

# The Digital Situation: The Present and Future of Systemic Labor-capital Relations

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**Abstract.** The digital economy has caused improper entanglement of labor-capital relations, and the safety bottom line of labor-capital relations is being challenged. Therefore, exploring the new variables that break the balance of labor-capital power and their mechanism of action is of great significance to provide new insights into the management and government strategies of labor-capital relations in the digital environment in the future. This paper uses the modeling method of cybernetics, from the systematic and structural point of view, along the traditional economy, platform economy and meta-universe economy in order to find out what has happened and will happen in labor-capital relations. It is found that the labor-capital relations in the platform economy mainly produce four new variables, which may push the potential risks to the crisis state. The new variables include employee's main status, systematic control function of labor-capital relations, labor-capital ecology and employee's psychological contract. The meta-universe and the platform economy will eventually coexist. Whether the meta-universe labor-capital relations can enter the control mode of the digital system smoothly is based on the platform labor-capital relations.

**Keywords:** digital situation; New variables of labor-capital relations; Platform employment; Industrial metaverse

## 1 Introduction

The Party's 20th National Congress made strategic plans for comprehensively building a modern socialist country, and clearly proposed to "accelerate the development of the digital economy, promote the deep integration of the digital economy and the real economy, and build digital industrial clusters with international competitiveness." Digital economy is an emerging economic form based on the three elements of big data, intelligent algorithms and computing platform. Based on computing platform, it uses intelligent algorithms to store, process, analyze and discover big data, etc., so as to serve the optimization of resource allocation, transformation and upgrading of various industries. We will promote high-quality economic development. Today's world is accelerating the digital transformation and transformation of the economy. The digital economy is a highly practical innovation activity, which needs to pay attention to and control the new variables of labor-capital relations under the premise of emancipating the mind and bold innovation, and adhere to the bottom line of safe development. Therefore, the academic circles at home and abroad pay great attention to the research of labor relations in the digital situation, and the research work mainly focuses on two lines, and has obtained positive answers.

One line is that digitization is changing the fate of industrial relations. TA Medvedeva <sup>[1]</sup>(2018)

explains that the emergence of new types of social labor relations in the era of globalization and network economy is a difficult and uncertain phenomenon, and thus expresses serious concerns about the fate of labor and social labor relations. Jiao Hao et al. <sup>[2]</sup> (2022) believe that the static equilibrium competitive environment in the past is constantly changing, and the sustainable operation of enterprises is facing extremely severe challenges. The complexity and dynamics of the environment lead enterprises to change. Yin Libo et al. <sup>[3]</sup> (2022) Research shows that the effect of technological substitution may lead to concentrated unemployment in a short period of time, and it is necessary to adopt active policies to cope with the impact of the emerging technological revolution on employment. Cooke FL et al. <sup>[4]</sup> (2022) concluded that in authoritarian countries in Central Asia, business elites are bound in extended family networks. In Uzbekistan, in particular, there is a greater emphasis on providing a sufficient number of jobs in exchange for political stability. Yin Zhentao et al. <sup>[5]</sup> (2022) clearly proposed that platform enterprises with dual identities of platform builder and platform manager should become the main body of governance. The power of algorithm adjustment is only in the hands of the platform, and more reflects the interests of the platform, and other parties can only be forced to accept, and there is no way to pursue the loss caused by the algorithm change. Chen Lin <sup>[6]</sup> (2021) analyzed that algorithm-based management makes online contractors fragmented by platforms, and online contractors are decentralized in work form and separated from groups in space, which weakens the organization ability of online contractors. Through empirical test, Xiao Linsheng <sup>[7]</sup> (2022) found that the breakdown of workers' psychological contract has a negative effect on job engagement, while the breakdown of psychological contract has a significant positive impact on job insecurity. RA Dolzhenko <sup>[8]</sup> (2022) argues that digitization in general and the introduction of blockchain are changing social relations in various aspects. Labor relations have always been a highly regulated field, more prone to change due to significant opportunism on the part of the participants.

