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Information Behavior of Faculty Members of NSTU, Public University of Bangladesh

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ABSTRACT

The study's main purpose was to investigate faculty members' information searching behaviors while administering any research. This study designed an online questionnaire and printed questionnaires used for data collection. The data were analysed using several descriptive statistics, such as frequencies, percentages, and non-parametric tests, i.e., Mann-Whitney and Kruskal-Wallis. The findings showed that faculty members were heavily dependent on search engines to access information, and they have mainly used academic social media sites such as Google Scholar (n=139) and ResearchGate (n=133). Additionally, to keep up-to-date with new publications, they primarily relied on journal alerts (n=126). In the case of applying searching strategies, they used more than one keyword search and sometimes one keyword. Conversely, they do not apply proximity operators, discovery and federated tools and Boolean operators in their search techniques. Furthermore, for modifying search techniques, they used several keywords searching and utilise search engines, databases, and advanced search techniques. Moreover, the Mann-Whitney test result found no significant differences in terms of their gender regarding the types of e-resources used by them, and the Kruskal-Wallis tests found substantial differences in terms of faculty demographic characteristics of using only indexed databases, search engines, academic, social media sites (e.g., ResearchGate, and Zotero Network), current awareness services (i.e., Journal alerts, Web alerts, and discussion lists), and search techniques (i.e., Boolean operators, and Truncation).

Keywords: Information sources types; Social media; Current awareness services; Information search techniques; Faculty members

1. INTRODUCTION

Information plays an essential role in university faculty members' professional life regarding the completion of academic and research tasks and day-to-day decision-making (Jongbloed, Enders, and Salerno, 2008)[14]. Information-seeking behavior refers to a well-planned search of information to meet specific goals (Wilson, 2000)[25]. Information seeking or searching behavior is a comprehensive phase that incorporates how individuals describe their information needs, search for, evaluate, select, and use desired information in their research (Gordon *et al.*, 2018)[9]. With the evolution of Information and Communication Technologies (ICTs), the mechanism of information searching and access to information resources for supporting research, teaching, and creative activities are shifting. Because the information resources are now obtainable in different forms and sources such as electronic books, online databases, CD-ROMs, Web OPAC, discovery tools, etc. are also easily accessible. Faculty members and other research scholars can access these resources for their specific research objectives worldwide. In Bangladesh, information technology is also profoundly affecting the educational systems as well as the research fields. All we know is that faculty members are the leading representatives of the university, and they perform a significant role in achieving institutional goals. Moreover, with the advancement of information communication, and networking technologies, faculty members are grasping diverse learning opportunities, acquiring, and evaluating information in a timely and sustainable manner in and across their disciplines. Many academicians also continue to strive to apply and use the various strategies and resources to stay on top of the research publication. This paper explores the information-seeking behavior of academicians of NSTU while trying to search and use information resources for their research purposes. Additionally, this research also focused on the faculty member's use of social media tools, current awareness services, various search techniques, and the search strategies modification process. Of particular interest was the desire to understand the faculty member's behavior on how they are overcoming search-related problems in meeting their information needs.

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2. LITERATURE REVIEW

Measuring the research information searching or seeking behavior related works were started in the early 1960s, and

since its inception, this investigation has been running as a continuous process and focused on assuming how information seekers search information and the resources they utilised in their scholarly works according to their demands (Gordon *et al.*, 2018[9]; Ford, 2015[13]; Case and Given, 2016[6]; Bruce, Davis, and Hughes, 2014[4]). Nowadays, a significant amount of literature has been published regarding the information needs and research information-seeking behavior of scientists, academicians, students, and overall library users. Generally, faculty members regularly involved in research activities such as information searching, retrieving, sharing, etc. It is an essential task of academics in their research and their learning efforts (Perkmann *et al.,* 2013)[23]. Moreover, faculty members explore information resources from diverse channels or sources to trace scholarly information and apply these resources according to their fields of the subject (Gordon *et al.,* 2018[9]; Arshad and Ameen, 2019[1]). In this age of information technology and information explosion, faculty members, research scholars, and students increasingly use the information resources for many purposes. Still, the question raises how accurately they search these resources or the channels they utilise and how faculty members can better perform in applying search strategies in exploring these resources during research activities.

