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Use of E-Resources: Opinion about the Growth of Academic Development among the Engineering College faculty members in Tamilnadu, India

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Abstract

This study has made an attempt to analysis the engineering college faculty members use of electronic resources and its impact of academic growth in Namakkal district in Tamilnadu. Based on the aim, survey method is applied and standard, structured and pretested questionnaire as a tool of this study. Percentage analysis, one-way ANOVA and post-host statistical tools are used for data analysis. Pie and bar charts also used for data representation. 1070 fully filled questionnaires received from the respondents. Among the total sample, 618(57.767) respondents are male and 425(42.243) respondents are female faculties who participated in this research. According to the designation of the respondents, 470(43.925), 331(30.935) and 269(25.140) are assistant professors, associate professors and professors. Based on the experience, 342(31.963) of them have 0-5 years of experience in teaching in engineering colleges, 299(27.944) of them have 6-10 years of experience, 159(14.860) percent of them have 11-15 years, 140(13.084) of them have 16-20 years of experience and the remaining 130(12.150) of them have 21 years and above teaching experience in engineering colleges.

Statistical significant difference is observed between the gender, experience and designation of the faculty members' frequency of accessing online journals. There is a statistical significant difference in the opinion about the usefulness of the e-journal of the faculty members' designation. Significant difference is observed between the gender of the respondents and their opinion about the increase of research publication while using the electronic information sources. Highly significant is observed between the educational qualifications of the respondents and their opinion about the increase of research publication by using the e-journals. There is a statistical significant difference in the designation of the faculties and their opinion about the increase of research publication by using Electronic Journals.

Key words: User study, Engineering faculties, E-journals, Academic Development .

Introduction

In the Electronic World, Library organization and their management has rapidly changed its functions in terms of collection development, staff pattern and services since past few decades. The information resources in both print as well as online have occupied a significant space in the library collection, transactions of library documents such as books, journals, magazines, and others have been fully automated. Further, web-based services are offered by the Library and Information Science Professionals to pay the attention of the user society like other Science disciplines,

This study deals with e- journals and various kinds of information resources such as electronic resources, online reference sources, major institutional repositories, selected online reference resources, major online resources and many more features. The present study tries to focus on Effective utilization of E-Journals and their Impact on the Academic Development of Faculty Members of Engineering Colleges in Namakkal District: a study.

Library information resources provide necessary update knowledge of the problem to investigate and develop insight into the researchers. Electronic resources are also called E- Resources or Online Resources which are available all types of information via Information and Communication Technology (ICT). Electronic resources play a significant role to all academic and Research & Development (R&D). Institutions and individuals are getting instant, relevant comprehensive information at doorsteps through electronic resources.

The research study area consists of academic institutions and the sample population is under taken is faculty members as the user community who are working in the Engineering Colleges at Namakkal District. A total number of 40 Colleges are there including management colleges and only 30 Engineering Self-financing Colleges have been chosen for the present study (see annexure 1). The sample unit of the faculty members who are working in different positions includes Professors, Associate Professors, and Assistant Professors etc.

NEED FOR THE STUDY

In any library, the evaluation of the resources is inevitable so as to identify the growth and progress in terms of infrastructure, collections and other resources which will lead to access scientific information and other materials. Dwindling budget of libraries, new form of subscription and format of information sources and services give the confusion to librarians attempting to provide the best to their user society. Moreover,

understanding and usage of electronic journals assists the librarians to make the best in terms of subscription policy decisions for their institutions and identify what type of strategies which could be useful to increase the accessibility and practice of e-journals.

Even though there are a number of studies on the use of e-journals and users behaviour in Tamil Nadu, India, it is hardly any effort has been made to study in-depth covering particular district of Engineering Colleges in Tamil Nadu, India. in Namakkal District. This research attempts to assess the results obtained from the investment in e-journals and also these results can be used to justify increases in budgets for acquisition of electronic resources.

STATEMENT OF THE PROBLEM

The present study is conceived under the title “Effective utilization of E-Journals and their Impact on the Academic Development of Faculty Members of Engineering Colleges in Namakkal District: a study”. This research has made an attempt to show the utilization and impact of Faculty members’ behaviour by way of accessing and using e-journals. This research will also expand our knowledge in terms of the use of online journal collections and give e-journal services effectively and efficiently.

Review of literature

Murugan and Allysornam (2011) carried out a research to discover Information needs and Information Seeking Behaviour of Allopathic Medical Practitioners in Tirppur District in Tamilnadu, India. The survey method was used for the primary data collection method. The study revealed that there is a significant association between the educational qualification and the use of internet. The study results also show that the medical practitioners in developing countries require more awareness about concerning the use of various information sources as well as digital sources for their professional/personal competency development. They also suggested that the training programs offered by the government should include a separate module on “information literacy for medical practitioners” which may also include digital information literacy skills.

Selvaraj and Rathinasabapathy (2014) conducted a research about the electronic information which used pattern of faculty members of self-financing engineering colleges in Tiruvallur district, Tamilnadu. From the study they revealed that one third of the faculty

members visited the library more frequently (daily) for the purpose of borrowing books, followed by read reference sources. Nearly thirty percent of the faculty members were using e-journals daily and 78.79 percent of them were browsing the Internet for four hours and more per week.

A study undertaken by Chandran (2013) on use and user perception of electronic information resources in an Engineering college revealed that the majority of respondents (95.12%) were aware of electronic resources in the library and 26.39% and 24.39% of them used e-journals and e-databases respectively.

Sathivel murugan, Ally Sornam, Cellestin Raj Manohar (2012) carried a research among the rural medical college internees about the Use of Information and Communication Technology (ICT) is on the rise in medical college libraries. This survey predominantly uses questionnaire for data collection. The study results reveal that reference books are the most often used reference sources in the library in comparison with other sources such as textbooks, journals, and back volumes. Another important finding is that the ICT knowledge among the respondents is not at optimum level.

Aim

The main aim of the study is to “analyse the engineering college faculty members’ effective utilization of e-journals and its impact on academic development”.

Objectives of the study

Based on the main aim the study, the following objectives are framed to conduct this research.

1. To identify the level of skills for accessing online journals.
2. To know how frequently the faculty members are using electronic information resources,
3. How are the e-journals useful for academic development?
4. To find out the faculty members opinion about their impact of e-journals in their research publication and academic development.

Research design

Research design of the present study is descriptive analysis. Survey method is used for this study. A standardized questionnaire tool is framed for collection of primary data.

Study Area

There are 30 engineering colleges available in Namakkal District (Tamilnadu Engineering Admission Handbook (TNEA, 2018). These colleges are affiliated to Anna University, Chennai. Six autonomous engineering colleges and 24 non autonomous colleges are there in this district. Analysis

Demographical details

Table 1 Gender and Designation of the Respondents

Gender	Designation			Total
	Assistant Professor	Associate Professor	Professor	
Male	252(40.777)	202(32.686)	164(26.537)	618(57.757)
Female	218(48.230)	129(28.540)	105(23.230)	452(42.243)
Total	470(43.925)	331(30.935)	269(25.140)	1070(100)

(Figures in parenthesis is considered as percentage)

Table 1 shows the distribution of the faculty members' gender and designation. Among the total respondents (1070), based on gender, 618(57.767) are male and the remaining 452(42.243) are female. According to the designation of the respondents, 470(43.925), 331(30.935) and 269(25.140) are assistant professors, associate professors and professors respectively. The following charts 1, 2, and 3 represent the above table data.