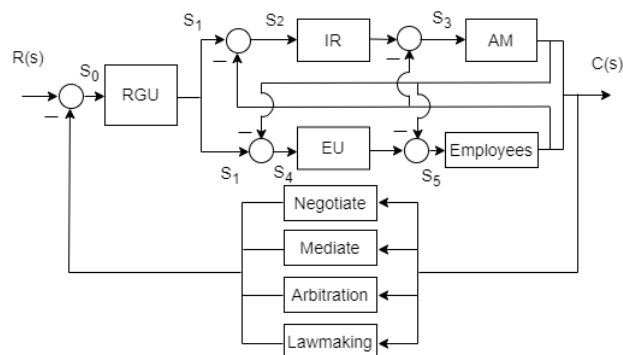
The other line is that digitization leads to de-laborization. Zhao Linlin <sup>[9]</sup> (2020) believes that digital economy has become the development focus of countries in the world to enhance comprehensive national strength, and digital labor has released innovation potential and creative power. However, the development reality of digital capital also exposes the selfish nature of capital and its greedy desire. Wang Quanxing et al. <sup>[10]</sup> (2018) showed that flexible employment, a new labor form, subverts traditional labor relations and forms a situation of de-labor relations or deconstruction of labor relations. Du Rui <sup>[11]</sup> (2022) worries that the giants who have mastered the core technologies of the digital economy, such as algorithms, are addicted to the economic interests of the capital market, which intensifies a series of labor-capital conflicts including de-laborization, age discrimination and algorithm control, and new employment inequality is emerging. This vicious ecology may eventually form a systemic risk that affects the steady growth of our economy. According to Yao Cuiyou et al. <sup>[12]</sup> (2022), the study of unfair public emotions shows that resonance of public opinion topics is increasingly common in online social networks, and the interaction and superposition of similar or related topics make public group emotions more complex and uncertain, increasing the difficulty of government control. AS Bondy et al. <sup>[13]</sup> (2022), after analyzing relevant cases in Israel, claimed that judicialization can stimulate trade unions and employers' associations to initiate strategic and inclusive changes.

In summary, scholars focus on the undue entanglement of labor relations in the digital economy, and find that the balance of labor and capital power has begun to reverse and worry

about this. But in the context of the digital economy, what are the new variables leading to changes in industrial relations? What is the mechanism of action of these variables? The logic is unclear and the methodology is limited. Although there are many problems in the labor-capital relations in the platform economy, it is undeniable that the platform economy is the only way to the industrial meta-universe economy, and the two will eventually coexist. Therefore, the study of labor-management relations in the platform economy is inseparable from the study of labor-management relations in the meta-universe economy. In the past, scholars' vision of studying industrial relations has not been coherent. This paper uses the modeling method of cybernetics to start from the system and structure, delimit the line along the three stages and background of traditional economy, platform economy and meta-universe economy, and examine labor-capital relations to see what has happened and what will happen. To find out the new variables that break the balance of labor and capital power and their mechanism of action. This may open new perspectives and provide new insights for scholars to study the regulation and management strategy of industrial relations in the future. Furthermore, in the process of accelerating the development of the digital economy, it is necessary to ensure that industrial relations do not trigger the bottom line of safety.

## 2 The Industrial Relations System of Traditional Economy

The systematic control model of labor-capital relations in traditional economy is constructed by using cybernetics, as shown in Figure 1. Figure 1 reflects the non-digital pattern of labor-capital relations in the traditional economy. Among them,  $S_0$  is the deviation signal between the national authoritative instruction and the negative feedback of the whole system,  $S_1$  is the regulating signal of the regional Federation of Trade unions,  $S_2$  is the deviation signal between the regulating signal of the regional Federation of Trade unions and the behavior of employees,  $S_3$  is the deviation signal between the behavior of investors' representatives and the behavior of employees,  $S_4$  is the deviation signal between the regulating signal of the regional federation of trade unions and the behavior of administrators.  $S_5$  is the deviation signal between the enterprise union behavior and the executive behavior.



