds of content-generating workers more deeply, with particular attention to data operations for model training, invisible labour and platform revenue distribution. To help promote the high-quality development of the digital gig economy, only by enhancing technological efficiency, involving workers in their work, and protecting their rights can generative AI be applied.

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