

## Retraction

# Retracted: Quantitative Evaluation and Empirical Analysis of Educational Policies for Ethnic Minorities in Border Areas Based on the PMC Index Model

### Wireless Communications and Mobile Computing

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their

agreement or disagreement to this retraction. We have kept a record of any response received.

### References

- [1] S. Zhang and S. Yang, "Quantitative Evaluation and Empirical Analysis of Educational Policies for Ethnic Minorities in Border Areas Based on the PMC Index Model," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 4602586, 10 pages, 2022.

## Research Article

# Quantitative Evaluation and Empirical Analysis of Educational Policies for Ethnic Minorities in Border Areas Based on the PMC Index Model

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China is a multiethnic country, and the border areas are the gathering places of ethnic minorities. Strengthening the ethnic unity education in the border areas is an important measure to maintain the social stability and national security in the border areas of China. Colleges and universities in the border areas are the cradle of cultivating outstanding ethnic minority cadres, and colleges and universities in the border areas shoulder an important historical mission. In recent years, many domestic experts and scholars began to try to use the PMC index model for policy evaluation. Chinese scholars also have a deeper understanding of the standards of policy evaluation and put forward policy evaluation standards that are more in line with the actual needs of China's public policy evaluation research. This paper takes the education policy text of the border ethnic minorities as the research object, takes the policy evaluation as the research perspective, constructs the transformation policy text evaluation model according to Ruiz Estrada's PMC index model construction method, defines the calculation method and rating method, draws the PMC surface of each sample, and makes a comparative analysis of the PMC index. According to the comparative analysis results of PMC index and the scanning results of policy text, this paper puts forward three optimization strategies for the education policy of border ethnic minorities.

## 1. Introduction

In the report of the 18th National Congress of the Communist Party of China, it was proposed that “the party's ethnic policy should be fully and correctly implemented, the system of regional ethnic autonomy should be adhered to and improved, education on ethnic unity and progress should be carried out in depth, and all ethnic groups should live in harmony, work together, and develop harmoniously [1].” The education on national unity and progress should be carried out in depth [2]. We will strengthen the education of ethnic unity among ethnic minority college students in border areas and forge a strong sense of the community of the Chinese nation for ethnic minority college students in border areas [3]. Academically, it can better deepen and expand the content of ideological and political education, combine theory with practice, deeply study education and

teaching practice, and tell Chinese stories about ethnic relations, which will certainly promote the innovation and development of ethnic theory and ethnic policy [4]. To enrich the development of ethnic theory, ethnic unity education has always been an issue that the party and the state attach great importance to [5]. The issue of ethnic relations is related to the long-term stability of the party and the state. In the new era, exploring the ethnic unity education mode for ethnic minority college students in border areas and improving the theoretical research and practical practice of ethnic unity education in colleges and universities are the basis for casting the awareness of the Chinese national community and maintaining the harmony and stability of border areas [6]. The consciousness of the Chinese national community is the psychological identity, value identity, and cultural identity of the “Chinese national community of destiny” formed in the historical process of the Chinese

nation moving towards consciousness. Facing the great changes that have not been seen in the world in a century, colleges and universities in frontier ethnic areas should strengthen the cultivation of college students' awareness of the Chinese national community with a historical attitude of being highly responsible for the party, the country, and the nation and cultivate more qualified builders and reliable successors for the development of socialism with Chinese characteristics.

In recent years, as a necessary way to improve policy, policy evaluation has been paid more and more attention by experts and scholars [7]. Although policy evaluation has just started in China and has not formed a normative and long-term government behavior, many scholars have begun to try to evaluate policies in various fields [8]. A PMC index model is a theoretical model only used in China's policy evaluation in recent three years, and there are relatively few literatures. Because it fully considers the impact of various factors on policies, researchers can set up a variety of variables in the PMC index model according to the needs of evaluation and in combination with the characteristics of policies [9]. Therefore, the PMC index model is particularly suitable for policy text evaluation. The PMC index model can maximize the objectivity and scientificity of policy evaluation results, thus enhancing the guiding significance of policy evaluation results to policy formulation and implementation. For this study, the PMC index model is the basis and support for this study [10]. To sum up, on the basis of reasonable application of the PMC index model and the poor implementation of educational policies for ethnic minorities in border areas and driven by the reality, the author hopes to analyze and reflect on the regional cultural reform policy through text mining and evaluation of the education policy of the border ethnic minorities, comparative analysis, and empirical research with other policies, improve the policy text, solve the problems, promote the policy evaluation practices, and build a reasonable policy text evaluation index system [11].