**Figure 1.** Systematic control model of labor-capital relations in traditional economy<sup>1</sup>

RGU (Regional General Union); IR (Investor Representative); AM (Administrative Manager); EU (Enterprise Union)

## **2.1 Composition of the Main Body of Industrial Relations**

The main body of industrial relations is generally the regional general trade union, management representatives (or employers), administrative managers, enterprise unions and employee groups. The regional federation of trade unions is at the highest energy level of the control system, and promotes the construction of harmonious labor-capital relations in enterprises according to the Trade Union Law and the requirements of the superior federation of trade unions, combined with the local reality, and in accordance with the authoritative instructions of the state. The management representative is a manager authorized or entrusted by the employer to have full authority over the enterprise. The administrative manager is to carry out the administrative management work under the leadership of the management representative, obey and obey the command of the management representative, and fulfill the resolutions of the workers' congress. Enterprise trade unions are workers' organizations elected by employees' representatives to express their demands on behalf of employees and protected by the Trade Union Law. Employees are the key and extremely sensitive elements to establish suitable labor-management relations, the main force of national economic construction, and enjoy high political status.

## **2.2 The Controlling and Restricting Relationship of The Main Elements**

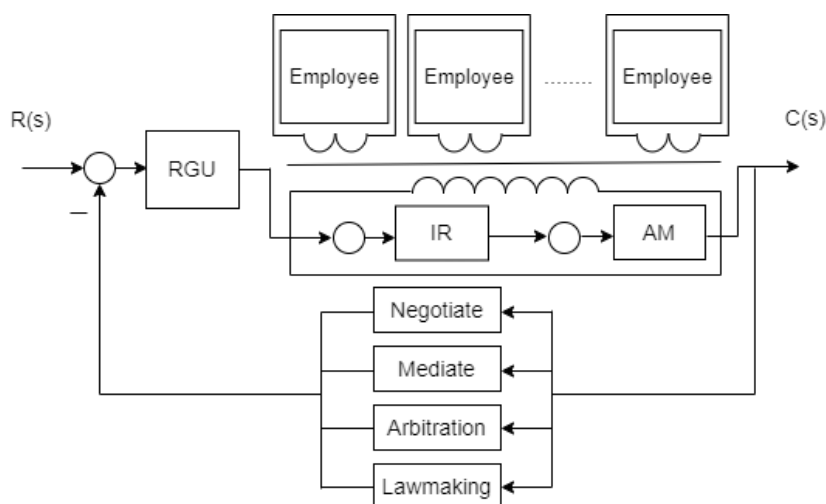
The regional Federation of trade unions shall be responsible for monitoring the development and change of labor-capital relations in the enterprises under their jurisdiction, and shall promptly negotiate with the representatives of the enterprises' management and directly negotiate with the employers when necessary to resolve labor-capital relations issues. At the same time, as the strong backing of enterprise trade unions, regional trade unions take the initiative to create favorable conditions for enterprise trade unions to carry out their rights protection work, and effectively promote enterprise trade unions to make a voice for safeguarding the legitimate rights and interests of employees. The management representative directs and leads the enterprise administrative managers to carry out various management activities. In accordance with the company's internal control measures and rules and regulations, and in accordance with the requirements or wishes of management representatives, the executive exerts influence on employees and, if necessary, on the union of the enterprise. In turn, the employees, led by the enterprise unions, will have to restrain the administrators and, if necessary, the management representatives, and form countermeasures.

