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Role of Academic Libraries in Research and Development Activities in the Electronic Environment: A Study of University Libraries in Delhi

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ABSTRACT: *The study comparatively investigated the resources and services provided to the users (research scholars and faculty members) by the Central Library of Jamia Millia Islamia, University of Delhi, Jawaharlal Nehru University, Jamia Hamdard and Guru Gobind Singh Indraprastha University for research work in the present electronic environment.*

KEYWORDS: *E-resources, Academic Library, Jamia Millia Islamia, Delhi University, Jawaharlal Nehru University, Jamia Hamdard, Guru Gobind Singh Indraprastha University*

I. INTRODUCTION

The Information and Communication Technology (ICT) revolution and the advent of the Internet has had drastic and far-reaching impacts on the knowledge and information sector and added a new dimension to information retrieval platforms. It has created an environment where rapid continuous changes have become the norms. Developments in information and communication technologies have a profound impact on every sphere and academic activities. Academic libraries are not an exception for this. It has reduced the library stature from the custodian of our literature heritage to being a competitor among many others in the information society changes have been noticed in the academic libraries in professionals, collection and policies. Changes have also seen in information seeking behaviour of users. Their preferences have been changed. User satisfaction level has been increasing. Now libraries have been able to provide fast and seamless access of information to its users. In the 21st century, most of the library resources are being made available in electronic formats such as e-journals, e-books, e-databases, etc. Libraries are moving from print to e-resources either subscribing individually or through consortia because of its advantages over pint resources [1]. But the appropriate selection of e-resources is one of the most difficult jobs faced by LIS professionals because there are too many products available in the market, making the task of a selector extremely difficult. For this a survey is conducted to find out the use and awareness of resources (print and electronic) available in the library for the users and the impact of these resources on their research work.

II. SCOPE OF THE STUDY

The study is limited to the Central Library of Jamia Millia Islamia (JMI), University of Delhi (DU), Jawaharlal Nehru University (JNU), Jamia Hamdard (JH) and Guru Gobind Singh Indraprastha University (GGSIPU or IPU) and its users (research scholars and faculty members).

III. OBJECTIVES OF THE STUDY

Specific objectives of the study are:

1. To know the frequency and purpose of visit to the library by the users.
2. To know the awareness and use of different types of resources (print and electronic) among the users.
3. To find out the communication channels through which information is acquired by users in their research work.
4. To find out the revolutionary change brought out by the Information and Communication Technology in these libraries.
5. To examine various aspects of library facilities and services including collection adequacy, staff assistance and other physical facilities provided to the researchers.

IV. METHODOLOGY

A questionnaire was designed and was pre-tested before using it for the survey. The questionnaires were distributed personally among the research scholars and faculty members.

V. DATA ANALYSIS AND INTERPRETATION

A total of 50 questionnaires (in each university) were randomly administered among the user community, i.e. 30 for research scholars and 20 for faculty members in Jamia Millia Islamia, University of Delhi, Jawaharlal Nehru University, Jamia Hamdard and Guru Gobind Singh Indraprastha University. Out of 250 questionnaires, 176 questionnaires (70.4%) were received. Data analysis has been done by using MS-Excel package and Chi-square ($\chi^{2)}$. The Chi-square method is applied to check there is any association between two variables. For this, the calculated value of χ^2 is compared with the tabulated value of χ^2 for given degrees of freedom at a certain specified level of significance. If at the stated level (generally 5% or 0.05 level is selected), the calculated value of χ^2 is more than the tabulated value of χ^2, then it is assumed that the association between the two variables is significant. If, on the other hand, the calculated value of χ^2 is less than the tabulated value of χ^2 then it is assumed that there is no significant association exist between the two variables.

Table I: Size of Sample

Category	***Questionnaires***	***JMI (N=50)***	***DU (N=50)***	***JNU (N=50)***	***JH (N=50)***	***IPU (N=50)***	***Total (N=250)***
Research Scholars	Responded/Distributed	22/30 (73.33)	25/30 (83.33)	20/30 (66.67)	21/30 (70)	24/30 (80)	112/150 (74.67)
Faculty Members	Responded/Distributed	13/20 (65)	14/20 (70)	11/20 (55)	12/20 (60)	14/20 (70)	64/100 (64)
Total Responded		35 (70)	39 (78)	31 (62)	33 (66)	38 (76)	176 (70.4)

Note: Figures in parenthesis indicate percentages.

