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Dynamic Changes in Publication Volume and Impact Factor of SCI-Indexed Journals and the Effect of Publication Volume on Impact Factor: Postprint

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Date: 2024-10-06T00:00:00+00:00

Abstract

Objective: To investigate the dynamic changes in journal publication volume and impact factor over the past five years from different dimensions, and to study the effect of increased publication volume on journal impact factor and Journal Citation Indicator (JCI).

Methods: A total of 8,094 journals continuously indexed by SCI in the Web of Science (WoS) database from 2018-2022 were selected as the research subjects. The annual publication volume and impact factor were statistically analyzed and compared for each year, and the publication volumes from different years were analyzed in relation to impact factor and JCI.

Results: The total annual publication volume primarily increased, but the number of journals with increased publication volume was less than the number of journals with decreased publication volume. The average annual impact factor showed an overall increasing trend, with the number of journals with increasing impact factors significantly greater than those with decreasing impact factors. For journals from different countries/regions and disciplines, both publication volume and impact factor increased most substantially in 2020, and experienced their first decline in the past five years in 2022. Chinese journals demonstrated a steady growth trend in both publication volume and impact factor. Among journals with increased publication volume, the number of journals with rising impact factors was greater than those with declining impact factors, but the opposite trend was observed for JCI. The effect of increased journal publication volume on impact factor and JCI was not statistically significant ($P>0.05$).

Conclusion: The change in total annual publication volume showed significant inconsistency with the number of journals exhibiting changes in publication volume, while the annual increase in impact factor demonstrated high consistency

with year-to-year changes in individual journal impact factors. In recent years, both the quantity and quality of Chinese SCI journals have steadily improved. No correlation exists between publication volume and impact factor, and attempting to enhance journal impact factor by reducing publication volume lacks scientific basis.

Full Text

Dynamic Changes in Paper Quantity and Impact Factor of SCI-Indexed Journals and the Influence of Paper Quantity on Impact Factor

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Abstract

[**Purpose**] This study aims to explore the dynamic changes in journal paper quantity and impact factor over the past five years from multiple dimensions, and to investigate the effect of increased paper quantity on journal impact factor and Journal Citation Indicator (JCI).

Methods We selected 8,094 journals continuously indexed by the Science Citation Index (SCI) from the Web of Science database as research subjects. Statistical analysis and comparison were conducted on annual paper quantity and impact factors across the five-year period, and the relationships among paper quantity, impact factor, and JCI were analyzed.

Results The total annual paper quantity shows an overall increasing trend, yet the number of journals with primarily increased paper quantity is smaller than those with decreased paper quantity. The annual average impact factor demonstrates a consistent growth trend, with significantly more journals experiencing rising impact factors than declining ones. For journals across different countries/regions and disciplines, the most substantial increases in both paper quantity and impact factor occurred primarily in 2020, with the first decline observed in 2021. Chinese journals have exhibited robust growth in both paper quantity and impact factor. Among journals with increased paper quantity, more saw their impact factors rise than fall, but the opposite pattern was observed for JCI. The increase in journal paper quantity had no statistically significant effect on impact factor and JCI ($P>0.05$).

[**Conclusion**] The change in annual total paper quantity is markedly inconsistent with the number of journals experiencing changes in paper quantity. The

annual rise in impact factors shows high consistency with year-on-year changes in individual journals' impact factors. In recent years, Chinese SCI journals have demonstrated steady improvement in both paper quantity and quality. No correlation exists between paper quantity and impact factor, and attempting to enhance impact factor by compressing paper quantity lacks scientific validity.

Keywords: scientific journal; paper quantity; impact factor; Journal Citation Indicator; dynamic change

Introduction

Paper quantity is an important manifestation of the information volume of academic journals, typically referring to the number of scientific papers published, which serves as a crucial quantitative indicator of scientific research output [1]. The impact factor refers to the total number of citations in the current year to all documents published in a journal during the previous two years, divided by the number of citable items published in those two years [2], first proposed by the renowned bibliometrician Garfield in 1972. It is one of the most intuitive and commonly used indicators for measuring journal academic influence, originally intended for selecting publications for the Science Citation Index (SCI) [3], with citation analysis methods subsequently introduced for journal evaluation.

