Use of Online Databases and Social Networking Sites by Geology Faculty Members in Kerala

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Abstract: This study examines the use of online databases and social networking sites (SNS) by geology faculty in Kerala, India. It also seeks to identify the relationship between their research experience, the number of published papers, and their overall usage of these digital resources. Data was collected using a structured questionnaire. The study population comprises geology faculty members from academic geoscience departments in government and government-aided colleges, as well as state and central universities in Kerala. SPSS software was employed for both descriptive and analytical data analysis. The respondents in this study utilized an average of four databases: Science Direct, Web of Science, Scopus, and Google Scholar. They also exhibited an average level of usage across social networking sites such as WhatsApp, ResearchGate, YouTube, Slideshare, and Academia.edu. A very strong statistically significant relationship was found between research experience (in years) and the number of published papers (rho = 0.659, p < 0.01). Additionally, a moderate statistically significant relationship was observed between the overall use of online databases and the overall use of social networking sites (rho = 0.517, p < 0.01). Conversely, a moderate statistically significant negative relationship was observed between the overall use of social networking sites and the number of published papers (rho = -0.323, p < 0.05). The usage of various digital resources by faculty members is continually increasing.

Keywords: Electronic Resources, Geology Faculty, Online Databases, Social Networking Sites

1.   INTRODUCTION

In the evolving landscape of academia, the integration of technology has become crucial to scholarly activities, reshaping how educators and researchers interact with their fields. This shift is notably significant in geology, where understanding Earth's complexities necessitates a blend of traditional methods and advanced digital tools. Consequently, the utilization of online databases and social networking sites (SNS) by geology faculty members has become a central subject, influencing knowledge dissemination, collaborative research, and professional networking.

In the 21st century, geology faculty members are navigating between geological exploration and the expansive digital domain. Online databases act as extensive repositories, offering access to diverse datasets, research findings, and opportunities for collaboration. Concurrently, SNS have developed into vibrant platforms that enhance global connectivity among academics, facilitating idea exchange, collaborative projects, and the spread of innovative research.

This article explores the diverse ways in which geology faculty members leverage online databases and SNS to advance their research, teaching methods, and professional networks.

2.   RELATED STUDIES

In the ever-evolving landscape of academia, the integration of digital technologies has become increasingly prevalent. This literature review explores the current state of knowledge regarding the use of online databases and SNS by faculty members across various academic disciplines.

Rostami, Hosseini, and Saberi (2022) surveyed the information-seeking behavior of Iranian medical faculty members, identifying reasons and obstacles for their use of the internet, scientific databases, and online social networks. This cross-sectional study used a structured questionnaire to collect data from faculty members at four faculties of Hamadan University of Medical Sciences in Iran: Health, Nursing-Midwifery, Paramedicine, and Rehabilitation. SPSS software was employed for data analysis. Key barriers were low internet speed, network traffic, and lack of time. Gender significantly influenced familiarity with databases, access barriers, and social network usage. The primary goals for internet and database use were educational and research resource searches and general information enhancement. A significant negative relationship was found between social network use and both age ($r = -0.204$, $p < 0.05$) and experience ($r = -0.239$, $p < 0.05$). The use of various digital resources by faculty members is continually increasing, with this study examining the simultaneous use of the internet, scientific databases, and online social networks.

Academic SNS (ASNS) are becoming increasingly prominent in academia, significantly contributing to knowledge dissemination. Jain and Makwana (2022) investigated the usage of ASNS by faculty members and researchers at National Institute of Fashion Technology (NIFT) Centers across India. They collected primary data through an online questionnaire from 17 NIFT Centers. The data analysis revealed that the majority of respondents were aware of and utilized ASNS. Google Scholar had the highest awareness and usage (34.98%),

followed by ResearchGate (27.09%), LinkedIn (18.23%), and Academia.edu (17.24%). The findings indicate that faculty members and researchers primarily use ASNS to access millions of freely available research papers (34.98%), somewhat less for new forms of communication with researchers (27.09%), and very rarely for increasing citations of research papers (17.24%). The results also reveal a positive attitude towards using popular ASNS. The study recommends that NIFT organize workshops and seminars on ASNS platforms to enhance awareness and visibility of their research.

 Nigam and Singh (2016) examined the usage patterns of social networking sites (SNS) among academicians for scholarly communication in the Central Himalayan region's state universities of Uttarakhand, India. The study revealed that 93% of faculty members at these universities were using SNS, with information sharing being the most common activity. Additionally, 44% of the faculty members used SNS several times a day, and 48% considered SNS information reliable. Among the various platforms, Facebook had the highest usage at 28.75%. The study also indicated that 38% of faculty members used SNS to stay updated with the latest knowledge. Most faculty members accessed SNS from their homes, likely due to the lack of Wi-Fi facilities on university campuses. Therefore, the study recommends that universities provide Wi-Fi access to facilitate the use of SNS for academic purposes during working hours, thereby promoting academic excellence.