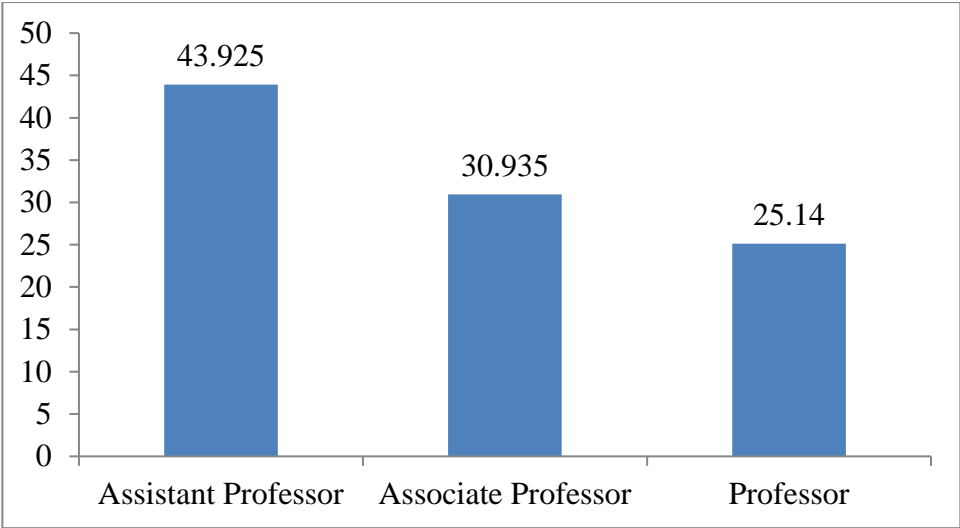


Chart 1. Designation of the respondents

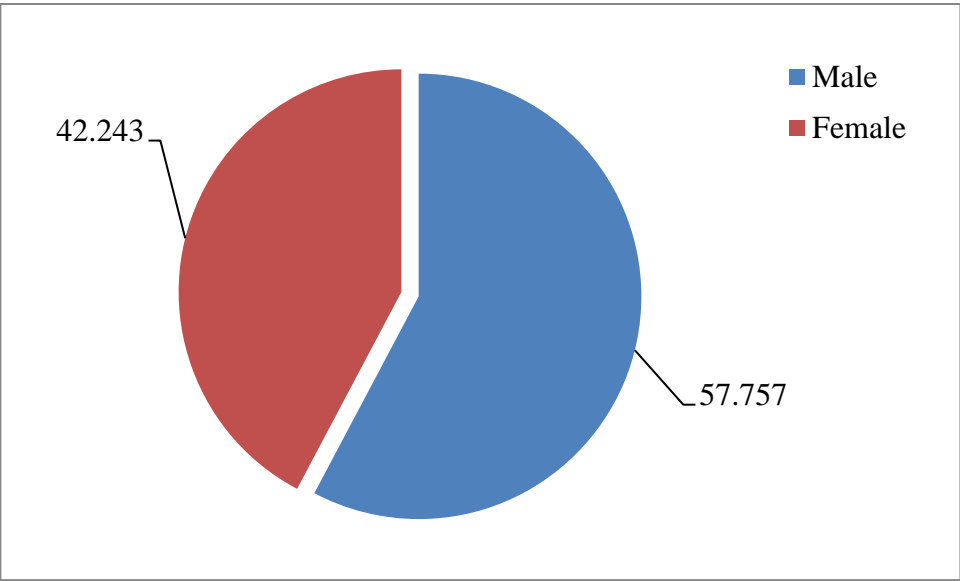


Chart 2. Gender of the respondents

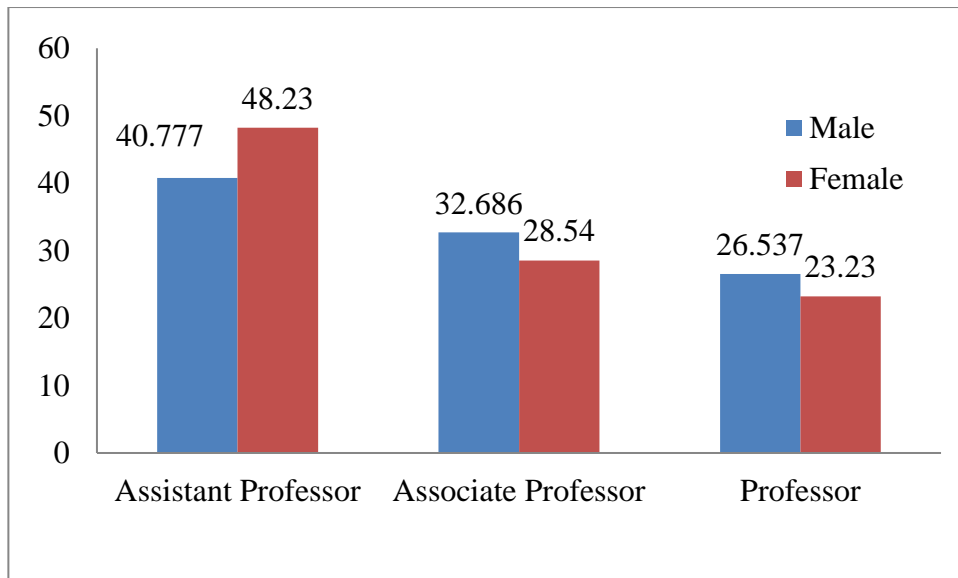


Chart 3. Gender and Designation of the respondents

Table 2 Designation and Educational Qualification of the Respondents

Designation	Educational Qualification				Total
	PG Eng	PG Eng with PhD	PG S& H with M.Phil	PG S&H with PhD	
Assistant Professor	328 (69.787)	19 (4.043)	104 (22.128)	19 (4.043)	470 (100)
Associate Professor	180 (54.381)	88 (26.586)	42 (12.689)	21 (6.344)	331 (100)
Professor	32 (11.896)	99 (36.803)	78 (28.996)	60 (22.305)	269 (100)
Total	540 (50.467)	206 (19.252)	224 (20.935)	100 (9.346)	1070 (100)

(Figures in parenthesis is considered as percentage)

Table 2 describes the faculty members' designation and their educational qualification. Among the total respondents (1070), 50.467 percent of the respondents have post graduate qualification in faculty of engineering. 19.252 percent of the respondents have post graduate engineering qualification with Ph.D in engineering. 20.935 percent of them have Post graduate qualification in Physics, Chemistry, Mathematics, and English with relevant M.Phil qualification. 9.346 percent of them have post-graduate qualification in Physics, Chemistry, Mathematics, and English with Ph.D in their relevant subjects.

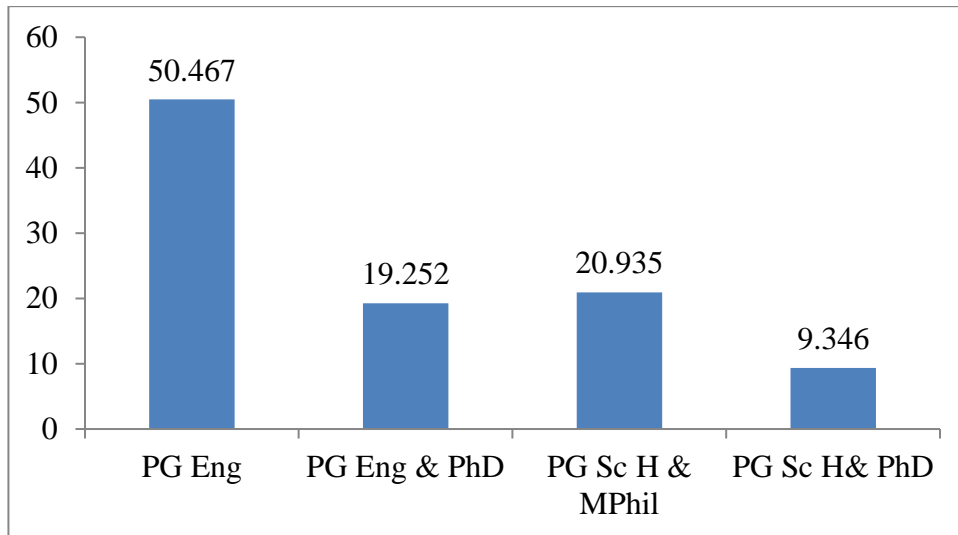


Chart 4 Educational Qualification of the respondents

Table 3 Designation and Teaching Experience of the Respondents

Designation	Teaching Experience					Total
	0-5 yrs	6-10 yrs	11-15 yrs	16 - 20 yrs	21 yrs with above	
Assistant Professor	242 (51.489)	197 (41.915)	12 (2.553)	6 (1.277)	13 (2.766)	470
Associate Professor	100 (30.211)	102 (30.816)	45 (13.595)	52 (15.710)	32 (9.668)	331
Professor	0	0	102 (37.918)	82 (30.483)	85 (31.599)	269
Total	342 (31.963)	299 (27.944)	159 (14.860)	140 (13.084)	130 (12.150)	1070

(Figures in parenthesis is considered as percentage)

Respondents' designation and their teaching experience in engineering colleges are shown in the table no. Teaching experience is classified into five categories like, 0-5 years, 6-10 years, 11-15 years, 16-20 years, and 21 years and above. Among the assistant professors (470), 242(51.489) of them have 0-5 years of experience in teaching in engineering colleges, 197(41.915) of them have 6-10 years of experience, 12(2.553) percent of them have 11-15 years, 6(1.277) of them have 16-20 years of experience and the remaining 13(2.766) of them have 21 years and more teaching experience in engineering colleges.

