

A Research on the Incentives for the Employees of the Academic Journals of Guangxi Universities with Big Data Collected by Web Crawlers

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Abstract: To explore the effective incentives for the employees of the academic journals of Guangxi universities and to promote the orderly development of the academic journals of the universities in Guangxi, on the basis of reviewing and summarizing the relevant literature on incentives for university journals, science and technology journals, journal editorials, etc., the big data of the academic journals of the universities in Guangxi was collected with the web crawler software. 3,000 samples were extracted using the SPSS bootstrapping method, and multiple linear regression analysis was conducted. It was found that the factors affecting the incentive effect are formal employment status, professional titles, and work pressure. From the data collected through questionnaires, interviews, etc., it was found that the factors affecting the effect of incentives for the employees are difficulties in job promotion, over-general performance evaluation, and poor implementation of employee benefits in the editorial departments of the academic journals of universities in Guangxi. Based on the analysis, specific suggestions were put forward in the three areas including building a dual-channel job title promotion, formulating a scientific and reasonable performance evaluation and reward system, and implementing benefits according to regulations.

Keywords: Web crawlers; Big data; Multiple linear regression analysis; Journals of universities; Incentives

1 Introduction

Guangxi is located in the southern part of China and is bordering Vietnam in the Southwest of the province. With the strengthening of economic and trade cooperation between China and ASEAN countries and the signing of the RCEP agreement in recent years, Guangxi is becoming increasingly important in many national strategies or initiatives such as the Belt and Road Initiative, Rural Revitalization, Western China Development, and Prosperity of the People in the Border Area. For the Guangxi university journals, which play the role of showcasing scientific and technological achievements, promoting scientific and technological

development, speeding up the transformation of research results, promoting academic exchanges, and stimulating scientific and technological innovation, there is an urgent need to improve journal management, promote the academic exchanges, speed up the transformation of achievements, boost local economic development, and promote the formation of favorable public opinions for scientific and technological innovation development.

However, judging from the number of the journals of Guangxi's colleges and universities that have been selected in the domestic core journal list, there is a big gap between their impact and that of the journals based in economically developed regions. Apart from the influence of objective factors such as geographical location and economic development levels, the most important factor is employees. The core resource of a journal is its employees, and the recruitment, training, and retention of outstanding employees is the foundation for building a high-quality editorial. At the same time, some studies have shown that due to the hidden, cumbersome, and repetitive work of the journals, it is easy for editors to have professional burnout ^[1-4], which affects the effectiveness of their work. In addition, problems such as a lack of effective performance evaluation systems ^[5] and a lack of career advancement channels ^[6] also affect employees' commitment to their work. The organizational behavior research on incentives shows that incentive is an important factor in improving employee performance, and the goal of management work is to guide and motivate employees to complete tasks more effectively. It can be seen from this analysis that in the context of the widespread application of information technology, motivating journal employees from the managerial level and improving the employees' job satisfaction and work commitment are the key to improving the management quality of a journal ^[7].

To explore the effective incentives for motivating employees in the university journals in Guangxi, on the basis of reviewing and summarizing the relevant literature on incentives for universities' journals, science and technology journals, editorials, etc., information technology tools such as web crawlers and online questionnaires were used to collect data related to the journals of all universities in Guangxi, and in-depth interviews were conducted on the issues. The data collected mainly included the number of employees in journals, employees' job titles, academic qualifications, professional qualifications, changes in the number of columns of the journals, number of articles published annually, number of articles published in each issue, page numbers for each issue, changes in the journal impact factor, changes in the number of articles receiving a grant, etc. Then the data was sorted out and summarized to provide specific management suggestions.

2 The problems with the incentives for the employees of university journals in Guangxi

The way employees are motivated will be reflected in their work performance, which ultimately reflects the influence of journals. Therefore, the impact factor of the journal which represents the incentives for the employees was used as the dependent variable. Using the number of employees, employees' job titles, academic qualifications, professional qualifications, changes in the number of columns in the journal, number of the subjects covered by the columns, number of articles published annually, page numbers of each issue, etc. as independent variables, 3,000 samples were extracted from the original data using SPSS

software's bootstrapping method, and multiple linear regression analysis was performed.

As the regression data shows, the number of editors and the total number of employees in the editorial positively affect the influence of journals, while the number of full-time employees negatively affects the influence of journals. The details are shown in Table 1.