3.   OBJECTIVES

The basic objective of the present study is to identify the major online databases and SNS used by geology faculties in Kerala. The following questions guided the study:

☐   What are the online databases used at the average level by the geology faculties in Kerala.

☐   What are the SNS used at the average level by the geology faculties in Kerala.

☐   Whether there exist any relationships among research experience, number of published papers and the overall use of online database and SNS by geology faculties in Kerala.

4.   METHODOLOGY

The study population comprises geology faculty members working in academic geoscience departments at government and aided colleges, as well as state and central universities in Kerala. Faculty members from private self-financing colleges in Kerala, where geology courses are also taught, were not included in the study.

The total population consists of 67 geoscience faculty members. Simple random sampling using the lottery method was employed to select the sample from this population. The sample size was determined using Krejcie and Morgan's (1970)

table, which indicated that a sample of 57 is required for a population of 67 geology faculty members.

In line with the study's objectives and the literature review, a questionnaire containing both closed and open-ended questions was designed to collect relevant research data. Likert's five-point scale was incorporated into the questionnaire design. The collected data from the faculty members were organized, tabulated, analyzed, and interpreted using various tools and techniques.

Initially, the data were expressed using descriptive statistics. The Kolmogorov-Smirnov test was then applied to check for normal distribution. Based on the findings, appropriate further analyses were conducted. The data underwent statistical analysis using both descriptive statistics (frequency and percentage) and inferential statistics (One Sample t-test, Spearman's Rho test) with SPSS software (version 22.0). Additionally, MS Excel was used for tabular presentations.

5. ANALYSIS AND INTERPRETATION

The collected data was analyzed and interpreted to draw the results of this study.

5.1 Demographic Profile of Respondents

The total number of respondents in this study is 57. The demographic details of the respondents are presented in Table 1. Of the geology faculty members, 78.9% are male, while only 21.1% are female, indicating a low representation of women in geology faculty positions. The faculty members are categorized into five age groups. The majority (19 respondents, 33.3%) fall within the 41-50 age group, followed by 16 respondents (28.1%) in the 31-40 age group.

The majority of respondents hold the designation of 'Assistant Professor' (45, 78.9%), followed by eight respondents (14%) with the designation of 'Associate Professor'. Only 5.3% (3 respondents) are designated as 'Professor', and there is one 'Emeritus Scientist', representing 1.8% of the respondents. Most respondents (28, 49.1%) hold a Ph.D., followed by 20 respondents (35.1%) with an M.Sc. degree. Additionally, 15.8% (9 respondents) have post-doctoral experience.

Table 1: Demographic Profile of Respondents

SL. No.	Attribute	Variable	Number (%)	SL. No.	Attribute	Variable	Number (%)
1	**Gender**	Male	45 (78.9)	3.	**Designation**	Assistant Professor	45 (78.9)
		Female	12 (21.1)			Associate Professor	8 (14)
2	**Age**	<30	10 (17.5)			Professor	3 (5.3)
		31- 40	16 (28.1)			Emeritus Scientist	1 (1.8)
		41 - 50	19 (33.3)	4	**Educational Qualification**	M.Sc.	20 (35.1)
		51 - 60	11 (19.3)			Ph.D	28 (49.1)
		>60	1 (1.8)			Post Doc	9 (15.8)

5.2   Use of Online Databases

Online databases are invaluable tools for geology faculty, offering access to a wealth of information, facilitating collaboration, enhancing teaching materials, and supporting various aspects of their research and professional activities. The use of online databases is integral to their research, teaching, and professional development. These resources enable faculty to access information, collaborate with peers, and stay at the forefront of advancements in the dynamic field of geology.

This study includes the use of the most comprehensive international databases specifically focusing on the geosciences, such as 'GeoRef' and 'GeoBase', as well as comprehensive, international, multidisciplinary bibliographic databases like Science Direct, Scopus, and Web of Science (WoS). In addition to these subscribed databases, free databases like Google Scholar (GS) are also available to them on the internet.

