

Quantitative Evaluation Study of Employment Policies for Employees in New Businesses—Based on the PMC Index Model Construct

He Jiaying^{1,a,*}, Wan Zhehao^{1,b}

¹China Jiliang University, Hangzhou, Zhejiang, China

^a18868783603@163.com, ^b2307967589@qq.com

*Corresponding author

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Abstract: This study successfully constructed a set of evaluation index system for new industrial youth employment policies based on text mining and policy analysis. In response to the problem of insufficient awareness of policy protection among young people in new industries, the article stresses that future policy formulation and publicity should pay more attention to the needs of this group, increase policy publicity, optimise the rights and interests protection system, and ensure that the policies can effectively benefit those employed in new industries. At the same time, the article also points out the importance of policy implementation in supporting the development of new industries, including in-depth understanding of the characteristics of the industry, strengthening policy publicity, ensuring the effective implementation of policies and strengthening the protection of flexible employment.

1. Research background

In the post-epidemic era, traditional industries are still suffering from the normalised impact of unstable income, employment difficulties, changes in consumption habits and other negative impacts not only on individual career development, but also on the long-term development of the country and social harmony and stability.^[1] The wave of the digital economy has given rise to the flourishing development of the sharing economy and platform economy, and the new business forms, new modes and new technologies have become an important force in enhancing economic resilience and stimulating economic vitality.^[2]

Although China's new industry started late, the scale of practitioners is huge, and the proportion of its scale will continue to expand.^[3] The Report on the Development of China's Sharing Economy (2023) shows that the transaction scale of the sharing economy market is about 3832 billion yuan, with a year-on-year growth of about 3.9 per cent. However, the new industry also suffers from unstable labour relations, lack of social security and unclear development pathways, making the development of the new industry a bottleneck for young people. By exploring in depth the challenges and dilemmas faced by youth in the new business context, as well as their adaptive capacity and resilience, it can provide a theoretical and empirical basis for the formulation of more targeted policies

and the provision of effective support measures. The study aims to comprehensively assess the level of vulnerability and resilience of youth livelihoods in the new business environment and to provide a scientific basis for promoting the sustainable development and healthy growth of youth groups.

2. Research design

2.1 Collection of policy texts

Online education and training, mobile travel, beauty bloggers, e-commerce anchors, online delivery workers, and other occupations representing new industries are springing up.^[4] The policy text retrieval time period for this study is 2020 - 2024. The policy collection channel of this paper is the websites of various government departments, selected the most representative of the 39 policies, including 9 national policies, 35 local-level policies (9 Zhejiang Province, 10 Shanghai, 9 Jiangsu Province, 7 Anhui Province.), selected policy documents are shown in Table 1 below:

Table1: List of national and local new business policies (partial).

serial number	name (of a thing)	issue number	Date of issue
P ₁	Opinions of the General Office of the State Council on Accelerating the Development of New Types of Consumption Led by New Types of Businesses and New Modes	State Council [2020] No. 32	2020-9-21
P ₂	Opinions of the General Office of the State Council on Supporting Multi-Channel Flexible Employment	State Council [2020] No. 27	2020-7-31
P ₃	Opinions of the General Office of the State Council on Accelerating the Development of New Forms and Modes of Foreign Trade	State Council [2021] No. 24	2021-7-9
...
P ₃₅	Circular on the issuance of an implementation plan for safeguarding the labour security rights and interests of workers in new employment patterns	The Anhui People's Social Development [2022] No. 3	2022-1-25

2.2 Word processing and word frequency analysis

In this study, the ROSTCM 6.0 software was used to carry out a careful lexical processing and an in-depth word frequency analysis of 35 new business policies. In the relevant policy texts involving new business, the high-frequency words highlight the focus of the policy on new business, and will be used as the basis for the setting of some of the primary and secondary variables in the PMC index model, as demonstrated in Table 2 below.

As can be seen from Table 2, the emergence of new industries has not only changed the traditional industrial structure and forms of employment, but has also promoted economic transformation and upgrading and social change. Its flexible forms of employment, such as "Internet" and "platform", provide more choices and autonomy for workers, and promote the activity of the employment market and the optimal allocation of labour resources. At the same time, the "service" orientation of the new industry and the innovative "entrepreneurial" atmosphere have stimulated the creativity and innovation of "enterprises" and "employees". At the same time, the "service" orientation and innovative "entrepreneurial" atmosphere of the new industry has stimulated the creativity and innovation of "enterprises" and "practitioners", thus promoting economic growth and competitiveness.