## **2.3 Input and Output of The Control System, As Well As Feedback Adjustment Links**

The input of the industrial relations control system is the national authority instruction, and the output of the control system is the industrial relations behavior. The so-called authoritative directive of the state is the Supporting law and a series of public policies of the state to regulate the relations between labor and capital. When the behavior of labor relations deviates from the national authority instruction, the whole control system must make a correction response under the action of negative feedback adjustment link, so that the system can restore the state of no difference. A structure that acts as a negative feedback correction function, including negotiation, mediation, arbitration, and legislative related consultative organizations or functional institutions.

### 3 The System of Industrial Relations in Platform Economy

From the beginning of the development of platform economy to now, the traditional industrial relations system control model built by people day by day and gradually formed in the traditional economy is being quietly broken, weakened, and even dismembered. The industrial relations system control model of the digital platform economy is shown in Figure 2. Labor relations are facing an unprecedented test, and its improper entanglement is prone to produce the following new variables.



**Figure 2.** Industrial relations system control model of digital platform economy.

#### 3.1 Variable SSSE: the System Subject Status of Employees

The system subject status of the employee is vacuumed. In the traditional economic and labor-management relations system, employees were originally directly in the same working relationship loop with the regional general union, management representatives and enterprise administrators, and interconnect with each other. After it becomes a digital platform industrial relations system, employees are squeezed out of the original working relationship loop, and each employee forms a lonely loop, which is coupled with management representatives and enterprise administrators through the network. Under the pretext of mutual voluntary reasons, the management has separated the industrial relations and tried to use the invisible hand of the platform algorithm to control everything. On the one hand, employers have embedded their employees and their labor in highly volatile digital interconnections and algorithmic distribution. On the other hand, employees are fragmented by platforms, making it difficult to form sticky organizational capabilities. Due to the limitation of time and space, it seems that employees' unions cannot be formed on the surface, and in essence, employees' unions are kicked out of the industrial relations system. Without the power of the enterprise union, the regional federation seems to have to rely on the management representatives and the enterprise administrators to know some information about the employees. From the employees' point of view, the mistaken belief that the District unions are still in the same working relationship loop as the management cannot but make the employees suspicious of the District unions and drift away from them. In fact, the consequence of employees being separated from the control

system is the loss of the principal status of the system and the protection of the system barrier. As a result, management has cleverly shifted the systemic risks of industrial relations to social risks, keeping the operating profits for themselves, and shifting the responsibility to society and the government.

### **3.2 Variable SRFL: The System Regulating Function of Labor-Capital Relations**

The system regulating function of labor-capital relations has been weakened. The regional federation of trade unions originally made adjustments to management representatives, enterprise administrators, and enterprise unions and employees at the same time. However, in the platform economy, the adjustment path of the regional federation of trade unions and employees has been cut off, and their space has been seriously squeezed. The large-span platform business operates interactively in various regions, which is beyond the reach of the regional federation of trade unions. Regional cross jurisdiction is easy to make the regional federation of trade unions have jurisdiction ambiguity. In addition, platform employees make their own choices, and the mobility of platform employment has an uncertain impact on the adjustment objects of the regional federation of trade unions. As the boundary of the system of industrial relations is blurred, it is difficult for the regional federation of trade unions to communicate with the scattered platform employees, so the adjustment function of the system is basically broken.

### **3.3 Variable LEIO: The Labor-Capital Ecology in Which the Investor Operates**

The labor-capital ecology in which investors live is "incubated" unilaterally. This means that an unregulated industrial relations system is fragile. Practice has shown that only when there are constraints on labor-capital relations can they become robust. The industrial relations system of traditional economy is restricted, including the restriction of enterprise unions, the restriction of employees, the restriction of various system functions, and the non-flexible restriction of the government. The system restriction of labor-capital relations in platform economy has been weakened. The labor-capital environment is like a greenhouse, and the capital is like a pet, which is usually not shaken by the wind and rain. Investors are accustomed to planning development without arm-wrestling, as if standing behind the glass curtain of an SLR, employees can not see, but management can see. This kind of disparity game between potential and force, without checks and balances, how can the management not secretly rejoice, show their muscles, and use the algorithm to exploit their abilities? However, wind and rain, the weather is unpredictable. Once the labor-capital conflict intensifies, major events may be brewing, leading to major conflicts and major upheavals. This may not be alarmist.