Table 2: Use of Online Databases

Online Databases	Mean	SD	t-value	p-value
Science Direct (Elsevier)	4.19	1.08	8.37	0.001*
J-Stor	2.74	1.34	-1.48	0.145
Web of Science	3.23	1.39	1.24	0.220
Scopus	3.02	1.38	0.09	0.924
Georef	2.82	1.31	-1.01	0.317
Geobase	2.89	1.33	-0.59	0.553
Google Scholar	3.93	1.13	6.20	0.001*

*denotes significant at 1% level

Weighted Index is calculated on 5 point scale with weight assigned as follows:

Never = 1, Rarely = 2, Sometimes = 3, Often = 4, Always = 5

Out of the seven databases, Science Direct (Elsevier) is the most used database by respondents, with a mean score of 4.19, followed by Google Scholar with a mean score of 3.93. Web of Science and Scopus are also frequently used, with mean scores of 3.23 and 3.02, respectively. The least used databases are Geobase (2.89), GeoRef (2.82), and J-Stor (Table 2).

The analysis indicates that respondents have an average level of database usage for only four databases: Science Direct, Web of Science, Scopus, and Google Scholar, as their mean scores exceed the target value of 3. Among these, the usage of Science Direct and Google Scholar is above average and statistically significant (significance level <0.01). Conversely, the use of J-Stor, GeoRef, and Geobase is below average, with mean scores less than the target value of 3, and their usage is not statistically significant. The negative t-values in these cases indicate that the sample mean is less than the known population mean.

5.3   Use of Social Networking Sites

Social Networking Sites are popular internet-based platforms that enable users to communicate and interact with each other. Some SNS are specifically dedicated to academic social networking, while others, although general in nature, are also used by academic faculty.

Geology faculties, like professionals in many other fields, increasingly use SNS for various purposes. They utilize these sites for professional, educational, and networking activities, leveraging the platforms to enhance their academic and research endeavors.

Table 3: Use of Social Networking Sites

Social Networking Sites	Mean	SD	t-value	p-value
Facebook	2.67	1.24	-2.02	0.048**
WhatsApp	3.16	1.32	0.90	0.370
ResearchGate	3.98	1.11	6.68	0.001*
LinkedIn	2.61	1.31	-2.23	0.030**
Twitter	1.74	0.97	-9.79	0.001*
Wikis	2.68	1.45	-1.64	0.107
Blogs	2.16	1.13	-5.62	0.001*
YouTube	3.61	1.05	4.42	0.001*
Flickr	1.60	0.88	-11.99	0.001*
Slideshare	3.14	1.30	0.81	0.419
ResearcherID	2.28	1.60	-3.39	0.001*
Academia.edu	3.42	1.18	2.69	0.009*

** denotes significant at 5% level
Weighted Index is calculated on 5 point scale with weight assigned as follows:
Never = 1, Rarely = 2, Sometimes = 3, Often = 4, Always = 5

From Table 3, it is evident that ResearchGate (RG), a purely academic social networking site, is the most used SNS with a mean score of 3.98. This is followed by YouTube, a platform for sharing and viewing videos, with a mean score of 3.61. Other preferred SNS among the respondents include Academia.edu (3.42), another academic-focused SNS, followed by WhatsApp (3.16) and Slideshare (3.14). The least preferred SNS are Flickr (1.60), Twitter (1.74), Blogs (2.16), and ResearcherID.

The analysis indicates that respondents have an average level of usage for only five SNS: WhatsApp, ResearchGate, YouTube, Slideshare, and Academia.edu, as their mean scores are higher than the target value of 3. Among these, the usage of ResearchGate, YouTube, and Academia.edu is above average and statistically significant (significance level <0.01).

The use of other SNS is below the average level, with mean scores less than the target value of 3. Notably, the usage of Facebook and LinkedIn is below average and statistically significant (significance level <0.05). Similarly, Twitter, Blogs, Flickr, and ResearcherID also have below average usage, which is statistically

significant (significance level <0.01). Here also negative t-values suggest that the sample mean is lower than the population mean.

5.4   Research Experience (in years) and Number of Published Papers of Respondents

The research experience of geology faculty members is an indicator of their work proficiency. As part of their professional responsibilities, geology faculty conduct research in their respective fields of specialization. To advance their careers, academic faculty members are required to publish research articles in peer-reviewed journals, which is a critical component of the selection and promotion process. Table 4 presents the research experience (in years) and the number of published papers of the respondents.

Table 4: Research Experience (in years) and Number of Published Papers of Respondents

Variable	Mean	N	SD
Research Experience (in years)	10.54	57	8.797
Number of Published Papers	9.65	57	15.205

The study indicates that the mean research experience of the respondents is 10.54 years with a standard deviation (SD) of 8.797. Additionally, the respondents have a mean of 9.65 published papers with a standard deviation of 15.205.