A recent article by Hendal (2020)[11] mentioned that faculty members' most preferred resources were databases and e-journals, and most of them had the tendency to uncover more electronic resources. On the other hand, Chen (2019)[7] stated that the respondent's mostly used resources were printed books, and they utilised and continued this during the procedure of concept development. Another recent paper by Habiba and Ahmed (2020)[10] found that faculty members were mostly involved with the following e-resources, e.g., e-theses, online magazines, electronic newspapers, and online indexing databases, full-text and reference databases for their academic and research purposes. In their article, Arshad and Ameen (2019)[1] claimed that the respondents' favoured information sources were electronic journals, e-books, and they also consulted with their co-workers. Furthermore, they explored e-resources using general search engines, Google Scholar, and open access to electronic journal websites. Likewise, Campbell (2017)[5] conducted a study where faculty members were asked to rank the sources of information used for research, teaching, and creativity activities within their discipline. They found that they significantly used internet resources at all levels, and e-books used were the lowest. On the other hand, an early study by Marouf and Anwar (2010)[18] found that respondents rely heavily on books and journals for teaching and research activities. Their use of informal sources is comparatively lower than that of traditional sources, and newspapers and books were used more frequently than raw data, technical reports, manuscripts, and primary documents. Bhatt (2014)[3] described that faculty member in Law department preferred to use the web-based library resources in contrast to traditional resources, i.e., 25(52.1 %) of respondents stated they always see the library website to access their needed information, and many of them frequently consulted with their senior colleagues for their query.

Furthermore, among the various recent discoveries in the creation and dissemination of information in the web version, social media considered as the best way of sharing and gathering knowledge because it belongs to a set of web-based technologies that allow the creation and dissemination of user-generated content (Nández and Borrego, 2013)[19]. Jordan (2019)[16] revealed that many Academic Social Media sites (ASMs), such as Academia.edu, Mendeley, ResearchGate, etc., offer the online hosting scope for faculty members to upload their research activities as a form of self-marketing and archiving. Likewise, Nicholas *et al.* (2020)[22] found that the early-career research scholars widely used Google, Google Scholar as their foremost search tools, ResearchGate, and Twitter were also essential to them for academic networking, keeping updated with their scholarly activities. A study by Howlader and Islam (2019)[12] stated that 130(71.40 %) of respondents utilised social media to search for information, and (39.50 %) of participants emphasised the use of both traditional and electronic resources. Additionally, Current Awareness Service (CAS), such as Journal alerts, RSS feeds, Citation alerts, etc., provides frequent updates to the research scholars on recent publications in diverse areas (Johnson, Osmond, and Holz, 2009)[15]. For instance, Leatherman and Eckel's (2012)[17] study affirmed that faculty members most often practiced e-mail alerts, and few researchers utilised RSS feeds current awareness services to inform them about research updates on their fields.

Moreover, in this age of information technology, various search engines such as Google, Yahoo, etc., performed as essential tools for collecting information from the web (Vijayarajan *et al.*, 2016)[24]. Information searching, accessing, and using by faculty members, research scholars, and students are a continual activity. Information searching activities also include applying Boolean operators and other retrieval tools and techniques that interact with information systems (Wilson, 2000)[25]. Arshad and Ameen (2019)[1], in their research, found that the majority of the participants (n=3, 86 %) made use of "title words" as a searching strategy and (n=24, 67 %) of respondents employed "keyword searching" while exploring information on the web. Navalur, Balasubramani and Kumar (2012)[20], in their paper, also revealed that keyword search, area search, phrase search, using advanced search techniques such as Boolean operators, wild cards, and truncations generally acknowledged as the search strategies to the respondents. Their study results also confirmed that 38(30.6 %) of the respondents preferred keyword searching while applying search strategies to seek information. Similarly, Bhat, Ganaie, and Khazer (2015)[2] also indicated that most of the respondents had employed 'keywords search' approaches to regaining their desired information, and they had less experience applying the latest search procedures.

