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Politická ekonomie

Volume 74 (6)
Forthcoming articles
https://doi.org/10.18267/j.polek.1550
Open Access

VŠE / PRAGUE UNIVERSITY OF ECONOMICS AND BUSINESS

# Digital Government Construction and Employment Stability: Promoting Equity or Deepening Disparities?

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**Abstract**

Amid the rapid expansion of the digital economy, digital government construction has emerged as a vital instrument for advancing the modernization of national governance systems and promoting high-quality economic growth. Drawing on institutional theory, this study investigates the impact of digital government construction on enterprise employment levels and the mechanisms through which this influence operates. Using panel data from Chinese listed companies between 2019 and 2023, a fixed-effects model is employed for empirical analysis. The findings reveal that digital government development significantly enhances enterprise employment levels, a conclusion that remains robust after controlling for firm- and region-specific characteristics. Specifically, this positive effect operates through two synergistic pathways: an innovation-driven mechanism that facilitates digital transformation and sector integration, and an efficiency-enhancing mechanism that boosts competitiveness by optimizing resource allocation. Furthermore, the analysis highlights structural variations in these effects, showing they are more pronounced in eastern regions, non-resource-based cities, state-owned enterprises, and firms with high R&D investment. Ultimately, the study underscores the dual role of digital government

**Citation:** Wang, Z., Zhao, X., Dariusz. S., Li, W., Shahzadi, I.: Digital Government Construction and Employment Stability: Promoting Equity or Deepening Disparities? *Politická ekonomie*, 2027, 75, Forthcoming articles, https://doi.org/10.18267/j.polek.1550

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in fostering technological advancement in tech sectors while accelerating sustainable transformation in polluting industries. These integrated findings provide empirical evidence for deepening digital governance reforms to promote more equitable and inclusive employment growth.

**Keywords:** Digital Government Construction; Employment Stability; Institutional Theory; Innovation-Driven; Efficiency Enhancement

**JEL Classification:** C33; J21; O33

# 1. Introduction

Amid the accelerating global digital transformation, digital government construction has emerged as a key pathway for nations to advance governance modernization and promote high-quality economic development. Digital government refers to the use of digital technologies to improve and transform government operations, services, and interactions with citizens (Fan *et al*., 2024). As a vital component of the digital economy, digital government not only signifies the digital restructuring of governmental functions but also embodies systemic innovation in public management models, policy implementation mechanisms, and social resource allocation processes. Its core lies in leveraging information technology to build efficient, transparent, and collaborative governance through data sharing, process reengineering, and intelligent decision-making, thereby injecting new momentum into socio-economic operations. Within this broader framework, digital government construction concerns not only the modernization of national governance capacity but also directly influences the optimization of the business environment and the development of innovation ecosystems (Gil-Garcia *et al*., 2018). By enabling real-time communication and data exchange between citizens and governments, digital government fosters more responsive and participatory governance. From a microeconomic perspective, digital government – through technological empowerment and institutional optimization – provides enterprises with more stable and predictable external conditions, thereby shaping their employment decisions and influencing overall employment levels. Consequently, digital government represents not merely a transformation in governance methods but also a significant economic force that affects corporate behavior and the broader employment structure (Warren, 2021).

Existing research on digital government construction has primarily examined its influence on government performance, administrative efficiency, and the quality of public services. Scholars widely argue that the development of digital government enhances governance capacity and improves the efficiency of public resource allocation (Zhu *et al*., 2024), thereby promoting policy transparency and fostering collaboration within the public sector

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(Li and Yue, 2025). Additionally, digital government is seen as a mechanism for improving public sector accountability and enabling data-driven decision-making. Numerous studies have further emphasized the critical role of digital government in optimizing administrative processes, increasing efficiency, and enhancing public service accessibility (Yang *et al*., 2024), as well as its institutional advantages in advancing governmental functional transformation and governance modernization (Wang *et al*., 2025).

However, most of these studies remain situated at the macro level of governance or public administration, with limited exploration of how digital government affects micro-level corporate behavior and economic performance through mechanisms such as information transparency, resource allocation, and innovation-driven policies. Research at the enterprise level generally centers on the broader impacts of the digital economy or digital infrastructure on firm performance, innovation, and financing constraints. For example, prior studies indicate that digital transformation enhances enterprise productivity and innovation capacity (L. Zhang and X. Zhang, 2025), while digital government services help alleviate financing constraints and improve resource allocation (Ding *et al*., 2024; Hao *et al*., 2024). Other findings suggest that digital governance, by optimizing the business environment and improving policy transparency, indirectly stimulates corporate investment and entrepreneurial dynamism (Gong and Yang, 2024).

Nevertheless, despite the extensive literature on digitalization and employment, significant research gaps remain regarding the specific role of government digitalization. Most existing research focuses on economic outcomes such as innovation performance, financing behavior, or operational efficiency, whereas empirical evidence on how digital government specifically influences corporate employment – a crucial socio-economic dimension – remains scarce. Critically, previous studies are largely constrained by a "technological substitution" perspective, focusing on how AI or industrial robots replace labor, while neglecting the "institutional empowerment" effect of digital government. They often treat digital government merely as an external environmental variable, failing to systematically reveal how it reshapes the internal labor demand structure of enterprises through institutional transaction cost reduction and innovation incentives. Moreover, the effects of digital government may differ across regions, industries, and firm characteristics, yet the mechanisms underlying this heterogeneity have not been systematically explored.

Building on the above research gaps, this study addresses the central question: How, and to what extent, does digital government construction influence enterprise employment levels, and through which mechanisms and contextual factors does this effect operate? To answer this question, the study, grounded in institutional theory, systematically exam-

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ines the impact of digital government construction on enterprise employment from a microeconomic perspective. It explores how digital governance shapes corporate employment behavior through two primary mechanisms: innovation-driven and efficiency-enhancing pathways.

