Measuring the Employment Structure Effect and Growth Potential of Digital Consumption

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Introduction

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1. Introduction

1.1 Background and significance of the selected topic

➢ **Why are you discussing digital consumption?**

- In March 2021, China's 14th Five-Year Plan first formally proposed "developing digital consumption" in government documents, listing it as a key task to cultivate new consumption types.

- In December 2023, the Central Economic Work Conference prioritized "vigorously developing digital consumption" as the top measure to expand domestic demand.

- As a dynamic, innovative, and high-growth consumption pattern, digital consumption drives digital economy development and serves as a core engine for boosting domestic demand and unleashing economic potential.

1. Introduction

1.1 Background and significance of the selected topic

➢ **Why are we discussing digital consumption?**

　① As a key component of the digital economy, digital consumption transforms consumption habits, spawning new industries and driving traditional sectors' digital transformation (Mao & Wang, 2023). It creates jobs, optimizes labor supply-demand structures, and facilitates inter-industry labor reallocation (Guo et al., 2022).

　② Its spawned flexible employment model enhances job market resilience, fueling economic growth and employment creation (Wu & Yang, 2022).

1. Introduction

1.1 Background and significance of the selected topic

➤ **Why are we discussing digital consumption?**

③ Against the backdrop of high employment pressure, structural contradictions, and uncertain environment (Xu Heng et al., 2024), tapping the employment-absorbing capacity of digital consumption-driven production systems is key to stabilizing employment and boosting labor market confidence. Thus, exploring the employment effects of digital consumption from an effective demand perspective is crucial to removing supply-demand cycle obstacles and expanding employment space.

1. Introduction

1.2 Possible marginal contributions

① In-depth analyses of digital consumption patterns and characteristics, proposing the concept and statistical scope of digital consumption that satisfies both economic definitions and statistical measurements, and on this basis, incorporating digital technology, digital consumption and employment into the same research framework to clarify the theoretical mechanism of digital consumption-driven employment, in order to expand and deepen the inadequacies of related digital consumption research;

1. Introduction

1.2 Possible marginal contributions

② In the dual context of expanding domestic demand and promoting high-quality full employment, the digital economy input-output model of employment expansion is used to systematically quantify the employment effect driven by digital consumption, and comprehensively analyse the employment creation effect, employment scale effect, employment substitution effect and employment structure effect of digital consumption;

③ Explore the trend of digital consumption changes and changes in the number of people employed in the industry, simulate and portray the changes in the employment structure triggered by the changes in digital consumption, and explore the effective path of digital consumption-driven employment.

2.1 Literature review

➢ **Progress in research on digital consumption**

Digital consumption measurement primarily adopts two approaches. The first involves constructing composite index systems (e.g., Pang Liang & Huarui, 2024) that integrate development strength, vitality, and potential to evaluate holistic progress. This method captures systemic characteristics but risks oversimplification.

The second approach utilizes single variables like national information consumption pilot cities (Yan Juan & Chen Jing, 2024; Zhang J et al., 2024) or per capita express delivery volume (Liu Changgeng et al., 2017) to reflect specific dimensions. While providing targeted insights, these metrics fail to depict structural complexity.

Both methods have limitations: composite indices may generalize excessively, while isolated indicators lack systemic integration. Consequently, neither fully satisfies consumption accounting's statistical requirements, creating a gap in characterizing digital consumption's multifaceted nature.

2.1 Literature review

> **A study on the impact of digital consumption on employment**

From the supply-side perspective, the digital economy is integrated into economic growth models (Acemoglu & Restrepo, 2018) as innovation or technological progress, analyzing its employment impacts through the lens of Western technological progress theories. Studies typically quantify the digital economy using variables like artificial intelligence (Chen Lin et al., 2024; Sun et al., 2019), digital technologies (Yang & Li, 2013), platforms (Xu et al., 2024), and e-commerce (Lin et al., 2023). Findings reveal multiple employment effects: creation and compensation effects (Chen Lin et al., 2024; Xiang et al., 2024) drive job growth, while substitution, crowding-out, and siphoning effects (Liu et al., 2024; Gala, 2024) reshape labor structures. These mechanisms collectively determine the scale and composition of employment outcomes.

2.1 Literature review

➢ **A study on the impact of digital consumption on employment**

From the demand perspective, building on Keynesian effective demand theory, researchers construct a demand-supply cycle framework to analyze digital technology-driven consumption upgrades' employment impacts (Hou et al., 2024; Wu, 2023). Two mechanisms are explored: first, shifts in export, investment, and consumption scales/structures reshape industry employment distribution; second, unilateral changes in these sectors drive labor market supply dynamics (Tang, 2023). Current academic focus also includes employment effects of policies stimulating digital consumption potential, such as labor market responses to digital consumption credit schemes (Yin, 2023) and rural e-commerce initiatives (Pan, 2024). These studies reveal how digital transformation reconfigures employment patterns through both macroeconomic structural adjustments and targeted policy interventions.

2.1 Literature review

➤ **Insufficient research**

✓ Few studies have included digital technology, digital consumption and employment together in the Keynesian framework of effective demand analysis to explore the theoretical mechanisms of digital consumption-driven employment under the boundary of the production system that encompasses the digital economy industries;

✓ Quantitative research on the differences in the structural effects of employment driven by digital and traditional non-digital consumption has not yet been conducted, and there is limited guidance on stimulating the potential of digital consumption to promote high-quality full employment;

✓ The path to effectively expanding digital consumption and promoting employment is not sufficiently clear, and there is a lack of quantitative research on digital consumption reshaping production systems to achieve digital transformation and expand employment.