## 2. State of the Art

*2.1. Ethnic Minority College Students in Border Areas and Their Characteristics.* National unity education is one of the important means to maintain social stability, safeguard national unity, and strengthen the exchanges and integration of people of all ethnic groups. The CPC Central Committee has always attached great importance to the work of minority talents in Xinjiang. In order to promote the development of minority education, Xinjiang minority students in the mainland are an important resource for talent reserves in the training of minority talents in Xinjiang. It is of great significance and positive role to strengthen the education management services of Xinjiang minority students in the mainland and continuously improve the quality of Xinjiang minority talents. Therefore, to carry out the research on ethnic unity education of ethnic minority college students in border areas, the first thing is to accurately grasp and define the core concepts, which is the basis for the smooth development of the research [12]. In this study, it is necessary to

define some concepts such as "border areas," "ethnic minority college students," "ethnic unity education," and "characteristics of ethnic minority college students," so as to lay a foundation for the follow-up research on ethnic unity education of ethnic minority college students in border areas [13].

*2.1.1. The Definition of Minority College Students in Border Areas.* Frontier is a broad concept, which usually refers to the remote border areas in a country that are far away from the political, economic, and cultural center and close to the national border. The scope of frontier includes the border areas covered by land and sea. Since ancient times, the border areas have been the populated areas of ethnic minorities [14]. They have lived in the border areas for a long time and have their own characteristics in history, culture, and so on. Most of the population of ethnic minorities in China is distributed in the border areas [15]. The natural environment, ecological environment, and economic environment in the border areas are relatively fragile. The border areas are usually the gateway to national social stability and homeland security. Border governance is an important part of national governance [16]. Strengthening the national unity in the border areas has a strong practical significance. The border areas studied in this paper refer to several representative regions close to the border and where ethnic minorities gather, mainly including Inner Mongolia, Tibet, Xinjiang, and Guangxi, as well as Gansu and Yunnan provinces [17].

The scope of ethnic minority students in border areas defined in this study refers to ethnic minority students growing up in border ethnic areas, and their identity must be ethnic minority students who have registered in colleges and universities, mainly from Inner Mongolia Autonomous Region, Tibet Autonomous Region, Xinjiang Uygur Autonomous Region, and Guangxi Zhuang Autonomous Region. The minority college students from several provinces in Gansu and Yunnan were investigated. For the governance of border areas, sometimes ethnic factors will become a difficult problem in the governance of national border areas. It is a strategy for China to strengthen the training of ethnic minority cadres to go deep into their own ethnic areas, and the training of ethnic minority college students is an important way to effectively govern the border areas [18].

*2.1.2. Characteristics of Ethnic Minority College Students in Border Areas.* Ethnic minority college students are the backbone to carry out work in ethnic areas and coordinate ethnic relations and an important guarantee to maintain social stability and national unity in ethnic areas. There are great differences in the geographical environment, historical conditions, and cultural environment between the border minority areas and the inland areas. The problems of ethnic religion and multiculturalism have brought severe challenges to the ethnic unity education of minority college students in the border areas. The border area has been the residence of various ethnic minorities since ancient times, and it is also a region with more religious beliefs. Therefore, the special social conditions in the border area have created its unique charm. Due to the complicated social, economic, and cultural conditions in the border areas, the thoughts of ethnic

minority college students in the border areas are limited, and they also develop their own characteristics [19].

(1) *Strong Sense of National Superiority.* Influenced by the unique cultural customs and economic environment in the border areas, many ethnic minority college students have certain particularity. Due to the influence of ethnic plots, most ethnic minority college students have a strong understanding of their own nation, and the number is relatively small. They have deep feelings of identity for their own nation and have a strong sense of national pride and superiority [20–22]. Minority college students show high enthusiasm for international and domestic government affairs. They pay more attention to the trend of national policies, trust and expect the leadership of the country, and fully agree with the party's ruling philosophy. From their daily words and deeds, they can show a high degree of attention to politics and strong recognition of the government.

(2) *Deep Ethnic and Religious Views.* The customs and cultures of the ethnic minorities in the border areas have distinctive national characteristics. Due to the special historical accumulation, cultural inheritance, and backward production mode, the cognitive style, values, life style, and thinking concept of the members of the ethnic minorities are limited, showing a strong religious consciousness.

(3) *Unique Thoughts and Behaviors.* The ideological behavior of ethnic minority college students in border areas is unique, which mainly reflects the following characteristics: more withdrawn, more sensitive, impulsive, vulnerable, and easy to feel inferior. The reasons for this phenomenon are influenced by many aspects. First, they have been influenced by the original national culture of the local region for a long time, and their thoughts have been branded with national characteristics, which has led to the formation of a thinking mode and behavior cognition with national characteristics, so that they do not know how to communicate with students of other nationalities. Second, different lifestyles and customs, no common language, and topics attracting each other are easy to make them feel lonely in their daily life.

**2.2. PMC Index Model.** The PMC (policy modeling consistency) index model, namely, the policy consistency index model, is a quantitative policy evaluation and analysis method. The PMC model can not only analyze the internal heterogeneity and advantages and disadvantages of a policy through the PMC index but also visually display the advantages and disadvantages of each dimension of the policy through the PMC surface chart. The PMC index model was established by Ruiz Estrada et al. Ruiz Estrada believes that everything is linked by movement, so any relevant variable should not be ignored when building the policy research model. In the article "The Policy Modeling Research Consistency Index," Estrada put forward his views on the classification and quantitative distribution of policy models. There is a common problem in all policy modeling; that is, any policy model research should consider unknown

factors, such as natural disasters, climate change, and poverty expansion, and any factor will affect policy behavior (policy formulation, policy implementation, etc.). For this reason, when evaluating a policy, we should consider the impact of multiple factors on the policy, and each factor should have the same weight. Figure 1 shows the monthly number of documents issued for the education policy of border ethnic minorities.

