

User Content Usage Behavior in Academic Social Networks: An Empirical Analysis of Popular Blog Posts on ScienceNet (Postprint)

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Abstract

[Purpose] User content usage behavior is of significant value for the sustainable development of academic social networks. This paper seeks to explore user content usage behavior in academic social networks from the perspective of user reading. **[Method]** Using popular blog posts from ScienceNet as the analytical sample, and employing methods such as variance analysis and correlation analysis, this study investigates the characteristics of user content usage behavior from aspects including basic content features, relationships in user content usage behavior, and characteristics of content contributors. **[Results]** Users demonstrate considerable interest in content related to viewpoint exchange and sharing of teaching and research experience; for most categories of blog posts, the comment volume and recommendation volume reach levels of significant correlation or high correlation. **[Limitations]** The research platform is singular, selecting only Chinese academic exchange websites as the research platform; the study of user content usage behavior is not comprehensive, examining only users' content reading behavior. **[Conclusion]** Users enjoy expressing and exchanging ideas and viewpoints on academic social networks; they are more inclined to recommend content they have interacted with.

Full Text

Academic Social Network User Content Usage Behavior Research: An Empirical Analysis Based on Popular Blogs from ScienceNet

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Abstract

[Objective] User content usage behavior holds significant value for the sustainable development of academic social networks. This study investigates academic social network user content usage behavior from the perspective of user reading. **[Methods]** Using popular blog posts from ScienceNet as the analysis object, this research employs methods including variance analysis and correlation analysis to examine user content usage behavior characteristics from three dimensions: basic content features, relationships among user content usage behaviors, and content contributor characteristics. **[Results]** Users demonstrate greater interest in content involving opinion exchange and the sharing of teaching and research experiences. For most blog categories, comment volume and recommendation volume reach significant or high correlation levels. **[Limitations]** The research platform is singular, selecting only a Chinese academic exchange website; the study of user content usage behavior is incomplete, focusing solely on user content reading behavior. **[Conclusions]** Users enjoy expressing and exchanging ideas and viewpoints on academic social networks; they are more inclined to recommend content in which they have participated interactively.

Keywords: Scholarly communication; User-generated content; User behavior; Academic social networking

Classification Number: G350

Academic exchange represents a crucial pathway for the inheritance of human knowledge and culture. Advances in the era and development of computer network technology have created new opportunities for academic exchange, with the dissemination of scientific knowledge and culture gradually shifting to the internet. Academic social networks have emerged as a new medium for academic exchange under this backdrop. Academic social networks are online services or platforms that serve scientific researchers, support various aspects of their research processes, and maintain their personal social relationships [1]. Research shows that academic social networks can effectively promote academic exchange while helping to increase users' academic visibility and article citation rates [2].

Content constitutes the cornerstone of survival and development for academic social networking sites. High-quality content attracts and retains more users for the platform, generating greater traffic. One of the primary ways users engage in academic exchange on academic social networking sites is by creating content and sharing it with others. As information recipients, users selectively read based on their interests and the quality of the content itself. Popular content spreads faster and reaches broader audiences, significantly enhancing content creators' academic visibility, increasing user stickiness to academic social networking sites, and serving as an information source for libraries, information institutes, and other service organizations to enrich their service offerings. Therefore, studying user content usage behavior in academic social networks to identify characteristics of popular content and leverage its utility holds important research significance.

With the rapid development and widespread application of academic social networks, research on user behavior has attracted considerable scholarly attention. Chen et al. summarized user content-related behaviors in social networks into two categories: content creation behavior and content transmission behavior. Content creation refers to delivering self-created content through writing and publishing, while content transmission primarily refers to sharing behaviors in social networks, such as sharing blog posts, photos, and videos [3]. Academic social networks represent a special application of social networks with general social network characteristics. Additionally, we contend that users' content sharing behavior represents only part of their actions when encountering content. Users' complete set of operations should also include searching, reading, commenting, recommending, etc. These behaviors, together with sharing behavior, constitute the complete actions of users as communication objects when facing content created by users as communication subjects. All these behaviors constitute purposeful content usage by users. Therefore, we define this series of behaviors as user content usage behavior. Building upon Chen et al.'s [3] classification of user content behaviors in social networks, this paper categorizes user content-related behaviors in academic social networks into content creation behavior and content usage behavior, using this framework to review relevant research.