2.2 Theoretical analysis —conceptualisation of digital consumption

Digital Consumption Concept Definition:

Drawing on the classification of digital products and the statistical measurement of the digital economy in the 2018 edition of the United Nations Classification of Individual Consumption According to Purpose (COICOP), the Organisation for Economic Co-operation and Development (OECD) Manual for the Preparation of Tables for the Usage of Digital Supplies (MTUS), and the Manual for the Measurement of Digital Trade (MTDT), and taking digital products produced by industries in the 01-04 broad categories of the National Bureau of Statistics (NBS) Statistical Classification of the Digital Economy and its Core Industries (2021) as a benchmark. Digital products are separated from traditional broad consumer products according to three transaction methods: digital ordering, digital delivery and digital intermediary platform.

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2.2 Theoretical analysis —conceptualisation of digital consumption

Digital Consumption Concept Definition:

Considering that the core connotation of digital consumption is the change of traditional consumption patterns by digital technology, which is mainly reflected in the transaction and consumption segments. In the transactional segment, this is reflected in the ordering and use of consumer goods through digital ordering or digital delivery, and in the consumption segment, in the increase in the diversity of types of consumable digital products.

2.2 Theoretical analysis - measurement ideas
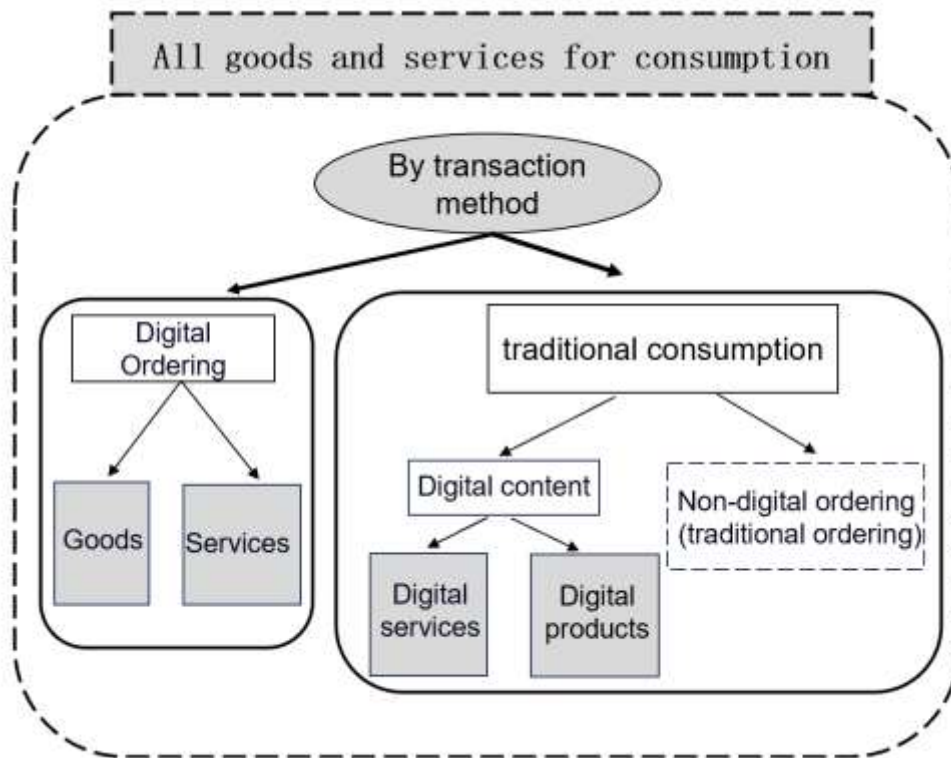
Figure 1   Scope of accounting for digital consumption statistics

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2.2 Theoretical analysis - measurement ideas

Measurement ideas for digital consumption:

First, digital consumption is defined as the total consumption activities where consumers order, receive, and utilize goods/services via online transactions, reflecting shifts in transaction modes and consumption content. This encompasses digital intermediary platforms and network-based interactions.

Second, its statistical scope extends beyond digital core industry outputs to include online transactions for non-digital products/services, incorporating digital ordering, delivery, and usage. Digital consumption expenditure—funds spent on these activities—serves as the critical metric for measuring its scale and structural composition in this study.

2.2 Theoretical Mechanisms - Theoretical Mechanisms of Digital Consumption Influencing Employment Changes

Digital consumption impacts employment through traditional consumption scale/structure changes and digital innovation/consumption pattern shifts, altering total employment and sectoral composition (Qi & Chu, 2021). By penetrating production systems, it drives factor input adjustments across industries, reshaping overall employment landscapes. To systematically quantify this macro-level employment-driving role, **three core issues need to be addressed:**

(1) Does digital consumption have a job-creating or substituting effect by changing the way transactions are carried out?

(2) Is the impact on employment of changes in the content of consumption prompted by digital consumption a scale or structural effect?

(3) What will be the combined impact of the interaction of changes in digital consumption and short-term fluctuations in the job market?