The main contributions of this study are as follows. First, grounded in institutional theory, it constructs an analytical framework to examine the impact of digital government construction on enterprise employment levels, thereby addressing a gap in existing research on the economic effects of digital government. This framework provides a novel theoretical perspective on how digital governance influences micro-level corporate behavior through institutional innovation. Second, based on enterprise-level empirical analysis, the study systematically identifies the internal mechanisms through which digital government promotes employment via innovation-driven and efficiency-enhancing pathways. Unlike prior studies that isolate these factors, this study clarifies the "dual-drive" logic: the innovation mechanism emphasizes the expansion of labor demand through industrial upgrading and new business formats, while the efficiency mechanism highlights the optimization of labor allocation through reduced financing constraints and improved resource matching. It further uncovers heterogeneous effects across regions, industries, and firm characteristics, offering targeted empirical evidence to support governmental digital transformation and the optimization of employment policies.

The remainder of this paper is structured as follows. Section 2 develops the theoretical framework. Section 3 outlines the research design and methodology. Section 4 presents the baseline regression results, conducts robustness tests, and analyzes the underlying mechanisms and heterogeneity. Section 5 further investigates the impact of digital government construction across different industries. Finally, Section 6 concludes by summarizing key findings and providing policy implications along with directions for future research.

# 2. Theoretical Analysis and Research Hypotheses

## 2.1 Impact of digital government from the perspective of employment stability

Institutional theory argues that a stable and efficient institutional environment is fundamental to enterprise productivity and employment growth (Xing *et al*., 2024). As a key form of institutional innovation, digital government leverages information and data technologies to enhance governance capacity and policy implementation, strengthen governmental transparency and institutional consistency, and thereby reshape the external environment in which firms operate (Duan *et al*., 2024).

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By streamlining administrative procedures and improving the efficiency of governmental services, digital government directly reduces transaction costs and facilitates access to critical market and policy information. In this process, digital government enhances business expectations and managerial confidence by improving the predictability of governmental actions and the stability of regulatory frameworks (Dubey *et al*., 2023). Moreover, digitalization in public services and policy support fosters a more equitable and predictable business environment, which in turn strengthens firms' ability to absorb and retain labor.

Therefore, digital government directly promotes employment by improving institutional efficiency, reducing operational uncertainties, and stimulating enterprise dynamism. These changes enable businesses to grow, expand operations, and directly increase their demand for labor. Based on this reasoning, we propose the following hypothesis:

***H*$_1$:** The construction of digital government significantly enhances enterprise employment levels.

## 2.2 Mechanisms for enhancing employment stability through digital government

Grounded in institutional theory, digital government construction improves the external environment for firms through data-driven institutional innovation, thereby promoting employment via two key pathways: innovation-driven and efficiency-enhancing mechanisms (Cheng *et al*., 2024).

First, the innovation-driven mechanism operates as digital government reduces barriers to accessing policy and innovation resources, increases information transparency, and stimulates firms' innovation incentives and R&D investment (Yuan *et al*., 2023). Digital governance also accelerates firms' digital transformation, strengthens competitiveness in production and market responsiveness, and facilitates the integration of digital technologies into core business activities, forming a virtuous cycle of innovation, expansion, and employment (Xu *et al*., 2025; Zhao *et al*., 2024). From the perspective of institutional theory, this reflects a response to normative pressures, where firms actively expand their high-quality workforce to demonstrate conformity with the external digital environment and secure organizational legitimacy.

Second, the efficiency-enhancing mechanism emerges as digital government improves policy transmission and resource allocation efficiency through process reengineering and data sharing (Gan *et al*., 2023). This alleviates financing constraints, optimizes the matching of capital and labor, enhances firm performance, and boosts market competitiveness (Feng *et al*., 2025). A more stable and efficient institutional environment reduces transaction costs

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and strengthens expectations, further increasing productivity and labor demand (Güler and Büyüközkan, 2023). This illustrates the function of the regulative pillar, where a transparent institutional framework lowers the "institutional friction" of resource exchange, encouraging firms to channel efficiency gains into long-term human capital investment.

Overall, digital government promotes employment by simultaneously enhancing innovation capacity and operational efficiency. Thus, the following hypotheses are proposed:

***$H_2$*:** Stronger digital government construction enhances the innovation-driven mechanism, increasing enterprise employment levels.

***$H_3$*:** Stronger digital government construction enhances the efficiency-enhancing mechanism, increasing enterprise employment levels.

# 3. Research Design

## 3.1 Model construction

To examine the impact of digital government construction on labor employment, the baseline model is specified as follows:

$$Labor_{i,t} = a + \beta DigGov_{i,t} + \gamma Controls_{i,t} + \mu_i + \delta_{year} + \varepsilon_{i,t} \quad (1)$$

where, $Labor_{i,t}$ represents the employment level at the enterprise level, with $i$ and $t$ denoting the enterprise and year, respectively. $DigGov_{i,t}$ is the digital government indicator. $Controls_{i,t}$ is a set of control variables. $\mu_i$ is the fixed effect to control for unobservable enterprise-level heterogeneity. $\delta_{year}$ represents the year fixed effect. $\varepsilon_{i,t}$ is the error term.