Table 1 Results of multiple linear regression analysis of employee incentives

Independent variable	Dependent Variable: Journal Impact Factor
Total number of employees	.225**
Number of editors and reviewers	.286**
Number of full-time staff	-.223**
R2	.496**
ΔR2	.429**
F	7.387**
ΔF	7.387**

Note: There was a significant correlation at the 0.05 level (two-sided), and a significant correlation at the 0.01 level (two-sided).

Based on the test results, together with the answers to open-ended questions in the questionnaire survey and the data from the in-depth interviews, it was found that the editorial departments of the university journals of Guangxi mainly exhibit problems such as difficulties in job promotion, difficulties in the elevation of editorial job titles, over-general performance evaluation, high work pressure, and inadequate implementation of employee benefits. The detailed summary and analysis are shown in the following sections.

2.1 Difficulties in job title improvement and job promotion

On the one hand, there is the problem of job title promotion review. The review of the job titles in the publication series puts college journals and publishing houses in the same category for review, but in the review of the Guangxi publication job title promotion, the staff of the publishing houses has a clear advantage, which is due to the characteristics of their work content. This makes it difficult for journal editors to be promoted. In our survey, we found that in Guangxi, on average each journal had 0.63 copy editors and 0.91 associate copy editors. It not only affects the influence of the editorial department of the journal but also causes the fear and worries of the journal editors when participating in the job titles review for the publication series. On the other hand, for the university journals of Guangxi, there are usually a small number of employees in each editorial with a flat management structure. In addition, the journal department is usually marginal in the university. Therefore, most employees of the journal department do not have opportunities for job promotion [8]. Under such restrictions, most editors feel helpless and disappointed, and therefore lack a positive attitude and motivation in their jobs.

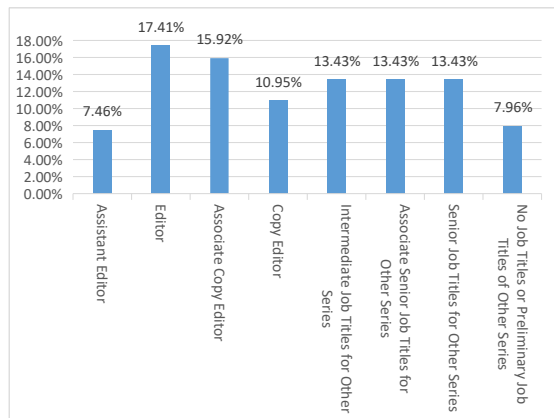


Figure 1. The job titles of the employees of university journals in Guangxi.

2.2 Over-general performance evaluation

The editorial department of the university journals in Guangxi implements performance-based salaries. The requirements for assessments are mainly based on the completion of the publication tasks. The content of the assessment is quite general, and there are no specific quantitative or detailed assessment indicators aimed at improving the management quality of the journal. There is no difference in the treatment for employees with excellent performance and poor performance [9]. There is no additional reward for innovative work, and there is no loss if employees only do the routine work. From a humanistic point of view, it is easy to infer that the editor's commitment to innovative work such as topic selection and planning is also inadequate. In addition, 75.66% of the employees of the university journals in Guangxi are standard employees of the public institutions, and 20.63% of employees non-standard employees. There is only 3.70% of part-time employees. There is no assessment mechanism for elimination from work due to poor performance. Even part-time employees are generally not dismissed even if they have a poor work attitude, because the procedures for recruiting new hires are too complicated and the cycle is long, with many uncertainties. The lack of targeted performance reviews has led to insufficient incentives.

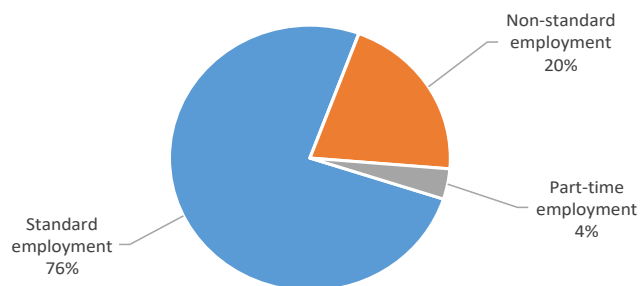


Figure 2. Staff composition of university journals in Guangxi

2.3 The implementation of relevant employee benefits is not in place

Article 12 of the “Administrative Measures for the Journals of Colleges and Universities” stipulates, “Journal editors are part of a school's teaching and research team. Journal editors shall be treated the same as teaching and research personnel in terms of job title evaluation and promotion, salary and benefits, and merit evaluation and commendation.” However, colleges and universities in Guangxi classify the journal department as a teaching support department and the employees' job titles as teaching assistants. The academic journal editorial department is quite often one level lower than other teaching and research departments, which means that the remuneration of the employees is lower than that of the teaching and research teams. At the same time, the management title and the salary and benefits of the head of the editorial department are also lower than that of the heads of other teaching and research departments. Furthermore, the slightly lower management title of the journal department heads also means that their communication and coordination with other departments and their ability to seek policy support from the universities are affected.

