WEP
Warwick
Evans
Publishing

Transactions on Economics, Business and Management Research
ISSN: 2960-1789, eISSN: 2960-2254 | Volume 9
GBMS 2024

The Labor Contract Law and the Digital Transformation of Enterprises -- Analysis based on Dual Perspective of Quantity and Quality of Employees

Xinyue Xu

School of Economic and Management, Northeast Normal University, Jilin 130117, China

18005137778@163.com

Abstract. The labor protection of employees caused by the Labor Contract Law has attracted wide attention, affecting the employment and even business activities of enterprises. Using the data of listed companies from 2005 to 2013, we aim to research the impact of the Labor Contract Law on digital transformation of enterprises. The results show that the Labor Contract Law has positive impact on enterprises' digital transformation, and this conclusion is still valid after a series of robustness tests. The promotion effect of Labor Contract Law on enterprises' digital transformation is more significant in state-owned enterprises and enterprises in areas with better legal environment. Mechanism analysis shows that the Labor Contract Law promotes digital transformation activities through improving the quality of employees and reducing the number of employees. The above conclusions are consistent with the logic that enterprises want to avoid high labor costs by reducing costs and increasing efficiency, and then promote the digital transformation. We believe that this paper will have significance to improve the legal system of the labor market and guide enterprises to improve digitization.

Keywords: Labor Contract Law; Quantity and Quality of Employees; Digital Transformation of Enterprise.

1. Introduction

Since the reform and opening up in 1978, China has experienced a period of rapid economic growth for more than three decades when its average annual growth rate of GDP ranks among the highest in the world. During this period, labor-intensive industries, as China’s comparative advantage, provided a strong impetus for economic development. However, as the economy enters the "new normal" period, original comparative advantage is facing challenges, stabilizing growth and promoting transformation have become important tasks at present. Against this backdrop, we explore the possibility of stimulating labor potential, regulating the labor market and industrial relations, and promoting economic growth through legal reform of legal system. Specifically, we focus on the impact of the Labor Contract Law on enterprises, aiming to provide a reference for solving the labor conflicts and other problems arising from the current economic development.

The Labor Contract Law has been a source of controversy since its inception, and many existing studies have explored the impact of the Labor Contract Law on enterprise behavior from multiple perspectives. Liao Guanmin and Chen Yan (2014) found that the Labor Contract Law makes it more difficult for enterprises to make personnel transfers,which makes it impossible for them to flexibly adjust their manpower inputs according to their own needs and the demands of external market.Because of this,operational flexibility and elasticity of enterprises will suffer a major setback. Ni Xiaoran and Zhu Yujie (2016) found that the implementation of the Labor Contract Law makes the market labor flexibility lower, and improves the level of human capital investment in enterprises so as to promote enterprise innovation. In summary, it can be seen that the Labor Contract Law has both positive and negative impacts on the digital transformation of enterprises, so the economic results of the Labor Contract Law need to be further discussed. Theoretically, the implementation of the Labor Contract Law has a facilitating effect on the digital transformation of enterprises. The Labor Contract Law raises the labor hiring and adjustment costs of enterprises (Dong Baohua, 2016),

prompting enterprises to adjust the structure and level of production factor inputs in order to reduce the adverse effects of the Labor Contract Law. So, enterprises choose to introduce machines and equipment to replace labor inputs in order to reduce the cost of labor hiring (Lin Wei, 2013). At the same time, in order to alleviate the increased stickiness of labor costs brought by the rising cost and difficulty of terminating labor contracts, enterprises also use machines and equipment to replace labor (Liu Yuanyuan and Liu Bin, 2014). Firms' behavior of raising the hiring threshold and downsizing their workforce to reduce costs will increase employment with high human capital stock (Huang Ping, 2012), indirectly improving the quality of the firm's workforce. In the process of digital transformation, from the setting of corporate strategic objectives to the operation of specific business processes,enterprises can not be separated from high-quality personnel proficient in digital technology (Chen Yubo and Ma Yefeng, 2018), and the reduction in the number of workers makes it necessary for enterprises to pursue the use of capital instead of manpower in all aspects of the organization of production and operation, forcing enterprises to innovate (Bena & Simintzi, 2015). In summary, after the implementation of the Labor Contract Law, the behaviors made by enterprises to avoid high labor costs will reduce the number of employees, improve the quality of employees, and promote the digital transformation of enterprises.

The Labor Contract Law may also have a dampening effect on the digital transformation of enterprises. The Labor Contract Law strengthens labor protection, reduces the probability of employee dismissal and increases the difficulty of incentivizing the firm. Increased labor hiring and frictional costs can adversely affect the level of employees, productivity, efficiency of human resource allocation (Bradley et al., 2017), and the level of investment in the firm. This is not conducive to the use of modern human resource management tools such as final elimination and competition for employment (Dong Baohua, 2016), which lead to a decline in employee motivation and professionalism. Enterprises' measure of factor substitution to mitigate the adverse impact of the Labor Contract Law requires enterprises to have certain financial base (Pan Hongbo and Chen Shilai, 2017), but cost increase and efficiency reduction the law brings may have a dampening effect on revenue growth and performance improvement (Autor et al., 2007), which limits the process of digital transformation of enterprises. Therefore, the Labor Contract Law goes against the cultivation of professional talents needed for change and transformation. At the same time, it makes enterprises lack the financial support needed for transformation, which in turn inhibits the digital transformation of enterprises.

In summary, as it is difficult to theoretically obtain the direction of influence of the Labor Contract Law on the digital transformation of enterprises, we need further empirical analysis. We choose A-share listed companies from 2005-2013 as samples, adopting a double difference model to prove that the Labor Contract Law has a positive effect on the digital transformation of enterprises, and this result is still robust after using different measurement of variable and propensity score matching method. This positive effect is more significant in the samples of state-owned enterprises and enterprises in regions with better legal institutional environment. Through the mechanism analysis, it is verified that the Labor Contract Law does improve the quality of employees and reduce the number of employees in enterprises. The above empirical results are consistent with the claim that the Labor Contract Law reduces the number of employees, improves the quality of employees, and promotes the digital transformation of enterprises.

This paper may made following contributions.First, it enriches the research on the economic consequences of the Labor Contract Law. Existing research on the economic consequences of the Labor Contract Law has mainly focused on enterprises' labor costs, employment, and investment activities. Such as the impact on firms' innovation activities (Acharya et al., 2014), the impact on firms' investment levels (Fairhurst & Serfling, 2015), and the impact on the level of employees (Ding Shouhai, 2010), etc. Based on existing research,we explore whether the quantity and quality of employees brought about by the Labor Contract Law affect digital transformation of firms. Second, it further expands the research on the influencing factors of digital transformation. Existing studies have mostly analyzed impact on digital transformation from the perspectives of fiscal policy, industry

environment, enterprise characteristics or internal control, such as the impact of national fiscal expenditure on science and technology (Kleer, 2010), the impact of enterprise organizational system (Zhang Chenggang, 2020), and the impact of fintech (Tang Song et al., 2022). Based on existing research, we explore the influence of the Labor Contract Law on digital transformation of enterprises. More specifically, we aim to ensure whether it has a positive impact on digital transformation of enterprises. Third, we explain the Labor Contract Law's impact on enterprise digital transformation from the perspective of labor market system reform, which has the practical significance of continuously optimizing the labor market system to achieve economic efficiency and social equity.