Table 5 presents the correlation matrix, showing a very strong statistically significant relationship between research experience (in years) and the number of published papers (rho = 0.659, $p < 0.01$). A moderate statistically significant relationship is observed between the overall use of online databases and SNS (rho = 0.517, $p < 0.01$). Additionally, a moderate statistically significant negative relationship exists between the overall use of SNS and the number of published papers (rho = -0.323, $p < 0.05$).

Statistically insignificant relationships were observed between the overall use of online databases and the number of published papers (rho = 0.225, $p > 0.05$), the overall use of online databases and research experience (in years) (rho = 0.199, $p > 0.05$), and the overall use of SNS and research experience (in years) (rho = -0.202, $p > 0.05$).

Table 5: Correlation Matrix

Variables	Overall Use of Online Databases	Overall Use of Social Networking Sites	Research Experience (in years)	Number of Published Papers
Overall Use of Online Databases	1.000	0.517*	0.199	0.225
Overall Use of Social Networking Sites	----	1.000	-0.202	-0.323**
Research Experience (in years)	-----	-----	1.000	0.659*
Number of Published Papers	------	----	-----	1.000

* denotes significance at 1% level
** denotes significance at 5% level

6.   DISCUSSION

Elsevier's Science Direct is a premier scientific database and platform offering access to an extensive collection of scholarly articles, journals, and research papers across a multitude of disciplines. Developed by the international publishing giant Elsevier, Science Direct stands as a critical resource for researchers, academics, and professionals seeking high-quality, peer-reviewed scientific literature. This platform hosts over 16 million content pieces from more than 2,500 journals and 11,000 books, making it one of the most comprehensive sources of scientific information available.

Access to Science Direct is predominantly subscription-based, with universities, research institutions, and libraries commonly subscribing to provide their members with seamless access to its vast resources. The subscription model ensures that users receive curated, up-to-date information, which is crucial for conducting thorough literature reviews, undertaking research projects, and keeping abreast of the latest advancements in their fields.

Researchers and students benefit immensely from the platform's robust search capabilities and user-friendly interface, which facilitate efficient retrieval of relevant information. Furthermore, Science Direct's integration with other Elsevier tools, such as Mendeley and Scopus, enhances the research experience by providing additional functionalities for citation management and research analytics. This interconnected ecosystem supports a holistic approach to research, fostering greater academic productivity and innovation.

By providing access to such a wealth of information, Science Direct plays a key role in advancing knowledge and supporting the global scientific community. As a result, it remains an indispensable tool for those engaged in scientific inquiry and academic pursuits.

The study results indicate that Elsevier's Science Direct is the most used database among geology faculty in Kerala, with a mean score of 4.19, followed by Google Scholar with a mean score of 3.93. One Sample t-test results reveal that these two databases are used above the average level by geology faculties. Most universities in Kerala subscribe to Science Direct to support their academic communities. The specific subject collection in Earth and Planetary Science available on Science Direct is a key reason for its high usage among geology faculty in the region.

Previous studies corroborate these findings. Mini Devi and Chithra (2014) established that the majority of scientists at the National Institute of Interdisciplinary Science and Technology (NIIST) in Trivandrum, India preferred Science Direct because it effectively met their information needs. Similarly, Rafique, Ameen, and Arshad (2019) found through transaction log analysis that the larger database, Science Direct, is frequently used by scientists. These studies reinforce the conclusion that Science Direct is a critical resource for geology faculties in Kerala due to its comprehensive and targeted content.

Google Scholar is a widely used and freely accessible academic search engine that plays a crucial role in the research activities of geologists and other scientists. Unlike traditional databases, Google Scholar provides a convenient and comprehensive means for researchers to access scholarly literature across various disciplines, including geology. According to Tahirkheli (2007), Google Scholar is particularly effective for quick information requests when completeness is not a concern, as irrelevant results can be easily ignored. He also noted that Google Scholar covers a broader range of publication types than the predominantly formal publications found in subject-specific databases in geoscience. This broad coverage likely contributes to its status as the second most used resource among geology faculty in Kerala.

ResearchGate is a platform specifically designed for researchers and academics, facilitating the sharing of publications, connecting with peers, and engaging in discussions related to their research interests. The study results show that ResearchGate is the most used social networking site by geoscience faculty in Kerala.

YouTube, a platform for sharing video content, is the second most used SNS by geology faculty. It is utilized for creating educational videos, fieldwork documentaries, and presentations, making it an effective tool for reaching a broader audience.

Academia.edu allows academics to share research papers, monitor analytics for their publications, and connect with researchers globally. Geology faculty use it to disseminate their research.