Among the associate professors (331), 100(30.211) of them have 0-5 years of experience in teaching in engineering colleges, 102(30.816) of them have 6-10 years of experience, 45(13.595) percent of them have 11-15 years, 52(15.710) of them have 16-20 years of experience and the remaining 32(9.668) of them have 21 years and above teaching experience in engineering colleges.

However, among the professors (269), 102(37.918) percent of them have 11-15 years, 82(30.483) of them have 16-20 years of experience and the remaining 85(31.599) of them have 21 years and above teaching experience in engineering colleges.

Table 4 Educational Qualification and Papers publications in National Journals

No. of National Papers	Educational Qualification				Total
	PG Eng	PG Eng with PhD	PG S&H with M.Phil	PG S& H with PhD	
1 to 5 papers	208	45	59	7	319(29.813)
6-10 papers	178	66	67	31	342(31.963)
11-15 papers	117	52	52	19	240(22.430)
16-20 papers	12	10	12	18	52(4.860)
21-25 papers	6	9	24	25	64(5.981)
26-30 papers	19	18	10	0	47(4.393)
31 with more papers	0	6	0	0	6(0.561)

Total	540(50.467)	206(19.252)	224(20.935)	100(9.346)	1070 (100)
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(Figures in parenthesis is considered as percentage)

Table 4 shows the faculty members' educational qualification and their publication of research articles in the national journals. Among the total respondents (1070), 319(29.813) faculty members have published 1-5 papers in the national journals. 342(31.963) faculty members have published 6-10 research articles in the national journals. 240(22.430) respondents have published 11-15 articles. 52(4.860), 64(5.981), 4.86 percent of the have published 16-20 papers, 47(4.393) and 6(0.561) engineering teaching faculty members have published 16-20 papers, 21-25 papers, 26-30 papers and more than 31 papers in the national journals. Nearly 85 percent of the respondents have published 1-15 articles in the national journals. And rest of the 15 percent of the faculty members has published 16 and more articles in national journals.

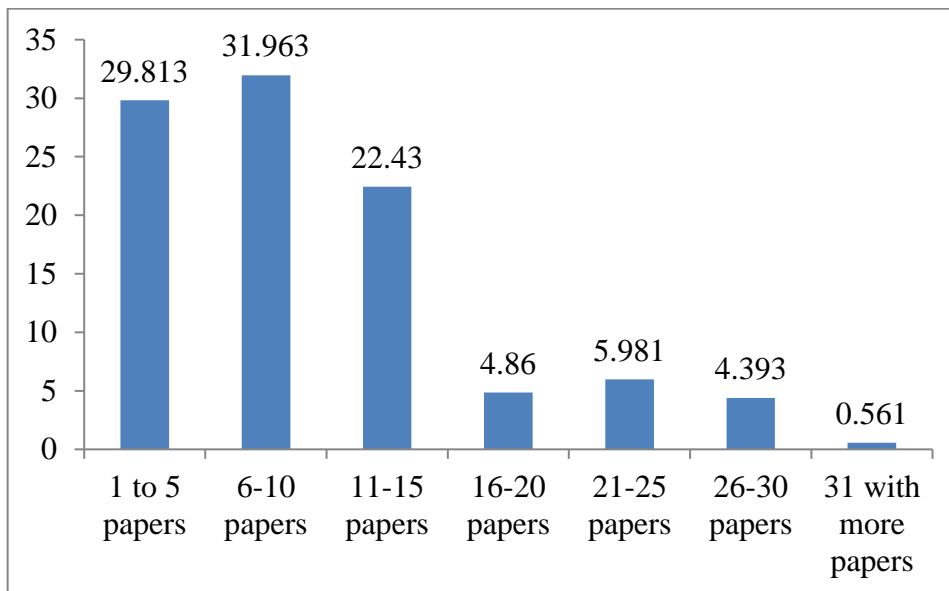


Chart Educational Qualification and Papers publications in National Journals

Table 5 Educational Qualification and Papers publications in International Journals

No. of International	Educational Qualification	Total
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Journals	PG Eng	PG Eng with PhD	PG S& H with M.Phil	PG S&H with PhD	
1-5 papers	267	105	104	19	495(46.262)
6-10 papers	213	51	42	19	325(30.374)
11-15 papers	12	12	36	37	97(9.065)
16-20 papers	12	6	12	25	55(5.140)
21-25 papers	30	26	24	0	80(7.477)
26 and more	6	6	6	0	18(1.682)
Total	540(50.467)	206(19.252)	224(20.935)	100(9.346)	1070(100)

(Figures in parenthesis is considered as percentage)

Table 5 shows the engineering college faculty members' articles contribution in the international journals. 46.262 percent of the respondents have published their research contribution through 1-5 papers in international journals. 30.374 percent of them have published 6-10 papers. 9.065 percent of them have contributed in 11-15 papers. 5.140 percent of the faculty members have published 16-20 international papers. 7.477 percent of the faculty members have presented 21-25 papers and 1.682 percent of them have published 26 and more papers. The following chart shows the above table data.

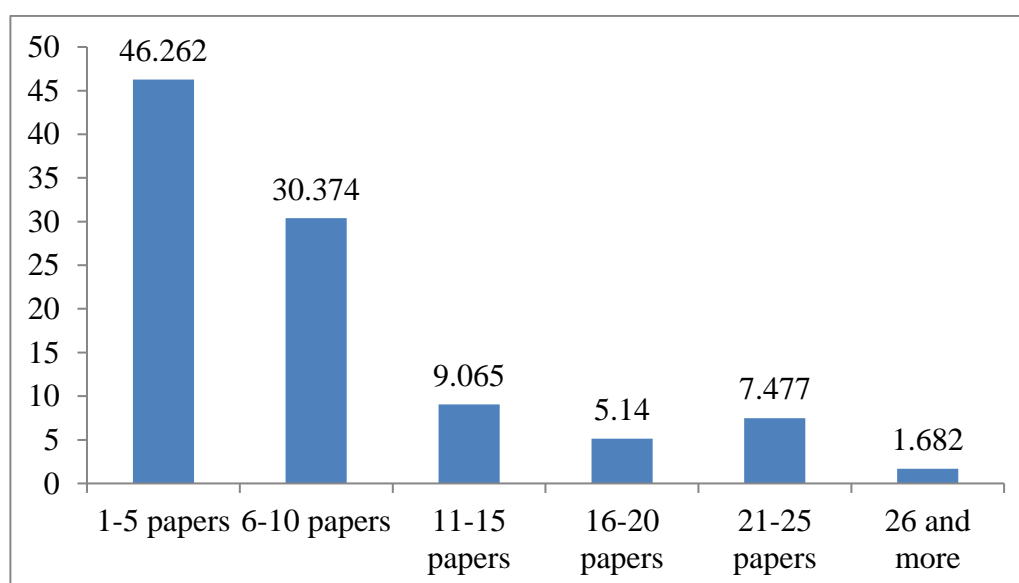


Chart Faculty members' articles publication in international journals.

Table 8 Educational Qualification, Designation, Experience and Google Scholar Account

	Status of the Google Scholar Account	
	Yes	No
Educational Qualification		
PG Eng	380(70.370)	160(29.630)
PG Eng & PhD	127(61.650)	79(38.350)
PG S&H &M.Phil	179(79.911)	45(20.089)
PG S&H& PhD	58(58)	42(42)
Designation		
Assistant Professor	328(69.787)	142(30.213)
Associate Prof	229(69.184)	102(30.816)
Professor	187(69.517)	82(30.483)
Experience		
0 - 5 yrs	285(83.333)	57(16.667)
6-10 yrs	176(58.863)	123(41.137)
11 - 15 yrs	126(79.245)	33(20.755)
16 - 20 yrs	87(62.143)	53(37.857)
21 & above	70(53.846)	60(46.154)
Total	744(69.533)	326(30.467)

(Figures in parenthesis is considered as percentage)

Among the total sample (1070), 744 (69.533) faculty members have Google scholar accounts and the remaining 326 (30.467) of the faculty do not have this account.