The paper is structured as follows: section 2 is the literature review, section 3 is the research hypothesis and empirical design, section 4 is the empirical results and analysis, section 5 is the further analysis, and section 6 is the conclusion.

2. Literature review

(i) Studies on the Labor Contract Law

As a legal system regulating the rights and obligations of both parties to a labor contract, the Labor Contract Law, which was formally implemented on January 1, 2008, has the fundamental goal of achieving a relative balance of power between employers and employees and a long-term and stable labor contract relationship (Chang Kai, 2008). Although China promulgated the Labor Law in 1994, the lack of operability of many provisions and unsatisfactory law enforcement have resulted in serious infringement of workers' legal rights. Labor conflicts have become a major contradiction in Chinese society and must be resolved through improving legislation. Compared with the Labor Law, the Labor Contract Law has more pronounced tendency to protect workers, which gives more specific and testable definitions of illegal acts by enterprises and strengthens the involvement of public power in labor-management relations. The implementation of this law has indeed regulated the labor practices of enterprises, raised their illegal costs, and significantly enhanced the protection of workers' rights and interests. However, it has also brought a series of negative impacts, such as increasing the operational pressure of enterprises, restricting the flexibility of the labor market and promoting the behavior "knocking on the door" of workers, which is not conducive to the motivation and efficiency of the employees (Dong Baohua, 2016), and therefore also received the attention and discuss of many scholars at home and abroad.

Currently, a part of researchers analyse the Labor Contract Law from the perspective of its direct effect on employees. Liu Yuanyuan and Liu Bin (2014) found that the implementation of the Labor Contract Law increases the dismissal costs of enterprises, raises the difficulty of terminating the labor contract, and hinders enterprises from reducing the stickiness of labor costs, thus prompting enterprises to optimize the factor structure and replace manual labor with machines and equipment. Kong Dongmin et al. (2020) argued that the Labor Contract Law's overprotection of workers would make the supply of employees in enterprises exceed demand, which would not be conducive to enterprises, especially labor-intensive enterprises, improving or even maintaining their labor investment efficiency. Ding Shouhai (2010) argued that the Labor Contract Law, as a legal system design to strengthen labor protection, adversely affects the level of employees in enterprises due to increasing the cost of hiring and decreasing the elasticity of employment. Li & Freeman (2015) argued that the Labor Contract Law has led to an increase in the rate of signing of labor contracts in enterprises. And consequently, the cost of social welfare and security increases. Cooper et al. (2018) argued that the Labor Contract Law reduces firms' demand for labor by boosting labor cost. Huang Ping (2012) argued that the Labor Contract Law has led labor-intensive firms to significantly reduce their workforce, but has led knowledge-intensive firms to expand their workforce, thereby increasing the employment rate of highly qualified labor.

A part of researchers analyze the Labor Contract Law from the perspective of its role on enterprises. Liao Guanmin and Chen Yan (2014) found that the Labor Contract Law increased the difficulty for enterprises to make personnel transfers, making it impossible for them to flexibly adjust their

manpower inputs according to their own needs and external market demands. The operational flexibility and elasticity of enterprises thus suffered a significant weakening. Ni Xiaoran and Zhu Yujie (2016) found that the implementation of the Labor Contract Law reduces market labor flexibility and increases the level of enterprises' human capital investment, thereby promoting enterprise innovation. Li Jianqiang and Zhao Xiliang (2019) argued that by strengthening labor protection, the Labor Contract Law prompts firms to make factor structure adjustments to enhance the innovation efficiency of labor-intensive firms.Acharya et al. (2014) argued that the Labor Contract Law's strengthening of labor protection facilitates a fair distribution of the benefits of innovation outputs, which motivates employees to invest in long-cycle innovation projects, promotes the level of corporate innovation and then promotes the level of enterprise innovation. Bena & Simintzi (2015) argue that the Labor Contract Law enhances labor protection to raise enterprise labor costs, and at the same time incentivizes enterprises to use capital instead of labor, forcing enterprises to innovate.Bradley et al. (2017) argued that the Labor Contract Law restricts the flexibility of enterprises in employment, which makes it difficult to maintain the optimal level of employment and reduces the productivity of enterprises. Li Bo and Jiang Dianchun (2019) argued that the implementation of the Labor Contract Law makes firms increase their productivity by increasing their investment in corporate training funds and the degree of factor substitution in the face of operational pressures generated by the strengthening of labor protections. Fairhurst & Serfling (2015) argued that the institutional norms resulted from the Labor Contract Law are conducive to the enhancement of the corporate culture.Enterprises are able to improve level of investment by incentivizing employees to learn more proprietary knowledge of the firm. Pan Hongbo and Chen Shilai (2017) argued that the Labor Contract Law increases the cost of violation of laws and regulations for private enterprises, reduces their labor flexibility, and ultimately reduces the level of enterprise investment.

(ii) Research related to digital transformation of enterprises

Enterprise digital transformation is a process of comprehensively utilizing digital technologies, such as big data, cloud computing, blockchain, artificial intelligence, etc. to profoundly influence and reshape all aspects of enterprise's business model, organizational framework, and cultural construction, which can speed up the process of business model innovation and provide positive guidance for enterprise development and value creation (Dasilva, 2021). As digital technology gradually penetrates into all aspects of organizational management, the perspective of organizational change has become more prominent in the study of enterprise digital transformation. The research generally agrees that digital transformation is not only a matter of technology application, but also an important process for enterprises to integrate digital technology with business management processes and promote comprehensive digitization. In this process, enterprises should be committed to the digitalization of all elements and processes in order to promote the reorganization and change of business processes and production methods (Mittal et al., 2020). Such a transformation can not only improve the operational efficiency of enterprises, but also inject new impetus for their sustainable development. Digital information technology dominates the third technological revolution. Since creation, it has rapidly penetrated into various industries and subverted the traditional business model. The development of digitalization and intelligence has been a general trend, and all sectors of society are eager to keep up with the current of the era and innovate the existing business model to improve the competitive advantage in the market. Therefore, the study of the factors influencing the digital transformation of enterprises has attracted our great attention.

Some scholars have studied the influencing factors of enterprise digital transformation based on the macro perspective. Kleer (2010) argued that the state's financial expenditure on science and technology can effectively reduce the cost of enterprise digital transformation and drive it to accelerate its digital transformation. Tang Song et al. (2020) believe that problems of structural imbalance and insufficient quality of supply of traditional finance such as "attribute mismatch", "domain mismatch" and "stage mismatch" constrain the development process of enterprise digital transformation. Tang Song et al. (2022) argued that fintech effectively promotes the process of enterprise digital transformation by reducing financing pressure and lowering the cost of capital,

while increasing R&D investment and improving innovation efficiency. Liu Shuchun (2019) argues that traditional enterprises can innovate the production management mode by increasing the research, development and application of data technology, rapidly breaking through the internal barriers of the enterprise and realizing the leapfrog development of the enterprise from human-led to digital-led. Chen Linlin et al. (2021) argued that the government should strengthen data security supervision and establish a perfect commercial data trading market system to help enterprises more fully explore the value of data and promote their digital development. Yu Dianfan et al. (2022) argued that subsidies for digital enterprises can empower the digital transformation of other industries through inter-industry transmission, thereby increasing the supply of digital industrial services and incentivizing digital human capital investment. Shen Minghao et al. (2022) argued that the pilot policy of science and technology finance can alleviate the problem of information constraints, enhance the commercial credit of enterprises, help enterprises access government resources, trigger the effect of talent agglomeration, and ultimately empower the digital transformation of real enterprises.