Research on user content creation behavior in academic social networks primarily focuses on two aspects: user content creation motivations and the created content itself. Studies on user content creation motivations include: Mewburn et al.'s analysis of why academic blog users write blogs [4]; Wei et al.'s study on group usage motivations and knowledge sharing motivations of Mendeley group members [5]; Gan Chunmei et al.'s exploration of psychological inducements for knowledge exchange and sharing among academic blog users [6-7]; and Tsai et al.'s comprehensive consideration of cognitive, emotional, and social influence factors to explain knowledge sharing behavior in virtual communities [8]. Furthermore, some scholars have studied the specific content created by academic social network users. For example, Mewburn et al. categorized scholars' blog content into nine types including self-help, descriptions of academic practice, technical advice, academic culture critique, research dissemination, and career advice, finding that academic culture critique and research dissemination represented the largest proportions [4]. Bukvova et al. divided scholars' blog content into three categories: professional, activity, and identity. Professional content is closely related to the blogger's professional knowledge and interests; activity content refers to blog posts documenting the blogger's research and teaching activities; and identity content includes records of the blogger's life as an ordinary person [9]. Shema et al. used content analysis to examine 391 blog posts under the health category of an academic blog, classifying them into ten categories including discussion, critique, advice, and personal content based on specific content [10]. These studies demonstrate that many scholars recognize the importance of user knowledge sharing behavior and their created content for the construction and development of academic social networks, conducting

extensive and active explorations of users' knowledge sharing motivations and contributed content.

In research on user content usage behavior in academic social networks, scholars have gradually increased their focus. For instance, Luzón analyzed hyperlink usage in academic blogs, finding that bloggers strategically use hyperlinks for purposes including: seeking their own position in academic circles, organizing information in hypertext to structure knowledge, disseminating their research findings, increasing blog visibility, and optimizing the blog itself [11]. Hu Yuan studied knowledge linking relationships in virtual knowledge communities, discovering three types of knowledge linking relationships: person-to-person, person-to-knowledge-body, and knowledge-body-to-knowledge-body [12]. Shi Xinyan et al. analyzed links in academic blogs, finding that links appearing in different positions serve different purposes: links in article content sections serve to cite content; links in blog list positions are used to recommend others' works; links in article comment sections are evaluation links; and links in Tag and Category positions are identification links [13].

From current research, studies on user content creation behavior are more numerous and comprehensive, primarily analyzing psychological influencing factors of user creation behavior and the content itself to reveal user creation motivations, content categories, and potential value. However, research on user content usage behavior is relatively weak, focusing mainly on link usage, and requires systematic study from multiple perspectives. Therefore, this paper attempts to investigate user content usage behavior in academic social networks from the perspective of user reading.

3.1 Research Purpose

This study aims to explore user content usage behavior in academic social networks from the perspective of user reading, investigating: what content users prefer to read; whether users' attitudes toward different content categories are consistent; and whether relationships exist among users' reading, recommending, and commenting behaviors during article reading, and what these relationships are.

3.2 Research Methods

To address the research questions proposed in Section 3.1, this study employs data crawling and mathematical statistics methods. Web crawler technology is used to collect user reading behavior data from academic social networking sites; Excel is used to organize collected data and clean it according to certain standards; SPSS software is used for sample statistical analysis. In applying statistical analysis methods, descriptive statistics are used to quantitatively describe basic sample characteristics; mean comparison and one-way ANOVA are used to compare differences in user behaviors toward different content; and correlation analysis is used to analyze correlations among various user behaviors

during reading.