Based on educational qualification, 70.370 percent of the PG engineering faculty members and 61.650 percent of the PG Eng.& PhD holders have Google scholar account. Similarly, 79.911 and 58 percent of the PG in S&H & PhD in S&H faculty members also have this account.

Based on Designation, 69.787 percent of assistant professors, 69.184 percent of the associate professors and 69.517 percent of the professors' category have Google scholar account.

0-5 years of experienced faculty members ((285(83.333)) have Google scholar account. 176(58.863), 6-10 yrs experienced faculty members, 126(79.246) 11-15yrs

faculty members, 87(62.143) 16-20 yrs faculty members and 70(53.846) faculty members have Google scholar account.

Table 9 Faculty members 'frequency of Library Visits

Educational Qualification	Library Visits					Total
	Never	Rarely	Occasionally	Sometimes	Regularly	
PG Eng	74 (13.7)	120 (22.2)	134 (24.8)	121 (22.4)	91 (16.9)	540
PG Eng with PhD	26 (12.6)	47 (22.8)	39 (18.9)	49 (23.8)	45 (21.8)	206
PG S& H with M.Phil	6 (2.7)	25 (11.2)	79 (35.3)	66 (29.5)	48 (21.4)	224
PG S&H with PhD	7 (7.0)	20 (20.0)	6 (6.0)	61 (61.0)	6 (6.0)	100
Total	113 (10.6)	212 (19.8)	258 (24.1)	297 (27.8)	190 (17.8)	1070

(Figures in parenthesis is considered as percentage)

Faculty members' educational qualification and their frequency of library visits are shown in the above table. Frequency of library visit can be divided into five categories like, regularly, sometimes, occasionally, rarely and never. Among the total respondents (1070), 113 (10.6) do not visit the library and the remaining 89.4 percent of them visit the library at any cause. 17.8 percent of the faculty members visited the library frequently, 27.8 percent of them visited sometimes. 24.1 percent of them visited occasionally and 19.8 percent of them visited rarely.

Among the PG engineering qualified faculty members (540), 16.9 percent of them visited the library regularly, 21.8 percent of the PG in engineering with Ph.D qualified faculty members, 21.4 percent of the PG S&H with M.Phil teaching staff and 6 percent of the PG S& H with PhD faculty members visited the library regularly.

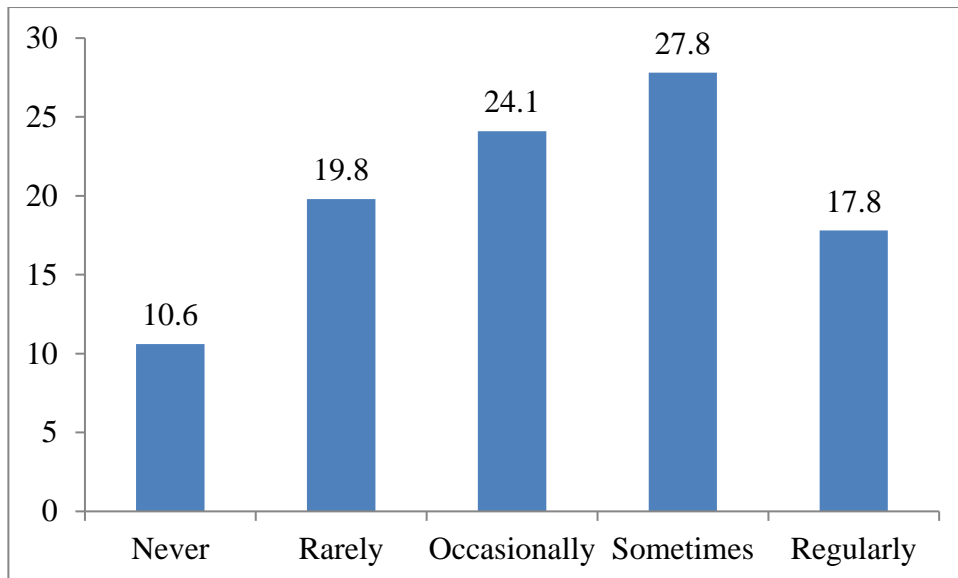


Chart Educational Qualification and frequency library visits

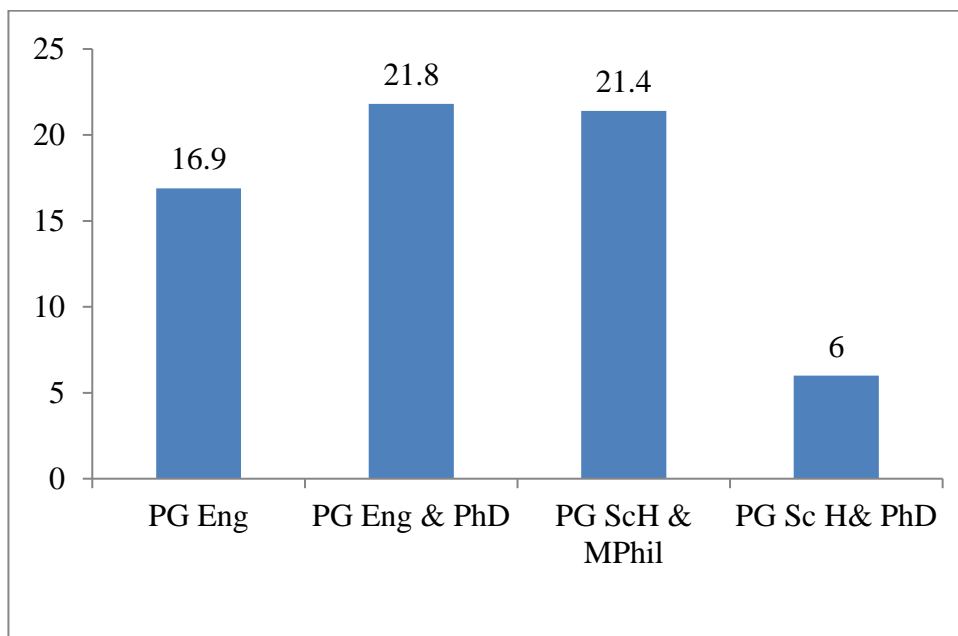


Chart Educational Qualification and regular library visits

Statistical analysis based on frequency of library visits

Faculty members' frequency of library visits are analysed by the following null and alternative hypothesis. Hypotheses are tested by one-way anova and the results are tabulated below.

Null Hypothesis (H₀): There is no significant difference between the engineering college faculty members' frequency of library visits and their gender, educational qualification, designation & experience.

Alternative hypothesis (H₁): There is a significant difference between the engineering college faculty members' frequency of library visits and their gender, educational qualification, designation & experience.

Table 10 One way Anova Results: Frequency of library visits, gender, educational qualification, designation and experience.

Variables	Level of Significance
Gender	0.084 ^{NS}
Educational Qualification	0.000**
Designation	0.000**
Experience	0.001**

Significant value is 0.000 & 0.001 (i.e., $p = 0.000$, and 0.001), which is less than 0.05; therefore, there is a statistically significant difference in the engineering college faculty members' frequency of library visits and their educational qualification, designation and experience. However, gender has no significant difference.

For identification of significant groups, it is to be further analysed by post-hoc test.

Table 10.1 Post-hoc Test: Educational qualification and frequency of library visits

Educational qualification	N	Subset for alpha = 0.05		
		1	2	3
PG Eng	540	3.06		
PG Eng with PhD	206	3.19	3.19	
PG S&H with PhD	100		3.39	3.39

PG S& H with M.Phil	224			3.56
Sig.		0.309	0.124	0.186

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 188.942.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

From the above post-hoc table 10.1 result, we reveal that PG in Engineering and PG in engineering with PhD faculty members' frequency of library visits means are 3.06 and 3.19. These two means form a subset-1. It is a homogeneous subset. There is no significant difference between these two groups of faculty members. Similarly, PG in engineering with PhD and PG S&H with PhD qualified frequency of library visits means are 3.19 and 3.39. These two means form a subset-2. There is no significant difference between these two respondents. It is a homogeneous subset. PG S&H with PhD and PG S& H with M.Phil faculty members' frequency of library visits means are 3.39 and 3.56. These two means are form a subset-3. There is no significant difference between these two qualified respondents. It is a homogeneous subset. Mean of PG Eng with PhD is 3.19. It is common for the subset-1 and subset-2. Similarly PG S&H with PhD mean is 3.39. It is a common for subset-2 and subset-3. However, the significant is observed between the subset-1, subset-2 and subset-3.