2.2 Theoretical Mechanisms - Theoretical Mechanisms of Digital Consumption Influencing Employment Changes

Assumption 1: Employment creation effect and employment substitution effect of digital consumption.

Digital consumption's transaction shifts generate dual employment effects: spurring digital innovation and platform economies, it creates online-oriented roles (job creation), while displacing traditional retail and brick-and-mortar sectors through technological disruption (job substitution). This dynamic reflects the sectoral restructuring driven by evolving consumption patterns.

2.2 Theoretical Mechanisms

Assumption 2:Employment scale effects and employment structure effects of digital consumption.

Digital consumption's diversification spurs new employment opportunities, demanding high-skilled professionals like innovative content creators and tech developers (Mandel, 2017), driving structural shifts toward premium expertise (Guo et al., 2022). While traditional roles face disruption, personalized trends boost service-sector jobs (e.g., customer support), enriching job market tiers and diversity through technological adaptation.

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2.2 Theoretical Mechanisms - Theoretical Mechanisms of Digital Consumption Influencing Employment Changes

Assumption 3: Direct employment effects and indirect employment effects of digital consumption.

Digital consumption shifts first adjust the final production sector, directly impacting labor inputs (direct effect). Simultaneously, induced upstream supply chain effects ripple through interconnected sectors, spurring employment across related industries (Bartelsman et al., 2019). This two-tiered mechanism—direct production scaling and indirect supply-chain amplification—shapes digital consumption's dual employment impact.
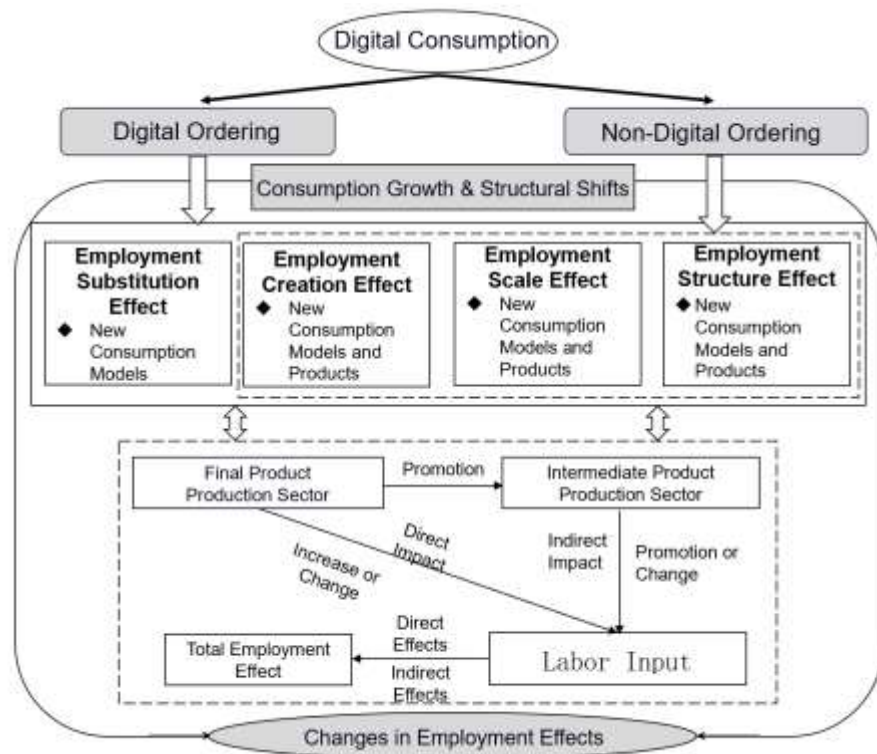
Figure 1 Theoretical mechanisms of employment effects of digital consumption

2.3 Research methodology

➢ Employment Extended Data Input-output Model

$$\begin{bmatrix} Q^d \\ Q^n \end{bmatrix} = \begin{bmatrix} q^d \\ q^n \end{bmatrix} \begin{bmatrix} L^{dd} & L^{dn} \\ L^{nd} & L^{nn} \end{bmatrix} \begin{bmatrix} y^d \\ y^n \end{bmatrix} = \boldsymbol{qLY} = \boldsymbol{mY}$$

In formula (6), the employment multiplier $\boldsymbol{m} = \boldsymbol{qL} = \boldsymbol{q(I - A)^{-1}}$ denotes the total workforce needed per unit of final consumption. It reflects employment distribution in digital product supply chains. $\boldsymbol{Y}$ represents the total amount of digital consumption. $\boldsymbol{L} = \boldsymbol{(I - A)^{-1}} = \boldsymbol{(I - T/X)^{-1}}$ and $\boldsymbol{X}$ are calculable from the digital economy's input - output table.

2.3 Research methodology

➢ **Scenario design for digital consumption changes**

First, to evaluate policy effectiveness in expanding domestic demand, this study explores digital consumption's evolution and employment impacts during China's 14th Five-Year Plan period through three scenarios: baseline, prudent, and expansionary.

✓ **The baseline scenario**, the most probable projection, assumes digital consumption, production systems, and technological innovation align with GDP growth while maintaining current employment growth rates. This occurs under stable policies without major economic fluctuations, reflecting a continuity of existing developmental trajectories and structural patterns.