From the above discussion, the authors found no literature regarding the Bangladeshi university teachers' (at all levels) information searching behaviors while conducting research. Additionally, faculty members' search techniques for collecting information yet unexplored, so this study attempted to fill the gap. It is also significant that this type of investigation will help the related authorities such as librarians, information professionals, decision and policymakers, stakeholders, etc., to

develop their resources, systems, and services for enhancing the performance of this group (academicians).

This paper aims to examine the information-seeking behavior of faculty members while they perform research activities. It endeavours to find out the following research questions:

- What types of resources are used by the faculty members during research activities?
- What types of social media sites and current awareness services are used by faculty members to get updated information on their fields?
- What types of information search techniques have they used during research activities?
- How are the faculty members modifying their search techniques if they failed once?

3. METHODOLOGY

The quantitative research method was applied in this study for collecting data. Most of the research regarding the information-seeking behavior of faculty members utilised survey methods as data collection techniques (Habiba and Ahmed, 2020[10]; Hendal, 2020[11]; Arshad and Ameen, 2019[1]; Chen, 2019[7]; Gordon *et al.,* 2018[9]; Bhatt, 2014[3]). The present study reviewed some peer-reviewed literature for developing a questionnaire to assess faculty members' research information-seeking activities. Additionally, this study employed a pilot study upon faculty members of the Institute of Information Sciences, Noakhali Science and Technology University (NSTU). Their input was incorporated to develop the questionnaire further. Moreover, it's worth mentioning that both online and printed versions of questionnaires were sent to the faculty members of NSTU for data collection.

The online and printed questionnaires were sent to 271 active faculty members of NSTU, from whom 146 responded, which notes a response rate of (53.88 %). The university has six faculties, two Institutes, and thirty departments offering degrees in various disciplines. Moreover, NSTU has about 360 plus faculty members and approximately 6800 students studying in different departments (Noakhali Science and Technology University, 2020)[21]. However, to reach the faculty members staying abroad for higher study, the authors sent the online questionnaire using Google form. Survey responses were gathered over a period of 10 weeks. The questionnaire included the following features:

- Demographic information such as gender, age, designation, teaching experience, faculty/institutes
- The types of information resources
- The frequency of using social media and current awareness service; and
- The frequency of searching techniques used and changed the search techniques if they failed once.

Faculty members of NSTU were asked first to respond to the demographic questions, rank their frequency of using information resources, search techniques, and modifying search techniques they implemented while conducting any research. Their performance of research information searching activities was obtained from a 5-point Likert scale-based questionnaire, i.e., for the category of (2 and 4) above, faculty members were asked to rank each questionnaire item from 1 – 'Never' to 5 – 'Always.'

The response data collected from the survey were tabulated for analysis through IBM SPSS®. Firstly, descriptive statistics were acquired, such as frequency, percentages, mean, and Standard Deviation (SD) with cross-tabulation of responses. Moreover, to see the significant differences in demographic characteristics, the Kruskal-Wallis and Mann-Whitney tests were also carried out. The following null hypotheses were also tested to see the discrepancies between the faculty member's demographic characteristics:

- There are no significant differences between faculty members' demographic characteristics, i.e., gender, age, designation, teaching experience, and university faculty in terms of their use of information resources