Some scholars also study the influencing factors of enterprise digital transformation based on the micro perspective. Zhang Chenggang (2020) argued that when advanced digital technology is applied to enterprises with backward organizational systems, the mismatch between the two will prompt enterprises to upgrade their organizational forms, but the huge costs incurred will not be conducive to the advancement of enterprise digital transformation. Verhoef et al. (2021) argued that the digitalization of the industry causes a transformation of the industry's competitive pattern, value creation mechanism and consumption demand pattern, which will promote the digital transformation of enterprises. Zhang Lina et al. (2021) argued that supply chain finance effectively promotes enterprise digitalization by reducing information asymmetry, easing financing pressure, and enhancing enterprise productivity and innovation. Song Jing and Chen Jin (2021) argued that a moderate entrepreneurial social network size can leverage its reachability and connection strength to promote enterprise digital transformation. Li Huamin et al. (2021) argued that pressure-resistant institutional investors effectively promote enterprise digital transformation by increasing analyst attention and positive news coverage, reducing corporate financing constraints and financial expenses, and increasing R&D investment and innovation output. Zhang et al. (2022) argued that enterprise digital transformation is influenced by leaders' knowledge reserves, risk appetite, and decision-making style. Meanwhile, whether team members have their own roles, whether employees are loyal and have certain digital knowledge, and whether consumers have a greater demand for digital products and services all affect the digital transformation of enterprises. Chen Qingjiang et al. (2021) argued that there is a significant cohort effect in the process of enterprise digital transformation. The focal enterprises will refer to the relevant decisions and practices of cohort enterprises when formulating their digital transformation strategies, which leads to the upward convergence of the level of digital transformation of the group members. Vial G (2019) argued that digital transformation is an organizational change, and organizational inertia in enterprises is one of the main reasons for most enterprises' failure in transformation.

To sum up, on the one hand, though the Labor Contract Law is an important institutional change that affects the employment of enterprises and then affects the entire production and operation activities of enterprises, the research on the economic consequences of it mainly focuses on the business results of enterprises, enterprise innovation and investment and financing, and no one has yet examined whether it affects the digital transformation of enterprises. On the other hand, for the examination of the factors affecting the digital transformation of enterprises, the existing literature mostly starts from the fiscal policy, technical elements and enterprise characteristics, but lacks sufficient attention to the important factor of laws and regulations. No scholar has research on the impact of the Labor Contract Law on the digital transformation of enterprises. Therefore, we undertake the research results of the existing literature, then study the effect and mechanism of the Labor Contract Law on the digital transformation of enterprises from the perspective of both the quantity and quality of employees to enrich the research related to the Labor Contract Law and the digital transformation of enterprises.

3. Research hypotheses and empirical design

(i) Research hypotheses

The Labor Contract Law, as an important code for promoting harmonious labor-management relations in contemporary society, has largely strengthened the protection of workers' rights and interests (Huang Ping, 2012). However, for enterprises, the Labor Contract Law raises the unit employment cost(Park et al., 2012) and adds additional restrictions on dismissal and contract renewal.So,its institutional arrangement reduces the flexibility of employment and the efficiency of human resource allocation of enterprises (Hopenhayn & Rogerson, 1993). At the same time, the Labor Contract Law also raises the cost of hiring, breach of contract, and the labor adjustment costs associated with it (Dong Bohua, 2016), prompting enterprises to adjust the structure and level of inputs of production factors in order to reduce the adverse impacts of the law. This paper regards the adjustment of enterprises' labor practices caused by the Labor Contract Law as an entry point to examine the law's impact on enterprises' digital transformation.

First, the Labor Contract Law will lead to a reduction in the number of workers employed by enterprises. Compared with the Labor Law, the Labor Contract Law protects workers in a number of ways, including open-term labor contracts, economic compensation, and probationary periods.It stipulates that in the event of termination of a labor contract, regardless of the reason, the employer must pay economic compensation to the employee in accordance with the law. The method of calculation is clearly defined in the law. At the same time, the law strictly defines the probationary period, clearly stating that the same employer shall not set multiple probationary periods for the same employee for the same position, and that the salary level during the probationary period shall not be lower than the legal minimum wage. On the one hand, this has prompted enterprises to choose to adopt advanced technology and equipment to replace part of their human resource inputs when facing rising labor costs that may weaken their market competitiveness (Lin Wei, 2013). On the other hand, the rising cost and difficulty of terminating labor contracts has led to an increase in the stickiness of labor costs, raising the risk of labor factor inputs, and prompting enterprises to replace labor with machines and equipment (Liu Yuanyuan and Liu Bin, 2014). Therefore, the Labor Contract Law raises the cost of labor for enterprises by strengthening labor protection, prompting enterprises to find other factors to replace labor factors and reduce their demand for labor (Cooper et al., 2018), which leads to a decrease in the number of workers.

Second, the Labor Contract Law helps improve the quality of workers. First, as the cost of employment and the cost of violation increases, enterprises reduce labor costs through the channel of raising the employment threshold and employment standards to reduce the size of the workforce.And labor-intensive enterprises obviously reduce the size of the workforce, increasing employment with a high human capital stock (Huang Ping, 2012), which indirectly improves the quality of the enterprise's workforce. Moreover, according to the Labor Contract Law, when a worker meets specific conditions and takes the initiative to sign an open-ended labor contract, the employer can't reject the request or allowed to terminate it without authorization in non-special circumstances. Such initiatives while limiting the flexibility of enterprises in employment also reduce the circulation of labor in the market, with employees not being able to change workplaces frequently, and more likely to aim for a long term of employment and steady advancement in an enterprise. This is conducive to enhancing employee loyalty, so firms will be willing to increase their investment in human capital to improve employee professionalism (Ni, Primrose and Zhu, Yujie, 2016) to drive organizational change, including strengthening human resource practices, raising job performance standards and improving management practices.

The digital transformation of enterprises is essentially the upgrading of all aspects of enterprises using digital intelligence technology, covering various methods such as digital knowledge mining and technology integration and innovation. This process has a high demand for technical facilities and relies on the strong support of innovative resources. In the process of enterprise digital transformation, from the formulation of enterprise strategic objectives to specific business operations, excellent

talents with digital vision and skills are needed to give specialized advice (Chen Yubo and Ma Yefeng, 2018). The implementation of the Labor Contract Law can improve the level of human capital investment of enterprises. And high-quality employees are efficient in both learning and applying new knowledge and technology, thus contributing to the digital transformation of enterprises. In order to improve productivity and market competitiveness in the case of labor shortage because of the reduction in the number of workers, it is necessary to pursue the use of capital instead of manpower in all aspects of organizational production and operation, which forces enterprises to innovate (Bena & Simintzi, 2015). This is conducive to promoting the realization of the digital transformation of the organization as a whole. From the above analysis, we proposes the following research hypotheses:

H1: The Labor Contract Law will facilitate the digital transformation of enterprises.