Paper quantity and impact factor are closely related. Some scholars, starting from the impact factor calculation formula, believe that since paper quantity serves as the denominator, increasing it will inevitably lead to a decrease in impact factor, and that "to improve impact factor, one simply needs to compress paper quantity and reduce the denominator" [4]. This approach is inadvisable because only when the numerator (citation frequency) remains unchanged will an increase in the denominator (paper quantity) necessarily cause the impact factor to decline, while a decrease in the denominator will cause it to rise. However, increased paper quantity leads to higher journal citation frequency. The effect of increased paper quantity on impact factor depends on the magnitude of citation frequency increase for the additional papers: if the increase in citation frequency exceeds the increase in paper quantity, the impact factor will inevitably improve; if the increase in citation frequency is smaller than the increase in paper quantity, the impact factor will inevitably decline. Scholars who mechanically interpret the impact factor calculation formula and artificially restrict paper quantity to increase impact factor may not achieve their desired outcome.

This study analyzes the year-on-year changes in paper quantity and impact factor of SCI-indexed journals, explores the effect of increased paper quantity on impact factor, and examines whether "improving impact factor must start with compressing paper quantity," thereby providing references for editorial planning and standardized management of scientific journals.

Literature Review

Extensive research has been conducted on paper quantity, impact factor, and their relationship. Duy et al. [5] found a potential link between publication quantity and research projects among U.S. neurosurgery residents during the 2020-2021 academic year, with residents who published more papers with higher citation counts securing more research projects. Dai et al. [6] compared paper quantities in atmospheric science journals between China and other countries from 2010-2019, finding that Chinese journals had smaller and continuously declining average paper quantities (with an average annual decrease of 5.5%), while international journals had larger and continuously increasing paper quantities (with an average annual increase exceeding 10%), widening the gap between them. Li and Shao [7] conducted a bibliometric study on the relationship between single highly-cited papers and impact factor fluctuations. Yang and Cong [8] analyzed impact factor changes in *SHPS* from 2000-2019 and studied influencing factors and their correlations.

Regarding the relationship between paper quantity and impact factor, existing research has yielded three main perspectives: First, a positive correlation exists. Yeung and Tse [9], studying 13 journals in the neuroimaging field, found a positive correlation between paper quantity and impact factor. Xue et al. [10] conducted a correlation analysis using same-year paper quantity and impact factor, finding a positive correlation between impact factor and paper quantity for the *Ningxia Medical Journal*. Li et al. [11], examining ophthalmology journals indexed by SCIE, concluded that for journals with high impact factors, increased paper quantity leads to decreased impact factor.

Second, no correlation exists. Yu et al. [12] studied Chinese information science journals based on CSSCI citation databases, finding that while the development cycles of impact factor and paper quantity were basically synchronized (divided into three stages: synchronous rise, fluctuating development, and adjustment), no correlation existed between paper quantity and impact factor for information science journals.

Third, a dual relationship exists. Dong [13] discussed the dialectical relationship between increasing paper quantity and improving impact factor values from the impact factor calculation formula, arguing that increased paper quantity sometimes raises and sometimes lowers impact factor values. Zhang and Yu [14], using art design and information science journals as examples, found both positive and negative effects between paper quantity and impact factor.

Most scholars have only selected journals in specific fields with relatively small sample sizes. Additionally, some studies have been limited to fixed years, lacking research on dynamic changes in paper quantity and impact factor. Numerous studies have directly analyzed same-year impact factor and paper quantity [15-16]. Therefore, this paper takes 8,094 SCI-indexed journals as research sub-

jects, conducts descriptive statistics on paper quantity and impact factor from 2017-2021, and uses the paper quantity from years strictly corresponding to the impact factor calculation time window to objectively analyze the effect of paper quantity changes on journal impact factor.

Methods

2.1 Research Subjects The research subjects were journals continuously indexed by SCI from 2017-2021. After matching and comparison, 8,094 journals indexed by SCI were obtained.

2.2 Data Acquisition and Processing From the Web of Science database, we clicked "InCites" → "Analyze" to enter the search page, set the time period to 2017-2021, selected "Publication Sources" as the analysis object, chose "Publication Source" and "Country/Region" as metric information, and saved the results in Excel format. We then accessed the Journal Citation Reports (JCR) search page, selected SCIE-indexed journals, chose "Citable Items" and "Impact Factor" as metric information, downloaded data by year and discipline, and exported it in Excel format. After matching journals continuously indexed from 2017-2021, we identified 8,094 journals, of which 1,081 lacked necessary metric data (including 1,060 with missing Citable Items information and 21 with missing impact factor information). These journals were excluded, leaving 7,013 journals for the final study. The metric information for these journals was matched using Excel functions such as vlookup, including: discipline, country/region, paper quantity from 2017-2021, and impact factor from 2018-2022. The data acquisition and processing workflow is shown in [Figure 1: see original paper].