Table 2: Frequency Distribution of New Business Policies (Partial).

words	word frequency	words	word frequency	words	word frequency
start a career	1406	fabrication	499	nations	240
labour	994	labourer	480	begin an undertaking	239
corporations	942	person employed in a trade or profession	470	cross-subsidise	230
oversight	921	flat-roofed building	447	unit (of measure)	223
job	832	system (e.g. political, administrative etc)	266	enjoy together	177
service	755	employment	374	machine	164
organisations	674	new business	364	old-age insurance	137
safeguards	511	careers	306	staff	131

2.3 PMC evaluation index system construction

This paper adopts the PMC index model, which is highly accurate and easy to operate, to quantitatively analyse policy texts. The PMC index model is a policy text evaluation model to scientifically and quantitatively evaluate the internal consistency of policies and the merits and demerits of policies.^[5]

In order to show the policy effects in the YRD region more clearly, 15 policy documents were further selected, among which, 3 from Zhejiang Province, 3 from Shanghai Municipality, 3 from Jiangsu Province, 3 from Anhui Province as well as 3 national policies selected to explore the relationship between national policies and provincial ministerial policies.

1) Constructing a policy evaluation indicator system

Taking the PMC index model established by ESTRADA and many domestic scholars as a starting point, combined with the high-frequency words after text mining, a PMC evaluation index system covering 10 primary indicators and 32 secondary indicators is constructed as shown in Table 3. The primary indicators are independent of each other, and the weights of each secondary indicator are equal.^[6] If the content of a document meets the evaluation criteria of the secondary indicators, it is assigned a value of 1, and vice versa is assigned as 0.

Table 3: PMC Evaluation Indicator System for New Business Employment Policies.

Level 1 variable	binary variable	Evaluation criteria	Basis of evaluation
X₁ Nature of Policy	<i>X₁₋₁ Regulation</i>	Determine whether the policy involves regulation, yes 1, no 0	Estrada
	<i>X₁₋₂ Support</i>	Judgement on whether the policy reflects supportive features, 1 for yes, 0 for no	
	<i>X₁₋₃ Promote</i>	Determine whether the policy has a promotion of flexible employment content, yes 1, no 0	
	<i>X₁₋₄ boot</i>	Judge whether the policy is guided or not, yes is 1, no is 0	
X₂ Policy Timing	<i>X₂₋₁ Long-term</i>	Judge whether the policy covers more than 10 years, yes 1, no 0	Estrada
	<i>X₂₋₂ Medium-term</i>	Determine whether the policy covers 6 to 10 years	

	<i>X₂₋₃ Short-term</i> <i>X₂₋₄ Provisional</i>	of content, 1 for yes, 0 for no Determine whether the policy covers 1 to 5 years, yes is 1, no is 0 Determine whether the policy covers content up to 1 year old, 1 for yes, 0 for no	
X₃ Policy Perspectives	<i>X₃₋₁ Macro</i> <i>X₃₋₂ Medium view</i> <i>X₃₋₃ Micro</i>	Policy perspective is macro, yes 1, no 0 Policy perspective is medium, yes is 1, no is 0 Policy perspective is micro, yes 1, no 0	Estrada
X₄ Policy Areas	<i>X₄₋₁ Economy</i> <i>X₄₋₂ Politics</i> <i>X₄₋₃ Social Services</i>	Involving economic instruments to promote flexible employment, yes 1, no 0 Involving political means to promote flexible employment, yes 1, no 0 Involving social services to promote flexible employment, yes 1, no 0	Lulu Wang et al.
X₅ Policy Receptors	<i>X₅₋₁ Industry</i> <i>X₅₋₂ Enterprises</i> <i>X₅₋₃ Colleges and Universities</i> <i>X₅₋₄ Individuals</i>	Determine whether the policy audience includes industry, yes 1, no 0 Determine whether the policy audience includes businesses, yes 1, no 0 Judge whether the policy audience includes HEIs, yes 1, no 0 Judge whether the policy audience includes individuals, yes 1, no 0	Chen Mei, Zhang Li, etc.
X₆ Policy content	<i>X₆₋₁ Guaranteed Employment</i> <i>X₆₋₂ Improvement Services</i> <i>X₆₋₃ Improving Safeguards</i>	Policies focus on securing employment, yes 1, no 0 Policy focus on improving services, yes 1, no 0 Policy focus on improving safeguards, yes 1, no 0	High Frequency Words for Text Mining
X₇ Policy Functions	<i>X₇₋₁ Integration and coordination</i> <i>X₇₋₂ Encouragement Motivation</i> <i>X₇₋₃ Deepening Reforms</i>	Judge whether the policy function involves integration and coordination, yes 1, no 0 Determine whether the policy function involves encouraging and incentivising new businesses, with a 1 for yes and a 0 for no. Determine whether the policy function involves deepening the reform of the new industry, with a 1 for yes and a 0 for no	High-frequency words after text mining
X₈ Policy evaluation	<i>X₈₋₁ Targeted</i> <i>X₈₋₂ Detailed planning</i> <i>X₈₋₃ Programme Science</i>	Judge whether the policy is well targeted, yes 1, no 0 Judge whether the policy is well planned, yes 1, no 0 Judgement on whether the policy is programme-scientific, yes 1, no 0	Fang Yongheng, Zhang Yongan, etc.
X₉ Policy Measures	<i>X₉₋₁ Incentives</i> <i>X₉₋₂ Optimising the environment</i> <i>X₉₋₃ Improving Safeguards</i> <i>X₉₋₄ Increased investment</i>	Determine whether the policy involves incentives, yes 1, no 0 Determine whether the policy relates to optimising the environment, yes 1, no 0 Judge whether the policy involves safeguarding support, yes 1, no 0 Judge whether the policy involves increased investment, yes 1, no 0	High-frequency words after text mining
X₁₀ Policy Disclosure	<i>X₁₀₋₁ Policy Disclosure</i>	Determine whether the policy is proactively made public, yes is 1, no is 0	Zhang Yong'an et al.