The *Table* I indicates the number of questionnaires distributed among the respondents and responses received from them. A response rate of JMI, DU, JNU, JH and IPU are 70%, 78%, 62%, 66% and 76% respectively. It reveals DU (78%) has a high response rate, whereas JNU (62%) has a low response rate.

Table II: Sex Wise Total of Questionnaires

Sex	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Male	28 (80)	25 (64.10)	23 (74.19)	17 (51.51)	22 (57.89)	115 (65.34)
Female	07 (20)	14 (35.90)	08 (25.81)	16 (48.48)	16 (42.10)	61 (34.66)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.086720702, χ^2-calculated value=8.136022201, χ^2-tabulated value=9.487729037, Significant=No						

The *Table* II indicates that responded to the questionnaire from male respondents are high in JMI (80%) and low in JH (51.51%), whereas responded to a questionnaire from female respondents are high in JH (48.48%) and low in JMI (16.67%). The Chi-square value indicates that there is no significant difference in responses of the questionnaires and gender (between male and male & female and female) of all the five universities.

Table III: Frequency of Visit to the Library

Frequency	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Daily	-	21 (53.85)	14 (45.16)	-	02 (5.26)	37 (21.02)
Once a week	06 (17.14)	05 (12.82)	04 (12.90)	07 (21.21)	06 (15.79)	28 (15.91)
Twice a week	07 (20)	02 (5.13)	03 (9.68)	08 (24.24)	06 (15.79)	26 (14.77)
Fortnightly	-	01 (2.56)	-	-	-	01 (0.57)
Monthly	-	-	-	02 (6.06)	-	02 (1.14)
As and when needed	22 (62.86)	10 (25.64)	10 (32.26)	16 (48.48)	24 (63.16)	82 (46.59)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)

α=0.05, Degree of freedom=20, p-value=2.21E-08, χ^2-calculated value=75.54019554, χ^2-tabulated value=31.41043284, Significant=Yes

The *Table* III indicates that the majority of the respondents in JMI (62.86%), JH (48.48%) and IPU (63.16%) visit the library as and when needed, whereas in DU (53.85%) and JNU (45.16%) the majority of the respondents visit the library daily. Statistical application reveals that there is a significant difference in the frequency of visit between the users of all the five universities.

Table IV: Purpose of Visit to the Library

Purpose	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
To borrow and return the books	32 (91.43)	23 (58.97)	22 (70.97)	14 (42.42)	19 (50)	110 (62.50)
To consult print resources	10 (28.57)	24 (61.54)	16 (51.61)	10 (30.30)	12 (31.58)	72 (40.91)
To access e-resources	20 (57.14)	20 (51.28)	20 (64.52)	19 (57.57)	26 (68.42)	105 (59.66)
To study	07 (20)	34 (87.18)	20 (64.52)	07 (21.21)	11 (28.95)	79 (44.89)
To use the Internet	01 (2.86)	20 (51.28)	25 (80.64)	03 (9.09)	04 (10.53)	53 (30.11)
Any other	02 (5.71)	04 (10.26)	13 (41.93)	03 (9.09)	-	22 (12.50)

The *Table* IV indicates that the majority of the respondents in JH (57.57%) and IPU (68.42%) visit the library to access e-resources, in JMI (91.43%) the majority of the respondents visit the library to borrow and return the books, in DU (87.18%) the majority of the respondents visit the library to study, whereas in JNU (80.64%) the majority of the respondents visit the library to use the Internet.

Table V: Suggestion Regarding Print & E-resources Subscription

Sources		***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Print Resources	Yes	01 (2.86)	10 (25.64)	01 (3.22)	09 (27.27)	05 (13.16)	26 (14.77)
	No	34 (97.14)	29 (74.36)	30 (96.77)	24 (72.73)	33 (86.84)	150 (85.23)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.004572762, χ^2-calculated value=15.0627802, χ^2-tabulated value=9.487729037, Significant=Yes							
E-resources	Yes	04 (11.43)	12 (30.77)	06 (19.35)	04 (12.12)	12 (31.58)	38 (21.59)
	No	31 (88.57)	27 (69.23)	25 (80.64)	29 (87.88)	26 (68.42)	138 (78.41)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.086075113, χ^2-calculated value=8.154636301, χ^2-tabulated value=9.487729037, Significant=No							

The *Table* V indicates the suggestion regarding print and e-resources subscription. The majority of the respondents have not suggested to the Librarian for subscribing the print and electronic resources. Statistical application reveals that there is a significant difference in suggestion regarding print resources, but there is no significant difference in suggestion regarding electronic resources among the users of all the five universities.

