Acta Scientifica Malaysia (ASM)

THE EVALUATION INDEXES OF SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENTS IN JIANGXI PROVINCE, CHINA

Di Xiao*, Yuqing Liu

School of Management, Nanchang University, Nanchang, Jiangxi, China, 330031.
Corresponding Author Email: 462130885@qq.com.

ARTICLE DETAILS

ABSTRACT

At present, improving the transformation of scientific and technological achievements has become a hot issue in Jiangxi province's scientific and technological development. This article by SPSS data correlation analysis, the original index is optimized to improve, the index evaluation system of Jiangxi province in transformation of scientific and technological achievements, and principal component analysis is used to analyze performance of transformation of scientific and technological achievements in Jiangxi province.

1. INTRODUCTION

At present, with the trend of globalization and the rapid development of science and technology, technology has become the main means of competition between countries and regions [1]. This paper analyzes the transformation of science and technology achievements in Jiangxi province from three aspects: science and technology input, scientific and technological achievements, and transformation of scientific and technological achievements [2]. Based on the data of Jiangxi scientific and technological achievements, the evaluation index system was established. Then the principal component analysis was adopted to analyze the influence factors of the technological achievements.

2. BUILDING AND OPTIMIZING THE INDEX SYSTEM

This article selects 17 indicators. Among them, the number of international science and technology award, the number of provincial science and technology award, the patent to accept the quantity, the number of published scientific papers, the patent grant, R&D personnel or full-time equivalent, R&D activities unit number, number of R&D personnel, R&D project project number, project project participant, R&D expenses within budget and the ratio of GDP, the R&D funding ratio of external spending relative to GDP, the industrial added value of GDP proportion of the added value of high technology industry and industrial park GDP proportion of the overall Labour productivity, the total accounted for the proportion of the population, labor resources [3].

We went on through the SPSS correlation analysis to improve the evaluation index system, the results show that the indicators are positive correlation between, show that the indicators in accordance with ecotropic hypothesis. R&D personnel, published scientific papers, project participants (full-time equivalent the three indicators, and most of the indexes correlation coefficient reaches 0.900 above, shows the other indicators can be used in place of these three indicators; And the correlation between the three indicators and some indicators do not meet

0.05 significant level, correlation between instructions and some indicators is not big, will therefore X15, X16, X17 these three indicators, from the original index by 14 indicators to build the new transformation of scientific and technological achievements evaluation system.

3. DATA PROCESSING EMPIRICAL ANALYSIS

We use the principal component analysis method as the basic evaluation method, first of all, the original index $X_1, X_2,...,X_p$, a new set of composite index F_m, replaces the original. The primary component of the first linear combination of the original variable is represented by F_1, just like

$$Fi=a_{i1}X_1+a_{i2}X_2+...+a_{ip}X_p, \quad i=1,2,...,k \qquad （3.1）$$

$$\begin{cases} F_1 = a_{11}X_1 + a_{12}X_2 + ... + a_{1p}X_p \\ F_2 = a_{21}X_1 + a_{22}X_2 + ... + a_{2p}X_p \\ \quad ...... \\ F_m = a_{m1}X_1 + a_{m2}X_2 + ... + a_{mp}X_p \end{cases}$$

We use Z standardization method to standardize data processing and using the statistical software for standardization spss20 data (also go against the original data, because in spss20 on principal component analysis will now will be standardized data processing) to calculate principal component score coefficient matrix and the explanation of the total variance. The variance contribution of the main component F_i is called A_i, and the greater the value of F_i means that it represents X_1, X_2,..., X_p more powerful. In addition, the cumulative variance contribution of the former k principal component indicates that the former k principal components have extracted $X_1, X_2,...,X_p$. If the cumulative variance contribution of the former k principal component is less than 80%, the criterion is not met.

make $W_j=\sum A_i a_{ij}$, （i=1,2，…，k=1,2，…，p） （3.2）

Use the normalized processing to get the weight of X_j

$B_j=W_j/\sum W_j$ （j=1,2，…，p） （3.3）

From the analysis results, we can see which indicators play a crucial role in the transformation evaluation of scientific and technological achievements in JiangXi province.

4. STATUS ANALYSIS AND CORRESPONDING STRATEGY

In recent years, the technological achievements of Jiangxi province have been accelerated, the core competitiveness of the industry has been strengthened, and the social and economic development has been coordinated. Here are some things to do:

(1)   Technology input

The input of the R&D personnel in Jiangxi province is basically stable and growing according to certain linear laws, and the investment of funds is also an important factor in the transformation of the results.

(2)   The output of scientific and technological achievements

Jiangxi province in 2010-2015 national science and technology awards and provincial science and technology awards quantity change maintained a relatively stable level.

(3)   Achievements in scientific and technological achievements

The transformation effect of scientific and technological achievements can also be measured by the increase of industrial value and the added value of high-tech zones.

The countermeasures are as follows:
(1) establish a team of highly qualified scientific and technical personnel [4].
(2) the scale of investment in science and technology and the structure of investment in science and technology [5].
(3) to improve the ability of enterprises to independently innovate and develop high technology industries

ACKNOWLEDGEMENT

REFERENCES

[1] Ran, L., Xuanhua, L. 2009. The construction of the evaluation index system for the transformation and evaluation of science and technology in Guang Dong province [J]. Economy, 1 (1), 35-37.

[2] Min, C., Xuchao, Q., Long, W. 2013. The transformation assessment [J]. Enterprise economy, 1 (6), 174-177.

[3] Min, T. 2010. Jiangsu provincial science and technology achievement transformation and comprehensive evaluation study Jiangsu: Yangzhou University.

[4] Jie, D. 2014. The evaluation of China's scientific and financial efficiency and its influencing factors. Xi 'an: northwest university.

[5] Wuxiang, T. 2017. The analysis of the performance evaluation index system of the performance evaluation index system of technology achievements [J]. Industrial and technological economy, 1 (1), 61-67.