Calculation method based on PMC, the PMC indices for each of the 15 NBPs can be calculated, after which they are rated, and the rating criteria are shown in Table 4 below.

Table 4: Policy evaluation rating criteria

PMC Score	0 to 3.99	4 to 6.99	7 to 8.99	9-10
Hierarchy H	Unhealthy U	Acceptable A	Favourable F	Talented T

2) Establishment of multi-input-output tables

According to the PMC index calculation methodology, each of the 15 policies was scored, and then the PMC indices of the 15 policies were calculated based on the detailed scores as well as Eqs. (1) to (3), and rated and ranked (see Table 5).

Table 5: PMC index of 15 new business policies.

serial number	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	PMC exponents	arrange in order	hierarchy
P ₁	0.75	0.5	0.33	0.67	0.5	1	1	1	1	1	7.75	4	F
P ₂	1	0.25	0.33	1	0.5	1	1	0.67	0.75	1	6.34	12	A
P ₃	0.5	0.25	1	0.33	0.75	0.67	0.33	1	0.25	1	6.08	13	A
P ₄	1	0.25	0.33	1	0.75	1	1	0.67	1	1	8	3	F
P ₅	0.5	0.5	0.33	0.33	1	1	0.67	1	0.5	1	6.83	10	A
P ₆	0.75	0.25	0.67	0.67	0.5	1	0.67	1	0.75	1	7.26	6	F
P ₇	0.75	0.25	0.33	0.67	0.5	0.67	1	0.67	1	1	6.84	9	A
P ₈	0.75	0.5	0.67	1	0.75	1	1	1	1	1	8.67	2	F
P ₉	0.75	0.5	0.33	0.67	0.5	0.67	0.67	0.67	0.5	1	5.26	15	A
P ₁₀	1	0.25	0.33	0.33	0.75	0.67	1	1	0.75	1	7.08	8	F
P ₁₁	1	0.5	0.67	1	0.75	1	1	1	1	1	9.17	1	T
P ₁₂	0.5	0.5	0.33	0.67	1	0.67	0.67	1	1	1	7.34	5	F
P ₁₃	0.75	0.25	0.33	0.33	0.25	0.67	0.33	1	0.5	1	5.36	14	A
P ₁₄	1	0.5	0.33	0.67	0.5	0.33	0.67	1	0.75	1	6.75	11	A
P ₁₅	0.5	0.5	0.33	1	0.75	1	0.67	1	0.5	1	7.25	7	F

**** Explanation**:** X₁ for formulation characteristic, X₂ for formulation limitation period, X₃ for formulation, angle on sth, X₄ for formulation realm, X₅ for formulation acceptor, X₆ for formulation elemen, X₇ for policy function, X₈ for formulation evaluations, X₉ for incentives, X₁₀ for Policy disclosure.