The establishment of the PMC index model requires four steps: the first is the establishment of multi-input and output tables, the second is the classification of variables and parameters, the third is the calculation of PMC index, and the fourth is the drawing of the PMC surface. Ruiz Estrada divides the variables into 10 main variables, namely, research type, research direction, data source, applied econometric method, research field, research theoretical framework, policy modeling by department, economic framework, geographical analysis, and paper citation. It also divides the 10 main variables into 50 subvariables. The 50 subvariables are not ranked in order. They are assigned by the binary system. If they meet the conditions, they are assigned 1. If the conditions are not met, assign 0. The final score of each main variable is the mean value of the subvariables and the sum of the scores of the main variables of the PMC index. According to the PMC index, the evaluation results can be divided into four grades, namely, excellent, good, qualified, and poor, so as to obtain the evaluation grade of the evaluated policy.

The greatest advantage of applying the PMC index model to policy text evaluation is that it can intuitively show the advantages and disadvantages of policy text by using numerical value and PMC surface graph. Compared with other evaluation methods, the PMC index model obtains original data through text mining, which can avoid subjectivity and improve accuracy to a great extent.

### 3. Methodology

**3.1. Traditional Policy Mining Algorithm.** Clustering and classification, topic extraction algorithm, text similarity calculation algorithm, and so on are used in traditional policy mining like policy topic statistics, policy hotspot identification, and policy diffusion research. Traditional classification algorithms include the decision tree classification algorithm, Bayesian classification algorithm, KNN classification algorithm, etc. The LDA algorithm and textrank algorithm are commonly used for topic and keyword extraction. The LDA algorithm, textrank algorithm, and similarity calculation algorithm are introduced below.

**3.1.1. LDA Algorithm.** LDA refers to a document topic generation model. The algorithm considers that an article selects a topic with a certain probability, and the topic selects some words with a certain probability. In this way, an article is formed. Therefore, there is a strong relationship between words and topics. The hidden information can be mined through the topic model. LDA combines document generation for reverse thinking. Find the topic of this article and the corresponding words under the topic according to a

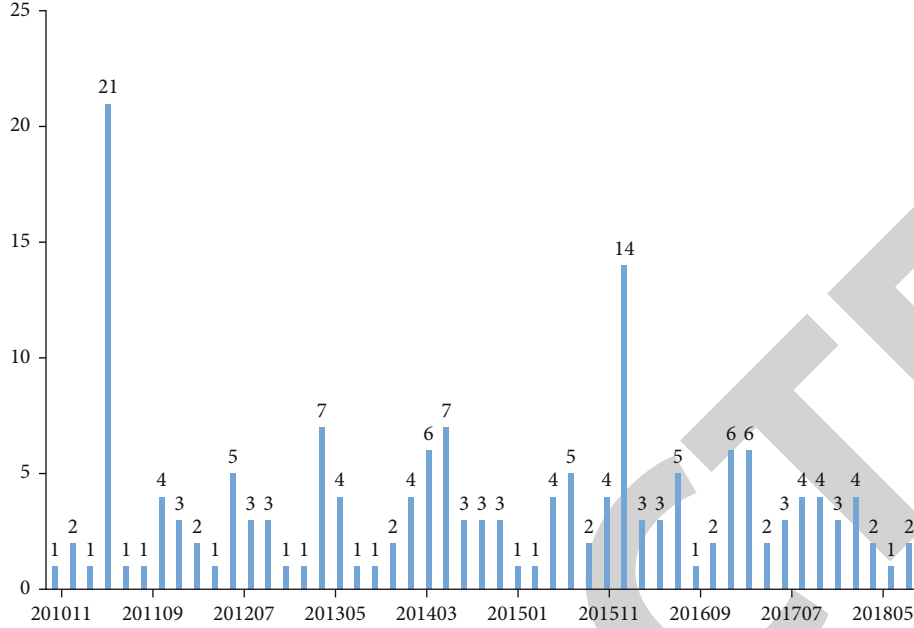


FIGURE 1: Monthly issuance of educational policies for ethnic minorities in border areas.

document. If documents are to be generated, the probability of each word in the document is shown in

$$p(\text{document}) = \sum_{\text{topic}} p(\text{topic}|\text{document}). \quad (1)$$

LDA is an unsupervised machine learning model, which needs to set the number of divided topics. The algorithm will output the topic probability distribution of the text and the probability distribution of words under each topic.