3.3 Data Sources and Processing

ScienceNet (<http://www.sciencenet.cn/>) was selected as the research platform, which includes sections such as news, blogs, groups, and academicians. This study focuses only on popular blog posts in the blog section. Each blog post on ScienceNet has a unique blog post ID as an identifier. When creating a blog post, authors must select a system category based on their own judgment. Created blog posts can be read, commented on, and recommended by other users. Posts with high recommendation volumes become popular blog posts appearing on ScienceNet's homepage, gaining opportunities to be seen by more users. Since popular blog posts are recommended by readers, they reflect readers' reading preferences and represent the popular portion of blog content created by ScienceNet blog users. Based on this analysis, ScienceNet popular blog posts were selected as samples to study user content usage behavior in academic social networks.

On November 18, 2015, a Java program was written to crawl blog posts under ScienceNet's popular blog section. The crawled information included blog post ID, title, system category, author, click volume, comment volume, date, year, and recommendation volume. Before data crawling, a preliminary estimate of the number of popular blog posts on ScienceNet was made. Considering the limited quantity, all popular blog post information up to the crawling date was collected, totaling 4,500 entries. Twenty-one entries with severe missing data were removed, leaving 4,479 valid data entries for analysis. The collected data were organized using Excel and then imported into SPSS 19.0 for subsequent analysis.

4.1 Overall Category, Annual, and Temporal Distribution of Popular Blog Posts

This section statistically analyzes popular blog post numbers from three basic indicators—overall category, year, and time—to provide a foundation and support for subsequent in-depth analysis.

(1) Overall Category Distribution

Popular blog posts involve 12 blog categories (provided by ScienceNet): Opinion Review, Life Miscellaneous, Research Notes, Biographical Accounts, Teaching Insights, Overseas Observations, Blog Information, Picture Encyclopedia, Science Popularization Collection, Humanities and Social Sciences, Poetry Collection, and Paper Exchange. Statistics show that the top three categories by blog post quantity are Opinion Review (1,538), Life Miscellaneous (693), and Research Notes (391). Poetry Collection (65) and Paper Exchange (56) represent the smallest proportions in popular blog posts, accounting for less than two percent. Details are shown in .

The statistical results indicate that among popular blog posts, content related to personal opinion expression accounts for the highest proportion (34.3%) in the Opinion Review category. Life Miscellaneous ranks second (15.5%). The remaining categories account for smaller proportions. These results suggest that, purely from a quantitative perspective, users are most willing to exchange ideas and viewpoints on academic social networking sites.

(2) Annual Distribution

[Figure 1: see original paper] shows the annual distribution of all popular blog posts on ScienceNet from January 1, 2008, to November 18, 2015. The first popular blog post appeared on ScienceNet in 2008. The data shows that from 2008 to 2012, the number of popular blog posts on ScienceNet increased exponentially. 2012 represents an important turning point for ScienceNet popular blog posts, with the annual number reaching its peak (1,188). In 2013 and 2014, the number of popular blog posts decreased year by year. Although data collection only extended to mid-November 2015, it can be predicted that the number of popular blog posts in 2015 will be difficult to exceed that of 2014, marking three consecutive years of decline in annual popular blog post numbers.

[Figure 2: see original paper] shows the annual publication of each category of popular blog posts. From 2008 to 2012, the annual publication numbers for each category increased, with Opinion Review growing the fastest, followed by Life Miscellaneous. Consistent with the overall trend, after 2012, except for Biographical Accounts, the annual increase in popular blog posts for other categories has been decreasing year by year, with most categories dropping to 2011 levels.

To further explore the reasons for the decline in popular blog post numbers, this paper analyzes changes in the number of bloggers using four indicators: blogger churn numbers and proportions, and new blogger numbers and proportions, as shown in formulas (1) through (4):

In formula (1), $n(t-1)$ represents the number of bloggers who churned, where $n_{-1}(t)$ refers to the total number of popular blog post authors in year $t-1$, and $n(t)$ represents the number of authors who published popular blog posts in both year t and year $t-1$.