After the above calculations, we get one excellent policy P₁₁, 7 Favourable policies P₁, P₄, P₆, P₈, P₁₀, P₁₂, P₁₅, and the rest are acceptable policies.

3) Drawing PMC surface diagrams

The PMC matrix transformation was completed according to Table 5. Since the level 1 variables X₁₀ evaluation scores are all 1, considering that a 3×3 matrix needs to be generated for each policy text, they are discarded and only the level 1 variables X₁ -- X₉ are used to generate the PMC matrix, see equation (1), which is then entered into EXCEL for the surface plotting.

$$PMC_{matrix} = \begin{bmatrix} X_1 & X_2 & X_3 \\ X_4 & X_5 & X_6 \\ X_7 & X_8 & X_9 \end{bmatrix} \quad (1)$$

We chose to plot the PMC indices of typical policies, namely excellent policy P₁₁, good policy P₁₅, and acceptable policy P₉. The surface plots of the three policies are shown below (see Figure 1, Figure 2, Figure 3):

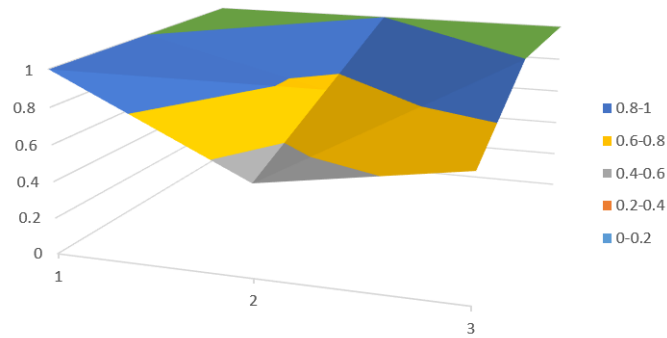


Figure 1: Outstanding Policy P11 Surface Map

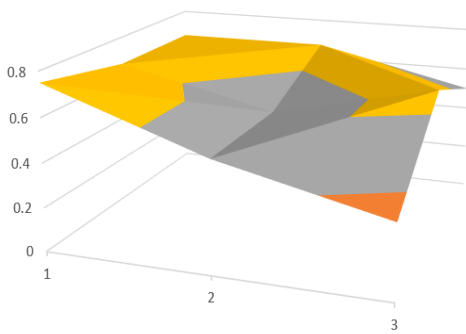


Figure 2: Good Policy P15 surface

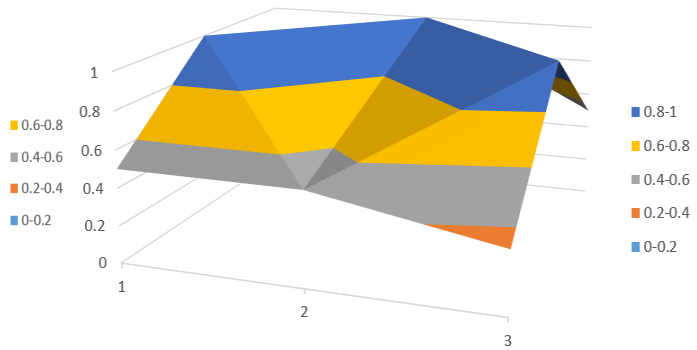


Figure 3: Acceptable Policy

3. Future outlook

3.1 Increase the publicity of employment policies for new industries

Future policy formulation and release should focus on expanding and deepening the publicity and education of the employment policies for new industry youth. On the one hand, we need to continuously optimise and improve the rights and interests protection system for the employment groups in new industries to ensure that the policy regulations can better adapt to the characteristics and needs of new industries. On the other hand, it is crucial to promote the effective implementation of relevant policies and regulations. Relevant departments should strengthen supervision and guidance to ensure that the policies can truly benefit the new industry employment groups.^[7]

3.2 Strengthening flexible employment protection and monitoring of policy implementation

There are still some deficiencies in the current inter-departmental co-operation on social security policies for new industry practitioners. In view of this, this paper proposes that the division of responsibilities among departments should be further strengthened and detailed guiding principles for collaborative work should be formulated to ensure that responsibilities are clearly defined and that policy objectives can be successfully achieved through an efficient collaborative mechanism. Meantime, at the regulatory level of labour rights and interests protection, the policy needs to specify the supervision and management methods of the regulatory authorities on enterprises, and continuously improve the relevant regulatory rules and standards.

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