The Dirichlet distribution function is introduced here, as shown in

$$\text{Dirichlet}(p_1, p_2, p_3 | \alpha_1, \alpha_2, \alpha_3) = \frac{\Gamma(\alpha_1 + \alpha_2 + \alpha_3)}{\Gamma(\alpha_1)\Gamma(\alpha_2)\Gamma(\alpha_3)} p_1^{\alpha_1-1} p_2^{\alpha_2-1} p_3^{\alpha_3-1}. \quad (2)$$

The above involves the three-dimensional Dirichlet function. For the  $k$ -dimensional Dirichlet, see

$$\text{Dirichlet}\left(\vec{p} | \vec{\alpha}\right) = \frac{\Gamma\left(\sum_{k=1}^k \alpha_k\right)}{\prod_{k=1}^k \Gamma(\alpha_k)} \prod_{k=1}^k p_k^{\alpha_k-1}. \quad (3)$$

Thus, the Dirichlet distribution of  $K$  topics of document  $D$  and the Dirichlet distribution of each word generated by topic  $TT$  can be obtained. See

$$\theta_d = \text{Dirichlet}\left(\vec{a}\right), \quad (4)$$

$$\beta_k = \text{Dirichlet}\left(\vec{\eta}\right). \quad (5)$$

3.1.2. *Textrank Algorithm.* The textrank algorithm is a rela-

tively common keyword extraction algorithm in the field of natural language processing. It can be easily used to extract keywords from text and generate automatic text summaries. The textrank algorithm is an unsupervised algorithm, which is commonly used in keyword and abstract sentence extraction. In the textrank algorithm, the idea of PageRank is mainly used to sort the word items and sentences in the text. First of all, textrank uses the Markov principle to meet its two conditions; that is, the state transition matrix  $M$  needs to meet the stochastic matrix in Markov, and all rows that are all 0 are replaced by  $e/n$ ; to meet the irreducible and aperiodic requirements, smoothing is required.

The process is mainly divided into four steps:

- (1) Construct text cells to form graph model nodes.
- (2) Identify the relationship between text units and add them to the graph model to form edges.
- (3) The algorithm is iterated until convergence.
- (4) The nodes are sorted according to their final convergence scores:

$$\text{WS}(V_i) = (1 - d) + d * \sum_{v_j \in \ln(v_i)} . \quad (6)$$

The following is the specific algorithm flow of keyword extraction:

- (1) Segment the target text  $t$  into sentences to form a set of sentences, as shown in

$$T = [S_1, S_2, \dots, S_m]. \quad (7)$$

- (2) Word segmentation and part of speech tagging are carried out in each segmented sentence. Meanwhile,



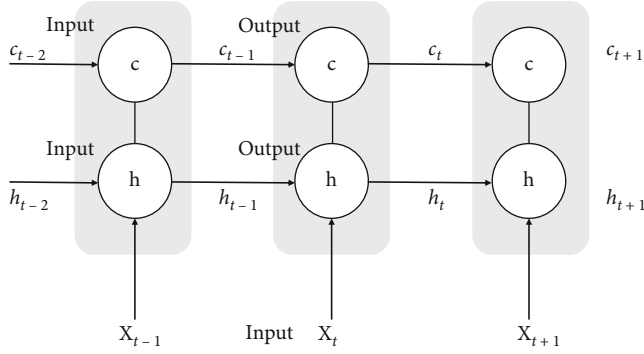


FIGURE 2: Schematic diagram of LSTM.

TABLE 1: Grade evaluation of various policies.

Policy	PMC index	Ranking	Grade
P1	7.04	5	Good
P2	7.21	3	Excellent
P3	6.41	8	Good
P4	6.51	7	Good
P5	6.10	9	Pass
P6	7.12	4	Good
P7	7.41	2	Excellent
P8	5.81	10	Pass
P9	6.91	6	Good
P10	7.53	1	Excellent

stop words can be selectively filtered according to their own needs, and words of specific part of speech can be retained. See formula (8), where  $t_y$  represents candidate keywords

$$S_i = [t_{i,1}, t_{i,2}, \dots, t_{i,m}]. \quad (8)$$

**3.1.3. LSTM Algorithm.** In fact, short-term and long-term memory (LSTM) is a special recurrent neural network RNN. Compared with RNN, it can show good results in longer sequences and solve the problem of gradient explosion and disappearance in long sequences. The LSTM network model can extract vocabulary level features well and overcome the problem of long-distance dependence. Figure 2 shows the schematic diagram of LSTM. In the implementation of LSTM, three gates are used to protect and control the neural network unit. Firstly, in the forgetting gate, an  $F$  value (0-1) is generated according to the last output  $HT_{-1}$  and the input  $x$  at the moment, and then, the sigmoid function is used to control the partial or full passage of the information  $C_{-1}$  obtained at the last moment. The input gate determines which values to update through the sigmoid function and updates them in combination with the new candidate values generated by the tanh layer. Finally, the output gate needs to determine what value to output, and run a sigmoid layer based on the previous neural network unit state to determine which part will be output. Then, the unit state will be proc-

essed through tanh, and it will be multiplied by the output of the sigmoid gate to finally determine the output part, so as to control the impact of long-term memory on the current output.