## 3.2 Data sources

This study uses panel data on Shanghai and Shenzhen A-share listed companies from 2019 to 2023 to examine the impact of digital government construction on enterprise employment. The sample period is chosen for two main reasons. First, data during these years are relatively complete and continuous, allowing the collection of reliable indicators of digital government development and firm-level variables. Second, since 2019, China's digital government construction has entered a phase of rapid advancement, with governments at all levels intensifying efforts to promote "Internet + Government Services" and overall digital transformation. Thus, the 2019–2023 period ensures data operability and accurately captures the deepening of digital governance policies and the practical effects of digital government on employment stability.

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The data used in this study are obtained from the CSMAR and Wind databases, which comprehensively capture the financial characteristics and macroeconomic information of Chinese A-share listed companies. To ensure sample representativeness and data reliability, a rigorous screening process was applied to the initial dataset. Specifically, firms facing delisting risks or financial anomalies – such as ST, *ST, and PT companies – were excluded. In addition, companies that were newly listed, delisted, or missing key financial indicators during the study period were removed. After this screening process, the final panel dataset of A-share listed companies retained complete data, a robust structure, and strong representativeness.

## 3.3 Variable description

The core explanatory variable in this study is digital government (*DigGov*), measured by the regional level of e-government service capability. Specifically, we adopt the comprehensive index published in the *Government E-Government Service Capability Index Report*. This index evaluates four major government service channels – official websites, Weibo, WeChat, and mobile applications – and establishes a multidimensional assessment framework covering service capacity, delivery channels, regional disparities, and geographical characteristics, generating time-continuous and cross-regionally comparable quantitative data. Published annually since 2016, the report systematically reflects the progress of the "Internet + Government Services" initiative and the broader level of digital governance, providing an important objective basis for measuring digital government development.

The dependent variable is enterprise employment level (*Labor*), measured by the natural logarithm of the total number of employees in each enterprise. This metric reflects both the scale of employment over a given period and the potential impact of digital government construction on enterprise employment outcomes.

To mitigate omitted variable bias, several control variables are included in the empirical analysis. Enterprise size (*Size*) is measured by the natural logarithm of total assets to control for firm size effects. Financial leverage (*Lev*), represented by the asset–liability ratio, captures the firm's debt level and capital structure. Profitability (*ROA*), measured by the return on assets ratio, reflects operational performance. Growth (*Growth*) is proxied by the growth rate of operating income, indicating the firm's growth potential. Operating cash flow (*CF*) controls for the enterprise's internal financial condition, while liquidity (*Liquidity*), measured by the asset turnover ratio, captures the efficiency of asset utilization. Firm valuation (*TobinQ*) is included to control for market expectations and growth opportunities. Additionally, industry concentration (*HHI*) is incorporated to account for potential competitive effects on firms' employment decisions.

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To control for regional heterogeneity that may influence enterprise employment, city-level variables are also introduced. Economic development (*Econ*) is measured by the natural logarithm of per capita GDP; urbanization rate (*Urb*) is represented by the proportion of the urban population to the total resident population; and industrial structure sophistication (*Indus*) is measured by the share of tertiary industry value added in regional GDP.

# 4. Empirical Results Analysis

## 4.1 Baseline regression results

To examine the effect of digital government construction on enterprise employment and test Hypothesis $H_1$, Model (1) is employed for the baseline regression. Table 1 presents the results.

In column (1), without any control variables, the coefficient of digital government is significantly positive, indicating that digital government construction increases enterprise employment. After sequentially adding firm-level and regional control variables in columns (2) and (3), the coefficient remains positive and significant, demonstrating the robustness of the findings. The core result in column (3) shows significance at the 1% level, confirming the strong positive effect of digital government on employment.

Column (4) further incorporates firm and regional fixed effects to control for unobserved heterogeneity, and the results remain consistent. We present this stricter specification alongside the baseline model to conduct an immediate sensitivity test. This confirms that the estimated impact remains reliable even after fully accounting for time-invariant firm-specific characteristics, thereby ruling out potential bias from unobserved heterogeneity at the onset. Overall, as more controls and fixed effects are included, the sign and significance of the digital government coefficient remain stable, indicating that the observed effect reflects the true impact of digital government construction rather than model specification issues. Based on these results, this study supports the validity of Hypothesis $H_1$.

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**Table 1: Baseline Regression Results**

| *Variables* | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Labor** | **Labor** | **Labor** | **Labor** |
| ***DigGov*** | 0.0038***<br>(0.0012) | 0.0022***<br>(0.0007) | 0.0080***<br>(0.0009) | 0.0041***<br>(0.0007) |
| ***Size*** | | 0.7848***<br>(0.0057) | 0.7883***<br>(0.0057) | 0.6643***<br>(0.0239) |
| ***Lev*** | | 0.0590***<br>(0.01458) | 0.0556***<br>(0.0142) | −0.0635<br>(0.0845) |
| ***ROA*** | | 0.2614***<br>(0.0897) | 0.2446***<br>(0.0876) | −0.1594*<br>(0.0931) |
| ***Growth*** | | −0.0001<br>(0.0007) | −0.0001<br>(0.0007) | 0.0001***<br>(0.0057) |
| ***CF*** | | 0.0001***<br>(0.0001) | 0.0001***<br>(0.0001) | 0.0001<br>(0.0001) |
| ***Liquidity*** | | 0.2262***<br>(0.0111) | 0.2218***<br>(0.0111) | 0.0836***<br>(0.0077) |
| ***TobinQ*** | | −0.0006<br>(0.0039) | 0.0007<br>(0.0039) | 0.0133***<br>(0.0048) |
| ***HHI*** | | 0.0014<br>(0.1206) | 0.0142<br>(0.1198) | −0.1195**<br>(0.0617) |
| ***Econ*** | | | −0.0590***<br>(0.0114) | 0.0608<br>(0.0726) |
| ***Urb*** | | | 0.0613**<br>(0.0265) | 0.0608<br>(0.0726) |
| ***Indus*** | | | −0.0681***<br>(0.0065) | 0.0142<br>(0.0138) |
| ***Industry*** | YES | YES | YES | YES |
| ***Year*** | YES | YES | YES | YES |
| ***City*** | NO | NO | NO | YES |
| ***Firm*** | NO | NO | NO | YES |
| **Cons** | 7.2841***<br>(0.0996) | −10.3934***<br>(0.1378) | −10.1384***<br>(0.1702) | −6.2909***<br>(0.9046) |
| $R^2$ | 0.1179 | 0.7089 | 0.7115 | 0.9748 |
| **Obs.** | 18,066 | 18,066 | 18,066 | 17,932 |

Note: *, ** and *** denote be significance at the 0.1 level, the 0.05 level, and at the 0.01 levels, respectively. The same as below.