Table 1. Demographic information

Demographic Information	Categories	No. of participants (*N*=146)	(%)
Gender	Male	106	72.6
	Female	40	27.4
Age	25-30	79	54.1
	31-35	47	32.2
	36-40	11	7.5
	41-46	8	5.5
	46+	1	.7
Designation	Professor	9	6.2
	Associate professor	11	7.5
	Assistant professor	65	44.5
	Lecturer	61	41.8
University Faculty/ Institutes	Faculty of Engineering and Technology	33	22.6
	Faculty of Science	71	48.6
	Faculty of Business Administration	9	6.2
	Faculty of Social Science and Humanities	23	15.8
	Faculty of Education Science	4	2.7
	Faculty of Law	0	0
	Institute of Information Sciences	3	2.1
	Institute of Information Technology	3	2.1
Teaching Experience	Less than 5	98	67.1
	5-10	35	24.0
	11-15	8	5.5
	16-20	5	3.4

Table 2. Frequency of information resources used by the respondents

Types of information resources	Never *Freq.* (%)	Rarely *Freq.* (%)	Sometimes *Freq.* (%)	Very often *Freq.* (%)	Always *Freq.* (%)
Use WWW search engines	3 (2.1)	2(1.4)	8(5.5)	18(12.3)	115(78.8)
Search library's website	16(11.0)	29(19.9)	50(34.2)	40(27.4)	11(7.5)
Search indexed databases	3(2.1)	5(3.4)	20(13.7)	37(25.3)	81(55.5)
Search online journals	3(2.1)	13(8.9)	28(19.2)	42(28.8)	60(41.1)
Search printed sources	16(11.0)	42(28.8)	45(30.8)	33(22.6)	10(6.8)
Consult a librarian	57(39.0)	49(33.6)	24(16.4)	11(7.5)	5(3.4)
Consult with colleague	6(4.1)	17(11.6)	35(24.0)	59(40.4)	29(19.9)
Consult the references' list at the end of articles and/ or books	7(4.8)	28(19.2)	37(25.3)	50(34.2)	24(16.4)

Scale: Never=1, Rarely=2, Sometimes=3, Very often=4, Always=5

- There are no significant differences between faculty members' demographic characteristics in using search techniques during research activities.

4. RESULTS AND INTERPRETATION

4.1 Respondent's Demographic Information

The questionnaires were sent to 271 faculty members working in the NSTU, of which received 146 responses. Results showed that out of 146 of respondents, male faculties were (*n*=106, 72.6 %) and female (*n*=40, 27.4 %). Moreover, other demographics information of the faculty members were as follows: the majority of the respondents (*n*=79, 54.1 %) were from the age group of 25-30, and the 2nd largest groups were (*n*=47, 32.2 %) between 31-35 age groups; most of the faculties (*n*=65, 44.5 %) were Assistant Professors while next largest groups (*n*=61, 41.8 %) were lecturers; followed by (*n*=71, 48.6 %) of respondents were from Science faculty, (*n*=33, 22.6 %) of them were from the Engineering and Technology faculty. Moreover, in the case of faculty teaching experience, most of the faculty members (*n*=98, 67.1 %) had less than five years of teaching experiences, and (*n*=35, 24.0 %) of them had '5 to 10' years of teaching experiences. The demographics information of the respondents achieved from the survey responses presented in Table 1.

4.2 Information Resources used by the Respondents

The faculty members were asked about where they seek information resources for their research purposes. Table 2 indicated that (*n*=115, 78.8 %) of respondents used WWW search engines (e.g., Google, Yahoo) and (*n*= 81, 55.5 %) of faculties used indexed databases (e.g., Google Scholar, Web of Science Scopus) in information-searching activities whereas, only (*n*=11, 7.5 %) of faculty members searched library's website. Additionally, a lower frequency (*n*=5, 3.4 %) was also found regarding consultation with the librarian for seeking information.