In formula (2), p represents the blogger churn proportion. For example, if there were 100 authors ($n_{-1}(t)$) in year $t-1$, and only 80 of them ($n(t)$) continued to publish popular blog posts in year t , then the number of churned authors from year $t-1$ ($n(t-1)$) would be 20, and the churn proportion (p) would be 20%.

In formula (3), $n(t)$ represents the number of newly added authors, and n represents the total number of popular blog post authors in year t .

In formula (4), p represents the proportion of newly added authors in year t relative to the total number. For example, if there were 100 authors (n) in year t , and 70 of them ($n(t)$) had published popular blog posts in year $t-1$, then the

number of newly added authors would be $30(n(t))$, accounting for 30% (p) of the total number of authors in year t .

The analysis results (see) show that after 2011, the annual author churn proportion has been increasing overall. Since 2013, the annual author churn proportion has reached nearly 50% each year. Correspondingly, after 2012, the number of new authors added each year has been decreasing, and the proportion of new bloggers has been shrinking. Moreover, starting from 2013, the number of newly added authors has been significantly lower than the number of churned authors. Therefore, we contend that excessive and annually increasing churn of popular blog post authors, combined with decreasing numbers of new authors, constitutes an important reason for the decline in annual popular blog post numbers on ScienceNet. Blog operators should immediately take measures to retain existing users while encouraging new users to contribute.

(3) Temporal Distribution

[Figure 3: see original paper] shows the distribution of popular blog posts published at various times throughout the day. The figure reveals that popular blog posts are distributed across every time point. The period from 8:00-11:00 sees the highest number of popular blog post publications, with many popular blog authors tending to create content during this time slot. The period from 23:00-6:00 (the following day) is rest time and also the time slot with the fewest popular blog post publications. These results indicate that 8:00-11:00 is the most active period for popular blog authors; therefore, if readers wish to interact with popular blog authors, 8:00-11:00 is optimal.

Additionally, we distinguished between weekdays and weekends. Comparing the temporal distribution of popular blog posts on weekdays versus weekends in [Figure 3: see original paper] reveals that the total number of popular blog posts published across all time slots on weekdays is approximately 2.5 times that of weekends. This suggests that the temporal distribution of popular blog post creation does not change significantly between weekends and weekdays; relatively speaking, the temporal distribution of popular blog post creation on weekends is more evenly distributed.

4.2 Analysis of User Content Usage Behavior Relationships

This section analyzes and compares the relationships among user behaviors from three perspectives: click volume, comment volume, and recommendation volume, attempting to address two questions: Do significant differences exist among users' click volumes, comment volumes, and recommendation volumes when dealing with different categories of popular blog posts? Are there internal relationships among these three indicators of popular blog posts? If so, what are these internal relationships?

(1) Difference Analysis

Mean Comparison

provides a preliminary comparison of the mean values of the three basic indicators for each blog post category, with gray cells highlighting the maximum values for each indicator. Among them, Paper Exchange has the highest average click volume per post (24,773), while Picture Encyclopedia has the lowest (4,471). Opinion Review has the highest average comment volume per post (77) and average recommendation volume per post (96), while Poetry Collection has the lowest values for both indicators (44 and 67, respectively).

From , two preliminary conclusions can be drawn: First, Paper Exchange blog posts generate the most user interest. The click volume indicator shows that users are most concerned with papers during content usage, demonstrating user recognition of ScienceNet's academic characteristics and indirectly verifying that academic social networks can help increase users' academic exposure. Second, Opinion Review blog posts most effectively stimulate reader debate. The comment volume indicator shows that users are willing to express their viewpoints and engage in academic exchange and discussion on ScienceNet. The recommendation volume indicator expresses users' desire to disseminate and spread their academic viewpoints and ideas while expressing opinions. These analyses also demonstrate that academic social networks can effectively promote academic exchange.

Significance Difference Comparison

When comparing differences in indicators across different blog post categories, since "category" is a 12-category variable and the dependent variables (click volume, comment volume, recommendation volume) are continuous variables, one-way ANOVA (Analysis of Variance) was selected as the comparison method.