Article 16 of the “Administrative Measures for the Journals of Colleges and Universities” stipulates, “The editorial department of a journal may pay editorial fees, proofreading fees, etc. to editors following the relevant national regulations.” However, in actual operation, academic journals in Guangxi colleges and universities do not pay editing fees, proofreading fees, etc.; the employees are only paid according to the performance-based salary standards of the teaching support departments. This is quite similar to the situation across China [8].

The editorial office is generally not adequately staffed according to national regulations, and the work pressure on the employees is high. As shown in Table 2, the 35 journals surveyed had a total of 189 employees. The journal with the largest number had 10 employees, and the one with the smallest number had 3 employees, with an average of 5.40 people per journal; there were 119 editors, with the greatest number of editors in a journal being 7 and the smallest number being 2, with an average of 3.31 editors per journal. Chapter 3, section 8 of the “Administrative Measures for Science and Technology Journals” enacted by the Ministry of Science and Technology and the former State Administration of Press and Publication stipulates that “full-time editors are employed according to tasks. A typical quarterly (or semi-annual) shall have no less than three editors, a bimonthly journal shall have no less than five editors, a monthly journal shall have no less than seven editors, and a certain number of full-time editors shall be in need.” The number of editors of the 25 journals is relatively small, accounting for 71% of the total number of university journals in Guangxi. Judging from the average number of employees in the editorial department, 5.4, and the average number of editors, 3.31, the number of employees and editors employed in the editorial department of the journals is relatively low.

In terms of publication of the journals, there is 1 monthly journal, accounting for 2.86%; 27 bimonthly journals, accounting for 77.14%; and 7 quarterly journals, accounting for 20.00%. As shown in Equation (1) and Equation (2), x_i is the number of articles published in each issue, and n is the number of issues published by a journal in the past 3 years. We added the number of articles from each journal in the last 3 years, and the total number of articles published in each journal in the last 3 years y_j is obtained. After adding the total number of articles published in each journal y_j , it is divided by the number of journals m . Then the average number of published articles in each journal in the past three years \bar{y} is obtained. Based on the

calculations, the journal with the highest number of published articles had 1,414 articles, with an average of 471 articles per year; the lowest was 188 articles, with an average of 63 articles per year; the average number of published articles for the journals was 424, with an average of 141 articles per year.

$$y = \sum_{i=1}^n x_i \quad (1)$$

$$\bar{y} = \sum_{j=1}^m y_j / m \quad (2)$$

Based on the calculation of an average of 5.40 employees per journal and an average publication of 141 articles per year, each person completed the full process of the publication of 26 articles per year. By using SPSS to analyze the disciplines of the articles published in the journals, 46.02% of the articles published in the journal cover three main disciplines, and 80% of the articles cover 10.2 disciplines on average. It can be seen that the dispersion of the disciplines of the published literature and the number of articles have incurred great work pressure on the employees. The statistical analysis results are shown in Table 2, Figure 3, and Figure 4.

Table 2 Number and employment status of the employees of the university journals in Guangxi

Number of employees			Number of journal editors		
The largest	The smallest	Average	The largest	The smallest	Average
10	3	5.4	7	2	3.31

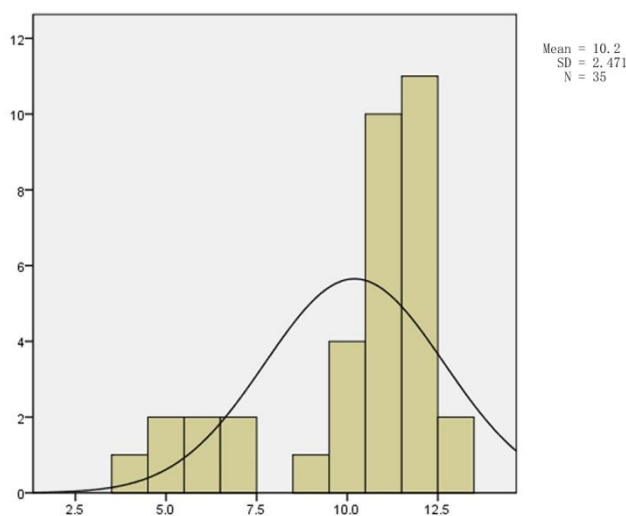


Figure 3 The disciplines of 80% of the literature published in each journal in the last 10 years.