4.3 Social Media Sites and Current Awareness Services used by Faculty Members

Academic scholars used social media sites and current

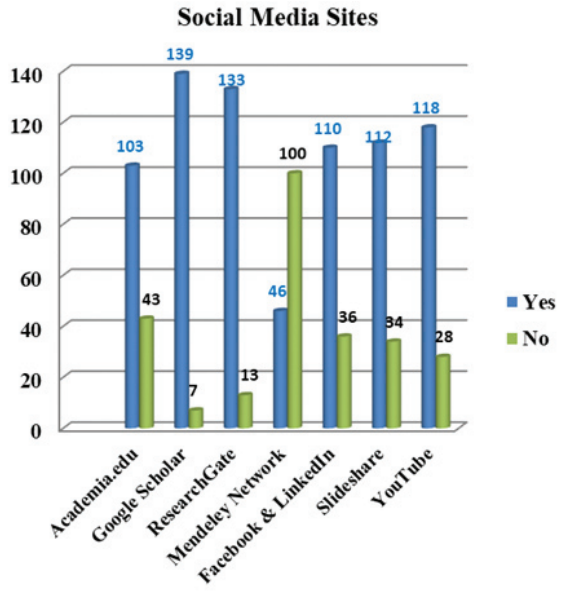

Figure 1. Frequency of academic social media sites used by faculty members.

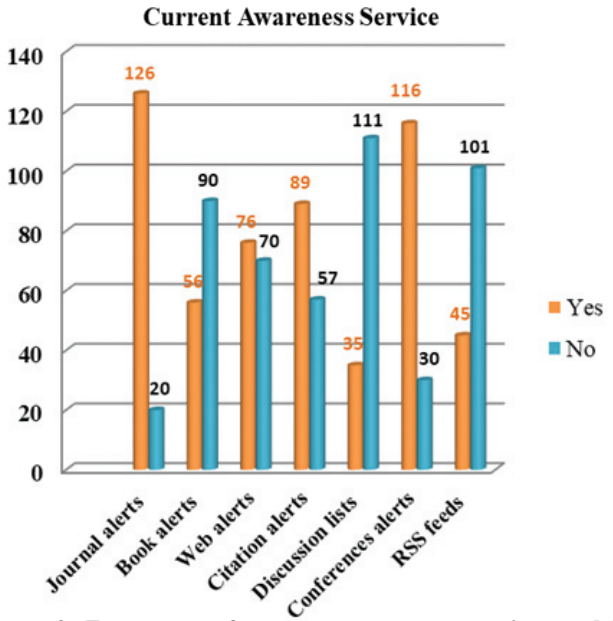

Figure 2. Frequency of current awareness service used by faculty members.

awareness services to share their research work and get updated research information according to their fields of knowledge. This study asked faculty members regarding the types of social media sites and current awareness services (CAS) they used during research activities. The data presented in Fig. 1 indicated that the respondents were frequently used Google Scholar (*n*=139), YouTube (*n*=118), and ResearchGate (*n*=133) for getting updates and tracking scholarly information though they also used other sites. Moreover, they also seek their needed information through Academia.edu, Mendeley Network, Facebook & LinkedIn, and Slideshare, respectively. Figure 2 further showed that the faculty members explored information to keep themselves up to date with the recent developments in their respective disciplines. For example, the respondents heavily relied on Journal alerts (*n*=126) and conference alerts (*n*=116) to remain updated with the latest developments. In addition, the book alerts, web alerts, citation alerts, and RSS feeds also played a vital role as a current awareness service that helps respondents keep themselves informed with new publications in their subject area.

4.4 Search Techniques used by the Faculty Members

This study also asked faculty members regarding the search techniques they applied during research. Table 3 showed that most faculty members frequently used more than one keyword search (*n*=58, 39.7 %) and rarely used one keyword by 53(36.3 %) of faculty members to retrieve their desired information. Additionally, faculty members also sometimes explored their needed information within the search result 45(30.8 %)) and sought similar results 48(32.9 %) within their retrieved items. On the other hand, the largest groups of the faculties were not used truncation (*n*=60, 41.1 %), proximity operators (*n*= 55, 37.7 %), followed by the discovery and federated tools (*n*=46, 31.5%); Boolean operators (*n*= 42, 32.2 %) in their search techniques.