Table VI: Consideration of Request Regarding Print Resources Subscription

Sources		***JMI (N=01)***	***DU (N=10)***	***JNU (N=01)***	***JH (N=09)***	***IPU (N=05)***	***Total (N=26)***
Print Resources	Yes	01 (100)	06 (60)	01 (100)	05 (55.55)	05 (100)	18 (69.23)
	No	-	04 (40)	-	04 (44.44)	-	08 (30.77)
Total		01 (100)	10 (100)	01 (100)	09 (100)	05 (100)	26 (100)
α=0.05, Degree of freedom=4, p-value=0.366770529, χ^2-calculated value=4.301234568, χ^2-tabulated value=9.487729037, Significant=No							

The *Table* VI indicates the consideration of a request regarding print resources. The majority of the respondents stated that whatever they have suggested to purchase the relevant materials related to print resources their request were attended. The Chi-square value shows that there is no significant difference in consideration of request regarding print resources among the users of all the five universities.

Table VII: Consideration of Request Regarding E-resources Subscription

Sources		***JMI (N=04)***	***DU (N=12)***	***JNU (N=06)***	***JH (N=04)***	***IPU (N=12)***	***Total (N=38)***
E-resources	Yes	04 (100)	07 (58.33)	05 (83.33)	03 (75)	09 (75)	28 (73.68)
	No	-	05 (41.67)	01 (16.67)	01 (25)	03 (25)	10 (26.31)
Total		04 (100)	12 (100)	06 (100)	04 (100)	12 (100)	38 (100)
α=0.05, Degree of freedom=4, p-value=0.526663225, χ^2-calculated value=3.189285714, χ^2-tabulated value=9.487729037, Significant=No							

The *Table* VII indicates the consideration of a request regarding electronic resources. The majority of the respondents stated that whatever they have suggested to purchase the relevant materials related to e- resources, their request were attended. The Chi-square value reveals that there is no significant difference in consideration of request regarding electronic resources among the users of all the five universities.

Table VIII: Use of Reading Materials in Research Work

Sources		***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Print Resources	Yes	35 (100)	38 (97.43)	30 (96.77)	33 (100)	38 (100)	174 (98.86)
	No	-	01 (2.56)	01 (3.22)	-	-	02 (1.14)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.536196883, χ^2-calculated value=3.130696025, χ^2-tabulated value=9.487729037, Significant=No							
Online Databases	Yes	22 (62.86)	22 (56.41)	25 (80.64)	14 (42.42)	26 (68.42)	109 (61.93)
	No	13 (37.14)	17 (43.59)	06 (19.35)	19 (57.57)	12 (31.58)	67 (38.07)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.02517467, χ^2-calculated value=11.1268607, χ^2-tabulated value=9.487729037, Significant=Yes							
E-journals	Yes	33 (94.28)	33 (84.61)	30 (96.77)	33 (100)	38 (100)	167 (94.89)
	No	02 (5.71)	06 (15.38)	01 (3.22)	-	-	09 (5.11)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.013642698, χ^2-calculated value=12.55926205, χ^2-tabulated value=9.487729037, Significant=Yes							
E-books	Yes	09 (25.71)	12 (30.77)	14 (45.16)	9 (27.27)	19 (50)	63 (35.79)
	No	26 (74.28)	27 (69.23)	17 (54.84)	24 (72.73)	19 (50)	113 (64.20)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.110011851, χ^2-calculated value=7.538768848, χ^2-tabulated value=9.487729037, Significant=No							
Audio-visual Materials	Yes	06 (17.14)	02 (5.13)	03 (9.68)	03 (9.09)	03 (7.89)	17 (9.66)
	No	29 (82.86)	37 (94.87)	28 (90.32)	30 (90.91)	35 (92.10)	159 (90.34)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.507081662, χ^2-calculated value=3.311693497, χ^2-tabulated value=9.487729037, Significant=No							

The *Table* VIII indicates that the majority of the respondents used print resources, online database and e-journals in their research work, but e-books and audio-visual materials are less used by the respondents. Statistical application reveals that there is a significant difference in the use of online databases and e-journals by users for their research work, but there is no significant difference in the use of print resources, e-books and audio-visual materials in research work among the users of all the five universities.