Digital transformation has high requirements on the talent pool and financial strength of enterprises. First of all, digital transformation, as a major change throughout the whole process of enterprise operation, requires the joint promotion of employees from all departments of the enterprise. However, the Labor Contract Law strengthens labor protection to reduce the probability of employees being dismissed and increases the difficulty of motivation for enterprises, goes against the use of modern human resource management tools such as final elimination and competitive induction (Dong Baohua, 2016). This will reduce employees' motivation and professionalism, leading to a lack of appropriate talent to invest in the change and transformation of the enterprise, thus inhibiting the digital transformation of the enterprise. In addition, to mitigate the adverse impact of the Labor Contract Law on labor cost, enterprises will carry out factor substitution which requires enterprises to have certain financial strength as a basis (Pan Hongbo and Chen Shilai, 2017). However, the labor hiring and friction costs increased by the Labor Contract Law for firms, the adverse effects on firms' employee levels, human resource allocation efficiency, productivity (Bradley et al., 2017), and investment levels may have a dampening effect on firms' revenue growth and performance enhancement (Autor et al., 2007), which may be detrimental to the digital transformation of firms. From the above analysis, we proposes the following research hypotheses:

H2: The Labor Contract Law will inhibit the digital transformation of enterprises.

(ii) Empirical design

In order to test whether the Labor Contract Law promotes digital transformation of enterprises, the following regression model is set up with reference to Qian Xuesong & Shi Xin. (2024):

$$DT_{it} = \alpha + \beta Treat_i \times Post_t + \theta X_{it} + \mu_i + \mu_t + \varepsilon_{it} \quad (1)$$

The explanatory variable *DT* is the digital transformation of enterprises. The methods of portraying the digital transformation of enterprises applied by existing studies can be generally categorized into two types: the word frequency analysis method and the quantitative description method. The word frequency analysis method can measure the degree of digital transformation of an enterprise by extracting and organizing the word frequency of digital transformation-related phrases in the enterprise's annual report or announcement. The quantitative description method can further assess the degree of digital transformation by calculating quantitative indicators related to digital transformation, such as the growth rate of digital revenue and the adoption rate of digital products or services. After comprehensively analyzing the main research content, we refers to the existing literature (Wu Fei et al., 2021; Nie Xingkai et al., 2022), and count the word frequencies from five dimensions of artificial intelligence technology, big data technology, cloud computing technology, blockchain technology, and the use of digital technology in the annual reports of listed companies. Then we obtain the measure of the enterprise's digital transformation (*DT*) by the adding and taking the logarithmic.

The explanatory variable is the interaction term of *Treat* and *Post*. Studies show that compared with non-labor-intensive industries, the Labor Contract Law has a more significant economic impact on

labor-intensive industries, which is mainly attributed to the deep dependence of such industries on labor resources. (Ni & Zhu, 2018; Li Bo and Jiang Dengchun, 2019). Therefore, we measure the labor intensity of firms at initial stage by the ratio of the number of employees to the sales revenue (Ni & Zhu, 2016). And we measure the grouping variable by the mean value of the firms' labor intensity from 2005 to 2007, designating the highest 1/3 of the business sector as the treatment group, and the lowest 1/3 of the business sector as the control group. We construct the grouping dummy variable *Treat* to portray the labor intensity of the sample firms before the implementation of the Labor Contract Law, and *Treat* is taken as 1 for the experimental group, otherwise it is taken as 0. Post is a dummy variable for the implementation of the policy, which is taken as 1 for the year 2008 and later, and 0 for the period before 2008.The coefficient with most concern in this paper is the β, which reflects the impact of the Labor Contract Law on the digital transformation of the firms. When β is greater than 0, it indicates that the Labor Contract Law will promote the digital transformation of enterprises. When the β coefficient is less than 0, it indicates that the Labor Contract Law will inhibit the digital transformation of enterprises.

α is a constant term. μ_i refers to firm fixed effect to control for firm characteristics that may be omitted and are not time-varying. μ_t refers to year fixed effect to control for the impact of macro shocks other than the Labor Contract Law on the digital transformation of firms. and a random perturbation term. X_{it} is an ensemble of a series of control variables, specifically firm size (*Si* ze), gearing ratio (*Lev*), return on assets (*ROA*), growth rate of operating income (*Growth*), level of cash holdings (*Cash*), growth (*Q*) firm years of experience (*Age*), nature of property rights (*State*), and proportion of shares held by the first largest shareholder (*Top1*).

Table 1. Variable definitions and constructs

variable symbol	variable name	Description of variable construction
DT	Enterprise Digital Transformation	ln (annual report's keyword word frequency + 1)
Treat	Dummy variable of labor-intensive	The labor intensity of the firm is within the highest 1/3, take 1. Otherwise, take 0.
Post	Dummy variables before and after the implementation of Labor Contract Law	1 for 2008 and beyond, 0 for before 2008
Size	Enterprise size	Natural logarithm of total company assets
Lev	Leverage	Total liabilities to total assets
ROA	Return on assets	Net profit to total assets ratio
Growth	Revenue growth rate	(Current year's operating income - prior year's operating income)/prior year's operating income
Cash	Level of cash holdings	Cash level to total assets
Q	Tobin's Q Ratio	Market value to book value of total assets
Age	Age of business	ln (current year - year of establishment of the enterprise)
state	Nature of property rights	State-owned enterprises take 1, otherwise 0
Top1	Shareholding ratio of the largest shareholder	Ratio of number of shares held by the largest shareholder to total share capital

(iii) Data sources

We select the data of Chinese A-share listed companies from 2005 to 2013 as the research sample. The data used in this paper mainly include enterprise investment data, enterprise nature data and enterprise characteristics data, which are all from the CSMAR. In order to ensure the accuracy and

rigor of the sample data, they are processed as follows: (1) exclude ST and * ST data samples; (2) exclude financial industry data samples; (3) exclude data samples with missing values of the main research variables. After processed, a total of 7238 observations are obtained. In order to avoid the occurrence of extreme values of the data, the sample variables are subjected to an upward and downward 1% shrinkage process.

(iv) Descriptive statistics

Table 2 lists the descriptive statistical characteristics of the main variables. The mean value of enterprise digital transformation is 0.343 and the standard deviation is 0.676, which shows that the level of enterprise digital transformation of listed companies in China is not uniform. The mean and standard deviation of *Treat* and *Post* are 0.477 and 0.5, 0.673 and 0.469 respectively, indicating that the number of firms whose labor intensity is in the highest 1/3 and the lowest 1/3 is similar. *State*'s mean is 0.636, indicating that more than half of the sample firms in this paper are state-owned enterprises.

Table 2. Descriptive statistics of variables

VARIABLES	N	mean	sd	min	max
DT	7,238	0.343	0.676	0	3.296
Treat	7,238	0.477	0.500	0	1
Pos t	7,238	0.673	0.469	0	1
Size	7,238	21.810	1.290	19.280	25.830
Age	7,238	2.614	0.350	1.609	3.296
Cash	7,238	0.146	0.111	0.004	0.543
Lev	7,238	0.509	0.188	0.093	0.906
Q	7,238	1.816	1.077	0.911	7.050
ROA	7,238	0.034	0.060	-0.213	0.200
state	7,238	0.636	0.481	0	1
Top1	7,238	37.050	15.780	9.400	75.840
Growth	7,238	0.473	1.647	-0.722	12.540

4. Empirical results and analysis

(i) Analysis of baseline regression results

This paper estimates the impact of the Labor Contract Law on firms' digital transformation based on a sample of listed firms. The double difference test from equation (1) is used to estimate the impact of the Labor Contract Law on firms' digital transformation, and the estimation results are presented in Table 3. The estimated coefficients of the cross-multiplier term *Treat* × *Post* in columns (1)-(2) of the benchmark regression results are significantly positive at the 1 percent level. The first column controls only for firm and year fixed effects to ensure that the regression results are not affected by a range of omitted variables related to firms' own characteristic factors and macro-level factors other than the Labor Contract Law. The second column further controls for a range of firm-level specific variables on top of controlling for fixed effects, and neither the sign nor the significance of the coefficients of *Treat*×*Post* changes significantly. This suggests that after the implementation of the Labor Contract Law, digital transformation is more effective in firms with high labor intensity compared to firms with low labor intensity, thus validating the research hypothesis H1 of this paper.