Source: Authors´ elaboration

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## 4.2 Robustness test results

### 4.2.1 Substitution of the core explanatory variable

To further verify the robustness of the baseline regression results, the core explanatory variable is replaced with an alternative indicator of digital government (*R_DigGov*). Specifically, the natural logarithm of the *digital government construction index ranking* is introduced as the substitute variable. This index ranks local governments according to their overall performance in digital government service provision, where a lower ranking indicates a higher level of digital government development. It thus captures the government's comprehensive efforts in advancing digital governance.

The results in Table 2 indicate that regions with a higher level of digital government development (*i.e.*, a lower ranking) exhibit higher enterprise employment levels, which further corroborates the reliability of the empirical findings of this study.

**Table 2: Robustness check with substitution of core variables**

| ***Variables*** | **(1)** | **(2)** | **(3)** | **(4)** |
|---|---|---|---|---|
| | **Replace explanatory variables** | | **Replace explained variables** | |
| | ***Labor*** | ***Labor*** | ***R_Labor*** | ***R_Labor*** |
| ***R_DigGov*** | −0.0177*** (0.0058) | −0.0336*** (0.0048) | | |
| ***DigGov*** | | | 0.0001** (0.0001) | 0.0001*** (0.0001) |
| ***Control*** | NO | YES | NO | YES |
| ***Industry*** | YES | YES | YES | YES |
| ***Year*** | YES | YES | YES | YES |
| **Cons** | 7.6449*** (0.0216) | −9.4317*** (0.1974) | 0.0047*** (0.0004) | 0.0272*** (0.0018) |
| $R^2$ | 0.1179 | 0.7111 | 0.1122 | 0.1660 |
| **Obs.** | 18,066 | 18,066 | 18,066 | 18,066 |

Source: Authors´ elaboration

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### 4.2.2 Substitution of the dependent variable

To further test the robustness of the baseline regression results, the dependent variable is replaced with the relative employment value (*R_Labor*) as an alternative measure of enterprise employment. Specifically, *R_Labor* is calculated by standardizing the ratio of total employees to total assets, thereby mitigating the potential influence of firm size on employment levels. The results in Table 2 also verify the core conclusion of the baseline regression.

### 4.2.3 Adjustment of sample period

To further verify the robustness of the baseline regression results, the sample period is adjusted by excluding observations from 2019 and 2020. This adjustment is made because the *Government E-Government Service Capability Index Report* underwent a methodological refinement in 2020, which may have affected the consistency of measurements across years.

The regression results after excluding the 2019 and 2020 samples are presented in columns (1) and (2) of Table 3. The findings continue to reveal a significant and positive relationship between digital government and enterprise employment, further corroborating the conclusions drawn from the baseline regression analysis.

**Table 3: Additional robustness checks**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Adjust the sample period | | Exclude specific samples | | | |
| | *Labor* | *Labor* | *Labor* | *Labor* | *Labor* | *Labor* |
| *DigGov* | 0.0033** (0.0017) | 0.0088*** (0.0014) | 0.0162*** (0.0022) | 0.0098*** (0.0019) | 0.0056*** (0.0014) | 0.0078*** (0.0011) |
| *Control* | NO | YES | NO | YES | NO | YES |
| *Industry* | YES | YES | YES | YES | YES | YES |
| *Year* | YES | YES | YES | YES | YES | YES |
| Cons | 7.2962*** (0.1399) | –9.7431*** (0.2168) | 6.4545*** (0.1762) | –10.2693*** (0.3198) | 7.2563*** (0.1144) | –10.1969*** (0.1944) |
| $R^2$ | 0.1199 | 0.7193 | 0.1606 | 0.6758 | 0.1243 | 0.7201 |
| Obs. | 12,380 | 12,380 | 6,475 | 6,475 | 14,174 | 14,174 |

Source: Authors´ elaboration

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### 4.2.4 Exclusion test for specific types of enterprises

To further assess the robustness of the baseline results, exclusion tests are conducted for specific types of firms. First, high-tech enterprises – which generally exhibit higher levels of digitalization and may respond differently to digital government initiatives – are excluded from the sample. After this exclusion, the results in columns (3) and (4) of Table 3 still show a significantly positive relationship between digital government and enterprise employment.

Second, firms listed on the ChiNext board, characterized by higher growth potential and stronger innovation capability, are excluded. The regression results in columns (5) and (6) of Table 3 continue to reveal a significantly positive coefficient on digital government.

### 4.2.5 Endogeneity test

To alleviate potential endogeneity concerns regarding digital government construction, this study adopts an instrumental variable approach and conducts a two-stage least squares (2SLS) estimation. Specifically, the number of post offices per million inhabitants in each region in 1984 is used as the instrumental variable for digital government. This measure captures the historical level of communication and information infrastructure, which is closely related to the subsequent path dependence and technological accumulation underlying current digital government development. As a historical variable largely determined by past administrative and postal planning, it has no direct link to contemporary enterprise employment, thereby satisfying both relevance and exogeneity conditions.