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2.3 Research methodology

➤ **Scenario design for digital consumption changes**

✓ **The cautious scenario, a more conservative simulation**, incorporates factors like sluggish domestic demand, industrial modernization gaps, and external uncertainties, which may slow digital consumption growth due to market saturation, technological bottlenecks, or macroeconomic headwinds. Employment growth, particularly in e-commerce and cloud services, is constrained. **Drawing on the McKinsey report, this scenario assumes a 2.3% digital consumption growth rate for 2024-2025, reverting to baseline levels thereafter.** Employment data and digital economy input-output treatments align with the baseline framework.

2.3 Research methodology

➢ **Scenario design for digital consumption changes**

✓ **The Expansion Scenario, a positive and optimistic simulation, assumes digital consumption accelerates due to technological innovation, rising demand, and policy support.** Digital consumption growth for 2024-2025 is projected using 2022-2023 sectoral rates (mostly exceeding 8%). Employment trends align with the Baseline Scenario, while digital economy expansion synchronizes with annual GDP targets. Input-output tables for 2021-2025 are derived through coordinated GDP-linked adjustments, maintaining consistency with macroeconomic benchmarks.

2. Research process and methodology

2.4 Data processing and description

➤ **The data required for this paper are mainly digital economy input-output tables, sub-sectoral employment figures and disaggregated data on digital consumption.**

✓ **Compiled by China Industrial Ecology Lab (Wang, 2017) using sector-coordinated conversion, referencing NBS's 2020 Input-Output Table and 2021 Digital Economy Classification Standard.**

✓ **Digital consumption data by consumption type is assessed via online retail sales metrics.** **Given the absence of direct input-output table alignment, this study refers to Pang and Huarui (2024) and employs online retail data from the Trade and Foreign Economic Statistics Yearbook to quantify digital consumption scale, ensuring consistency with sectoral classification frameworks.**

2.4 Data processing and description

- ✓ **Industry-specific employment data follows Wang Yafei et al.'s (2021) methodology, using NBS's annual urban/rural employment statistics and survey-projected totals (China Statistical Yearbook) as controls. After projecting sectoral and broader industry employment figures and cross-verifying data, 2020 figures for 97 industries were derived, including subindustry, educational attainment, and age group breakdowns.**

3. Results and analyses

Characteristics of the overall employment effect

The total employment effect of digital consumption is significantly lower than that of non-digital consumption, but its potential for job creation should not be overlooked. In 2020, digital consumption constituted 44.1% of final consumption, driving 198.18 million jobs (45.9% of total employment impacts), with digitally-ordered products/services contributing 117.22 million jobs (27.2% share). Non-digital consumption, by contrast, supported 233.41 million jobs—1.2 times digital consumption's impact.

Employment efficiency: Each additional million dollars of consumption of digitally subscribed products and services contributes to the creation of 10 new jobs, higher than non-digital consumption (7.4 per million dollars) and non-digitally subscribed digital content (6.2 per million dollars).

①Digital consumption created a total of 93,533,000 jobs, with a large difference in the total job creation effect between non-physical consumption under a digital subscription and digital content consumption under a non-digital subscription, but the employment efficiencies of the two were essentially equal.

②The more efficient an industry is in employment, the larger the size of its job creation effect.

Table 1 Employment Creation Effect Driven by Digital Consumption

Digital Ordering Non - physical Consumption			Non - digital Ordering Digital Content Consumption		
Industry	Employment	Efficiency	Industry	Employment	Efficiency
Retail	157.1	0.78	Comm. & Radar Equip.	1660.9	1.28
Bus. Serv.	144.3	0.72	Soft. Dev.	1552.7	1.20
Education	91.1	0.46	Electr. Comp. & Equip.	1229.4	0.95
Health	81.6	0.41	Computer	1126.8	0.87
Catering	80.8	0.40	Other Digital Inds.	874.8	0.67
Elec. & Heat Prod. & Supply	74.8	0.37	Digital Media Equip.	430.8	0.33
Real Estate	49.4	0.25	Telecom., Broad., TV & Satellite Trans. Serv.	370.4	0.29
Prof. & Tech. Serv.	48.3	0.24	Other Digital Prods.	175.2	0.13
Fin. Serv.	40.4	0.20	Digital Content & Media	147.3	0.11
Accommodation	35.5	0.18	Smart Devices	105.5	0.08
Road Trans. & Assist. Act.	35.1	0.18	Internet - rel. Serv.	87.0	0.07
Other Serv.	34.8	0.17	IT Serv.	79.2	0.06
Resident Serv.	34.0	0.17	Digital Prod. Retail	51.4	0.04
Soft. Dev.	32.7	0.16	Data Res. & Prop. Trade	48.5	0.04
Insurance	29.6	0.15	Digital Prod. Wholesale	33.0	0.03
Other Digital Inds.	23.0	0.11	Internet Finance	31.4	0.02
Telecom., etc.	22.8	0.11	Other Digital Tech. App. Serv.	26.6	0.02
Multimodal Trans. & Agency	21.0	0.10	Internet Whl. & Retail	25.3	0.02
IT Serv.	19.0	0.10	Internet Platforms	20.0	0.02
Urban Trans. & Hwy. Pass. Trans.	16.0	0.08	Info. Infrastructure Constr.	19.1	0.01
Pub. Fac. & Land Mgmt.	15.5	0.08	Digital Prod. Maint.	0.3	0.00
Total	1257.5	6.28	Total	8095.7	6.23

3.2 Characterisation of employment substitution effects

① In 2020, 62 industries faced employment substitution effects, with total jobs declining by 52.07 million (8.8 million when adjusted for non-digital consumption efficiency).