The general idea of classification using the LSTM algorithm is that each word is embedded and input into the LSTM layer. After a time series,  $n$  hidden vectors containing LSTM neural units are obtained. All these hidden vectors will get vector  $h$  after the pooling layer, and then, a category distribution vector can be obtained by extracting the maximized features through the logistic regression layer or softmax layer. Then, the next step is to complete the text classification.

When constructing LSTM, the design of three “gates” is very important, which directly affects the output results of the model. For the forgetting gate, the sigmoid function  $\sigma$  is to control the cell status information:

$$f_t = \sigma(W_f \cdot [h_{t-1}, x_t] + b_f). \quad (9)$$

Finally, the gate will output a value of 0-1 to determine the cell status rejection information. In the input door,

$$i_t = \sigma(W_i \cdot [h_{t-1}, x_t] + b_i), \quad (10)$$

$$\tilde{C}_t = \tanh(W_c \cdot [h_{t-1}, x_t] + b_c), \quad (11)$$

$$C_t = f_t * C_{t-1} + i_t * \tilde{C}_t. \quad (12)$$

In equations (10), (11), and (12), the sigmoid layer decides to update the cell target, and the tanh layer will build a candidate value  $C$ . At this time, the cell state, forgetting gate, input gate, and candidate value are added and calculated to obtain the CT after the updated state, that is, the cell state at the current time  $t$ .

**3.2. PMC Index Calculation Method.** According to Ruiz Estrada’s method, PMC index calculation is divided into four steps: first, put secondary variables into multi-input and output tables, and determine the value of secondary variables through empirical analysis and text mining. Second, as shown in public (13) and (14), each secondary variable is distributed from  $[0, 1]$ ; that is, the value of the secondary variable can be taken as 0 or 1. Third, calculate the primary index value according to formula (15). The primary index value is the ratio of the sum of the scores of secondary variables to the number of secondary variables, that is, the arithmetic mean. Fourth, according to formula (16), the PMC index is calculated by summing up the index values of each level of the policy to be evaluated.

$$X \sim N[0, 1], \quad (13)$$

$$X = \{XR : [0, v, 1]\}, \quad (14)$$

$$Yt = \sum_{j=1}^n \frac{Xij}{n}, \quad (15)$$

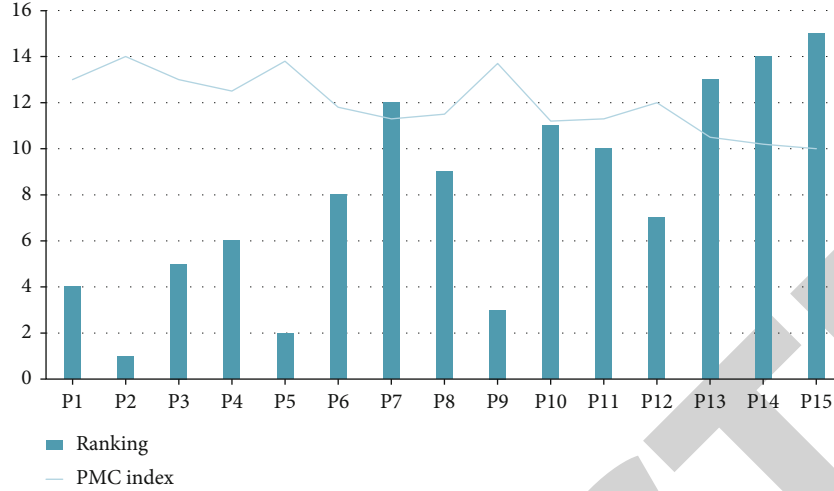


FIGURE 3: PMC index and ranking of sample policies.

$$PMC = X_4 \left( \sum_{l=1}^2 \frac{X_{4l}}{2} \right) + X_5 \left( \sum_{m=1}^5 \frac{X_{5m}}{5} \right) + X_6 \left( \sum_{x=1}^4 \frac{X_{6x}}{4} \right). \quad (16)$$

Thus, the PMC indexes of various digital economic policies are obtained, and the calculation results are shown in Table 1. The consistency of various education policies is evaluated according to the PMC index value. The total index score of various policies is 9. According to Estrada's point of view, the grading criteria are 7.2-9 (excellent), 6.3-7.19 (good), 5.4-6.29 (pass), and 0-5.39 (poor). The evaluation results are shown in Table 1.

**3.3. Construction of the Qualified PMC Surface Diagram.** In order to show the calculation results of the PMC index more intuitively, this paper establishes the PMC surface based on the calculation results of the PMC index. According to Ruiz Estrada, the establishment of the PMC surface is the last step in the construction of the PMC index model. The construction of the PMC surface depends on the results of the PMC matrix, which is a three times three matrix, and only the results of nine main variables are allowed to be retained. In the construction of the PMC matrix, the idea of using only nine principal variables is aimed at establishing a symmetrical surface. If the PMC matrix maintains the same number of rows and columns, the PMC surface can always display a perfect symmetrical view. Therefore, the distribution of the PMC index is the primary variable  $X$  of ten policy samples. The scores are the same, which are all 1. They are not included in the PMC surface. The nine primary variables from  $X_1$  to  $X_9$  are established into a  $3 \times 3$  matrix. For the calculation of the PMC surface, see formula (17). The PMC surface chart can display the quantitative evaluation results of the PMC index in a three-dimensional and intuitive way and is helpful to analyze the advantages and disadvantages of the educational policies for ethnic minorities in the border areas. The PMC surface is generally a rugged three-dimensional figure. Different color blocks represent different

values of index scores. The convex part of the surface indicates that the corresponding evaluation index score of the policy is high, and the concave part indicates that the corresponding evaluation index score is low.