Table 10.2 Post-hoc Test: Designation and frequency of library visits

Designation	N	Subset for alpha = .05	
		1	2
Associate Professor	331	3.11	
Assistant Professor	470	3.15	
Professor	269		3.50
Sig.		0.690	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 338.361.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Based on the respondents' designation, associate professor and assistant professors frequency of library visits means are 3.11 and 3.15. These two means form a subset-1. It is a homogeneous group. There is no significant difference between these two designations of the faculty members. Frequency of library visit of the professor's mean is 3.5. It is a subset-2. The significant difference is observed between these two subsets.

Table 10.3 Post-hoc Test : Experience and frequency of library visits

Experience	N	Subset for alpha = .05		
		1	2	3
6-10 yrs	299	3.05		
0-5 yrs	342	3.18	3.18	
11-15 yrs	159	3.23	3.23	
16-20 yrs	140		3.41	3.41
21years and above	130			3.55
Sig.		0.178	0.092	0.285

Means for groups in homogeneous subsets are displayed.

a Uses Harmonic Mean Sample Size = 182.529.

b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Teaching faculty members' experience is one of the influencing factors for visiting the library. 3.05, 3.18 and 3.23 means are 6-10 years, 0-5 years and 11-15 years of experienced faculty members' frequency of library visits. It is a subset-1. It is a homogeneous subset. There is no significant difference between subset-1 faculty members. 0-5 years, 11-15 years and 16-20 years of experienced faculty members' frequency of library visits means are 3.18, 3.23 and 3.41. These three means are from a subset-2. It is homogeneous subset. Similarly, 16-20 years of experienced faculty members and above 21 years and above experienced faculty members' frequency of library visit means are 3.41 and 3.55. It is subset -3. It is a homogeneous subset. However, the faculty members' frequency of library visits significant is between these subsets.

Frequency of accessing online journals

The following table shows the respondents frequency of access of online sources

Table 11 Faculties frequency of accessing online journals

	Frequency of accessing online journals					Total
	Never	Rarely	Occasionally	Sometimes	Often	
Gender						
Male	7 (1.133)	57 (9.223)	45 (7.282)	344 (55.663)	165 (26.699)	618
Female	0	19 (4.204)	37 (8.186)	249 (55.088)	147 (32.522)	452
Educational Qualification						
PG Eng	0	39 (7.222)	37 (6.852)	310 (57.407)	154 (28.519)	540
PG Eng with PhD	0	19 (9.223)	27 (13.107)	75 (36.408)	85 (41.262)	206
PG S&H with M.Phil	7 (3.125)	12 (5.357)	12 (5.357)	133 (59.375)	60 (26.786)	224
PG S& H with PhD	0	6(6)	6(6)	75(75)	13(13)	100
Designation						
Assistant Professor	7 (1.489)	44 (9.362)	31 (6.596)	281 (59.787)	107 (22.766)	470
Associate Prof	0	13 (3.927)	31 (9.366)	189 (57.100)	98 (29.607)	331
Professor	0	19 (7.063)	20 (7.435)	123 (45.725)	107 (39.777)	269
Experience						
0-5 yrs	0	18 (5.263)	37 (10.819)	205 (59.942)	82 (23.977)	342
6-10 yrs	7 (2.341)	27 (9.030)	19 (6.355)	170 (56.856)	76 (25.418)	299
11-15 yrs	0	0	13 (8.176)	89 (55.975)	57 (35.849)	159
16-20 yrs	0	13 (9.286)	0	67 (47.857)	60 (42.857)	140
21years and above	0	18 (13.846)	13(10)	62 (47.692)	37 (28.462)	130
Total	7 (0.654)	76 (7.103)	82 (7.664)	593 (55.421)	312 (29.159)	1070

(Figures in parenthesis is considered as percentage)

The above table shows the respondents, frequency of access of online journals for their needs. Among the total respondents (1070), 29.159 percent of them frequently access the online journals. 55.421 percent of them some time, 7.664 percent occasionally, 7.103

percent rarely and 0.654 percent never access the online journals. It is to be further analysed.

Hypothesis

Null Hypothesis (H₀): There is no significant difference between the gender, educational qualification, experience & designation of the respondents and frequency of online journals.

Alternative Hypothesis (H₁): There is a significant difference between the gender, educational qualification, experience & designation of the respondents and frequency of online journals.

Table 12 Statistical Analyses Comparison: Frequency of accessing online journal

S.No.	Status	Significant
1.	Gender	Significant (0.000)**
2.	Educational Qualification	Not Significant (0.418)
3.	Experience	Significant(0.000)**
4.	Designation	Significant(0.000)**

Significant value is 0.418(i.e., $p = 0.418$), which is higher than 0.05 and therefore, there is no statistically significant difference between the educational qualification of the faculty members and frequency of accessing online journals. Null hypothesis is accepted

Significant value is 0.000 (i.e., $p = 0.000$), which is below 0.05 and therefore, there is a statistically significant difference which is observed between the gender, experience and designation of the faculty members and frequency of accessing online journals. Alternative hypothesis is accepted.

Opinion about the usefulness of e-journals

Table 13 Faculty members' opinion about the usefulness of e-journals

Gender	Opinion about the usefulness of e-journals			Total
	Very Useful	Useful	Uncertain	

Male	348 (56.311)	158 (25.566)	112 (18.123)	618
Female	267 (59.071)	106 (23.451)	79 (17.478)	452
Educational Qualification				
PG Eng	320 (59.259)	133 (24.630)	87 (16.111)	540
PG Eng with PhD	116 (56.311)	62 (30.097)	28 (13.592)	206
PG S& H with M.Phil	124 (55.357)	50 (22.321)	50 (22.321)	224
PG S&H with PhD	55 (55)	19 (19)	26 (26)	100
Experience				
0-5 yrs	203 (59.357)	76 (22.222)	63 (18.421)	342
6-10 yrs	170 (56.856)	86 (28.763)	43 (14.381)	299
11-15 yrs	74 (46.541)	51 (32.075)	34 (21.384)	159
16-20 yrs	84 (60)	37 (26.429)	19 (13.571)	140
21years and above	84 (64.615)	14 (10.769)	32 (24.615)	130
Designation				
Assistant Professor	279 (59.362)	114 (24.255)	77 (16.383)	470
Associate Professor	191 (57.704)	90 (27.190)	50 (15.106)	331
Professor	145 (53.903)	60 (22.305)	64 (23.792)	269
Total	615 (57.477)	264 (24.673)	191 (17.850)	1070

(Figures in parenthesis is considered as percentage)

From the table, we identify that 57.477 percent of the respondents' opinion about the usefulness of the e-journal is very useful, 24.673 percent of their opinion is useful and 17.850 percent of their opinion is uncertain condition. These different opinions are analysed by one-way ANOVA with the following hypothesis.

Statistical Analysis: Opinion about the usefulness of e-journals

Null Hypothesis (H₀): There is no significant difference between the gender, educational qualification, experience & designation of the respondents and their opinion about the usefulness of the e-journals.

Alternative Hypothesis (H₁): There is a significant difference between the gender, educational qualification, experience & designation of the respondents and their opinion about the usefulness of the e-journals.

Table 14 Statistical Analyses Comparison: Opinion about the usefulness of e-journals

S. No.	Status	Significant
1.	Gender	Not Significant(0.644)
2.	Educational Qualification	Not Significant (0.174)
3.	Experience	Not Significant (0.065)
4.	Designation	Significant(0.012)

Significant value is 0.644, 0.174 and 0.065)(i.e., $p = 0.418$), which is higher than 0.05 and therefore there is no statistically significant difference in the faculty members' opinion about the usefulness of the e-journals and gender, educational qualification, and experience. Null hypothesis is accepted.