② The employment substitution effect was most pronounced in education, public administration, and health sectors (over 7 million jobs lost), followed by catering, real estate, and wholesale industries (over 1.8 million jobs lost each), collectively accounting for 85.5% of total substitution impacts.

③ Affected industries also exhibit lower employment efficiency, reflecting structural inefficiencies in labor reallocation amid digital consumption shifts.

Table 2 Employment Effect of Employment - Substituting Industries

Industry	Employment Population	Employment Efficiency	Industry	Employment Population	Employment Efficiency
Agricultural Products	237.2	0.24	Aquatic Products Processing	9.9	0.01
Agriculture, Forestry, Animal Husbandry and Fishery Service Products	102.0	0.10	Seasonings and Fermented Products	8.6	0.01
Catering	99.6	0.10	Alcohol and Wine	8.6	0.01
Livestock Products	61.9	0.06	Pharmaceutical Products	7.0	0.01
Grain Milling Products	45.8	0.05	Dairy Products	6.0	0.01
Automobile Vehicles	40.4	0.04	Culture and Art	5.7	0.01
Slaughter and Meat Processing Products	28.8	0.03	Convenience Foods	5.6	0.01
Arts and Crafts	27.6	0.03	Entertainment	5.2	0.01
Daily Chemical Products	26.2	0.03	Refined Tea	4.7	0.00
Fishery Products	21.6	0.02	Tobacco Products	4.1	0.00
Vegetables, Fruits, Nuts and Other Agricultural and Sideline Food Processing Products	21.6	0.02	Sports	2.3	0.00
Other Foods	21.5	0.02	Sugar and Sugar Products	2.0	0.00
Other Transportation Equipment	18.8	0.02	Publishing Industry	1.9	0.00
Vegetable Oil Processing Products	17.9	0.02	Ceramic Products	1.6	0.00
Beverages	12.9	0.01	Loading, Unloading, Handling and Warehousing	1.5	0.00
Health	11.9	0.01	Total	880.2	0.9
Professional and Technical Services	9.9	0.01			

3.3 Characterisation of employment scale effects

① Digital consumption primarily drives employment in manufacturing and service industries. Physical digital goods spurred 95.85 million jobs (48.4% of total impact), led by retail (47.6% of sector effect), followed by plastics, business services, and wood products (exceeding 4.3 million jobs each), with high employment efficiency.

② Digital consumption's employment impact on equipment manufacturing and heavy industries remains comparatively limited, reflecting sectoral disparities in digital transformation penetration.

Table 3 Employment Effects of Employment-Scale Industries

Industry	Employment	Efficiency	Industry	Employment	Efficiency
Retail	4562.4	4.68	Chemical Fiber Products	46.9	0.05
Business Services	519.4	0.53	Auto Parts & Accessories	41.7	0.04
Plastic Products	449.2	0.46	Knitted/Crocheted Products	38.2	0.04
Wood Processing	437.9	0.45	Power Transmission Equipment	35.9	0.04
Cotton & Chemical Fiber Textiles	374.0	0.38	Other Manufacturing Products	35.0	0.04
Rubber Products	297.1	0.30	Hemp & Silk Textiles	32.5	0.03
Resident Services	263.4	0.27	Other Digital Products	30.4	0.03
Textile Apparel	258.3	0.26	Other Electrical Machinery	29.5	0.03
Metal Products	238.2	0.24	Leasing	27.7	0.03
Electronic Components	165.2	0.17	Digital Media Equipment	22.5	0.02
Forest Products	136.0	0.14	Feed Processing	22.3	0.02
Other Special Equipment*	134.5	0.14	Wool Textiles	21.7	0.02
Paper & Paper Products	113.3	0.12	Instruments	21.5	0.02
Furniture	108.5	0.11	Smart Devices	21.0	0.02
Unspecified General Equipment*	103.6	0.11	Printing	11.4	0.01
Textile Manufactures	91.8	0.09	Graphite & Nonmetal Minerals	11.4	0.01
Special Chemicals & Explosives	89.8	0.09	Medical Instruments	9.8	0.01
Communication & Radar Equipment	76.1	0.08	Coal Processing	9.3	0.01
Leather Products	76.0	0.08	Ships & Related Devices	7.6	0.01
Footwear	75.3	0.08	Cultural & Office Machinery	6.8	0.01
Household Appliances	73.9	0.08	Agricultural Machinery	6.1	0.01
Computers	71.2	0.07	Pesticides	5.4	0.01
Other Services	69.5	0.07	Gypsum & Cement Products	3.9	0.00
Batteries	68.0	0.07	Building Materials (Bricks, Stones)	2.7	0.00
Cultural & Sporting Goods	65.2	0.07	Cement & Gypsum	2.6	0.00
Paints & Pigments	59.4	0.06	Glass & Glass Products	2.1	0.00
Wires & Cables	52.1	0.05	Digital Content & Media	0.2	0.00
Refined Petroleum	49.1	0.05	Total	9584.7	9.82

① Structural disparities exist in digital consumption's employment impacts across education levels. Junior high school graduates account for 38.9% of affected jobs (77.02M), followed by senior high school (23.5%), vocational college (14.8%), and bachelor-degree-or-above groups (11.6%).