$$PMC = \begin{pmatrix} X_1 & X_2 & X_3 \\ X_4 & X_5 & X_6 \\ X_7 & X_8 & X_9 \end{pmatrix}. \quad (17)$$

## 4. Result Analysis and Discussion

**4.1. Experimental Data.** The implementation plan of the education policy in ethnic minority areas is aimed at giving more ethnic minorities more opportunities to receive higher education, appropriately lowering the threshold of education, and expanding the opportunities for these people to enter colleges and universities. These measures include the bonus policy in education, economic support, the establishment of ethnic colleges, and special policy provisions for ethnic minority students. This paper makes an experiment based on the 1.58 million copies of the text database of educational policies for ethnic minorities in the border areas. The training set, test set, and verification set are selected, and the experimental environment is the deep learning framework TensorFlow 1.8.0. After a series of data collection and simple processing, detailed data of 1.58 million policy texts have been obtained in the database. Based on Python crawler technology, it preliminarily crawls millions of policy text data from online government information disclosure. The text contains key information such as title, document number, issuing unit, document date, effectiveness level, text, and effective status.

There are many ways to classify policy texts, such as by subject, effectiveness level, and unit. At present, not all policy texts are labeled or accurately labeled with corresponding categories, and even some policy texts do not have any labeled categories at all. Therefore, researchers should

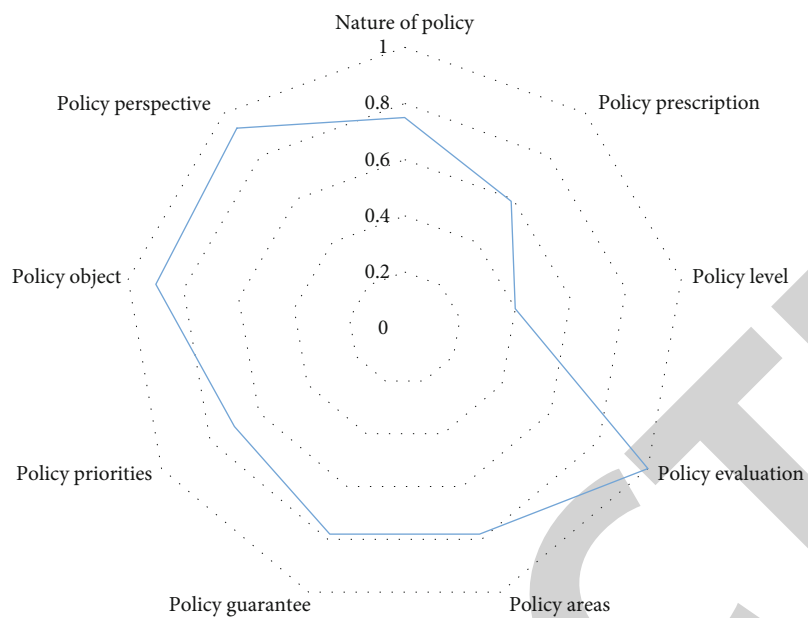


FIGURE 4: Radar chart of the average value of educational policies for ethnic minorities in border areas.

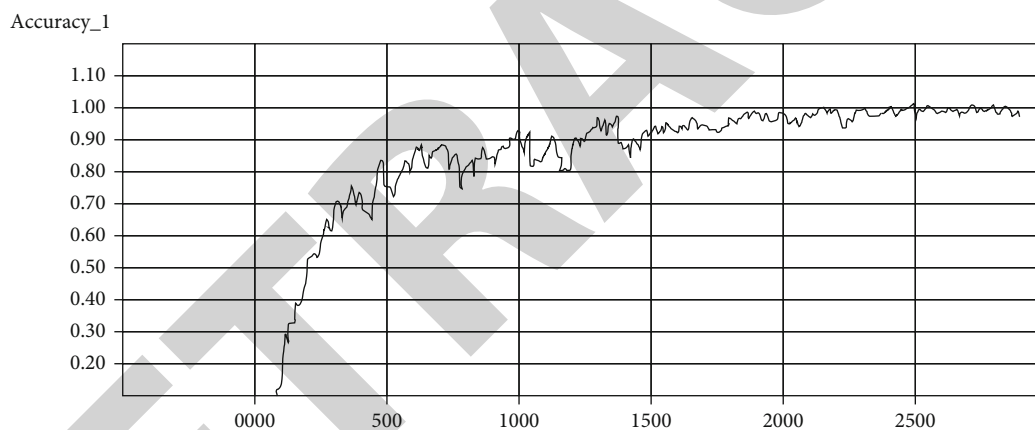


FIGURE 5: Training accuracy.