Homogeneity of variance tests for the three dependent variables were conducted, with results shown in . The 12 sample groups for click volume, comment volume, and recommendation volume all failed the homogeneity of variance test. For post-hoc comparisons, the Tamhane's T2 test for heterogeneous variance comparison was selected.

ANOVA results (see) show F-values of 26.107 ($p=.000<0.05$), 14.553 ($p=.000<0.05$), and 8.819 ($p=.000<0.05$) for each indicator, with all p-values less than 0.05. This indicates significant differences among the 12 categories for click volume, comment volume, and recommendation volume. Due to space limitations, post-hoc comparison results only display data with significant differences.

- 1) **Click Volume:** Post-hoc comparison results (see) show that Opinion Review, Overseas Observations, Teaching Insights, and Research Notes have significantly higher click volumes than Humanities and Social Sciences, Life Miscellaneous, Poetry Collection, and Picture Encyclopedia. Poetry Collection and Picture Encyclopedia have significantly lower click volumes than the other 10 categories. Meanwhile, Blog Information, Opinion Review, Overseas Observations, Teaching Insights, Science Popularization Collection, Research Notes, Paper Exchange, and Biographical Accounts

show no significant differences in click volumes among them. Overall, readers prefer content closely related to research and education and personal opinion expression, showing relatively lower reading interest in content related to personal life and hobbies.

- 2) **Comment Volume:** Multiple comparison results for comment volume are shown in . Blog Information' s comment volume is significantly higher than Science Popularization Collection, Poetry Collection, and Picture Encyclopedia. Opinion Review' s comment volume is significantly higher than Overseas Observations, Science Popularization Collection, Research Notes, Humanities and Social Sciences, Biographical Accounts, Life Miscellaneous, Poetry Collection, and Picture Encyclopedia. Teaching Insights' comment volume is significantly higher than Science Popularization Collection, Humanities and Social Sciences, Biographical Accounts, Life Miscellaneous, Poetry Collection, and Picture Encyclopedia. Poetry Collection and Picture Encyclopedia' s comment volumes are significantly lower than most other categories. These results show that opinion expression content most easily attracts reader-author interaction, followed by teaching insights content, while poetry collection and picture encyclopedia content are least likely to elicit reader participation. This aligns with analysis results on readers' reading interests (click volumes).
- 3) **Recommendation Volume:** Comparison results for recommendation volume are shown in . Opinion Review' s recommendation volume is significantly higher than Science Popularization Collection, Research Notes, Humanities and Social Sciences, Life Miscellaneous, Poetry Collection, and Picture Encyclopedia. Poetry Collection and Picture Encyclopedia' s recommendation volumes are significantly lower than the other 10 categories. No significant differences exist in recommendation volumes among Blog Information, Overseas Observations, Teaching Insights, Science Popularization Collection, Research Notes, Paper Exchange, Humanities and Social Sciences, Biographical Accounts, and Life Miscellaneous. Recommendation behavior expresses readers' appreciation and recognition of content they have read, and recommendation volume directly determines whether an article can become a popular blog post. Therefore, academic social networking site operators can encourage users to use blog posts to express their viewpoints, accumulating more reader-favored content. Blog authors can also win more readers through self-expression of viewpoints.

Comprehensive Analysis: Content sharing viewpoints and teaching/research experience-related content most effectively generates reader interest. After reading articles, readers are more willing to interact with authors regarding Opinion Review and Teaching Insights content. This shows that academic social network users have strong intentions for viewpoint expression and experience exchange. Content related to authors' personal hobbies and private life is disadvantaged across click, comment, and recommendation volumes. From a reading habit perspective, users prefer to use academic social networking sites for academic

purposes and to see content closely related to academia, consistent with existing research findings [14].