### **3.4 Variable PCE: The Psychological Contract of Employees**

The psychological contract of employees is alienated. In the platform economy labor-capital relations system, the management has broken through the restrictions of the traditional labor law system, so that the employees who make a living on the platform have lost powerful legal protection. When employees expect labor justice, they demand distributive justice. How to narrow the digital inequality caused by the "digital divide" has actually become a major problem facing the current society to achieve labor justice. No matter where employees go to seek employment, the resistance energy that has been repeatedly bullied on the platform will accumulate in the mind. If the platform loses the transaction contract, it must be mapped to the

society and the country, making it alienated from the relationship contract between society and the country. It is understandable that the government is in a dilemma in choosing and balancing between employment development and social stability, but there is much to be done in terms of keeping pace and weighing advantages and disadvantages.

#### 4 Data Verification of The Tense Situation of Labor-Capital Relations in The Platform Economy

According to the article "Market Analysis of China's Sharing Economy Industry" by the China Prospective Industry Research Institute in 2021, the number of participants in China's sharing economy has increased year by year, and the role of stabilizing employment and ensuring people's livelihood has gradually become prominent. The period from 2017 to 2020 is a window period for the rapid development and expansion of China's sharing economy, and the number of service providers among the employees and participants of platform enterprises is increasing year by year. As shown in Table 1.

**Table 1.** Number of Chinese Platform Company Employees and Sharing Economy Participants Serving.

A Given Year	Number of Employees of the Platform Enterprise (ten thousand)	Number of Services among Sharing Economy Participants (ten thousand)
2017	556	7000
2018	598	7800
2019	623	7800
2020	631	8400

However, due to the simultaneous effect of four variables in the platform economy labor-capital relations system, the platform economy labor-capital relations in recent years have presented a tense situation. In essence, the major illegal cases announced to the public by China's labor security supervision agencies are the output of enterprise administrative managers. As shown in Table 2.

**Table 2.** Major Cases of Violations of Laws or Rules Disclosed to the Public by China's Labor Security Supervision Institutions.

A Given Year	Serious Violations of Law or Rules (piece)	Growth Rate Based on Average Quantity (%)	Growth Rate Compared to Previous Year (%)
Average <sup>1</sup>	773	/	/
2017	3672	375	132.2
2018	2923	278	-20.4
2019	3286	325	12.4
2020	2456	218	-25.3
2021	2633	241	7.2

Average refers to the average number for the six years from 2011 to 2016

At the same time, the situation of workers' complaint cases published by China's labor arbitration institutions is the output of employees' behavior. As shown in Table 3. The former shows that the platform management violates the interests of the workers, while the latter

reflects that the platform service personnel protect their legitimate interests according to law.

In order to make the data analysis more reliable, it excluded the years when the COVID-19 outbreak occurred and weighted the cumulative data of six years from 2011 to 2016 as the benchmark data for the period of relatively stable labor-management relations. The data increment that occurred after 2017 can be used as the value of the system change triggered by the combined effect of the platform economy labor-capital relations variables. From the two sets of data, it can be seen that in the process of the growth of the platform economy, there has been a trend of conflict and divergence in labor-capital relations, and it has become increasingly fierce. Table 2 shows that, although the growth rate compared with the previous year has fluctuated, the growth rate compared with the base period has exceeded 200% every year from 2017 to 2021, with the highest year reaching an astonishing 375%. Table 3 shows that although the growth rate compared with the previous year also fluctuates, the growth rate compared with the base period is increasing year by year, and the highest year is 2021, with a growth rate of 75.3%. This not only reflects the wantonly behavior of the platform management to intensify the infringement of the interests of workers, but also indicates that the workers involved in the service of the platform have begun to raise legal weapons for the infringement problems accumulated before 2020.