Significant value is 0.012 (i.e., $p = 0.012$), which is below 0.05 and therefore there is a statistically significant difference in the opinion about the usefulness of the e-journals and the designation of the faculty members. Alternative hypothesis is accepted.

Academic Development: Increase of research publication

Engineering college faculty members' opinion is collected about the Research publications. Their publications have been increased greatly by using the electronic journals.

Table 15 Gender and Opinion about the Increase of research publications by using the electronic journals

Gender	Uncertain	Agree	Strongly Agree	Total
Male	49(7.929)	317(51.294)	252(40.777)	618
Female	70(15.487)	218(48.230)	164(36.283)	452
Total	119(11.121)	535(50)	416(38.879)	1070

(Figures in parenthesis is considered as percentage)

From the above table we express that the faculty members' opinion about the increase of research publication has been increased by using the electronic information sources. Among the total sample (1070), 38.879 percent of them strongly agree that the research publication has been increased by the use of electronic information sources and 50 percent of them agree. However, 11.121 percent of them are in uncertain condition.

Among the male faculty members (618) 40.777 percent of them strongly agreed and 51.294 percent of them agreed that the research publication has been increased by the use of electronic information sources. 7.929 percent of them are in uncertain condition. Among the female faculty members (452), 36.283 percent of them strongly agree, 48.230 percent of them agree and 15.487 percent of them are in uncertain condition. It is further to be analysed by one way Anova.

Hypothesis

H₀: There is no significant difference between the gender and their opinion about the increase of research publication by using the electronic information sources.

H₁: There is a significant difference between the gender and their opinion about the increase of research publication by using the electronic information sources.

Table 16 One-way Anova: Gender and their opinion about the increase of research publication by using the electronic information sources.

Gender	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.792	1	3.792	9.023	0.003**

Within Groups	448.770	1068	0.420		
Total	452.562	1069			

****Highly Significant**

Significant difference is observed between the gender of the respondents and their opinion about the increase of research publication by using the electronic information sources. Alternative hypothesis is accepted.

Table exhibits the educational qualification of the faculty members' opinion about the increase of research publication by using Electronic Journals.

Table 17 Educational qualification and opinion about the increase of research publication by using electronic journals.

Educational Qualification	Uncertain	Agree	Strongly Agree	Total
PG Eng	52(9.630)	270(50)	218(40.370)	540
PG Eng with PhD	19(9.223)	137(66.505)	50(24.272)	206
PG S& H with M.Phil	48(21.429)	84(37.500)	92(41.071)	224
PG S&H with PhD	0	44(44.000)	56(56.000)	100
Total	119(11.121)	535(50)	416(38.879)	1070

(Figures in parenthesis is considered as percentage)

Among the PG in Eng. qualified faculty members (540), 40.370 percent of them strongly agree that the research publication has been increased by using the electronic

information sources, 50 percent of them agree and 9.630 percent of them are in uncertain condition. PG Eng with PhD qualified faculty members (206), 24.272 percent of them strongly agree and 66.505 percent of them are agreed. 9.223 percent are in uncertain condition.

Among the PG S& H with M.Phil faculty members (224), 41.071 percent of them strongly agree that the research publication has been increased by using the electronic information sources and 37.5 percent agree. However, 21.429 percent of them are uncertain. PG S&H with PhD faculty members, 56 percent strongly agree 44 percent agree. It is further to be analysed by One-way Anova.

Hypothesis

H₀: There is no significant difference between the educational qualification and their opinion about the increase of research publication by using the electronic information sources.

H₁: There is a significant difference between the educational qualification and their opinion about the increase of research publication by using the electronic information sources.

Table 18 One way ANOVA: Educational qualification and Opinion about the Increase of research publication by using e-journals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.259	3	4.420	10.725	0.000 ^{HS}
Within Groups	439.302	1066	.412		
Total	452.562	1069			

HS = Highly Significant.

Highly significant is observed between the educational qualifications of the respondents and their opinion about increase of research publication by using the e-journals.

Table 18.1 Post hoc test: Educational qualification and Opinion about the Increase of research publication by using e-journals

Educational	N	Subset for alpha = 0.05
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Qualification		1	2	3
PG Eng & PhD	206	4.15		
PG S&H & M.Phil	224	4.20	4.20	
PG Eng	540		4.31	
PG S& H& PhD	100			4.56
Sig.		0.487	0.093	1.000
Means for groups in homogeneous subsets are displayed.				

By using the post-hoc test, we can find out the significant opinion groups of education qualification. PG Eng & PhD and PG S&H & M.Phil faculty members means are 4.15 and 4.20. These two means form a subset-1. It is a homogeneous subset. There is no significant difference between them. PG S&H & M.Phil and PG Eng qualified faculty members' means are 4.20 and 4.31. These two means form a subset-2. There is no significant difference between these two qualified faculty members. PG S&H& PhD qualified faculty members mean is 4.56. It is a subset-3. However, the significant difference is between the subset-1, subset-2 and subset-3.

Following table exhibits the designation of the faculty members' opinion about the increase of research publication by using Electronic Journals.

Table 19 Designation and opinion about the Increase of research publication by using electronic journals

Designation	Uncertain	Agree	Strongly Agree	Total
Assistant Professor	68(14.468)	230(48.936)	172(36.596)	470
Associate Professor	26(7.855)	172(51.964)	133(40.181)	331
Professor	25(9.294)	133(49.442)	111(41.264)	269
Total	119(11.121)	535(50)	416(38.879)	1070

(Figures in parenthesis is considered as percentage)

Among the assistant professors (470), 36.596 percent of them are strongly accepting that the use of e-journals for increase of research publications. 40.181 percent of the associate professors and 41.264 percent of the professors are also strongly accepting that their research publications have been increased by using the e-journals.

Table 20 One way ANOVA: Designation and Opinion about the Increase of research publication by using e-journals

Designation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.658	2	1.329	3.152	0.043 ^{HS}
Within Groups	449.904	1067	0.422		
Total	452.562	1069			

Significant value is 0.043 (i.e., $p = 0.043$), which is below to 0.05. Therefore, there is a statistically significant difference in the designation of the faculty members and their opinion about the Increase of research publication by using electronic journals.

Table 21 Experience and opinion about the Increase of research publication by using electronic journals

Experience	Uncertain	Agree	Strongly Agree	Total
0-5 yrs	56(16.374)	130(38.012)	156(45.614)	342
6-10 yrs	32(10.702)	176(58.863)	91(30.435)	299
11-15 yrs	19(11.950)	89(55.975)	51(32.075)	159
16-20 yrs	0	85(60.714)	55(39.286)	140
21years and above	12(9.231)	55(42.308)	63(48.462)	130
Total	119(11.121)	535(50)	416(38.879)	1070

(Figures in parenthesis is considered as percentage)

Based on 0-5 years of experienced faculty members, 45.614 percent of their opinion about the increase of research publication while using the electronic information resources is strongly agreed and 38.012 percent of them agreed. Remaining 16.374 percent of them are in uncertain condition. 6-10 years experience faculty members, 30.435 percent are strongly agreeing that the research publication has been increased by using the electronic information resources. 58.863 percent of them are agreed and 10.702 percent of them are in uncertain condition. From 11-15 years of experienced category, 32.075 percent of them strongly agree that the opinion about the use of electronic information resources

influencing the research publication. 55.975 percent are agreed and 11.95 percent are uncertain condition.

39.286 percent of the 16-20 years experienced faculty members strongly agree about their opinion and the use of electronic information resources and 60.714 percent of them agree. 48.462 percent of the above 21 year experience faculty members strongly agree and 42.308 percent of them agree. However, 9.231 percent of them are in uncertain condition. It is further to be analysed by one-way Anova .

Hypothesis

H₀: There is no significant difference between the experience and their opinion about the increase of research publication by using the electronic information sources.

H₁: There is a significant difference between the experience and their opinion about the increase of research publication by using the electronic information sources.

Table 22 One way ANOVA: Experience and Opinion about the Increase of research publication by using e-journals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.499	4	1.625	3.879	0.004 ^{HS}
Within Groups	446.063	1065	0.419		
Total	452.562	1069			

HS= Highly significant

Significant value is 0.004(i.e., $p = 0.004$), which is below 0.05 and therefore, there is a statistical significant difference in the designation of the faculty members and their opinion about the increase of research publication by using Electronic Journals. Significant experienced groups are identified by post-hoc test.