**Table 4: Endogeneity test results**

| ***Variables*** | **(1)** | **(2)** |
|---|---|---|
| | ***DigGov*** | ***Labor*** |
| ***DigGov*** | | 0.1647*** (0.0372) |
| ***DigGov_Iv*** | 0.0099*** (0.0018) | |
| ***K-P rk LM*** | 28.638*** | |
| ***C-D Wald F*** | 25.135 | |
| ***K-P rk Wald F*** | 28.645 | |
| ***S-Y bias CV*** | [16.38(10%)] | |
| **Obs.** | 17,023 | 17,023 |

Source: Authors´ elaboration

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The 2SLS results are reported in Table 4. The first-stage regression shows a significant positive relationship between the instrumental variable and digital government construction, and weak-instrument tests confirm its validity. In the second stage, the coefficient on digital government construction remains significantly positive and consistent with the baseline estimates.

## 4.3 Mechanism analysis

### 4.3.1 Innovation-driven mechanism analysis

Based on the theoretical framework, digital government construction can indirectly affect enterprise employment by strengthening firms' innovation-driven mechanisms. Therefore, this section examines whether digital government operates through managerial innovation awareness (*InnCon*), digital transformation (*DigTrans*), and digital–physical technology integration (*TechIn*). Managerial innovation awareness is measured by the log frequency of innovation-related keywords in annual reports; digital transformation is proxied by the ratio of intangible assets to total assets; and technological integration is measured by the logged annual count (plus one) of non-digital industry patents citing digital industry patents.

**Table 5: Innovation-driven mechanism effect test results**

| ***Variables*** | **(1)** | **(2)** | **(3)** |
|---|---|---|---|
| | ***InnCon*** | ***DigTrans*** | ***TechIn*** |
| ***DigGov*** | 0.0024*** (0.0008) | 0.0444** (0.0224) | 0.0005** (0.0002) |
| ***Control*** | YES | YES | YES |
| ***Industry*** | YES | YES | YES |
| ***Year*** | YES | YES | YES |
| **Cons** | 3.0281*** (0.1840) | 31.8842*** (4.1911) | −0.3850*** (0.0604) |
| $R^2$ | 0.3157 | 0.3249 | 0.0445 |
| **Obs.** | 18,066 | 18,066 | 18,066 |

Source: Authors´ elaboration

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As shown in Table 5, digital government significantly enhances managerial innovation awareness, encouraging firms to strengthen R&D and expand talent recruitment. Digital government also has a strong positive impact on digital transformation, improving efficiency and productivity and promoting firm expansion. Moreover, digital government significantly increases the level of digital–physical integration, enhancing firms' technological applications and innovation capacity, which further supports employment growth. The above results verify the validity of Hypothesis 2. In international contexts, similar mechanisms may operate, though the degree of impact could vary depending on the institutional settings and digital infrastructure maturity of each country.

### 4.3.2 Efficiency-enhancing mechanism analysis

Digital government improves enterprise operational efficiency, resource allocation efficiency, and financing efficiency by optimizing government services, enhancing market transparency, and providing data support. This promotes firm expansion, increases productivity, and ultimately raises labor demand. Based on the theoretical framework, this section examines whether digital government construction promotes employment through financing efficiency (*FinEff*), resource allocation efficiency (*ResEff*), and value creation efficiency (*ValEff*).

Financing efficiency is measured using the DEA method, with equity, total assets, total liabilities, debt ratio, current ratio, and interest expenses as inputs, and main business income, asset turnover, profit margin, and growth potential as outputs. Resource allocation efficiency is estimated using the Richardson (2006) approach to determine reasonable investment levels. Value creation efficiency is measured as the ratio of value created to total assets, where value includes net profit, cash paid to employees, increases in compensation liabilities, taxes paid, increases in tax liabilities, and financial expenses.

The results in Table 6 indicate that financing efficiency is significantly enhanced by digital government, suggesting improved financing channels and reduced capital costs that support firm expansion and hiring. Digital government also significantly improves resource allocation efficiency, showing its role in optimizing investment decisions and operational performance, thereby increasing labor demand. Additionally, digital government significantly enhances value creation efficiency, strengthening firm productivity and competitiveness, which further promotes firm growth and employment. The above results verify the validity of Hypothesis 3. In an international context, while the mechanisms may remain similar, the extent of digital government's impact on financing and resource allocation could differ based on each country's financial systems and regulatory environments.

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**Table 6: Efficiency-enhancing mechanism effect test results**

| Variables | (1) | (2) | (3) |
|---|---|---|---|
| | ***FinEff*** | ***ResEff*** | ***ValEff*** |
| ***DigGov*** | 0.0003***<br>(0.0001) | 0.0002*<br>(0.0001) | 0.0002***<br>(0.0001) |
| ***Control*** | YES | YES | YES |
| ***Industry*** | YES | YES | YES |
| ***Year*** | YES | YES | YES |
| **Cons** | 1.0884***<br>(0.0341) | −0.1085***<br>(0.0365) | 0.1308***<br>(0.0195) |
| $R^2$ | 0.5075 | 0.0498 | 0.7295 |
| **Obs.** | 18,066 | 18,066 | 18,066 |

Source: Authors´ elaboration

## 4.4 Heterogeneity test

### 4.4.1 Urban location heterogeneity

There are significant differences among eastern, central, and western China in terms of economic development, digital infrastructure, and industrial structure. The eastern region, characterized by more advanced digital infrastructure and higher levels of technological innovation, experiences a stronger employment-promoting effect from digital government construction, whereas the relatively lagging digitalization in central and western regions leads to weaker effects. Accordingly, the sample is divided into eastern, central, and western subsamples, and separate regressions are conducted to examine regional heterogeneity in the employment effects of digital government.