② Digital consumption most strongly benefits 25–34-year-olds (28.6% of total impact), likely due to their higher digital adaptability and rapid uptake of technology-driven work patterns, creating comparative employment advantages.
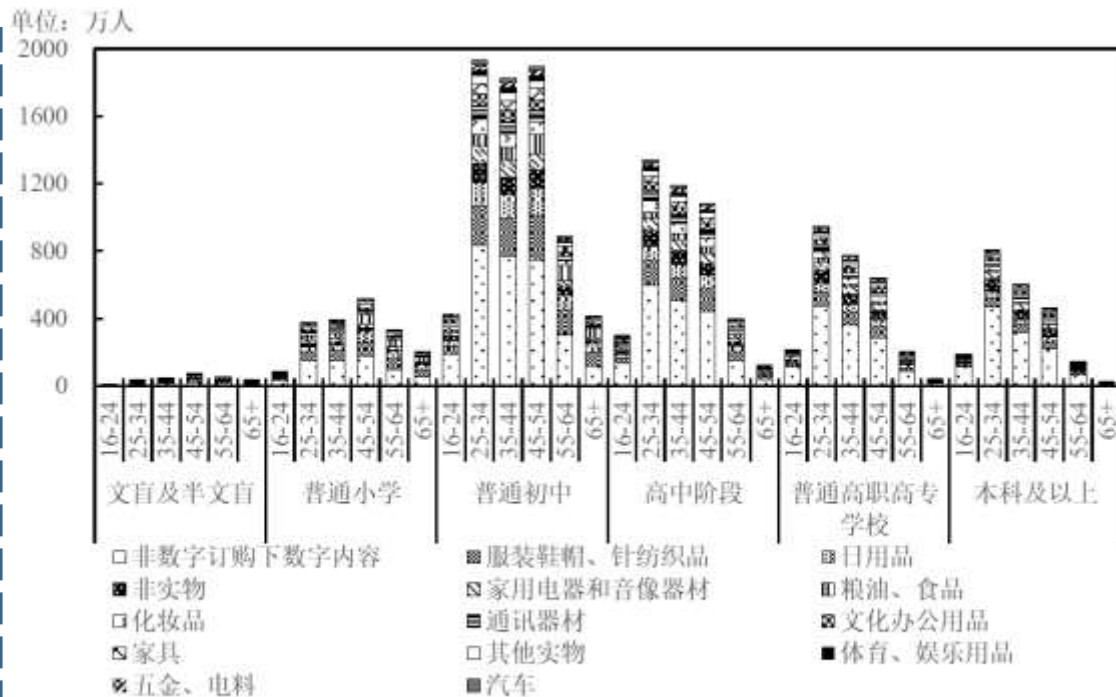

图 3 数字消费的就业结构效应：就业人数（万人）和就业效率（人/百万元）

注：本图仅展示就业效应超过 200 万人的数字消费类型，共有 14 个数字消费类型。

Analysis of the Employment Effects of Digital Consumption during the 14th Five-Year Plan Period

1.Characteristics of the overall change in the employment effect

Digital consumption's employment impact is stronger in non-expansion than baseline/cautious scenarios. Jobs driven fell 2.2% (2021) and 6.8% (2022) from 2020. By 2025, cautious scenario projects 190.53 million jobs, with baseline and expansionary scenarios rising 4.6% and 14.8% respectively compared to cautious estimates.

under Three Scenarios

Classification Index	Year	Baseline Scenario	Cautious Scenario	Expansion Scenario
Employment Effect Scale (10,000 persons)	2021	19388.0	19388.0	19388.0
	2025	19931.0	19052.9	21871.4
Growth Rate of Digital Consumption Scale vs. 2020 (%)	2021	5.1	5.1	5.1
	2025	31.2	28.3	42.4
Growth Rate of Employment Effect of Digital Consumption vs. 2020 (%)	2021	-2.2	-2.2	-2.2
	2025	0.6	-3.9	10.4
Growth Rate of Employment Effect of Digital Consumption vs. Previous Year (%)	2022	-4.8	-4.8	-4.8
	2025	-3.9	-1.6	5.5
Employment Effect per Million Yuan of	2021	7.5	7.5	7.5

1.Characteristics of the overall change in the employment effect

Digital consumption-driven employment grows slower than its scale. In 2025, digital consumption rises 7.7%, 6.4%, and 12.6% across scenarios, while employment effects reach -3.9%, -1.6%, and 5.5% (only expansionary positive).

Digital consumption's employment efficiency declines during the 14th Five-Year Plan, dropping from 8.0 persons per million dollars in 2020 to 7.5 in 2021 and 7.0 by 2023 across all three scenarios

under Three Scenarios

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	2025	-3.9	-1.6	5.5
Employment Effect per Million Yuan of	2021	7.5	7.5	7.5

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2. Characteristics of structural changes in employment effects

Except in expansionary scenarios, digital consumption's job creation declines, particularly for "digital content consumption under non-digital subscriptions." Baseline/cautious scenarios show 2024-2025 drops (-0.1% to -6.7% vs. 2020), while expansionary scenarios surge 18.9% and 39.4%.