Table 22.1 Post hoc test: Experience and opinion about the increase of research publication by using e-journals

Experience	N	Subset for alpha = 0.05	
		1	2

6-10 yrs	299	4.20	
11 - 15 yrs	159	4.20	
0 - 5 yrs	342	4.29	4.29
21 & above	130		4.39
16 - 20 yrs	140		4.39
Sig.		0.187	0.163
Means for groups in homogeneous subsets are displayed.			

Means of 6-10 years, 11-5 years, and 0-5 years experienced faculty members are 4.20, 4.20 and 4.29. These three means form a subset-1. It is a homogeneous subset-1. There is no significant difference among them. Similarly, means of 0-5years, 21 years & above and 16-20 years experienced faculty members are 4.29, 4.39 and 4.39. These three mean from a subset-2. It is a homogeneous subset-2. There is no significant difference among them. However, the significant difference is between these two subsets. 0-5 years of experienced category is common for both subsets.

Improvements in teaching ability while using the Electronic Journals:

Teaching ability is improved by using the electronic journals. Here, data are collected from the faculty members and the same is tabulated (table 55) for analysis.

Table 23 Gender and Opinion about the improvements in teaching ability by using Electronic Journals

Gender	Uncertain	Agree	Strongly Agree	Total
Male	95 (15.372)	272 (44.013)	251 (40.615)	618
Female	70 (15.487)	282 (62.389)	100 (22.124)	452

Total	165 (15.421)	554 (51.776)	351 (32.804)	1070
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(Figures in parenthesis is considered as percentage)

From the above table we reveal that among the total respondents (1070), 32.804 percent of them are strongly agreed that the use of electronic information resources have been increasing the teaching capacity. 51.776 percent of them are agreed to this opinion. 15.421 percent of them are in uncertain condition.

Among the male respondents (618), 40.615 percent of them are strongly agreed that the electronic journals are useful for their improvement of teaching calibre. 44.013 percent of them are agreed and 15.372 percent of them are in uncertain condition.

Among the female (452) respondents, 15.487 percent are in uncertain condition, 62.389 percent are agreed and 22.124 percent are strongly agreed that the use of electronic journals for increasing their teaching capability. It is analysed by the following hypothesis.

H₀: There is no significant difference between the gender of the respondents and their opinion about the use of electronic information sources for increasing teaching capability.

H₁: There is a significant difference between the gender of the respondents and their opinion about the use of electronic information sources for increasing teaching capability.

Table 24 One way ANOVA: Gender and improvements in teaching ability by using electronic journals

Gender	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.722	2	1.861	7.716	0.000 ^{HS}
Within Groups	257.340	1067	0.241		
Total	261.062	1069			

HS= Highly Significant. .

Significant value is 0.000(i.e., $p = 0.000$), which is below 0.05 and therefore, there is a statistically significant difference in the opinion about the improvement of teaching capacity by using the electronic journals.

Table 25 Educational Qualification and opinion about the improvements in teaching ability by using Electronic Journals

Educational Qualification	Uncertain	Agree	Strongly Agree	Total
PG Eng	91 (16.852)	282 (52.222)	167 (30.926)	540
PG Eng with PhD	44 (21.359)	106 (51.456)	56 (27.184)	206
PG S & H with M.Phil	24 (10.714)	109 (48.661)	91 (40.625)	224
PG S&H with PhD	6 (6.000)	57 (57.000)	37 (37.000)	100
Total	165 (15.421)	554 (51.776)	351 (32.804)	1070

(Figures in parenthesis is considered as percentage)

From the table we express that the faculty members' educational qualification and their opinion about the improvements in teaching ability by using electronic journals. Among the PG in engineering quailed faculty members (540), 30.926 percent of them strongly agreed that their teaching capacity has been increased while using the electronic information sources. 52.222 percent of them agreed and 16.852 percent of them are in uncertain condition. 27.184 percent of the PG in Eng. with PhD qualified faculty members strongly agreed that the use of electronic and information resources have increased their teaching ability. 51.456 percent of them agreed and 21.359 percent of them are in uncertain condition. 40.625 percent of the PG in S& H with M.Phil qualified faculty members are strongly agreed and 48.661 percent of them agreed and 10.714 percent of them are in uncertain condition. Among the PG S&H with PhD qualified, 37 percent of the faculty members accepted that the use of electronic information resources have increased the teaching methods and ability. 57 percent of them are agreed and 6 percent are in uncertain condition. It is be analysed by one-way Anova with the following hypothesis.

Hypothesis

H₀: There is no significant difference between the educational qualification of the respondents and their opinion about the use of electronic information sources' improvements in teaching ability.

H₁: There is a significant difference between the educational qualification of the respondents and their opinion about the use of electronic information sources improvements in teaching ability.

Table 26 One-way ANOVA: Educational qualification and the respondents' opinion about the use of electronic information sources improvements in teaching ability.

Educational qualification	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	8.713	3	2.904	6.518	0.000 ^{HS}
Within Groups	474.954	1066	0.446		
Total	483.667	1069			

HS = Highly significant.

Significant value is 0.000(i.e., $p = 0.000$), which is below 0.05 and therefore, there is a statistically significant difference in the opinion about the use of electronic information sources improvements in teaching ability. Significant educational qualification groups are identified by the post-hoc test.

Table 26.1 Post Hoc test: Educational qualification and the respondents' opinion about the use of electronic information sources improvements in teaching ability.

Educational Qualification	N	Subset for alpha = 0.05	
		1	2
PG Eng & PhD	206	4.06	
PG Eng	540	4.14	
PG S&H & MPhil	224		4.30
PG S&H & PhD	100		4.31
Sig.		0.230	0.874
Means for groups in homogeneous subsets are displayed.			

The means of PG Eng & PhD and PG Eng. faculty members' means are 4.06 and 4.14. These two means form a subset-1. It is a homogeneous subset. There is significant difference between these two qualified faculty members. PG S&H & MPhil and PG S&H & PhD faculty members' means are 4.30 and 4.31. These two means form a subset-2. It is a homogeneous subset. There is significant difference between these two qualified faculty members. However the significant is observed between these two subsets.

Table 27 Designation and Opinion about the improvements in teaching ability by using Electronic Journals

Designation	Uncertain	Agree	Strongly Agree	Total
Assistant Professor	68 (14.468)	249 (52.979)	153 (32.553)	470
Associate Professor	66 (19.940)	141 (42.598)	124 (37.462)	331
Professor	31 (11.524)	164 (60.967)	74 (27.509)	269

(Figures in parenthesis is considered as percentage)

Opinion about the improvements in teaching ability by using Electronic Journals is collected and posted in the table..

Among the assistant professors' category (470), 32 Strongly agreed and 52.979 percent of them agreed that the teaching capacity has been increased by using the electronic information resources. However, 14.468 percent of them are in uncertain condition. 37.462 percent of the associate professors strongly agreed that their teaching capacity has been increased by using the e-journals. 42.598 percent of them agreed and 19.940 percent of them are in neutral condition.

Among the professor category (269), 27.509 percent of them strongly agreed and 60.967 percent of them agreed. 11.524 percent of the professors are in uncertain condition.

Hypothesis

H₀: There is no significant difference between the designation of the respondents and their opinion about the use of electronic information sources' improvements in teaching ability.

H₁: There is a significant difference between the designation of the respondents and their opinion about the use of electronic information sources' improvements in teaching ability.

Table One way ANOVA: Designation and the respondents' opinion about the use of electronic information sources improvements in teaching ability.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.076	2	0.038	0.084	0.919 ^{NS}
Within Groups	483.591	1067	0.453		
Total	483.667	1069			

NS = Not Significant

Significant value is 0.919(i.e., $p > 0.919$), which is above 0.05 and therefore, there is no statistically significant difference in the opinion about the use of electronic information sources improvements in teaching ability based on the designation of the respondents.