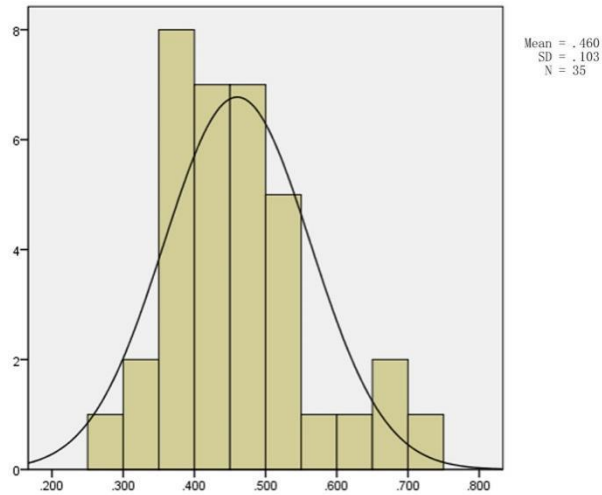


Figure 4 Percentage of articles in the three major disciplines in each journal in the last 10 years.

3 Conclusions

3.1 Creating a dual-channel job title elevation and job promotion

To solve the problem in the promotion of the editorial staff, the journal “Power System Automation” designed a system based on dual-channel career development for management work and professional work. The core idea is a promotion system that includes the promotion of job titles and positions, as well as a performance remuneration system based on competence evaluation and work contribution. This dual-channel system has proven effective in practice [10]. Taking this as a reference, considering the characteristics of the main entities running the journals of the colleges and universities, it is inappropriate to simply rely on performance-based salaries to motivate employees when there is no change in their titles and positions. We need to consider motivating employees through the dual promotion channels of job titles and positions. First, in terms of job titles, the provincial education administration departments and the press and publication administration departments should set up special research topics in the area of editing and publishing every year to ensure that the employees of the journal's editorial department can compete in a special track of scientific research projects instead of with the faculty and researchers of the entire university. The number of research topics related to editing and publishing should be increased, the professional level of journal editors should be enhanced, and the job titles of the publication series need to be reviewed in a different category. The university journals and publishing houses are categorized into different groups of job titles promotion. Special job title promotion review standards should also be formulated based on the characteristics of the work of university journals, and separate reviews of university journals editors' job title promotion files should be carried out to increase the proportion of outstanding editors being promoted in their job titles. This will guide university journal editors to make efforts to improve the quality of the journals. Second, in terms of job promotions, the head of the journal's editorial department should be raised to the same managerial level as the head of the other teaching and scientific research departments

when conditions permit. The management posts can be set up in the editorial department to provide opportunities for employees to advance their careers. The opportunities should also be provided for rotation exchanges between the journal department and the management positions in other teaching and research departments, with the goal of stimulating the motivation and enthusiasm of the employees for their work.

3.2 Formulate scientific and proper performance appraisal and reward system

In the aspect of performance appraisal, the performance appraisal indicators should be determined according to the development goals of journals. By decomposing the development goals into specific, quantifiable work tasks and decomposing the tasks according to the division of jobs, the specific indicators of work post-performance appraisal are formulated, such as error rate, the number of topics completed, article downloads, citations, etc. Determining the performance reward allocation plan based on the results of the performance appraisal can, on the one hand, prevent the problem of “focusing on social connections while ignoring effectiveness” through subjective ratings; on the other hand, it can motivate employees to work hard to improve their work performance and help the journal to achieve its development goals. In addition, honorary titles can be awarded to outstanding employees based on the performance evaluation results and used as an important reference for job title promotion and job promotion. More material and spiritual rewards are given to those with outstanding performance indicators or who make significant contributions, such as their topics receiving widespread attention, the number of citations of the articles under their management far exceeding the average, and providing innovative suggestions for the reform and development of the journal with good results in implementation ^[11] ^[12].