At the same time, resource-based cities rely heavily on natural resources and exhibit relatively concentrated industrial structures, face greater transformation pressures, and have weaker adaptive capacity to digital government construction, resulting in a more limited impact on enterprise employment. In contrast, non-resource-based cities tend to have more diversified industrial structures and stronger innovation capabilities, which allow digital government to exert a more pronounced employment effect. Following China's national sustainable development plans for resource-based cities, the sample is further divided into

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resource-based and non-resource-based cities for subgroup regressions. The results reported in Table 7 show that the impact of digital government construction on enterprise employment is most significant in the eastern region and is stronger in non-resource-based cities than in resource-based cities, indicating a more pronounced employment-promoting effect. This heterogeneous result may also be observed in other countries, where regions with different industrial structures and resource dependencies could experience varying degrees of employment impact from digital government construction.

**Table 7: Heterogeneity test results by enterprise location**

| Variables | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | East | Central | West | Resource Cities | Non-resource Cities |
| | *Labor* | *Labor* | *Labor* | *Labor* | *Labor* |
| ***DigGov*** | 0.0071*** (0.0013) | 0.0054** (0.0023) | 0.0056** (0.0022) | 0.0050** (0.0024) | 0.0082*** (0.0010) |
| ***Control*** | YES | YES | YES | YES | YES |
| ***Industry*** | YES | YES | YES | YES | YES |
| ***Year*** | YES | YES | YES | YES | YES |
| **Cons** | −10.5422*** (0.1936) | −10.3000*** (0.4786) | −6.7183*** (0.6333) | −9.6698*** (0.7283) | −10.4194*** (0.1870) |
| $R^2$ | 0.7142 | 0.7825 | 0.7158 | 0.8011 | 0.7057 |
| **Obs.** | 13,402 | 2,571 | 2,091 | 1,745 | 16,321 |

Source: Authors´ elaboration

## 4.4.2 Enterprise characteristics heterogeneity

In China, firms with different ownership structures exhibit distinct adaptability and responsiveness to digital government construction. State-owned enterprises (*SOEs*), supported by stronger government backing and a more stable policy environment, are generally better able to access policy resources and public services and are thus more likely to leverage digital government initiatives to expand employment, whereas non-state-owned firms, though more flexible in responding to market changes, may encounter greater institutional and informational barriers in accessing and using digital government resources. Accordingly, the sample is divided into SOEs and non-SOEs for subgroup regressions. In addition, R&D

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investment is adopted as a key indicator of technological adaptability, as firms with higher R&D investment typically possess stronger capabilities in technological upgrading and product innovation, enabling them to benefit more from digital government through enhanced innovation and recruitment, while firms with lower R&D investment face greater pressure in digital transformation and may be unable to fully exploit the opportunities created by digital government. As reported in Table 8, the impact of digital government construction on employment is particularly significant for SOEs, and is also stronger for firms with higher R&D investment, indicating that ownership structure and R&D intensity are crucial determinants of the heterogeneous employment-promoting effects of digital government. This finding may be similarly observed in other countries, where the differing institutional environments, ownership structures, and innovation capabilities of firms could lead to varying impacts of digital government on employment. Regions or countries with stronger government support for state-owned firms and higher levels of R&D investment might see more pronounced positive effects on employment.

**Table 8: Enterprise characteristics heterogeneity test results**

| Variables | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | State-Owned | Non-State-Owned | High R&D | Low R&D |
| | *Labor* | *Labor* | *Labor* | *Labor* |
| ***DigGov*** | 0.0090***<br>(0.0021) | 0.0079***<br>(0.0011) | 0.0061***<br>(0.0015) | 0.0052***<br>(0.0014) |
| ***Control*** | YES | YES | YES | YES |
| ***Industry*** | YES | YES | YES | YES |
| ***Year*** | YES | YES | YES | YES |
| ***Cons*** | −8.9296***<br>(0.3453) | −10.3363***<br>(0.2123) | −10.4148***<br>(0.2570) | −9.0020***<br>(0.2603) |
| $R^2$ | 0.7409 | 0.6850 | 0.7569 | 0.7316 |
| **Obs.** | 4,720 | 13,343 | 6,636 | 6,636 |

Source: Authors´ elaboration

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# 5. Extensibility Analysis: The Role of Digital Government in Promoting Industrial Equity and Transformation

## 5.1 The role of digital government in enhancing innovation capacity in the technology sector

Digital government construction reduces institutional transaction costs by optimizing service procedures, enhancing information transparency, and improving public service efficiency, thereby creating a more favorable environment for technology-driven enterprises. This promotes R&D activities and facilitates the commercialization of research outcomes. Meanwhile, the openness of environmental data, green approval systems, and policy guidance under digital government helps firms identify opportunities for green innovation and supports sustainable technology development.

This study further examines the differentiated impact of digital government on enterprise innovation, focusing on the technology sector, which is characterized by high technological intensity and substantial R&D investment. Given its sensitivity to policy and digital infrastructure, digital government is expected to exert a stronger innovation-promoting effect in this sector.