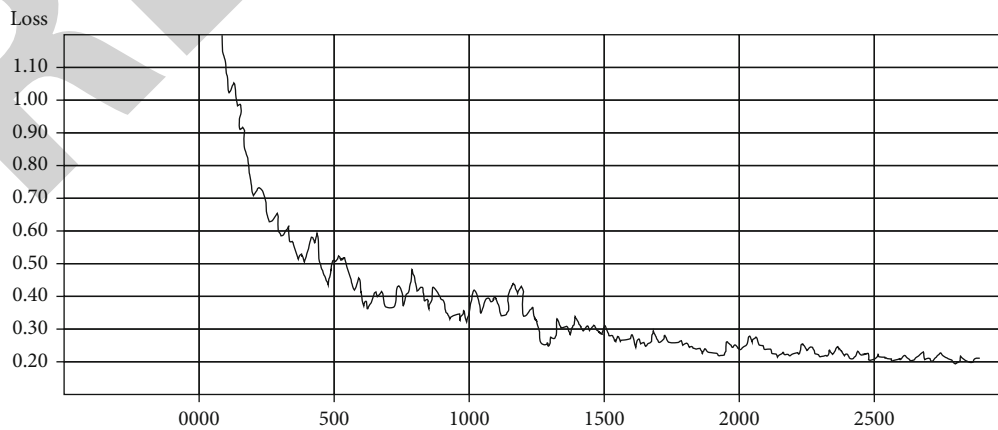


FIGURE 6: Training loss chart.



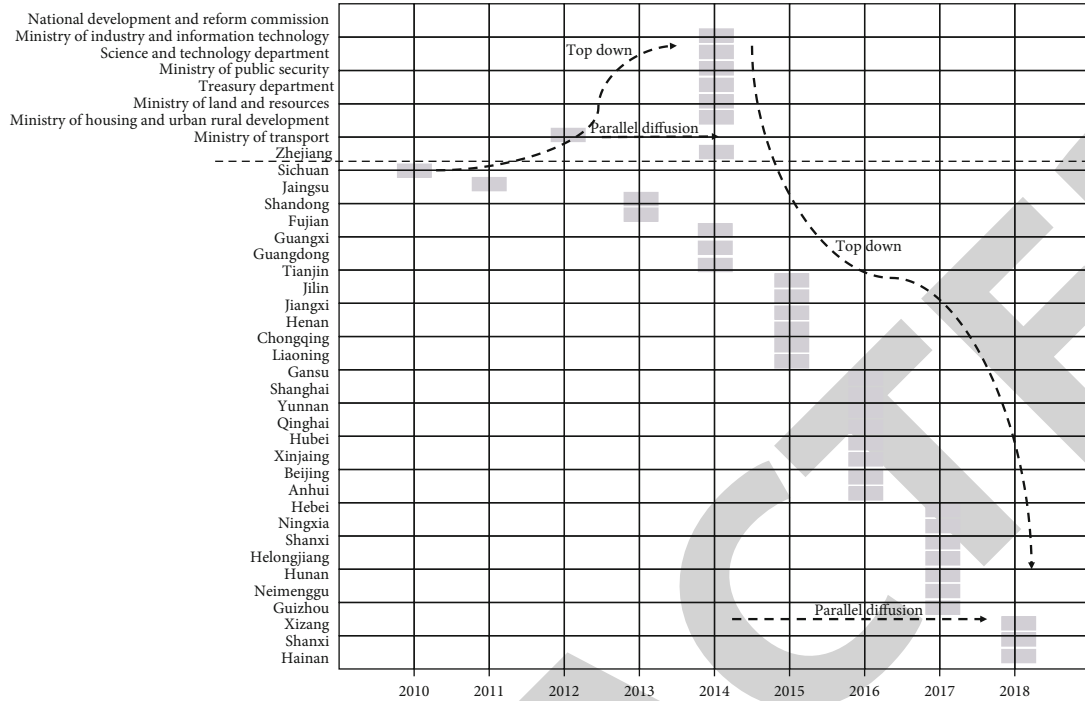


FIGURE 7: Diffusion mode of educational policies for ethnic minorities in border areas.

reasonably classify them according to specific situations. Taking the effectiveness level as an example, this paper studies the application of the PMC index model in the quantitative study of frontier minority policy.

The PMC model constructed in this paper makes classification on the basis of the content of the policy text. 30000 pieces of data are randomly selected from the database for cleaning and manual annotation. The data volume of the training set, test set, and verification set is roughly set as 7:2:1. When building the model, in order to facilitate the operation, the data set is directly separated according to category content. Each behavior is a document, that is, the policy text, and the marked data set is selected.