2.3 Statistical Methods for Journal Paper Quantity and Impact Factor Changes Assuming a journal' s paper quantity in year t is d, and in the next year ($t+1$) is d' , then when d' - $d > 0$, paper quantity increases; when d' - $d < 0$, it decreases; and when d' - $d = 0$, it remains unchanged (with the magnitude of change being $|d'$ - $d|$). The statistical method for impact factor changes is the same as for paper quantity changes. Changes in journal paper quantity and impact factor include increases and decreases (absolute equality is extremely rare), presenting a completely opposite relationship.

After clarifying the effect of paper quantity increase on impact factor, the effect of paper quantity decrease naturally becomes clear. Therefore, when studying the effect of paper quantity changes on impact factor, we only examined journals with increased paper quantity.

2.4 Statistical Analysis Statistical processing was performed using IBM SPSS 27 software. Spearman correlation tests were used for correlation analysis

among various indicators, with a significance level of $\alpha = 0.05$. Graphing was performed using Origin 2021 and Excel software.

Results

3.1 Changes in Paper Quantity Overall Changes in Paper Quantity

The total paper quantities for 2018-2021 were 1,776,794; 1,847,294; 1,973,068; and 2,068,513 articles, respectively, with 2017 as the base period (1,698,007 articles). There were four change periods, with total paper quantity reaching its peak in 2021 and showing the first decline in 2022. The trend is illustrated in [Figure 2: see original paper].

Across the four change periods, different journals exhibited different trends, as shown in [Figure 3: see original paper], [Figure 4: see original paper], and [Figure 5: see original paper]. The numbers following the trend lines indicate the number of journals showing that particular change pattern. The Y-axis in the line charts only reflects the absolute increase or decrease in paper quantity for a given year, not the magnitude of change.

[Figure 3: see original paper] shows the distribution of journals with primarily increased paper quantity (including continuous increase and three years of increase followed by one year of decrease), totaling 2,908 journals, of which 1,081 showed continuous increase. [Figure 4: see original paper] shows journals with balanced increases and decreases (two years of increase and two years of decrease), totaling 1,152 journals. [Figure 5: see original paper] shows journals with primarily decreased paper quantity (including continuous decrease and one year of increase followed by three years of decrease), totaling 2,953 journals, of which 1,081 showed continuous decrease.

Statistical analysis revealed that the number of journals with primarily increased paper quantity (2,908) is less than those with primarily decreased paper quantity (2,953). In the four change periods, the number of journals with decreased paper quantity held a clear advantage, which differs significantly from the overall increase in total paper quantity across all journals.

Changes in Paper Quantity by Country/Region

The average paper quantity of journals from different countries/regions reflects their information capacity and can, to some extent, represent a journal' s attractiveness to author submissions. It is commonly used to evaluate a country' s or institution' s international level of natural science research through the paper quantity and citation frequency of SCI-indexed journals [17]. In 2021, U.S. journals led with 580,000 total papers, followed by the U.K. with approximately 230,000 papers, both far exceeding other countries. The Netherlands, Switzerland, and Germany ranked third to fifth in total paper quantity. Despite Switzerland' s smaller number of journals, its average paper quantity per jour-

nal led all countries, followed by the Netherlands, the U.K., the U.S., Germany, and China (including Hong Kong, Macau, and Taiwan).

If the proportion of journals with increased paper quantity in a given year exceeds 50.0%, it indicates that more journals in that country/region increased their paper quantity compared to the previous year; if not, more journals decreased their paper quantity. presents the paper quantity changes for journals from 15 countries. The U.S. and U.K., which ranked first and second in total journal count, both showed significant increases in average paper quantity in 2020, with decreases in 2021. Singapore and Switzerland achieved continuous increases in average paper quantity, particularly in 2020, with Singapore joining China as countries where the proportion of journals with increased paper quantity exceeded 50.0%.

China' s total paper quantity ranks first in Asia. Except for a slight decline in 2018, China' s average paper quantity per journal has continued to rise since 2019, with the largest increase in 2020. Possible reasons include: enhanced influence of Chinese academic journals, increased attractiveness to international authors, project support (such as the "Excellence Action Plan for China STM Journals" jointly implemented by the China Association for Science and Technology and six other ministries [18]), and policy incentives (such as the "Opinions on Promoting the Prosperous Development of Academic Journals" jointly issued by the Publicity Department of the CPC Central Committee in 2021 [19]), which have created unprecedented development opportunities for scientific journals. Singaporean journals performed exceptionally well, achieving year-over-year increases in paper quantity, with the proportion of journals showing increased paper quantity exceeding 50.0% each year. Russia, Poland, and Spain never exceeded this 50.0% threshold in any year, indicating these countries' journals need to enhance their attractiveness to submissions.