**Table 9: Innovation capacity enhancement effect test results**

| Variables | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Tech Industry | Non-Tech Industry | Tech Industry | Non-Tech Industry |
| | *Tec* | *Tec* | *GTec* | *GTec* |
| ***DigGov*** | 0.0092***<br>(0.0018) | 0.0064**<br>(0.0029) | 0.0033***<br>(0.0013) | 0.0024**<br>(0.0010) |
| ***Control*** | YES | YES | YES | YES |
| ***Industry*** | YES | YES | YES | YES |
| ***Year*** | YES | YES | YES | YES |
| **Cons** | −15.7559***<br>(0.3436) | −14.5646***<br>(0.4820) | −4.3241***<br>(0.2874) | −0.8974***<br>(0.2249) |
| $R^2$ | 0.5051 | 0.4751 | 0.1655 | 0.2777 |
| **Obs.** | 11,580 | 6,475 | 11,580 | 6,475 |

Source: Authors´ elaboration

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Technological innovation is measured by the log of annual patent applications (*Tec*), and green innovation by the log of green patent applications (*GTec*). The empirical results in Table 9 show that digital government significantly enhances technological innovation in the technology sector and also promotes green innovation, indicating that digital government supports both technological advancement and sustainable development.

Comparative analysis further shows that the innovation-promoting effect of digital government is considerably stronger in the technology sector than in non-technology sectors, suggesting that improvements in information infrastructure, innovation resource allocation, and policy services under digital government particularly benefit technology-intensive firms.

## 5.2 The incentive role of digital government in accelerating the sustainable transformation of polluting industries

Digital government construction promotes the sustainable transformation of high-pollution industries by enhancing environmental information transparency, streamlining environmental approval procedures, advancing digital regulatory tools, and improving government–business communication. These improvements reduce information asymmetry and policy implementation costs faced by polluting industries, thereby encouraging them to strengthen green governance and sustainable development performance. To empirically examine this mechanism, this study evaluates sustainable development performance and green governance performance. Sustainable development performance (*Sus*) is measured from both financial and environmental dimensions – return on assets and the environmental score from the Bloomberg ESG system – standardized to ensure comparability and to reflect overall sustainability. Green governance performance (*Ggov*), calculated using the media sentiment index (*Janis–Fadner coefficient*), incorporates indicators such as pollution emission scores, environmental violations, complaint cases, ISO 14001 certification, and environmental awards, providing a comprehensive measure of firms' environmental governance practices.

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**Table 10: Incentive effect of sustainable transformation**

| Variables | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Polluting Industry | Non-Polluting Industry | Polluting Industry | Non-Polluting Industry |
| | *Sus* | *Tec* | *Ggov* | *Ggov* |
| *DigGov* | 0.0008** (0.0003) | 0.0002 (0.0002) | 0.0020* (0.0010) | 0.0008 (0.0007) |
| *Control* | YES | YES | YES | YES |
| *Industry* | YES | YES | YES | YES |
| *Year* | YES | YES | YES | YES |
| Cons | −0.4132 *** (0.0668) | −0.2926 *** (0.0445) | 1.3615*** (0.1948) | −0.2454** (0.1187) |
| $R^2$ | 0.1690 | 0.2232 | 0.1155 | 0.1394 |
| Obs. | 3,641 | 14,049 | 3,322 | 12,584 |

Source: Authors´ elaboration

The empirical results in Table 10 show that digital government significantly enhances the sustainable development performance of firms in polluting industries, indicating that improvements in digital government systems help firms strengthen environmental responsibility while achieving economic benefits. Digital government also has a highly significant positive effect on green governance performance, suggesting that digital regulation and policy incentives encourage polluting firms to improve environmental management, institutional compliance, and technological upgrading. Comparative analysis further indicates that the role of digital government is stronger in polluting industries than in non-polluting industries, highlighting its precise incentive effects in environmental information–based regulation and green policy transmission.

## 6. Conclusion and Discussion

Based on institutional theory, this study provides robust empirical evidence that digital government construction significantly enhances corporate employment. The analysis reveals a "dual-drive" mechanism: digital government promotes employment by stimulating innovation incentives (*e.g.*, digital transformation and manager awareness) and enhancing efficiency (*e.g.*, resource allocation and financing access). Heterogeneity analyses indicate

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that these positive effects are structural, being more pronounced in eastern regions, non-resource-based cities, state-owned enterprises (SOEs), and firms with high R&D intensity. Furthermore, the results highlight the unique role of digital governance in fostering technological advancement in high-tech sectors while accelerating the green transformation of pollution-intensive industries, confirming its value in reconciling economic growth with sustainable development.

To maximize the employment-promoting effects of digital government, three specific policy implications are proposed: First, policymakers should prioritize the dismantling of data silos across departments to reduce institutional transaction costs. Governments need to establish integrated digital service platforms that simplify administrative approvals and ensure transparent policy transmission, thereby stabilizing corporate expectations and encouraging labor expansion. Second, differentiated digital strategies should be adopted to bridge regional and structural gaps. For underdeveloped regions and non-SOEs, the government should provide targeted digital infrastructure subsidies and specialized procurement policies to lower the threshold for digital adaptation. Third, the integration of digital regulation and green governance should be strengthened. Regulators should leverage data analytics to monitor and guide the sustainable transformation of polluting industries, using digital tools to allocate resources toward green innovation, thus fostering high-quality employment in emerging sectors.

Despite these contributions, this study has some limitations. First, this study primarily focuses on the Chinese context, and the findings may not be directly applicable to other countries with different institutional and economic environments. This limitation could affect the generalizability of the results, as digital government construction and its impacts on employment might vary significantly across different nations. Future research could address this limitation by conducting cross-national analyses to explore how digital government affects enterprise employment in diverse institutional settings. Additionally, this study mainly examines the overall impact of digital government on enterprise employment, without delving into more micro-level aspects such as employment quality, job structure, and labor skills matching. Future research could further expand these areas with more granular data support.