(1) Word vector dimension: the word vector dimension set in the experiment is 64. If the dimension is too small, it cannot fully express the linguistic characteristics of the text. If the dimension is too large, it will increase the difficulty of calculation and slow the training speed. (2) Dropout parameter: dropout is proposed to prevent overfitting during training. The general parameter selection range is 0.2~0.5, and the dropout parameter set in this model is 0.5. (3) Sequence length: 600. (4) Batch size is set to 64, which means that 64 data are input into the model for training at one time to complete parameter calculation and update

**4.2. Experimental Results and Analysis.** From the ranking of sample policies, as shown in Figure 3, the top 6 policies in the PMC index, except for the 9th policy, are all policies issued by provincial and municipal government units, while the last 3 policies in the PMC index are education policies issued in recent years. In general, the PMC index score shows a downward trend with the decline of the level of policy issuing units, which is mainly due to the differences in

policy receptors and policy areas. The policies issued by district-level governments mainly consider the actual situation in the region, while the policies issued by provincial and municipal levels are more holistic, with wider policy receptors and wider policy coverage, which to some extent conforms to people's practical cognition.

At the same time, making the average value of the first-level indicators into a radar chart can clearly reflect that there are still some shortcomings in the education policy of border ethnic minorities, which is also an important aspect that needs to be further revised and improved in the future, as shown in Figure 4.

The average value of the policy nature ( $x_1$ ) is 0.73, which indicates that the frontier minority policy plays a complete role in suggestion, prediction, guidance, supervision, etc.; the mean value of the policy timeliness ( $x_2$ ) is 0.56, which indicates that the combination of the target period is ignored in the formulation of digital economy policy in Jilin Province, and only focusing on the realization of a single period target is not conducive to maintaining the coherence and effectiveness of the overall implementation of the policy. The average value of the policy level ( $x_3$ ) is 0.37, which indicates that the issuing agencies of the frontier minority education policies are relatively single, and most of them are issued by provincial governments alone. The average value of the policy evaluation ( $x_4$ ) is 1.00, which shows that the education policy of the border ethnic minorities has the characteristics of sufficient basis and reasonable objectives and is an effective and feasible policy. The average value of the policy area ( $x_5$ ) is 0.74, which indicates that the frontier minority education policy covers a comprehensive range of areas. The mean value of policy guarantee ( $x_6$ ) is 0.75, indicating that Jilin Province has multiple incentive guarantee

measures to ensure the implementation of the digital economy development policy. The average value of the policy focus ( $X_7$ ) is 0.67, which indicates that the focus of the border minority education policy is comprehensive and specific. The average value of the policy object ( $x_8$ ) is 0.89, which indicates that the orientation of the education policy for ethnic minorities in the border areas is relatively clear. The average value of the policy perspective ( $x_9$ ) is 0.94, which indicates that the education policy of the border ethnic minorities has a clear grasp of the macro and micro aspects.

The results of training the exponential model are shown in Figure 5. As can be seen from Figure 5, after 7 iterations, the accuracy of the training set has been close to 100%. By the 10th iteration, the training loss rate was 0.0048, and the accuracy of the verification set remained between 91% and 92%. The process and results of model training are visually displayed through TensorBoard. The training loss is shown in Figure 6.

At present, the research on the direction of policy diffusion is subjective. Policy diffusion usually refers to the diffusion of innovative policies, that is, the process of the diffusion of a public policy innovation program or group of public policies from the birthplace to other regions. The international policy science community usually defines policy diffusion as a process in which an innovation is communicated between members of a social system through some channel over time. Specifically, it refers to the process in which an innovation is transmitted from the birthplace of its invention and creation to the end user or adopter of the innovation. Researchers generally use the place or institution where the keywords of a policy first appear as the identification of its diffusion network elements and then judge the direction of policy diffusion from the overall perspective. The direction of policy diffusion can be divided into three types: top-down, bottom-up, and parallel diffusion. In China, the top-down diffusion mode is common. The higher level makes the lower level adopt and implement policies through administrative instructions. From the bottom up, it is mainly manifested as follows: local innovation-adoption by the higher authorities-promotion by all regions, which is an absorption radiation process. Parallel diffusion is more represented by the diffusion mode of learning, imitation, and competition of institutions at the same level. This paper marks the texts of the educational policies of the border ethnic minorities one by one, calculates the time when the relevant policies of the central and local governments first appeared, and then draws the diffusion mode diagram of the educational policies of the border ethnic minorities based on the statistical data, as shown in Figure 7.

## 5. Conclusion

Ethnic unity education for ethnic minority college students in border areas is an important part of ideological and political work in colleges and universities and an important part of the great cause of building socialism with Chinese characteristics in the new era. This paper combines text mining and the PMC index model to quantitatively evaluate the digital economic policy text of Jilin Province. From the perspec-

tive of policy text, the overall design of the formulation of educational policies for ethnic minorities in border areas is relatively reasonable and has played an important role in promoting the development of digital economy. Among the nine selected samples of frontier minority education policies, three are excellent, four are good, and two are qualified. It shows that the state has fully considered the development trend of regional economic characteristics and ethnic characteristics in formulating the education policy for border ethnic minorities and has formulated reasonable and feasible policy plans in combination with relevant strategic documents, laws, and regulations.

## Data Availability

The figures and tables used to support the findings of this study are included in the article.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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