Table 28 Experience and Opinion about the improvements in teaching ability by using Electronic Journals

Experience	Uncertain	Agree	Strongly Agree	Total
0-5 yrs	57 (16.667)	174 (50.877)	111 (32.456)	342
6-10 yrs	45 (15.050)	151 (50.502)	103 (34.448)	299
11-15 yrs	26 (16.352)	77 (48.428)	56 (35.220)	159
16-20 yrs	12 (8.571)	72 (51.429)	56 (40.000)	140
21 years and above	25 (19.231)	80 (61.538)	25 (19.231)	130

(Figures in parenthesis is considered as percentage)

Teaching ability can be improved by using the Electronic journals based on the experience as shown in the above table. From the above table, 32.456 percent of the faculty members among 0-5 years of experience strongly agreed the above opinion, 50.877 percent of them agreed and 16.667 percent of them are in uncertain condition. Among the 6-10 years experienced faculty members, 34.448 percent of them strongly agreed the opinion and 50.502 percent of them agreed and 15.050 percent of them were in neutral condition. 32.220 percent of the 11-15 years experienced faculty members strongly accepted the above opinion. 48.428 percent agreed and 16.352 percent were in uncertain condition. Among the 16-20 years of experienced faculty members, 40 percent strongly agreed that the use of electronic information resources have increased the teaching ability. 51.429 percent agreed and 8.571 percent were in uncertain condition. Among 21 years and above experienced faculty members' opinion about the above concept, 19.231 percent

strongly agreed, 61.538 percent agreed and 19.2231 percent were in uncertain condition. The above data is further analysed by one-way Anova based on the following hypothesis.

Hypothesis

H₀: There is no significant difference between the experience of the respondents and their opinion about the use of electronic information sources improvements in their teaching ability.

H₁: There is a significant difference between the experience of the respondents and their opinion about the use of electronic information sources improvements in their teaching ability.

Table 29 One way ANOVA: Experience and the respondents opinion about the use of electronic information sources improvements in teaching ability.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.933	4	1.733	3.872	0.004 ^{HS}
Within Groups	476.734	1065	0.448		
Total	483.667	1069			

HS = Highly Significant

Significant value is 0.004 (i.e., $p = 0.004$), which is below 0.05 and therefore, there is a statistically significant difference in the opinion about the improvement of teaching capacity by using the Electronic Information Resources based on experience. It is to be further analysed by post-hoc test for identification of significant groups. Post hoc test is used to identify the significant groups.

Table 29.1 Post Hoc Test: Experience and the respondents' opinion about the use of electronic information sources improvements in teaching ability.

Experience	N	Subset for alpha = 0.05		
		1	2	3
21 yrs & above	130	4.00		
0 - 5 yrs	342		4.16	
11 - 15 yrs	159		4.19	4.19
6-10 yrs	299		4.19	4.19

16 - 20 yrs	140			4.31
Sig.		1.000	0.631	0.090
Means for groups in homogeneous subsets are displayed.				

21 years and above experienced faculty members' opinion mean is 4. It is a subset -1. Means of 0-5 years, 11-15 years, and 6-10 years are 4.16, 4.19 and 4.19. These three means form a subset-2. It is a homogeneous subset. There is no significant difference between the subset-2 experienced groups. Similarly, means of 11-15 years, and 6-10 years and 16-20 years are form a subset-3. It is a homogeneous subset. There is no significant difference between the subset-3 experienced groups. However, the significant difference is between the subset-1, subset-2 and subset-3.

Findings and Conclusion

1. Among the total sample (1070), 618(57.767) respondents are male and the remaining 425(42.243) respondents are female faculties who participated in this research.
2. According to the designation of the respondents, 470(43.925), 331(30.935) and 269(25.140) are assistant professors, associate professors and professors.
3. Based on the experience of the faculty members, 342(31.963) of them have 0-5 years of experience in teaching in engineering colleges, 299(27.944) of them have 6-10 years of experience, 159(14.860) percent of them have 11-15 years, 140(13.084) of them have 16-20 years of experience and the remaining 130(12.150) of them have 21 years and above teaching experience in engineering colleges.
4. Nearly 85 percent of the respondents have published 1-15 articles in the national journals and rest of the 15 percent of them has published 16 and more articles.
5. 46.262 percent of the respondents have published their research contribution through 1-5 papers in international journals. 30.374 percent of them have published 6-10 papers. 9.065 percent of them have contributed in 11-15 papers. 5.140 percent of the faculty members have published 16-20 international papers. 7.477 percent of the faculties have presented 21-25 papers and 1.682 percent of them have published 26 and more papers.
6. 744 (69.533) faculties have Google scholar accounts and the remaining 326 (30.467) of the faculties do not have this account.

7. Based on educational qualification, 70.370 percent of the PG in engineering faculty members and 61.650 percent of the PG Engg & PhD holders has Google scholar account. Similarly, 79.911 and 58 percent of the PG in S & H & PhD in S&H faculties have this account.
8. Based on Designation, 69.787 percent of assistant professors, 69.184 percent of the associate professors and 69.517 percent of the professors' category have a Google scholar account.
9. 0-5 years of experienced faculties ((285(83.333)) have Google scholar account. 176(58.863), 6-10 yrs. experienced faculties, 126(79.246) 11-15yrs faculties, 87(62.143) 16-20 yrs. faculties and 70(53.846) faculties have Google scholar account.
10. Among the total respondents (1070), 113 (10.6) do not visit the library and the remaining 89.4 percent of them visit the library at any cause. 17.8 percent of the faculty members visit the library frequently, 27.8 percent of them visit sometimes. 24.1 percent of them visited occasionally and 19.8 percent of them visited rarely. Selvaraj and Rathinasabapathy (2014) research results reflected here.
11. There is a statistically significant difference in the engineering college faculty members' frequency of library visits and their educational qualification, designation and experience. However, gender has no significant difference.
12. 15.154 percent of the faculty members are often visitors of the library. 13.138 percent of them visits sometimes, 11.749 percent of them visits occasionally, 32.711 percent of them rarely visit the library. 27.251 percent of them never visit the library at any circumstance of the above reasons.
13. Among the total respondents (1070), 29.159 percent of them more frequently access the online journals. Chandran (2013) research result is reflected here. 55.421 percent of them some time, 7.664 percent occasionally, 7.103 percent rarely and 0.654 percent never access the online journals.
14. There is no statistical significant difference between the educational qualifications of the faculty members 'frequency of accessing online journals.
15. Statistical significant difference is observed between the gender, experience and designation of the faculty members 'frequency of accessing online journals.
16. 57.477 percent of the teaching faculties' opinion about the usefulness of the e-journal is very useful, 24.673 percent of their opinion is useful and 17.850 percent of their opinion is uncertain condition.

17. There is no statistically significant difference between the faculty members' opinion about the usefulness of the e-journals and gender, educational qualification, and experience. However, there is a statistical significant difference in the opinion about the usefulness of the e-journal of the faculty members 'designation.
18. Among the total sample (1070), 38.879 percent of them strongly agree that research publication has been increased by the use of electronic information sources and 50 percent of them agreed. However, 11.121 percent of them are in uncertain condition.
19. 40.777 percent of the male and 36.283 percent of the female faculty members strongly agree that the research publication has been increased by the use of electronic information sources.
20. Significant difference is observed between the gender of the respondents and their opinion about the increase of research publication by using the electronic information sources.
21. 40.370 percent of the PG Engineering faculties and 24.272 percent of PG engineering with PhD faculties strongly agree that the research publication has been increased by using the electronic information sources.
22. Among the PG S& H with M.Phil faculties (224), 41.071 percent of them strongly agree that the research publication has been increased by using the electronic information sources. 56 percent of the PG S&H with PhD faculties also strongly agree.
23. Highly significant is observed between the educational qualifications of the respondents and their opinion about the increase of research publication by using the e-journals.
24. Among the assistant professors (470), 36.596 percent of them strongly accept that the use of e-journals has increased the research publications. 40.181 percent of the associate professors and 41.264 percent of the professors also strongly accept that their research publications have been increased by using the e-journals.
25. There is a statistical significant difference in the designation of the faculties and their opinion about the increase of research publication by using Electronic Journals.
26. 45.614 percent of the 0-5 years of experienced faculty members' opinion about the increase of research publication while using the electronic information resources is strongly agreed. 30.435 percent of the 6-10 years experienced faculties also strongly agree the above concept. Among 11-15 years of experienced category, 32.075 percent of them strongly agree. 48.462 percent of the above 21 years' experience faculty members also strongly agree.

27. Statistical significant difference is observed between the designation of the faculty members and their opinion about the increase of research publication by using Electronic Journals.

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