(2) Correlation Analysis

Overall Correlation Analysis

Overall correlations among the three indicators were analyzed using Pearson correlation coefficients [15]. Results (see) show that all inter-indicator correlations reach significant levels: click volume and comment volume are lowly positively correlated ($0.3 < r = 0.478 < 0.5$); click volume and recommendation volume are significantly positively correlated ($0.5 < r = 0.517 < 0.8$); comment volume and recommendation volume show the strongest correlation ($0.5 < r = 0.580 < 0.8$), indicating that comment volume and recommendation volume influence each other the most overall.

Correlation Analysis of Click Volume, Comment Volume, and Recommendation Volume

Since click volume and comment volume are lowly correlated, this paper further elaborates only on the correlation analysis results between click volume and recommendation volume, and comment volume and recommendation volume for each blog category (overall analysis results see).

- 1) **Correlation between Click Volume and Recommendation Volume:** Life Miscellaneous, Teaching Insights, Blog Information, Research Notes, and Paper Exchange show significant correlations between click volume and recommendation volume ($0.5 < r < 0.8$), with Teaching Insights, Research Notes, and Paper Exchange all being closely related to research or teaching. Opinion Review, Overseas Observations, Science Popularization Collection, Humanities and Social Sciences, and Picture Encyclopedia show low correlations between click volume and recommendation volume ($0.3 < r < 0.5$). Biographical Accounts and Poetry Collection show no correlation between click volume and recommendation volume ($r < 0.3$).
- 2) **Correlation between Comment Volume and Recommendation Volume:** Teaching Insights, Biographical Accounts, and Paper Exchange show high correlations between comment volume and recommendation volume ($r > 0.8$). Opinion Review, Picture Encyclopedia, and Poetry Collection show low correlations between comment volume and recommendation volume ($0.3 < r < 0.5$). All other categories show significant or high correlations between comment volume and recommendation volume ($0.5 < r < 0.8$).

Comprehensive Analysis: Users' reading behavior has less influence on their recommendation behavior than commenting behavior does. Except for Picture Encyclopedia, the correlation coefficients between click volume and recommendation volume for the remaining 11 categories are all lower than those between comment volume and recommendation volume. Meanwhile, except for Opinion Review, Picture Encyclopedia, and Poetry Collection, comment volumes and

recommendation volumes for other categories all reach significant or high correlation levels. Since recommendation volume directly determines whether a blog post can be recommended to the blog homepage, we suggest that bloggers can increase their posts' recommendation volumes by actively interacting with readers to increase comment volumes.

4.3 Analysis of Blogger Characteristics

Popular blog post authors are creators of the most popular portion of blog content. They are valuable to both other readers and blog operators. Identifying high-productivity authors for each category of popular blog posts allows other readers to follow bloggers in their categories of interest and check their latest posts promptly. Blog operators can develop corresponding incentive measures for these bloggers, maintain these users, and encourage them to continue contributing high-quality content. Below are the analysis results for popular blog post authors.

The 4,479 popular blog posts were created by 588 bloggers. One hundred eight authors (18.4%) published eight or more popular blog posts, contributing 80% of popular blog posts. lists bloggers who published more than 40 popular blog posts, totaling 20 bloggers. The top blogger is Li Xuekuan (174 posts), followed by Wu Feipeng (166 posts). These bloggers are highly productive, having created 43.6% of popular blog posts and representing key targets for blog operator maintenance and incentives.

shows for each blog category: total number of authors, average posts per author, number of authors contributing more than the average, contribution proportion, and blog post output of the Top 5 authors.

In terms of author participation numbers across categories, Opinion Review attracted the most bloggers (313), followed by Research Notes (164), Life Miscellaneous (151), and Biographical Accounts (144). These four categories each had more than 140 participating bloggers. The remaining categories attracted fewer than 100 bloggers each, with Picture Encyclopedia (26) and Poetry Collection (19) attracting the fewest authors.