Table 5 Changes in Employment Creation Effect, Employment Substitution Effect, and Employment Scale Effect Compared with 2020

Time	Employment Creation Effect			Employment Substitution Effect	Employment Scale Effect
	数字订购下非实物消费的就业创造效应	非数字订购下数字内容消费的就业创造效应	Total		
2021 年	5.8	-7.9	-6.1	1.8	1.3
2022 年	-20.3	-22.9	-22.6	4.3	7.5
2023 年	1.2	-18.5	-15.8	11.4	12.7
Baseline Scenario					
2024 年	-0.1	-15.0	-13.0	9.9	11.2
2025 年	-1.0	-11.5	-10.1	8.9	10.2
Cautious Scenario					
2024 年	-2.7	-15.8	-14.0	7.1	8.3
2025 年	-6.7	-13.3	-12.4	2.6	3.9
Expansion Scenario					
2024 年	18.9	-13.3	-9.0	17.0	16.8
2025 年	39.4	-8.1	-1.8	23.1	21.0

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2. Characteristics of structural changes in employment effects

The job creation effect of digital content consumption under non-digital subscriptions is negative in both 2021-2025 compared to 2020.

With the exception of 2022, which is subject to short-term economic fluctuations, the scale of digital content consumption will continue to expand over the period 2021-2025 compared to 2020, with an average annual growth rate of between 14.1 and 33.9 percent. However, in stark contrast, the corresponding growth rate of the job creation effect will continue to be negative over the same period.

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2023 年	1.2	-18.5	-15.8	11.4	12.7
Baseline Scenario					
2024 年	-0.1	-15.0	-13.0	9.9	11.2
2025 年	-1.0	-11.5	-10.1	8.9	10.2
Cautious Scenario					
2024 年	-2.7	-15.8	-14.0	7.1	8.3
2025 年	-6.7	-13.3	-12.4	2.6	3.9
Expansion Scenario					
2024 年	18.9	-13.3	-9.0	17.0	16.8
2025 年	39.4	-8.1	-1.8	23.1	21.0

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2. Characteristics of structural changes in employment effects

The employment substitution effect and employment size effect of digital consumption show an increasing trend under all three scenarios (see Table 5). In both the baseline and cautious scenarios, the employment substitution effect of digital consumption shows an increase over the observation period compared to 2020, with growth rates ranging from 1.8 to 11.4 per cent. Notably, the increase in the employment substitution effect is more prominent in the expansionary scenario, reaching higher levels of 17.0 per cent and 23.1 per cent in 2024 and 2025, respectively.

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Time	Employment Creation Effect			Employment Substitution Effect	Employment Scale Effect
	数字订购下非实物消费的就业创造效应	非数字订购下数字内容消费的就业创造效应	Total		
2021 年	5.8	-7.9	-6.1	1.8	1.3
2022 年	-20.3	-22.9	-22.6	4.3	7.5
2023 年	1.2	-18.5	-15.8	11.4	12.7
Baseline Scenario					
2024 年	-0.1	-15.0	-13.0	9.9	11.2
2025 年	-1.0	-11.5	-10.1	8.9	10.2
Cautious Scenario					
2024 年	-2.7	-15.8	-14.0	7.1	8.3
2025 年	-6.7	-13.3	-12.4	2.6	3.9
Expansion Scenario					
2024 年	18.9	-13.3	-9.0	17.0	16.8
2025 年	39.4	-8.1	-1.8	23.1	21.0

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2. Characteristics of structural changes in employment effects

The impact of digital consumption on the employed population of different age groups during the period 2022-2025 is characterised by significant generational structural differences. The employment-driven effect of digital consumption on the youth group aged 16-34 is consistently negative, ranging from -20.4 to -0.2 per cent.

The change in the employment effect of the core working-age count for 35-54 year olds is relatively flat, with a significant positive effect only in the expansionary scenario, where the growth rate stays above 3.8 per cent.

Table 6 Changes in Employment Structure Effect Compared with 2020

By Age Group	2021	2022	2023	Baseline Scenario 2024	Baseline Scenario 2025	Cautious Scenario 2024	Cautious Scenario 2025	Expansion Scenario 2024	Expansion Scenario 2025
16-24	7.0	-16.6	-11.0	-10.3	-9.3	-12.0	-13.1	-5.8	-0.2
25-34	-3.2	-20.4	-15.0	-14.4	-13.5	-16.0	-17.1	-10.1	-4.8
35-44	-1.4	-1.8	4.7	5.3	6.3	3.2	1.7	10.6	16.9
45-54	-4.6	-7.5	-1.5	-1.1	-0.3	-3.1	-4.7	3.8	9.4
55-64	-2.9	9.3	15.9	16.1	16.8	13.6	11.3	21.6	27.6
65 以上	2.2	31.0	38.0	38.0	38.4	34.9	31.5	43.8	49.8
By Education Level	2021	2022	2023	2024	2025	2024	2025	2024	2025
Illiterate & Semi-literate	-4.0	8.0	13.7	13.8	14.3	11.3	8.7	18.6	23.6
Primary School	-3.5	29.4	36.8	37.2	38.0	34.2	31.4	43.2	49.9
Junior High School	-3.3	-10.4	-4.8	-4.4	-3.7	-6.4	-8.0	0.1	5.4
Senior High School	-1.6	-18.7	-13.3	-12.8	-12.1	-14.6	-16.0	-8.4	-3.3
Vocational College	-1.6	-9.1	-2.8	-2.1	-1.2	-4.0	-5.3	3.0	9.1
Undergraduate & Above	1.1	-0.9	6.3	7.3	8.7	5.5	4.5	13.1	20.5

2. Characteristics of structural changes in employment effects

The employment-boosting effect of digital consumption is particularly pronounced for the middle- and senior-age groups aged 55 years and over, especially for the elderly population aged 65 years and over, where the growth rate of the employment effect is as high as 31.0%-49.8% compared to 2020, which is significantly higher than that of other age groups.