4.5 Modifying Search Techniques Applied by the Faculty Members

As all other scholars do, the faculty members faced several problems in their information-seeking activities. For example, they might generally meet irrelevant information while searching for information that hampers to get their desired information needs. In this situation, they must choose another option and restarted their search process. The data presented in Table 4 showed that faculty members used several keywords searching (*n*=81, 55.5 %) when the initial search failed to return to satisfactory results**.** Utilizing search engines, databases, and advanced search techniques were also considered modified

Table 3. Various search techniques used by the faculty members

Search techniques	Never *Freq.* (%)	Rarely *Freq.* (%)	Sometimes *Freq.* (%)	Very often *Freq.* (%)	Always *Freq.* (%)
One keyword	20(13.7)	53(36.3)	26(17.8)	21(14.4)	26(17.8)
More than one keywords	1(.7)	14(9.6)	32(21.9)	41(28.1)	58(39.7)
A phrase (using quotation marks, e.g. " Cloud computing")	12(8.2)	21(14.4)	40(27.4)	32(21.9)	41(28.1)
Boolean operators (AND-OR-NOT)	42(32.2)	31(21.2)	34(23.3)	20(13.7)	14(9.6)
Proximity operators (e.g. Web 2.0 NEAR effect on library service)	55(37.7)	50(34.2)	21(14.4)	14(9.6)	6(4.1)
Truncation (e.g. librar*)	60(41.1)	33(22.6)	33(22.6)	14(9.6)	6(4.1)
Search within results	18(12.3)	22(15.1)	45(30.8)	34(23.3)	27(18.5)
Find similar results	12(8.2)	19(13.0)	48(32.9)	47(32.2)	20(13.70)
Use discovery tools (such as, federated search tools, EBSCO Discovery Services, Summon)	46(31.5)	33(22.6)	35(24.0)	14(9.6)	18(12.3)

Scale: Never=1, Rarely=2, Sometimes=3, Very often=4, Always=5

Table 4. Modifying search techniques applied by the faculty members

Modified Search techniques	Never *Freq.* (%)	Rarely *Freq.* (%)	Sometimes *Freq.* (%)	Very often *Freq.* (%)	Always *Freq.* (%)
I choose several keyword/keywords	3(2.1)	11(7.5)	20(13.7)	31(21.2)	81(55.5)
I choose various types of information source (e.g. search engine, database, journal provider)	4(2.7)	8(5.5)	31(21.2)	43(29.5)	60(41.1)
I use advanced search techniques (e.g. I use Boolean operators, truncation, search of phrase instead of keywords, etc.)	22(15.1)	30(20.5)	30(20.5)	21(21.2)	33(22.6)
I usually stop the search process	86(58.9)	32(21.9)	14(9.6)	11(7.5)	3(2.1)

Scale: Never=1, Rarely=2, Sometimes=3, Very often=4, Always=5

Table 5. Differences in types of information resources used by faculty members in terms of their gender (Mann-Whitney *U* test)

Information sources types	Mann-Whitney *U*	Wilcoxon *W*	Z	Asymp. Sig. (2-tailed)
Use WWW search engines	1931.000	7602.000	-1.162	.245
Search library's website	1926.000	2746.000	-.883	.377
Search indexed databases	1976.000	2796.000	-.702	.483
Search online journals	1917.500	2737.500	-.937	.349
Search printed sources	1928.500	2748.500	-.870	.385
Consult a librarian	2067.500	2887.500	-.243	.808
Consult with colleague	1816.000	7487.000	-1.398	.162
Consult the references' list at the end of articles and/ or books	1904.500	7575.500	-.979	.327

Note:* Significant difference (at the 0.05 alpha level)

Table 6. Differences in types of information resources used in terms of age, designation and university Faculty/Institute (Kruskal-Wallis)