## Acknowledgement

**Funding:** There was no funding, either externally or internally, towards this study.

**Conflicts of interest:** The authors hereby declare that this article was neither submitted nor published elsewhere.

**AI usage statement:** The author confirms that no artificial intelligence (AI) or AI-assisted tools were used in the creation of this manuscript.

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## References

Cheng, Q., Chen, B., Luo, J. (2024). The impact of digital tax administration on local government debt: Based on the revision of the tax collection and administration law. *Finance Research Letters*, 67, 105938. https://doi.org/10.1016/j.frl.2024.105938

Ding, Z., Qu, S., Zhou, S., Lu, S. (2024). Digital government and corporate leverage: Evidence from China. *Economic Analysis and Policy*, 83, 457–479. https://doi.org/10.1016/j.eap.2024.06.026

Duan, Y., Xi, B., Xu, X., Xuan, S. (2024). The impact of government subsidies on green innovation performance in new energy enterprises: A digital transformation perspective. *International Review of Economics & Finance*, 94, 103414. https://doi.org/10.1016/j.iref.2024.103414

Dubey, R., Bryde, D. J., Dwivedi, Y. K., Graham, G., Foropon, C., Papadopoulos, T. (2023). Dynamic digital capabilities and supply chain resilience: The role of government effectiveness. *International Journal of Production Economics*, 258, 108790. https://doi.org/10.1016/j.ijpe.2023.108790

Fan, X., Zhao, S., Shao, D., Wang, S., Zhang, B. (2024). Talking and walking: Corporate digital transformation and government subsidies. *Finance Research Letters*, 64, 105444. https://doi.org/10.1016/j.frl.2024.105444

Feng, Y., Han, Y., Hu, S., Pan, Y. (2025). Alleviating energy poverty globally: Does digital government matter?. *Energy Economics*, 143, 108272. https://doi.org/10.1016/j.eneco.2025.108272

Gan, T., Zhang, M., Zhang, Z. (2023). The impact of digital government policy on entrepreneurial activity in China. *Economic Analysis and Policy*, 79, 479–496. https://doi.org/10.1016/j.eap.2023.06.029

Gil-Garcia, J. R., Dawes, S. S., Pardo, T. A. (2018). Digital government and public management research: finding the crossroads. Public management review, 20(5), 633–646. https://doi.org/10.1080/14719037.2017.1327181

Gong, Y., Yang, X. (2024). Understanding strategies for digital government transformation: A strategic action fields perspective. *International Journal of Information Management*, 76, 102766. https://doi.org/10.1016/j.ijinfomgt.2024.102766

Güler, M., Büyüközkan, G. (2023). A survey of digital government: Science mapping approach, application areas, and future directions. *Systems*, 11(12), 563. https://doi.org/10.3390/systems11120563

Hao, X., Miao, E., Sun, Q., Li, K., Wen, S., Xue, Y. (2024). The impact of digital government on corporate green innovation: Evidence from China. *Technological Forecasting and Social Change*, 206, 123570. https://doi.org/10.1016/j.techfore.2024.123570

Li, X., Yue, S. (2025). Does the government digital attention improve China's digital economy output efficiency: Accelerator or inhibitor. *Economic Analysis and Policy*, 85, 607–625. https://doi.org/10.1016/j.eap.2024.12.020

Final version of the article before editorial processing



Richardson, S. (2006). Over-investment of free cash flow. *Review of accounting studies*, 11(2), 159–189. https://doi.org/10.1007/s11142-006-9012-1

Wang, D., Liu, X., Hu, S., Wu, S. (2025). The value of digital government transformation: Evidence from R&D subsidy efficiency in China. *International Review of Financial Analysis*, 102, 104106. https://doi.org/10.1016/j.irfa.2025.104106

Warren, K. (2021). Debate: Digital revolution and government investment. *Public Money & Management*, 41(4), 283–285. https://doi.org/10.1080/09540962.2021.1882735

Xing, Z., Yalçin, H., Daim, T. (2024). Digital Economy's influence on R&D Network configurations: Integrating resource dependence theory and institutional theory. *Technovation*, 137, 103098. https://doi.org/10.1016/j.technovation.2024.103098

Xu, W., Peng, Z., Feng, Z., Peng, C. (2025). The impact of government digital attention on enterprise digital transformation: empirical insights from China. *Applied Economics Letters*, 32(18), 2713–2718. https://doi.org/10.1080/13504851.2024.2339370

Yang, C., Gu, M., Albitar, K. (2024). Government in the digital age: Exploring the impact of digital transformation on governmental efficiency. *Technological Forecasting and Social Change*, 208, 123722. https://doi.org/10.1016/j.techfore.2024.123722

Yuan, Y. P., Dwivedi, Y. K., Tan, G. W. H., Cham, T. H., Ooi, K. B., Aw, E. C. X., Currie, W. (2023). Government digital transformation: understanding the role of government social media. *Government Information Quarterly*, 40(1), 101775. https://doi.org/10.1016/j.giq.2022.101775

Zhang, L., Zhang, X. (2025). Impact of digital government construction on the intelligent transformation of enterprises: Evidence from China. *Technological Forecasting and Social Change*, 210, 123787. https://doi.org/10.1016/j.techfore.2024.123787

Zhao, X., Zhao, L., Sun, X., Xing, Y. (2024). The incentive effect of government subsidies on the digital transformation of manufacturing enterprises. *International Journal of Emerging Markets*, 19(11), 3892–3912. https://doi.org/10.1108/IJOEM-05-2022-0766

Zhu, B., Zhong, R., Wei, C. (2024). Measuring digital government service performance: Evidence from China. *China Economic Review*, 83, 102105. https://doi.org/10.1016/j.chieco.2023.102105

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