**Table 3.** Cases of Workers' Grievances Published by China's Labor and Personnel Arbitration Institutions

A Given Year	Number of Workers' Complaints (piece)	Growth Rate Based on Average Quantity (%)	Growth Rate Compared to Previous Year (%)
Average	684564	/	/
2017	762572	11.4	-4.8
2018	869421	27	14
2019	1021334	49.2	17.5
2020	1041567	52.2	2
2021	1199847	75.3	15.2

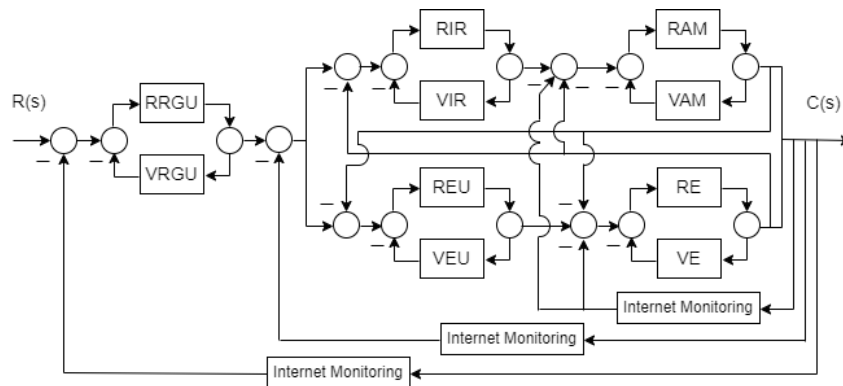
## 5 The Labor-Capital Relations System of the Industrial Metauniverse

Industry digitization and platform digitization are developing simultaneously and gradually integrating. The industrial metacosmic economy has been keenly seen by internationally renowned enterprises and invested heavily in transformation. The Chinese government has also made plans and implemented the industrial meta-cosmic economy as a new economic growth pole and a national competition strategy.

### 5.1 Based on the systematic Control Model of Labor-Capital Relations in The Traditional Economy

The system of labor-capital relations in the transitional period of industrial metauniverse will be based on the systematic control mode of labor-capital relations in the traditional economy. The labor-capital relations system in the transitional period of the industrial metauniverse is shown in Figure 3.





**Figure 3.** Systematic control model of industrial labor-capital relations in the transitional metauniverse

RRGU (Real Regional General Union); VRGU (Virtual Regional General Union); RIR (Real Investor Representatives); VIR (Virtual Investor Representative); REU (Real Enterprise Union); VEU (Virtual Enterprise Union); RE (Real Employees); VE (Virtual Employees)

In the transitional industrial metauniverse, the main body and system structure of labor-capital relations will not change fundamentally. On the basis of negotiation, mediation, arbitration and legislative functions, the feedback adjustment link will add strict coverage of low, medium and high level professional network control functions for strict screening and regulation of various monopolistic, fraudulent and predatory algorithms. Immersive experiences in the meta-universe have entered or are entering the lives of workers through AR, VR and MR Devices. Every worker will experiment with new industrial relations and life in frequent switching between the real world and the digital twin, the real worker and the digital worker. Therefore, in the metacosmic transition period, although workers cannot enter the virtual space to manipulate industrial equipment for the time being, the psychological immersion and logical new construction of the virtual world will have a greater impact on the actual labor-capital relations behaviors of workers, and even countermeasures, which are manifested in the self-regulation and self-adaptation behaviors of workers.