Information sources types	Age			Designation			University Faculty/Institute		
	Chi-Square	*df*	*Asymp. Sig.*	*Chi-Square*	*df*	*Asymp. Sig.*	*Chi-Square*	*df*	*Asymp. Sig.*
Use WWW search engines	1.111	4	.893	1.274	3	.735	5.632	6	.466
Search library's website	1.942	4	.747	1.804	3	.614	10.433	6	.108
Search indexed databases	6.650	4	.156	1.098	3	.777	9.282	6	.158
Search online journals	5.140	4	.273	1.844	3	.605	1.953	6	.924
Search printed sources	4.122	4	.390	5.079	3	.166	14.440	6	.025*
Consult a librarian	3.715	4	.446	.641	3	.887	4.841	6	.564
Consult with colleague	5.187	4	.269	.686	3	.876	4.180	6	.652
Consult the references' list at the end of articles and/ or books	4.118	4	.390	2.003	3	.572	5.385	6	.495

Note:* Significant difference (at the 0.05 alpha level)

Table 7. Differences in applying information search techniques in terms of faculty members' age and designation (Kruskal-Wallis)

Search techniques	Faculty age			Faculty designation		
	Chi-Square	*df*	*Asymp. Sig.*	*Chi-Square*	*df*	*Asymp. Sig.*
One keyword	7.530	4	.110	7.623	3	.054
More than one keywords	4.044	4	.400	5.463	3	.141
A phrase (using quotation marks, e.g., "Cloud computing")	2.688	4	.611	6.643	3	.084
Boolean operators (AND-OR-NOT)	11.993	4	.017*	4.117	3	.249
Proximity operators	6.797	4	.147	.813	3	.846
Truncation (e.g., librar*)	2.296	4	.681	1.355	3	.716
Search within results	3.720	4	.445	1.129	3	.770
Find similar results	1.014	4	.908	4.323	3	.229
Use discovery tools (such as, federated search tools, EBSCO Discovery Services, Summon)	6.270	4	.180	1.109	3	.775

Note:* Significant difference (at the 0.05 alpha level)

search strategies by the faculty members (*n*=43, 29.5 %), and only three respondents (*n*=3, 2.1 %) revealed they stopped the search process when initial search results are dissatisfactory.

4.6 Gender Differences in types of Information Resources used by Faculty Members

The Mann-Whitney *U* test was carried out to determine the differences in terms of gender, about seeking scholarly

information using various types of resources information, see Table 5. The statistical test result found no significant differences regarding the types of e-resources used by the faculty members between males and females. Therefore, the $H0_1$ is accepted in terms of faculty member's gender using various information resources. Moreover, male faculty members' mean scores were higher than the female faculties as the male faculty members were more frequently used various information resources for seeking scholarly information for their research purposes.

4.7 Age, Designation and University Faculty/Institute Differences in Types of Information Resources used by Faculty Members

Kruskal-Wallis tests were also conducted to see the differences in seeking scholarly information from various resources by faculty members regarding their demographic characteristics (e.g., age, designations, and university Faculty/Institute, Table 6). The Kruskal-Wallis test results revealed no significant differences in using various types of resources in seeking information in terms of the age of the faculty members, designations, and University faculty/Institute. Nevertheless, significant differences were found for one item in terms of university Faculty/Institute, i.e., search printed sources (x^2= 14.440, df= 6, n= 146, p<.025). Hence, the null hypothesis $H0_1$ is accepted in terms of faculty age and designation, but $H0_1$ is rejected for university faculty/institute. Furthermore, it was also noticed that the high mean score was found in the 46+ groups, followed by in the case of faculty designation, "Associate Professor's" level had higher mean score than the other faculty positions and the mean score of Education faculty was higher than the other University faculties/institutes.