Changes in Paper Quantity by Discipline

The WoS discipline classification is complex, with numerous disciplines and many interdisciplinary journals. The 7,013 continuously indexed journals cover 139 disciplines, including 4,737 journals in single disciplines and 2,276 interdisciplinary journals. The top five disciplines by total journal count are: Materials Science, Multidisciplinary (611 journals); Engineering, Electrical & Electronic (504 journals); Mathematics (447 journals); Neurosciences (444 journals); and Oncology (432 journals). Physics, Applied and Chemistry, Multidisciplinary are the only disciplines with no more than 100 journals, reflecting relatively concentrated and abundant research output in these fields.

The number of journals with increased paper quantity varies significantly across disciplines and years. In 2018, only Materials Science, Multidisciplinary (59.2%) and Oncology (50.6%) had proportions exceeding 50.0%. In 2020, Engineering, Electrical & Electronic (52.4%) also reached this threshold, but other years did not. In 2021, no discipline exceeded 50.0%. The discipline with the lowest increase proportion was Genetics & Heredity (28.8%).

The average paper quantity per journal for the top five disciplines by total journal count is also among the highest, with continuous increases from 2018-2021. Additionally, Biochemistry & Molecular Biology, Plant Sciences, and Geosciences showed continuous increases in average paper quantity, with increases exceeding 50.0% in 2020. Although Mathematics has many journals, its average paper quantity ranked only sixth, just above Zoology. Despite having relatively few journals, Applied Physics ranked first in average paper quantity in 2020. Chemistry, Multidisciplinary ranked second in average paper quantity with 94 journals. Among the top five disciplines by total paper quantity, Applied Physics, Chemistry, Multidisciplinary, and Materials Science, Multidisciplinary showed increases exceeding 50.0% in 2020.

3.2 Changes in Journal Impact Factor Overall Changes in Impact Factor

The changes in average impact factor for sample journals across years are shown in [Figure 6: see original paper]. The numbers following the trend lines indicate the number of journals showing that particular change pattern. The Y-axis only reflects the absolute increase or decrease in impact factor for a given year, not the magnitude of change.

[Figure 7: see original paper] shows the distribution of journals with primarily rising impact factors (including continuous rise and three years of rise followed by one year of decline), totaling 4,123 journals, of which 1,081 showed continuous increase. [Figure 8: see original paper] shows journals with balanced rises and declines (two years of rise and two years of decline), totaling 1,081 journals. [Figure 9: see original paper] shows journals with primarily declining impact factors (including continuous decline and one year of rise followed by three years of decline), totaling 1,809 journals, of which 1,081 showed continuous decline.

The number of journals with primarily rising impact factors (4,123) is 2.3 times the number with primarily declining impact factors (1,809). The maximum number of journals with rising impact factors was 5,627. Except for Russia and Denmark in 2018, the proportion of journals with rising impact factors exceeded 50.0% across different countries/regions, indicating that impact factor changes have been primarily upward in recent years, consistent with the trend in average impact factor.

Changes in Impact Factor by Country/Region

Impact factor can reflect a journal' s academic reputation and influence to some extent [20], but it is not equivalent to actual influence and is only one of several evaluation metrics. Generally, a country' s average journal impact factor can roughly reflect its average level of influence. The top five countries by average impact factor in 2021 were the U.K., U.S., Netherlands, China, and Denmark, with these countries' average impact factors rising or remaining stable from 2018-2021.

presents impact factor changes for journals from 15 countries. In 2020, all countries saw increases in average impact factor, with increases exceeding 20.0% for all countries except Russia. In 2021, only China saw its average impact factor rise, while other countries experienced declines or no change. China had the largest increase in average impact factor in both 2020 (32.4%) and 2021 (17.4%), demonstrating steady quality improvement in Chinese journals and reflecting enhanced international recognition and growing influence.

The country with the fewest journals showing impact factor increases in 2018 was Singapore (38.5% of its journals), while Australia had the most (94.6%). In 2020, the Netherlands, China, Brazil, South Korea, and Denmark all had proportions exceeding 90.0%, while no country exceeded this threshold in other years. The year 2020 saw significant impact factor increases across different countries/regions.