Table 3. Benchmark regression results

	(1) *DT*	(2) *DT*
Treat×Post	0.141***	0.133***
	(4.374)	(4.067)
Size		0.062**
		(2.378)
Lev		-0.223**
		(-2.460)
Growth		-0.000
		(-0.087)
Age		0.224
		(1.184)
Cash		-0.207**
		(-2.017)
Q		0.047***
		(3.627)
state		0.018
		(0.431)
Top1		-0.002
		(-1.162)
ROA		0.089
		(0.623)
Constant	0.145***	-1.560**
	(11.099)	(-2.286)
Observations	7,238	7,238
R^2	0.139	0.147
Firm fixed effect	YES	YES
Year fixed effect	YES	YES

Note: ***, **, and * denote 1%, 5%, and 10% significance levels, respectively, with t-values in parentheses, where standard errors are adjusted for firm-level clustering, as in the table below.

(ii) Parallel trend test

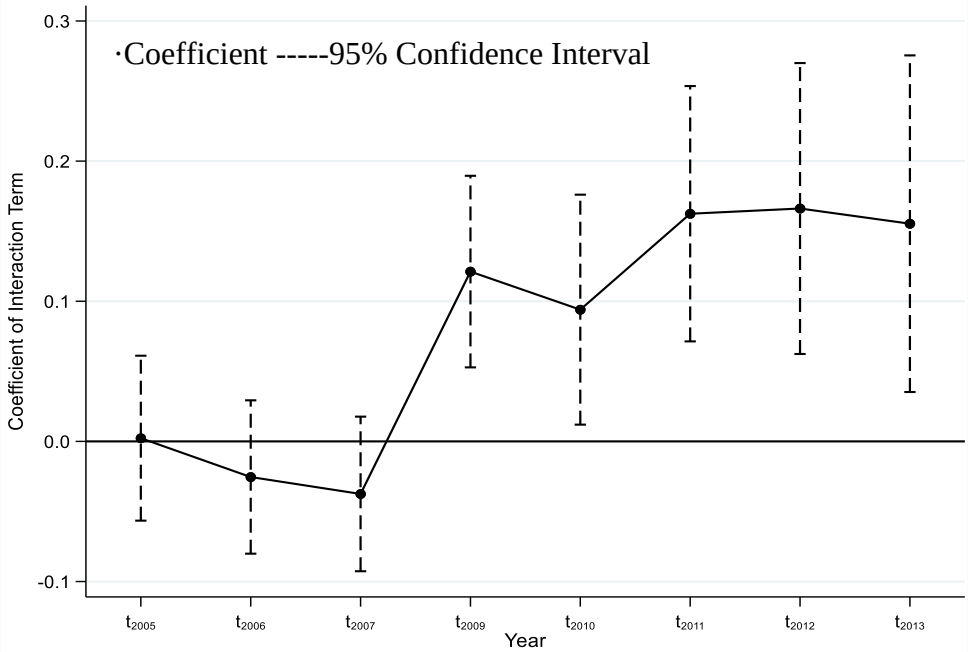

Figure 1. Parallel trend test

Parallel trends of the explanatory variables of the treatment and control groups before the implementation of the policy is a key condition for using a double difference model to analyze the causality of the variables. In this paper, this means that the two groups of listed companies with different labor intensity have the same trend in their digital transformation performance before 2008. We conduct the parallel trend test conducted with 2008 as the base period, and the results are shown in Figure 1. It can be seen that before the implementation of the Labor Contract Law, the coefficients of the cross-multiplier terms are all significantly close to 0, which satisfies the parallel trend hypothesis. Meanwhile, from 2008 onwards, the coefficient of the cross-multiplier term is significantly positive, indicating that the Labor Contract Law does have a positive impact on the digital transformation of enterprises.

(iii) Robustness tests

(1) Placebo test

In order to exclude the possibility that the changes in the trends of the treatment and control groups after the implementation of the Labor Contract Law are affected by non-policy factors, thus affecting the results of the study, we conduct a "placebo test" by randomly selecting the treatment group 1,000 times, and then regressing the samples in accordance with equation (1). If the coefficient of the cross-multiplier term is not significant, it is judged that the Labor Contract Law has no policy effect on the randomly selected treatment groups, otherwise it indicates that there is a bias in the equation of the benchmark regression or the selection of sample data. Figure 2 shows the distribution of the coefficients regressed from the placebo test, with the center of the distribution near 0. At the same time, the coefficients of the benchmark regression are not within the distribution of the, whereby the problem of omitted variables is further ruled out.

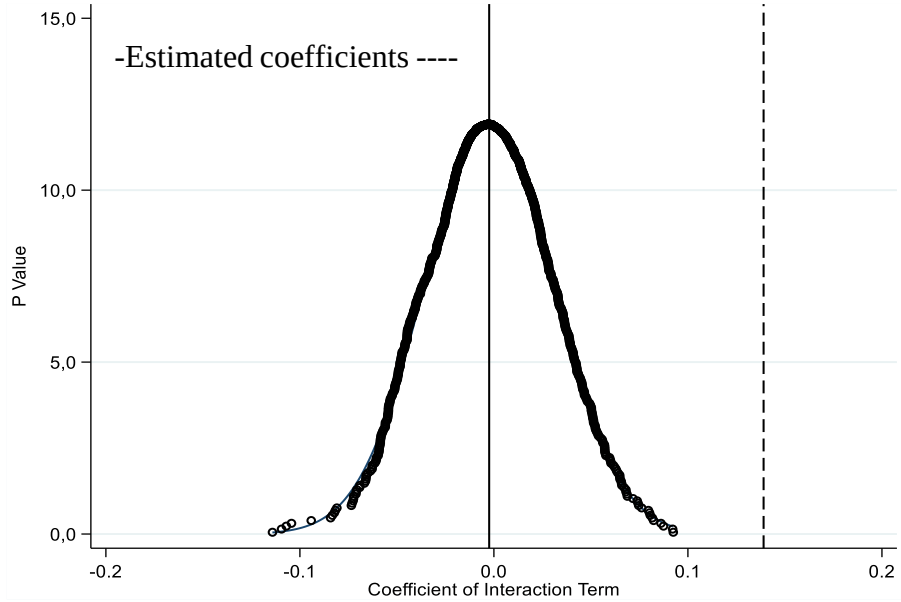

Figure 2. Placebo test

(2) Other robustness tests

In addition to the way *Treat* is constructed in the benchmark regression section, we further utilizes quartiles of the mean ratio of number of employees to sales revenue from 2005-2007. Firms in the upper quartile and above are the treatment group and firms in the lower quartile and below are the control group. The test results are shown in column (1) of Table 4, and the coefficient of the cross-multiplier term in equation (1) is significantly positive, which means firms with higher labor intensity are affected more by the Labor Contract Law and thave more prominent effectiveness of firms' digital transformation. The conclusion above still holds.