These three SNS—ResearchGate, YouTube, and Academia.edu—are used at above the average level by geology faculty in Kerala, indicating their significant role in supporting academic and research activities. The correlation between research experience (measured in years) and the number of published papers by geologists is an interesting aspect to explore. In academia, researchers typically gain more experience over time, which may be reflected in an increasing number of published papers. Researchers at different career stages may have

varying levels of institutional support, access to resources, and time for research. These factors can impact the correlation between research experience and publication output. The study results show a very strong statistically significant relationship between research experience (in years) and the number of published papers among geology faculty in Kerala.

The use of online databases and SNS is integral to academic and professional engagement. Understanding the correlation between these two activities can provide insights into how researchers balance information retrieval, collaboration, and networking in the digital age. It is likely that geologists and researchers benefit from a combination of both online databases and SNS to meet their diverse professional needs. The study results also show a moderate statistically significant relationship between overall use of online databases and overall use of SNS.

Additionally, a moderate statistically significant negative relationship was observed between overall use of SNS and the number of published papers. This suggests that as the number of published papers increases, the overall use of social networks decreases. The relationship between the overall use of SNS and the number of published papers can be complex and context-dependent. Various factors may influence this relationship, including individual preferences, career stages, research focus, digital fatigue, professional identity and the purpose of social media engagement.

7.   CONCLUSION
The study has underscored the critical role of online databases, with Elsevier's ScienceDirect being the most used resource, followed by Google Scholar. These platforms offer comprehensive access to scholarly articles, journals, and research papers, which are crucial for geologists to stay updated with advancements in their field. The high usage of ScienceDirect can be attributed to its extensive subject collection in Earth and Planetary Sciences, which aligns well with the needs of geology faculty, and also because of active paid subscription to it. Google Scholar is widely used due to its broad coverage of publication types and ease of access. It serves as an effective tool for quick information retrieval, particularly when completeness is not critical. ResearchGate emerges as the most used SNS among geology faculty, facilitating publication sharing, peer connection, and research discussions. The use of SNS is integral to professional networking and academic collaboration, enhancing the visibility of research and fostering global connectivity among academics. There is a very strong statistically significant relationship between research experience (in years) and the number of published papers. This suggests that more experienced researchers tend to have higher publication outputs, likely due to greater institutional support, access to resources, and accumulated expertise. The study identifies a moderate statistically significant relationship between the overall use of online databases and SNS, indicating

that geology faculty members balance these tools to fulfill their diverse professional needs. Conversely, a moderate statistically significant negative relationship exists between the overall use of SNS and the number of published papers. This implies that as faculty members publish more papers, their engagement with SNS decreases, possibly due to time constraints and a focus on research activities over social media interactions. Factors such as individual preferences, career stages, research focus, digital fatigue, and professional identity all play roles in shaping how faculty members engage with digital resources. By understanding these patterns, institutions can better support their faculty's research endeavors and professional development, ultimately contributing to the advancement of geological sciences.

8.   RECOMMENDATIONS

Based on the findings, several recommendations can be made to enhance the effective use of digital resources among geology faculty:

☐   Universities and research institutions should continue to support subscriptions to key databases like ScienceDirect, thereby ensuring that faculty have access to high-quality, peer-reviewed literature essential for their research. Provide remote access to these databases to facilitate off-campus research activities.

☐   Workshops and seminars should be organized to raise awareness about the benefits and effective use of academic SNS. This can help faculty members maximize their research visibility and collaborative opportunities. Develop online tutorials and guides that faculty can access at their convenience.

☐   Encouraging a balanced approach to the use of online databases and SNS can help faculty members manage their time effectively, ensuring that they leverage these tools for both research and professional networking without compromising their publication output. Offer training on time management and balancing online activities with research responsibilities.

☐   Share success stories and case studies of faculty members who have significantly benefited from using these platforms.

☐   Encourage faculty to integrate SNS usage into their academic activities, such as setting up profiles during research workshops and using these platforms for post-conference networking.

☐   Promote the use of tools and applications that help manage digital engagement, such as social media scheduling tools and research productivity apps. Implement systems to monitor the impact of SNS usage on research productivity and provide personalized feedback to faculty members. Encourage periodic self-assessment and peer feedback sessions where faculty members can reflect on their digital resource usage and its impact on their research activities.

☐   Develop institutional policies that support and encourage the effective use of digital resources, drawing from best practices observed globally. Provide continuous support and resources for faculty to stay updated with evolving digital tools and platforms.

☐   By implementing these recommendations, based on global best practices, geology faculties in Kerala in India can enhance their use of online

databases and SNS, thereby improving their research productivity and professional development.

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