Changes in Impact Factor by Discipline

The top five disciplines by average impact factor in 2021 were Oncology, Cell Biology, Chemistry, Multidisciplinary, Biochemistry & Molecular Biology, and Materials Science, Multidisciplinary. Significant differences exist in impact factor levels across disciplines. Analysis of the causes of disciplinary differences reveals that disciplines with higher literature growth rates, more citations, and larger proportions of effective citations have higher journal impact factors [21]. Although Mathematics has many journals, its slow paper quantity growth and fewer citations result in lower impact factors. Biology, medicine, chemistry, and materials science have abundant research output, high social attention, and numerous citations, leading to generally higher impact factors.

presents impact factor changes for the top 15 disciplines by total journal count. Only Engineering, Electrical & Electronic saw its average impact factor increase continuously from 2018-2021. The discipline with the largest average impact factor increase in 2020 was Oncology (14.0%), followed by Mathematics (11.1%). Notably, Ecology was the only discipline with a declining average impact factor. In 2021, the disciplines with the largest average impact factor increases were Public, Environmental & Occupational Health (38.7%), Environmental Sciences (18.4%), and Cell Biology (14.7%). Only Engineering, Electrical & Electronic, Applied Mathematics, and Plant Sciences did not see declines in average impact factor.

The disciplines with the largest average impact factor increases were concentrated in clinical medicine, biology, and biochemistry. In 2020, most disciplines had over 50.0% of journals with rising impact factors, while in 2021, only Engineering, Electrical & Electronic exceeded this threshold.

3.3 Impact of Increased Paper Quantity on Journal Impact Factor and JCI The impact factor for year *t* corresponds to paper quantity from years *t-2* and *t-1*. The change in paper quantity for calculating the 2021 impact factor is the difference between 2021' s paper quantity and that used for calculating the

2020 impact factor. Therefore, this study selected journals with increased paper quantity ($\Delta N \geq 20\%$) from 2018-2021 to examine the effect of paper quantity increase on impact factor.

COVID-19-related research may have affected journal evaluation metrics [22], so we selected the 2020 impact factor for analysis. The 2020 impact factor corresponds to 2018-2019 paper quantities, while the 2021 impact factor corresponds to 2019-2020 paper quantities. The change in paper quantity is the difference between the 2020-2021 paper quantity and that used for calculating the 2020 impact factor. We selected journals with paper quantity increases ($\Delta N \geq 20\%$) from 2020-2021 to study the effect of paper quantity increase on impact factor.

lists, by discipline, the number of journals with paper quantity increases $ $20% and changes in their impact factors and JCI. Among the 1,809 journals with increased paper quantity, 1,081 saw their impact factors rise while 728 saw them decline. The number of journals with rising impact factors exceeds those with declining impact factors. By discipline, Oncology had 432 journals with increased paper quantity, of which 288 saw impact factor increases and 144 saw decreases—the number of rising journals exceeds declining ones. In Mathematics, 447 journals increased paper quantity, with 144 rising and 303 declining—the number of declining journals exceeds rising ones.

From the impact factor perspective, many journals saw impact factors rise with increased paper quantity, but from the JCI perspective, the number of journals with declining JCI (1,081) was 1.5 times those with rising JCI (728), indicating more journals experienced JCI declines.

Correlation analysis between paper quantity increase and impact factor/JCI changes was performed by analyzing the correlation between 2020-2021 paper quantity increase and 2021 impact factor changes. The results are shown in . The analysis reveals that except for Surgery (r_{IF}<0.05) and Engineering, Electrical & Electronic (r_{JCI}<0.05), paper quantity increases had no statistically significant effect on impact factor or JCI across other disciplines.

Further correlation analysis between paper quantity increase and changes in impact factor/JCI, examining the relationship between 2020-2021 paper quantity increase and 2021 impact factor/JCI changes, shows that correlation coefficients between paper quantity increase and impact factor/JCI changes have both negative and positive values, with P-values almost all greater than 0.05 (except for Surgery' s P_{IF}<0.05 and Engineering, Electrical & Electronic' s P_{JCI}<0.05). This indicates that paper quantity increase has no statistically significant effect on impact factor and JCI.