We construct an empirical model to assess the impact of the implementation of the Labor Contract Law on firms and minimize endogeneity issues. Considering that the law change constitutes an

external shock to firms, the model has been designed to exclude endogeneity problems due to reverse causality as much as possible. Since there may be inherent systematic differences between labor-intensive and non-labor-intensive firms, we may still fail to observe some of the omitted variables and thus give rise to the endogeneity problem even though we have attempted to control for these differences in the regression analysis. To further address this issue, we employ propensity score matching (PSM) to identify matched control group and performs a double-difference (DID) analysis on the matched sample set, thereby effectively removing the potential impact of omitted variables and enhancing the reliability of the findings. We select a series of firm characteristic variables described in the previous section as matching variables, matching the treatment group with the control group in an optimal nearest-neighbor 1:1 match, and then re-run the regression analysis on the matched sample. As shown by the significantly positive coefficients of the cross-multiplier terms in column (2) of Table 4, the result of the benchmark regression still holds, verifying the robustness of the paper's conclusions.

Table 4. Robustness test

	(1) Replacement of explanatory variable's measure *DT*	(2) PSM *DT*
Treat×Post	0.126***	0.104*
	(3.383)	(1.670)
Size	0.027	0.061*
	(0.932)	(1.783)
Lev	-0.261**	-0.258**
	(-2.569)	(-1.970)
Growth	0.001	0.001
	(0.271)	(0.139)
Age	0.447**	0.267
	(2.201)	(0.762)
Cash	-0.149	-0.155
	(-1.321)	(-1.081)
Q	0.030**	0.006
	(2.171)	(0.447)
state	0.017	0.031
	(0.376)	(0.533)
Top1	-0.003*	-0.002
	(-1.729)	(-0.823)
ROA	-0.008	0.086
	(-0.048)	(0.475)
Constant	-1.229	-1.623
	(-1.584)	(-1.612)
Observations	5,320	3,656
R^2	0.145	0.153
Firm fixed effect	YES	YES
Year fixed effect	YES	YES

5. Further analysis

(i) Heterogeneity analysis

(1) Regional legal system environment

The economic effect of laws is not determined by their literal meaning, but also by the efficiency of their implementation. In China, the implementation of laws and regulations by local governments greatly affects their actual implementation, but how governments implement the law will be adjusted according to the actual situation of local economic development. This has led to the fact that although the Labor Contract Law aims to strengthen the legal protection of labor contracts, its actual enforcement may vary from region to region. Therefore, for regions with better legal environments

and stronger enforcement, the Labor Contract Law tends to be more effective, which in turn has a greater impact on the digital transformation of enterprises.

In order to ensure that the research variables are not affected by the implementation time of the Labor Contract Law, we borrow the research methodology of Qian Xuesong&Shi Xin (2024) and choose to use the "index of the development of market intermediary organizations and the environment of the legal system" in the regional marketization index of 2006 measured by Fan et al. (2011) as the basis for measuring the strengths and weaknesses of the region. Enterprises are divided into two groups by the index's median: enterprises in regions with better legal system environment and enterprises in regions with worse legal system environment. The data in column (1) of Table 5 reveals the correlation between the legal system environment and the digital transformation of firms. Specifically, firms in regions with better legal enforcement have significantly better digital transformation outcomes after the implementation of the Labor Contract Law than those in regions with poorer legal enforcement. This finding suggests that firms in poorly enforced environments are less sensitive to rising labor costs, thus attenuating the effects of the Labor Contract Law in terms of increasing labor costs and prompting firms to adjust their factor structure to achieve transformation. As a result, the Labor Contract Law has a stronger impact on the digital transformation of firms in regions with better legal environments than in regions with less favorable legal environments.

Table 5. Heterogeneity analysis 1: Excellence of the legal system environment

	(1) Better legal and institutional environment	(2) Poor legal system environment
	DT	*DT*
Treat×Post	0.201***	0.150***
	(3.778)	(3.278)
Size	0.085***	0.013
	(3.553)	(0.654)
Lev	-0.149	-0.231*
	(-1.205)	(-1.868)
Growth	0.003	-0.001
	(0.472)	(-0.185)
Age	-0.047	0.001
	(-0.676)	(0.016)
Cash	0.054	0.309**
	(0.377)	(2.088)
Q	0.103***	0.041*
	(4.548)	(1.690)
state	-0.012	-0.009
	(-0.239)	(-0.219)
Top1	-0.003*	-0.002
	(-1.847)	(-1.641)
ROA	0.100	-0.008
	(0.369)	(-0.030)
Constant	-1.452***	-0.082
	(-2.783)	(-0.166)
Observations	3,455	3,783
R^2		0.114
Firm fixed effect	YES	YES
Year fixed effect	YES	YES

(2) Nature of business

In terms of the motivation for enterprise digital transformation, SOEs usually have large scale and policy advantages, and are able to optimize their internal systems to solidify their market position and thus achieve stable development under relatively low competitive pressure. However, this environment may also lead SOEs to show lower acceptance and motivation when facing digital transformation projects that require longer implementation cycles and higher operational risks (Wu

Fei et al., 2021; Nie Xingkai et al., 2022). In contrast, private enterprises seek breakthroughs in fierce market competition and are highly sensitive to policy guidance and social needs. Especially in the context of the rapid development of the digital economy, they tend to regard digital transformation as a key strategy to enhance competitiveness and are willing to invest the necessary resources to accelerate it. In China, state-owned enterprises not only pursue economic benefits, but also shoulder social and political functions at the same time, such as guaranteeing employment stability. SOEs provide employees with relatively stable employment opportunities and sources of income, and play an active role in safeguarding their rights and interests, giving them a high sense of job security, commonly known as the "iron rice bowl". This situation makes it difficult for SOEs to flexibly deal with employment relationships and wage adjustments (Zeng and Chen, 2006; Xu et al., 2005). In contrast, private firms, which are less constrained by system and are able to flexibly adjust their employment relationship according to the actual situation, are more likely to infringe upon the legitimate rights and interests of workers before the implementation of the Labor Contract Law. Therefore, we expect that the impact of the Labor Contract Law is mainly reflected in private enterprises.

We divide the sample to two groups: state-owned enterprises and private firms. Column (1) of Table 6 shows that after the implementation of the Labor Contract Law, state-owned enterprises are not as effective as private enterprises in terms of enterprise digital transformation. This implies that SOEs are less sensitive to the rise in labor adjustment costs, and thus the Labor Contract Law has less impact on the digital transformation of these firms. Table 6 shows that the estimated coefficient of private enterprises are more significant than that of state-owned enterprises, thus verifying our conjecture.