Table 6 Changes in Employment Structure Effect Compared with 2020

				Baseline Scenario		Cautious Scenario		Expansion Scenario	
By Age Group	2021	2022	2023	2024	2025	2024	2025	2024	2025
16-24	7.0	-16.6	-11.0	-10.3	-9.3	-12.0	-13.1	-5.8	-0.2
25-34	-3.2	-20.4	-15.0	-14.4	-13.5	-16.0	-17.1	-10.1	-4.8
35-44	-1.4	-1.8	4.7	5.3	6.3	3.2	1.7	10.6	16.9
45-54	-4.6	-7.5	-1.5	-1.1	-0.3	-3.1	-4.7	3.8	9.4
55-64	-2.9	9.3	15.9	16.1	16.8	13.6	11.3	21.6	27.6
65 以上	2.2	31.0	38.0	38.0	38.4	34.9	31.5	43.8	49.8
By Education Level	2021	2022	2023	2024	2025	2024	2025	2024	2025
Illiterate & Semi - literate	-4.0	8.0	13.7	13.8	14.3	11.3	8.7	18.6	23.6
Primary School	-3.5	29.4	36.8	37.2	38.0	34.2	31.4	43.2	49.9
Junior High School	-3.3	-10.4	-4.8	-4.4	-3.7	-6.4	-8.0	0.1	5.4
Senior High School	-1.6	-18.7	-13.3	-12.8	-12.1	-14.6	-16.0	-8.4	-3.3
Vocational College	-1.6	-9.1	-2.8	-2.1	-1.2	-4.0	-5.3	3.0	9.1
Undergraduate & Above	1.1	-0.9	6.3	7.3	8.7	5.5	4.5	13.1	20.5

① **The overall employment effect of digital consumption is lower than that of traditional models, but there are employment scale effects and potential for job creation in specific areas.**

Digital consumption's overall employment effect lags traditional models by 8.2%, yet it generates significant scale effects and job creation in traditional manufacturing, services, and digital sectors. Non-digital subscription content consumption, in particular, outperforms digital non-physical consumption. Automation reduces labor demand, while new patterns create opportunities, revealing industry-specific heterogeneity.

② **Digital consumption is triggering deep structural changes in the labour market.**

Digital consumption triggers multi-dimensional labor market shifts. In industries, it substitutes more jobs in services than manufacturing; educationally, it polarizes employment by academic levels; demographically, it favors middle-aged workers. These changes reshape labor allocation, transitioning from "single balance" to "multiple stratification."

③ **The employment effects of digital consumption have evolved in a "scale-efficiency" paradox.**

Despite rapid digital consumption growth, employment lags, forming a "scale-efficiency" paradox. Industry linkages drive job growth, but technological substitution offsets it. Notably, non-digital subscription content shows negative job creation, signaling a structural shift in the digital economy's employment mechanism.

③ **Digital consumption is reshaping the structural characteristics of the labour market.**

Digital consumption reshapes labor demand with age and education disparities. It boosts employment for over-55s and both low- and high-educated groups, while squeezing mid-level education workers. This dual change calls for employment policies tailored to diverse human capital needs.

First, implement differentiated digital consumption promotion policies to optimise the job creation effect.

In light of digital consumption's differentiated employment effects, the government should craft targeted policies. Prioritize supporting non-digital subscription sectors like online education via tax breaks and subsidies. For high-impact subsectors, establish a "digital consumption-employment" linkage to evaluate platform firms' job contributions.

Secondly, we should formulate a strategy for synergistic development of the industry and strengthen the transmission mechanism of the scale effect.

Given the industry - specific employment scale effects of digital consumption, a cross - industry policy system is essential. Support traditional manufacturing and services with a "digital empowerment plan," industrial Internet funds, and employment promotion centers. For sectors with weak scale effects, use innovative tools like "digital - employment co - innovation projects" to boost productivity and jobs.

Thirdly, a human capital upgrading system has been constructed to meet the needs of the transformation of the employment structure.

Reform education systems to offer digital economy cross - disciplinary courses, fostering data analysts and platform operators. Implement a "digital skills lifelong learning account" and a "digital aging" program for older workers. Establish an employment monitoring system and encourage platform - college collaborations for order - based training.

Fourthly, the supply of innovative systems to cope with diminishing efficiency and the establishment of a long-term development mechanism.

To boost digital consumption and employment efficiency, three actions are proposed. First, create a coordinated assessment mechanism, incorporating employment quality metrics and using a "digital employment multiplier" to guide policy. Second, improve innovation incentives with a special R&D program and reward job - creating digital firms. Third, build a dynamic policy toolbox with quarterly evaluations to adjust focus.

Thanks for listening !

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