This paper also calculated the average number of posts contributed per author for each category. Only Picture Encyclopedia (7.63) had an average contribution exceeding five posts per author. Six categories had averages between three and five posts: Opinion Review, Life Miscellaneous, Teaching Insights, Overseas Observations, Blog Information, and Poetry Collection. Five categories had averages below three posts: Research Notes, Biographical Accounts, Science Popularization Collection, Humanities and Social Sciences, and Paper Exchange, with Paper Exchange having the lowest average (1.22) and only six authors contributing two or more posts.

Authors contributing more posts than the category average are considered core authors. Seven categories—Opinion Review, Research Notes, Biographical Ac-

counts, Teaching Insights, Blog Information, Science Popularization Collection, and Humanities and Social Sciences—have core author proportions of 20% or higher. Paper Exchange, Picture Encyclopedia, and Poetry Collection have fewer core authors with relatively low proportions (below 20%).

From the perspective of core authors' contribution proportions, except for Paper Exchange (29%), the remaining 11 categories show core author contribution proportions basically between 60%-80%, indicating that Paper Exchange popular blog posts have relatively dispersed author output without forming a true core author group. Notably, Paper Exchange popular blog posts account for the smallest proportion overall (N=56, P=1.3%), with only six core authors. From the Top 5 authors' output, the top five authors contributed only 2-5 posts each, while the vast majority of remaining authors contributed only one post, indicating low sustained participation in this category.

Comprehensive Analysis: Opinion Review popular blog posts have high participation numbers, a stable core author group, and high sustained participation among core authors, making it the most popular blog category on ScienceNet. Research Notes and Biographical Accounts rank second, with moderate total author participation and core author numbers and relatively stable sustained participation. Life Miscellaneous has a relatively large total number of authors but fewer core authors, with individual authors making enormous contributions. The remaining categories have fewer participating authors, especially Paper Exchange, which not only has few core authors (N=6) but also the lowest sustained participation across all categories, with the vast majority of authors publishing only one popular blog post in this category. Comparing these results with user reading behavior analysis reveals that ScienceNet users are not particularly enthusiastic about using this platform to exchange formal publications like papers that have undergone peer review.

5 Conclusions and Limitations

Based on this study's results, we propose the following improvement suggestions for blog site operators and blog creators: Blog operators can use these conclusions to identify and maintain core users, recommend blog posts of interest to users, reduce users' information search costs, and improve service quality. Bloggers can adopt strategies such as writing about topics of interest to users or actively interacting with readers to increase the likelihood of their posts being recommended to the blog homepage.

This study still has the following limitations: It selected only ScienceNet as the research platform, so results can only represent content usage characteristics of Chinese-language academic social network users. More research is needed on English-language academic social network user content usage behavior. Different academic social networking platforms have different functions; for example, ScienceNet alone includes both group and blog functions, and users may exhibit different content behaviors when using different functions. Future research

should comprehensively consider user content behaviors. This study's analysis of user content usage preferences is relatively coarse, examining only system blog categories without delving into specific themes of blog post content.

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Author Contribution Statement

Wang Yuefen: Designed the research framework, revised the paper.

Jia Xinlu: Jointly proposed the research idea, conducted data analysis and processing, drafted the paper.

Fu Zhu: Crawled and analyzed data, jointly proposed the research idea, revised the paper.

Conflict of Interest Statement

All authors declare no conflict of interest.

Supporting Data

Supporting data can be found in the journal's online version: <http://www.infotech.ac.cn>.

[1] Wang Yuefen, Jia Xinlu, Fu Zhu. ScienceNet Popular Blog Posts 20151118.xls. "ScienceNet" popular blog post data.

[2] Wang Yuefen, Jia Xinlu, Fu Zhu. ScienceNet Popular Blog Posts 20151118.sav. "ScienceNet" popular blog post data.

[3] Wang Yuefen, Jia Xinlu, Fu Zhu. One-way ANOVA Results.spv. Raw one-way ANOVA results for blog post click volume, comment volume, and recommendation volume.

[4] Wang Yuefen, Jia Xinlu, Fu Zhu. Correlation Analysis Results.spv. Raw correlation analysis results for blog post click volume, comment volume, and recommendation volume.

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