Discussion

4.1 Inconsistency Between Total Paper Quantity Changes and Number of Journals with Changes Overall, the total paper quantity of SCI-

indexed journals shows an increasing trend, yet most individual journals actually decreased their paper quantity. This manifests differently across countries/regions and disciplines: while average paper quantity per journal increased from 2017-2020 and decreased in 2021, the proportion of journals with increased paper quantity only exceeded 50.0% in 2020, with decreases being the dominant trend in other years. This occurs because increases in journal paper quantity show a concentration effect: a small number of journals substantially increased their paper quantity, while most journals decreased theirs, though the magnitude of decrease was relatively small.

Possible reasons for decreased journal paper quantity include: (1) Some journals compress paper quantity to improve impact factor, which directly dilutes the quality of individual papers and reduces the effective information density of academic journals [23]; (2) Papers are becoming increasingly lengthy, reducing paper quantity when journal information capacity (page limit) remains unchanged.

4.2 High Consistency Between Average Impact Factor and Number of Journals with Rising Impact Factors The average impact factor of SCI-indexed journals showed continuous growth from 2018-2020, with only a slight decline in 2021, and the overall trend was upward. Changes in the number of journals with rising impact factors across different countries/regions and disciplines followed the same pattern as the average impact factor. Analysis of impact factor changes revealed that the number of journals with primarily rising impact factors (4,123) was 2.3 times those with primarily declining impact factors (1,809). In 2020, the proportion of journals with rising impact factors exceeded 50.0% across different countries/regions, indicating that recent impact factor changes have been primarily upward, consistent with the average impact factor trend. This demonstrates high consistency between average impact factor and the number of journals with rising impact factors.

4.3 Steady Improvement in Both Quantity and Quality of Chinese SCI Journals China' s total paper quantity ranks first in Asia, and except for a slight decline in 2018, China' s average paper quantity per journal has continued to rise since 2019, revealing continuously increasing academic influence and attractiveness to authors. These achievements are closely related to the Chinese government' s sustained financial support for scientific research and education [24], particularly the "Excellence Action Plan for China STM Journals" [18] and policy incentives [19]. Notably, Chinese journals' impact factor growth rate ranked first globally for two consecutive years in 2020-2021, demonstrating that Chinese journals' impact factor improvement was not achieved by reducing paper quantity. The outstanding performance of Chinese journals not only contributes positively to global scientific publishing but also provides valuable experience for developing countries/regions seeking to enhance academic publishing quality.

4.4 No Correlation Between Paper Quantity and Impact Factor
Statistics on impact factor and JCI changes for journals with increased paper quantity across disciplines show that among journals with substantial paper quantity increases, 1,081 saw impact factor increases while 728 saw decreases. This indicates that with increased paper quantity, impact factors may rise or fall. As a multi-dimensional normalized indicator, JCI' s patterns with paper quantity changes better illustrate the effect of paper quantity on journal influence metrics. With increased paper quantity, both rising and declining JCI journals exist across disciplines, but the number of journals with declining JCI (1,081) exceeds those with rising JCI (728). The fundamental factor determining academic journal influence is the quality of accepted papers. Therefore, scientific journals should reasonably design their column structure based on their purpose, philosophy, and readership, accurately identify and accept excellent manuscripts, precisely position journal scale, and effectively conduct thematic planning. They can expand manuscript sources through academic seminars, themed call for papers, or invited contributions from experts to ensure high-quality development.

This study analyzed 7,013 SCI-indexed journals to examine dynamic changes in paper quantity and impact factor and the effect of paper quantity increase on impact factor. The findings confirm that increased paper quantity does not necessarily lead to decreased impact factor. Therefore, in journal development, editors should strictly control paper quality, discover more excellent papers, and simultaneously consider publication scale rather than blindly reducing paper quantity.

Limitations: (1) The study subjects were SCI-indexed journals, excluding those indexed by SSCI; (2) The large sample size involving numerous countries/regions, disciplines, and years prevented detailed presentation of each journal's information. Whether SSCI-indexed journals show similar patterns regarding the dynamic relationship between paper quantity and impact factor requires further research to provide decision-making references for social science journal professionals.

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Author Contributions: Wang Liyun: data acquisition and analysis, results interpretation, manuscript writing; Liu Xueli: research conceptualization, framework design, data interpretation, manuscript revision and review; Jiang Yuyan: data analysis assistance, discussion participation.

Conflict of Interest: The authors declare no conflict of interest.

How to cite this article: Wang Liyun, Liu Xueli, Jiang Yuyan. Dynamic changes in paper quantity and impact factor of SCI-indexed journals and influence of paper quantity on impact factor. Chinese Journal of Scientific and Technical Periodicals, XXXX, XX(XX): 1-XX.

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