4.8 Faculty Members' Age and Designation Differences in Applying Information Search Techniques

Moreover, the Kruskal-Wallis test was also conducted to see the differences in applying information search techniques while performing research activities regarding faculty members' age and designation. Table 7 indicated no significant differences found in the case of faculty age and designation**,** except the following case, e.g., using Boolean operators, i.e., (x^2= 11.993, df= 4, n= 146, p<.017). Therefore, the null hypothesis $H0_2$ is rejected for faculty age and accepted for faculty designations. Moreover, the highest mean ranks were also found in terms of faculty age groups "46+" and faculty position "Associate Professor's" level.

4.8 Faculty Members' Teaching Experiences and University Faculty/Institute Differences in Applying Information Search Techniques

The Kruskal-Wallis test result also showed that there were no significant differences in terms of faculty teaching experiences and university faculty/institute except the following cases, i.e., using Truncation (x^2= 14.801, df= 6, n= 146, p<.022) and using discovery tools (x^2= 7.995, df= 3, n= 146, p<.046), see Table 8. Hence, the null hypothesis $H0_2$ is rejected for faculty teaching experiences and university faculty/institute. Furthermore, the highest mean ranks were also found in faculty teaching experiences (i.e., 16-20 years in experiences) and university faculty/institute (i.e., IIT and IIS Institutes).

5. CONCLUSION

The internet has a vital influence on faculty members' behavioral intention to seek, access, and use their research information. In this study, it had found that the majority of faculty members searched for information from different channels or sources to stay up-to-date with recent developments in their related disciplines. Additionally, faculty members continuing their research activities by accessing information resources, i.e., they extensively used Google or Yahoo search engine. Moreover, to get updated scholarly information, most faculty members used academic, social media sites, for example, Google Scholar, ResearchGate, etc. Furthermore, faculty members were more dependent on Journal alerts for keeping themselves up-to-date with new publications in one's subject areas. These findings also found similar results of Gordon *et al.* (2018)[9] study, where they revealed that respondents make

Table 8. Differences in applying information search techniques in terms of faculty members' teaching experiences and university faculty/Institute (Kruskal-Wallis)

Search techniques	Teaching experience			University Faculty/Institute		
	Chi-Square	*df*	*Asymp. Sig.*	*Chi-Square*	*df*	*Asymp. Sig.*
One keyword	4.629	3	.201	11.486	6	.074
More than one keywords	3.438	3	.329	6.576	6	.362
A phrase (using quotation marks, e.g. " Cloud computing")	2.560	3	.464	5.279	6	.509
Boolean operators (AND-OR-NOT)	1.894	3	.595	7.898	6	.246
Proximity operators	.477	3	.924	8.533	6	.202
Truncation (e.g. librar*)	2.453	3	.484	14.801	6	.022*
Search within results	.231	3	.972	4.210	6	.648
Find similar results	3.108	3	.375	1.181	6	.978
Use discovery tools (such as, federated search tools, EBSCO Discovery Services, Summon)	7.995	3	.046*	9.517	6	.147

Note:* Significant difference (at the 0.05 alpha level)

regular database explorations, and they used current awareness services such as CAS alerts, RSS feeds, or table of contents services, and social media sites such as Twitter and Blogs for keeping them updated with field of knowledge.

Moreover, this study found that most faculty members always used more than one keyword and phrase searching to employ search strategies. These findings also matched with those of Arshad and Ameen's (2019)[1] study, where they explained that in the case of applied search strategies many of them used the 'title words' and 'keyword searching.' Gil (2016)[8] also revealed that the entire Economics faculty used the libraries' subscribed e-resources, whereas some of them practiced Google Scholar frequently. Moreover, this study found a careful observation of responses that only (7.5 %) of faculty members searched the library catalog, library repository, and (3.4 %) consulted with the librarian as research information-seeking activities. In this case, library and information science professionals in this university can play an essential role in developing the library resources and the faculty member's core information skills. The subscription to journals (print as well as electronic) requires special consideration. The strengthening of the collection, the introduction of advanced library services, and faculty members' orientation could develop their search strategies and libraries' use.

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