3.3 Implementing employee benefits according to regulations

First, when the conditions at the universities permit, the level of the journal's editorial department should be elevated to the same level as the head of other teaching and research management departments. The salaries of the corresponding managers can be raised, and the voice and influence of the journal's editorial department should also be enhanced. Secondly, proper salary and performance benefits should be implemented for the employees of the journal's editorial department based on the standard of the teaching and research team rather than that of the teaching support departments. The staff of the journals needs to be treated in the same way as teaching and research staff in terms of job evaluation, salary and benefits, merit evaluation, and contribution. Third, with reference to the “Method for Paying Remuneration for Using Written Works” formulated by the National Copyright Administration and the National Development and Reform Commission where it stipulates the “copy-writing fees of 20-100 Yuan/thousand characters and 50-200 Yuan/thousand words for translation” [13], the proofreading and copy-writing fees need to be paid for the editorial work. The relevant benefits also need to be implemented based on the regulations, which can improve the income of the journal editorial staff, attract more outstanding talents to the editorial team, improve the burnout dilemma of journal employees due to heavy work pressure, improve employees' job satisfaction, and improve the quality of work. Finally, adequate staffing needs to be provided in accordance with national regulations to reduce the work pressure on the existing employees.

4 Limitations and prospects

By collecting data through multiple channels such as web crawlers, questionnaires, interviews, etc., multiple regression analysis was conducted after 3,000 samples were extracted using the SPSS bootstrapping method. By combining data from questionnaires and interviews, etc., we systematically analyzed the main issues that exist in the incentives for employees of the university journals in Guangxi and put forward the corresponding management suggestions. It provided a reference for the reform and development of the university journals in Guangxi, which also has some reference value for similar situations in other regions of the country. However, considering the lack of comparative research with other provinces, the situation in Guangxi, such as the review of the job titles promotion in publication series may be somewhat different from other regions, so the findings of this study may not necessarily apply to other regions.

The healthy and orderly development of university journals is of great importance to the overall development of academic journals in China. Scholars from other regions can refer to the ideas in this study, discuss and analyze employee incentive suggestions applicable to the development of their local university journals by taking into account the actual situation in the region, and make positive contributions to improving the overall quality of university journals in China.

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References

- [1] Han, Y., Chen, F. The growth history of science and technology editors and adaptation measures[J]. Editorial Journal, 2015,27 (2): 193-195.
- [2] Chen, H. L. and Cai H.Y. Influencing factors and strategies for improving academic journal editorial job satisfaction in colleges and universities [J]. Research on Chinese Science and Technology Journals, 2016,27 (4): 385-391.
- [3] Zhang. R., Yan, Q.T., Wang, X.H. Self-adjustment of young people's lack of sense of accomplishment in editorial work [J]. Journal of Editors, 2017, 29 (S1): 158-159.
- [4] Nan, S.N., Wang J.H., Liao Q.H. A study on career development needs of young college journal editors based on ERG theory [J]. Editorial Journal, 2019,31 (5): 574-577.
- [5] Wang, W. Problems and countermeasures in incentive mechanisms for employees in small-scale academic journals [J]. Research on science and technology journals in China, 2014,25 (4): 542-546.
- [6] Wang, Z.H., Jiang, H. Science journal editors "Y" career development dual-channel

construction: taking “Power System Automation” journal as an example [J]. Editorial Journal, 2021,33 (2): 213-217.

[7] Xie, W.L. Analysis of the causes and countermeasures of career fatigue among university science and technology journal editors [J]. Research on science and technology journals in China, 2014,25 (5): 675-678.

[8] Zhang, G.J. Analysis of the relationship between incentive preferences and job satisfaction among science and technology journal editors [J]. Editorial Journal, 2012,24 (3): 297-299.

[9] Wang, W. Problems and countermeasures in incentive mechanisms for employees in small-scale academic journals [J]. Research on science and technology journals in China, 2014,25 (4): 542-546.

[10] Li, K. Analysis and selection of incentive management policies for university journals [J]. Editorial Journal, 2020,32 (5): 510-512.

[11] Wang, Z.H., Jiang, H. Science journal editors “Y” career development dual-channel construction: taking “Power System Automation” journal as an example [J]. Editorial Journal, 2021,33 (2): 213-217.

[12] Zhong, L. Research on incentive measures for university science and technology journal employees based on demand theory [J]. Today's Media, 2018,26 (7): 131-132.

[13] Zhang, Y.Y., Jin, X.M., Wang, Q., Lin, Y.Y. Demand analysis and incentives for young medical journal editors [J]. Editorial Journal, 2014,26 (1): 86-88.