## 5.2 Highly Developed Artificial Intelligence May End the Realistic System Control Mode of Industrial Labor-Capital Relations

The metacomverse economy is pushing aggressively to accelerate the decentralization of digital technologies such as artificial intelligence, blockchain, and the Internet of Things. In the real industrial production space, robots will sooner or later replace real people. Real workers may use industrial Internet, cloud computing, industrial robots, remote sensing and other technologies and equipment to sit in virtual workshops and participate in and manage production activities as digital people. As a result, real workers no longer gather to engage in production activities in the form of realistic production workshops, teams or assembly lines. All the credit, assessment, and legal certification of industrial relations are backed by blockchain technology. The decentralization of digital technology has led to the de-stickiness of industrial relations. Workers from the reality of face to face, into the virtual outside the back-to-back. The mode of real people interacting with real people is transformed into the mode of digital people interacting with digital people. During the transition period of the meta-universe, real workers construct labor-capital relations with other real workers with

virtual logic, and labor-capital compatibility is naturally endowed with new connotation and spiritual echoes. When entering the era of full metauniverse, digital workers will build digital labor-management relations with other digital workers using digital logic.

### **5.3 In the Age of Complete Metauniverse, The Digital System Control Mode of Industrial Labor-Capital Relations May Appear**

The employer may recreate the digital process and digital management model for the virtual production space, sign a digital contract with every worker, and give a digital identity. Thus, the intensification of human resources is transformed into the intensification of digital resources. The intensification of digital resources will partially replace and squeeze the intensive space of human resources. As a result, digital resource relations begin to surpass human resource relations and become the mainstream or focus of digital society. Digital labor in the metaverse space will bring prominent negative effects, that is, in reality, many ordinary workers will lose the main status of labor, or become digital vulnerable groups, or switch to other physical activities. In the two-way materialization of physical products and digital products, there will be two-way stereotyped cognition between real people and digital people. The work of digital people seems to be free and happy, but the real people behind it travel between the virtual and the real, and inevitably fall into the situation of obscurity and trance. Emotional alternation or mental interlace may lead to psychological burnout and emotional exhaustion. At this moment, whether labor is compatible or not, it is not only necessary to measure the rights and interests issues such as the performance of digital contracts, but also to consider whether the psychological contracts and digital identity problems of real people have been solved. At that time, digital unions may emerge, responsible for safeguarding the labor rights of real workers as digital people. Real people will sign up to join digital unions in virtual space, and their legitimate digital rights and interests will be protected. In the reflection of virtual space, real people may refer to the system control mode of real industrial relations and shape the digital system control mode of industrial relations. The regional Federation of trade unions will legally hold the key to the virtual space of industrial relations, and will do much to promote the industry to reconstruct the digital system control mode of real industrial relations.

## **6 Conclusion**

### **6.1 The Labor-Capital Relations System of The Platform Economy**

As the platform economy enters thousands of households, the gradually formed system control mode of industrial relations built by people day after day is being quietly broken and dismembered by the investors. Improper entanglements have occurred, including the system subject status of employees has been vacuumed, the system regulating function of labor-capital relations has been weakened, the labor-capital ecology in which the management is located has been unilaterally nurtured, and the psychological contract of employees has been alienated. In short, the deregulation of management will eventually transfer the systemic risk of industrial relations to society and the government.

### **6.2 The Labor-Capital Relations System of The Metacosmic Economy**

The labor-capital relations system of the industrial metauniverse, although influenced by

virtual life and digital values, will remain based on the systematic control model of labor-capital relations in the traditional economy during the transition period. Only artificial intelligence is highly developed and may end any realistic systematic control model of labor-capital relations. Truly to the full metauniverse era, the digital system control mode of industrial labor-capital relations may appear.

### **6.3 Platform Labor-Capital Relations and Industrial Metauniverse Labor-Capital Relations**

The platform and the meta-universe will work together on the road to digitization. The meta universe is inseparable from the development of the platform, and the industrial meta universe must rely on and rely on the smooth information and transmission order of the network platform to complete the remote control goal of digital people. Therefore, attaching importance to and regulating labor-capital relations in the current platform economy is not only to realize the fairness and justice of platform labor, but also to lay the foundation and pave the way for the construction of digital labor-capital relations in the future meta-universe economy.

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