Table 6. Heterogeneity Analysis 2: Whether or not a state-owned enterprise

	State-owned enterprise	Private enterprise
	DT	*DT*
Treat×Post	0.103**	0.190***
	(2.544)	(3.213)
Size	0.033	0.133***
	(0.948)	(2.899)
Lev	-0.151	-0.283*
	(-1.174)	(-1.919)
Growth	0.003	0.000
	(0.559)	(0.030)
Age	-0.158	0.617**
	(-0.619)	(2.021)
Cash	-0.222	-0.211
	(-1.467)	(-1.530)
Q	0.060***	0.026
	(3.242)	(1.511)
Top1	-0.001	-0.003
	(-0.609)	(-0.987)
ROA	0.218	0.003
	(1.065)	(0.015)
Constant	-0.138	-3.820***
	(-0.155)	(-3.387)
Observations	4,604	2,634
R^2	0.128	0.187
Firm fixed effect	YES	YES
Year fixed effects	YES	YES

6. Analysis of mechanisms

Through the empirical analysis in the previous section, we verify that the introduction of the Labor Contract Law is conducive to the digital transformation of enterprises. Considering that the influencing factors of enterprise digital transformation are more complex, various macro and micro

factors may all positively or negatively affect it, we only select some of the factors as mechanisms to be tested. It has been shown in the literature that the quantity and quality of employees are particularly important for enterprise digital transformation which requires a large amount of innovative resources and relevant talents and the reduction of the number of workers will make enterprises pursue the replacement of human labor with capital in all aspects of production and operation in order to enhance productivity and market competitiveness (Zhang et al. 2022). Therefore, we test the effects of the number and quality of employees separately to reveal the economic logic how the Labor Contract Law promotes digital transformation of enterprises.

In this paper, the logarithm of the number of employees (*ln NOE*) is used to measure the number of employees in enterprises; the proportion of R&D personnel to all employees (*PORD*) and the proportion of higher education personnel to all employees (*POHE*) are used to measure the quality of employees. Table 7 shows that the estimated coefficient of the explanatory variables is significantly negative when the explanatory variable is the logarithm of the number of employees, and the estimated coefficients of the explanatory variables are significantly positive at the 5% and 10% levels when the explanatory variables are related to employee quality. This indicates that the implementation of the Labor Contract Law significantly reduces the number of employees and improves the quality of employees in firms.

Table 7. Mechanism tests

	(1) *lnNOE*	(2) *PORD*	(3) *POHE*
Treat×Post	-0.385***	0.030**	0.022*
	(-10.617)	(2.011)	(1.920)
Size	0.552***	-0.002	0.023**
	(16.340)	(-0.180)	(2.306)
Lev	0.051	-0.027	-0.018
	(0.445)	(-0.494)	(-0.556)
Growth	-0.009	0.001	0.002
	(-1.416)	(0.431)	(1.348)
Age	0.209	-0.257***	0.071
	(1.238)	(-2.721)	(1.122)
Cash	-0.242**	0.120*	0.024
	(-2.091)	(1.797)	(0.708)
Q	0.028**	-0.020**	-0.002
	(2.475)	(-2.102)	(-0.498)
state	0.040	-0.027*	0.005
	(0.554)	(-1.905)	(0.283)
Top1	0.001	-0.000	0.001
	(0.766)	(-0.759)	(1.022)
ROA	-0.226	-0.033	0.037
	(-1.288)	(-0.411)	(0.732)
Constant	-4.996***	0.714*	-0.426*
	(-6.811)	(1.859)	(-1.708)
Observations	7,214	7,238	4,535
R^2	0.331	0.022	0.072
Firm fixed effect	YES	YES	YES
Year fixed effects	YES	YES	YES

7. Conclusion

With the rapid development of national economy, the system to protect workers' rights and interests is becoming increasingly perfect. In order to achieve compliant operation and sustainable developmen, the Labor Contract Law, as the cornerstone of it, has put forward new requirements about enterprise employment management, prompted enterprises to optimize the allocation of human resources,

strengthened the protection of employees' rights and interests and explored flexible employment modes. Analyzing the impact of the implementation of the Labor Contract Law on the digital transformation of enterprises helps to objectively evaluate the Labor Contract Law, add to the existing discussion and provide an important perspective for studying the economic consequences of the Labor Contract Law.

We select A-share listed companies in China from 2005 to 2013 as the research object, and adopt the double-difference model to explore the impact of the implementation of the Labor Contract Law on the digital transformation of enterprises. The results show that the Labor Contract Law has a positive impact on the digital transformation of enterprises. Through heterogeneity analysis, we find that the positive effect of the implementation of the Labor Contract Law on the level of enterprise digital transformation is stronger on enterprises located in regions with better legal institutional environment and non-state-owned enterprises. The mechanism analysis proves that the implementation of the Labor Contract Law reduced the number of employees and improved the quality of employees in enterprises. This is because the implementation of the Labor Contract Law has optimized the employment structure of enterprises, which can be reflected in its promotion of enterprises' shift from relying on production-oriented labor to adopting machines and equipment, as well as increasing the proportion of technological and R&D-oriented labor, which in turn improves the level of enterprises' digital transformation.

In the new economic era, the level of enterprise productivity depends largely on the level of human capital. Moderate labor protection measures are necessary, which can effectively protect the rights and interests of employees and significantly improve the economic efficiency of enterprises. However, excessive labor protection may have negative effects. Under the framework of the Labor Contract Law, enterprises can turn short-term operational pressure into a driving force for their long-term growth through scientific and reasonable institutional arrangements, thus effectively stimulating market potential and accelerating the digitization process. The Government needs to continuously improve the rule of law system, fully release market vitality, and give full play to the functions of institutional design in supporting to ensure high-quality economic development,safeguard and incentivize China's economic development.

References

[1] Chang Kai, On the Legislative Basis and Legal Positioning of Labor Contract Law [J]. Law Forum, 2008, (02): 5-14.

[2] Chen Linlin, Xia Jiechang, Liu Cheng, Marketized Regulation and the Construction of Fair Competition Order in Digital Economy [J]. Reform, 2021, (07): 44-53. Chen Yubo and Ma Yefeng, Digital Talents - The Core Driving Force of China's Economic Digital Transformation [J]. Tsinghua Management Review, 2018, (Z1): 30-40.

[3] Chen Qingjiang, Wang Yanmeng, Wan Maofeng, Research on the Cohort Effect of Enterprise Digital Transformation and Its Influencing Factors [J]. Journal of Management, 2021, 18 (05): 653-663.

[4] Dong Baohua, Ten Imbalances of the Labor Contract Law [J]. Exploration and Controversy, 2016, (04): 10-17.

[5] Ding Shouhai, Analysis of the Employment Effects of Minimum Wage Control--Analyzing the Interactive Effects of the Labor Contract Law [J]. China Social Science, 2010, (01): 85-102+223.

[6] Fan Gang, Wang Xiaolu, and Zhu Hengpeng, China's Marketization Index - 2011 Report on the Relative Process of Marketization in Provinces and Regions. Beijing: Economic Science Press, 2011.

[7] Ping Huang, Firing Costs, Employment and Industrial Transformation and Upgrading-Based on the Labor Contract Law and Evidence from Listed Companies in China [J]. Nankai Economic Research, 2012, (03): 79-94.

[8] Kong Dongmin, Tang Qi, Xiang Junyi, Labor Protection and the Efficiency of Labor Investment in Enterprises [J]. Journal of Huazhong University of Science and Technology (Social Science Edition), 2020, 34 (05): 36-47.

[9] Liao Guanmin and Chen Yan, Labor protection, labor intensity and business flexibility: An empirical test based on the 2008 Labor Contract Law [J], Economic Science, 2014, (02): 91-103.

[10] Li Bo and Jiang Dianchun, Labor protection and productivity progress in manufacturing [J]. World Economy, 2019, 42 (11): 74-98.

[11] Li Huamin, Long Hongjie, Wu Fei, Heterogeneous institutional investors and corporate digital transformation [J]. Financial Forum, 2021, 26 (11): 37-46+56.

[12] Li Jianqiang and Zhao Xiliang, Labor Protection and Corporate Innovation - An Empirical Study Based on the Labor Contract Law [J]. Economics (Quarterly), 2020, 19 (01): 121-142.

[13] Liu Shuchun, Yan Jinchen, Zhang Sixue, et al. Can digital change of enterprise management improve input-output efficiency [J]. Management World, 2021, 37 (05): 170-190+13.

[14] Lin W., Corporate innovation incentives: An explanation from rising labor costs in China [J]. Management World, 2013, (10): 95-105.

[15] Liu Yuanyuan and Liu Bin, Labor Protection, Cost Stickiness and Firms' Response [J]. Economic Research, 2014, 49 (05): 63-76.

[16] Nie Xingkai, Wang Jianhua, Pei Xuan, Does the digital transformation of enterprises affect the comparability of accounting information [J]. Accounting Research, 2022, (05): 17-39.

[17] Ni primrose, Zhu yujie, Labor protection, labor intensity and firm innovation - Evidence from the implementation of the Labor Contract Law in 2008 [J], Management World, 2016, (07): 154-167.

[18] Pan Hongbo and Chen Shilai, Labor Contract Law, Business Investment and Economic Growth [J]. Economic Research, 2017, 52 (04): 92-105.

[19] Qian Xuesong and Shi Xin, Did Strengthening Labor Protection Increase Labor Income Share? --an empirical study based on the implementation of the Labor Contract Law [J]. Economics (Quarterly), 2024, 24 (01): 286-302.

[20] Song Jing and Chen Jin, A study on the impact of entrepreneurial social network on enterprise digitalization - the moderating role of strategic flexibility [J]. Research in Science, 2022, 40 (01): 103-112.

[21] Shen YJ, Fan L, Chen DH, Liu J, Explicit contract, employee rights and rising labor costs:The role of the Labor Contract Law [J]. China Industrial Economy, 2017, (02): 117-135.

[22] Shin Hao, Tan Weijie, Yang Yongcong, Have the Pilot Policies of Science and Technology Finance Empowered the Digital Transformation of Real Enterprises? [J]. Journal of Central South University (Social Science Edition), 2022, 28 (03): 110-123.

[23] Tang Song, Su Xuesha, Zhao Dani, Fintech and Digital Transformation of Enterprises - Based on Enterprise Life Cycle Perspective [J]. Financial Science, 2022, (02): 17-32.

[24] Tang Song, Wu Xuchuan, Zhu Jia, Digital Finance and Corporate Technological Innovation - Structural Characteristics, Mechanism Identification and Effect Differences under Financial Regulation [J]. Management World, 2020, 36 (05): 52-66+9.

[25] WU Fei, HU Huizhi, LIN Huiyan, et al. Corporate digital transformation and capital market performance-empirical evidence from stock liquidity [J]. Management World, 2021, 37 (07): 130-144+10.

[26] Yu Dianfan, Wang Chao, Chen Lei, Government subsidies, industry chain synergy and enterprise digitization[J]. Economic Management, 2022, 44 (05): 63-82.

[27] Zhang Chenggang, Organizational form change in digital transformation: theory and current situation [J]. Journal of Shanghai Business School, 2020, 21 (02): 72-83.

[28] Lina Zhang, Xuesha Su, Lei Yuan, Supply Chain Finance and Firms' Digital Transformation - Heterogeneous Characteristics, Channel Mechanisms and Differences in Effects in a Non-Trust Environment [J]. Research in Financial Economics, 2021, 36 (06): 51-67.

[29] Tseng, Ching-Sheng and Hsin-Yuan Chen, State Holdings, Excess Employees and Labor Costs [J]. Economic Research, 2006, (05): 74-86.

[30] V.V., Acharya, R.P., Baghai and K.V., Subramanian, Wrongful Discharge Laws and innovation [J], Review of Financial Studies, 2014, 27 (1): 301 - 346.

[31] D.H., Autor, W.R., Kerr and A.D., Kugler, Does Employment Protection Reduce Productivity? Evidence from US States [J], The Economic Journal, 2007, 117 (521): 189-217.

[32] J.E., Bena, and Simintzi, Globalization of Work and Innovation: Evidence from Doing Business in China [J]. New York: Social Science Electronic Publishing, 2015.

[33] D., Bradley, I., Kim and X., Tian, Do Unions Affect Innovation? [J]. Management Science, 2017, 63 (7): 2049-2395.

[34] R., Cooper, G., Gong and P., Yan, Costly Labor Adjustment: General Equilibrium Effects of China's Employment Regulations and Financial Reforms [J]. The Economic Journal, 2018, 128 (613): 1879-1922.

[35] C.M., Dasilva, Understanding Business Model Innovation from a Practitioner Perspective [J]. Journal of Business Models, 2018, 6 (2): 19- 24.

[36] D.J., Fairhurst, and M., Serfling, Employee Firing Costs and Corporate Investment [J], Working Paper, 2015, University of Arizona.

[37] H.R., Hopenhayn, and Rogerson, Job Turnover and Policy Evaluation: A General Equilibrium Analysis [J], Journal of Political Economy, 1993, 101: 915 -938.

[38] R., Kleer, Government R&D Subsidies as a Signal for Private Investors [J], Research Policy, 2010, 39 (10): 1361-1374.

[39] X.Li, and R., Freeman, How Does China's New Labor Contract Law Affect Floating Workers? [J], British Journal of Industrial Relations, 2015, 53 (4): 711-735.

[40] S., Mittal, M.A., Khan, J.K., Purohit and T.A., Wuest, Smart Manufacturing Adoption Framework for SMEs [J]. International Journal of Production Research, 2020, 58 (5): 1555-1573.

[41] X., Ni, W. and Zhu, The Bright Side of Labor Protection in Emerging Markets: The Case of Firm Transparency [J], Pacific Basin Finance Journal, 2018, 50: 126 -143.

[42] A., Park, J. and Giles, Y., Du, Labor Regulation and Enterprise Employment in China [J], World Bank working paper, 2012.

[43] P.C., Verhoef, T., Broekhuizen, Y., Bart, A. Bhattacharya, J.Q. Dong, N. Fabian and M., Haenlein, Digital Transformation: A Multidisciplinary reflection and Research Agenda [J], Journal of Business Research, 2021, 122: 889-901.

[44] G., Vial, Understanding Digital Transformation [J]. The Journal of Strategic Information Systems, 2019, 28 (2): 11 -144.

[45] L.C., Xu, T., Zhu, Y.M., Lin, Politician Control, Agency Problems and Ownership Reform: Evidence from China [J], Economics of Transition, 2005, 13 (1): 1 J], Economics of Transition, 2005, 13 (1): 1-24.

[46] Zhang, X.Y., Xu, and L., Ma, Research on Successful Factors and Influencing Mechanism of The Digital Transformation in SMEs [J]. Sustainability, 2022, 14 (5): 1-18.