Table IX: Adequacy of Library Materials

Sources		***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Print Resources	Adequate	17 (48.57)	16 (41.02)	10 (32.26)	15 (45.45)	07 (18.42)	65 (35.23)
	Inadequate	05 (14.28)	09 (23.08)	09 (29.03)	01 (3.03)	09 (23.68)	33 (18.75)
	Satisfactory	13 (37.14)	13 (33.33)	11 (35.48)	17 (51.51)	22 (57.89)	76 (43.18)

	Can't say	-	01 (2.56)	01 (3.22)	-	-	02 (1.14)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=12, p-value=0.061643658, χ^2-calculated value=20.29862635, χ^2-tabulated value=21.02606982, Significant=No							
Online Databases	Adequate	08 (22.86)	06 (15.38)	13 (41.93)	04 (12.12)	11 (28.95)	42 (23.86)
	Inadequate	05 (14.28)	09 (23.08)	03 (9.68)	01 (3.03)	01 (2.63)	19 (10.79)
	Satisfactory	09 (25.71)	07 (17.95)	09 (29.03)	09 (27.27)	14 (36.84)	48 (27.27)
	Can't say	13 (37.14)	17 (43.59)	06 (19.35)	19 (57.57)	12 (31.58)	67 (38.07)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=12, p-value=0.007002402, χ^2-calculated value=27.29640102, χ^2-tabulated value=21.02606982, Significant=Yes							
E-journals	Adequate	13 (37.14)	07 (17.95)	15 (48.39)	10 (30.30)	24 (63.16)	69 (39.20)
	Inadequate	11 (31.43)	14 (35.90)	04 (12.90)	09 (27.27)	03 (7.89)	41 (23.29)
	Satisfactory	09 (25.71)	12 (30.77)	11 (35.48)	14 (42.42)	11 (28.95)	57 (32.39)
	Can't say	02 (5.71)	06 (15.38)	01 (3.22)	-	-	09 (5.11)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=12, p-value=0.000605449, χ^2-calculated value=34.29717077, χ^2-tabulated value=21.02606982, Significant=Yes							
E-books	Adequate	01 (2.86)	02 (5.13)	01 (3.22)	03 (9.09)	10 (26.31)	17 (9.66)
	Inadequate	03 (8.57)	03 (7.69)	05 (16.12)	01 (3.03)	03 (7.89)	15 (8.52)
	Satisfactory	05 (14.28)	07 (17.95)	08 (25.81)	05 (15.15)	06 (15.79)	31 (17.61)
	Can't say	26 (74.28)	27 (69.23)	17 (54.84)	24 (72.73)	19 (50)	113 (64.20)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=12, p-value=0.033584054, χ^2-calculated value=22.36923035, χ^2-tabulated value=21.02606982, Significant=Yes							
Audio-visual Materials	Adequate	-	-	01 (3.22)	01 (3.03)	-	02 (1.14)
	Inadequate	02 (5.71)	-	-	-	-	02 (1.14)
	Satisfactory	04 (11.43)	02 (5.13)	02 (6.45)	02 (6.06)	03 (7.89)	13 (7.39)
	Can't say	29 (82.86)	37 (94.87)	28 (90.32)	30 (90.91)	35 (92.10)	159 (90.34)
Total		35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=12, p-value=0.365101152, χ^2-calculated value=13.05437147, χ^2-tabulated value=21.02606982, Significant=No							

The *Table* IX indicates that the majority of the respondents stated that the collection of e-journals is adequate, collection of print resources and online databases are satisfactory. Statistical application shows that there is a significant difference in the responses received regarding the adequacy of online databases, e-journals and e-books, but there is no significant difference in the responses received regarding the adequacy of print resources and audio-visual materials from the users of all the five universities.

Table X: Consultation of E-journals Database

E-journals Database	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
ACM	01 (2.86)	-	-	02 (6.06)	-	03 (1.70)
Credo Reference	-	1 (2.56)	-	-	-	01 (0.57)
Jstor	05 (14.28)	10 (25.64)	30 (96.77)	05 (15.15)	07 (18.42)	57 (32.39)
Emerald	02 (5.71)	09 (23.08)	-	01 (3.03)	02 (5.26)	14 (7.95)
J-Gate	02 (5.71)	04 (10.26)	-	03 (9.09)	-	09 (5.11)
Scopus	02 (5.71)	04 (10.26)	-	03 (9.09)	09 (23.68)	18 (10.23)
ProQuest	-	01 (2.56)	-	-	05 (13.16)	06 (3.41)
Ebscohost	-	03 (7.69)	01 (3.22)	02 (6.06)	-	06 (3.41)
Sage Journals Online	03 (8.57)	15 (38.46)	22 (70.97)	07 (21.21)	08 (21.05)	55 (31.25)
Wiley Interscience	15 (42.86)	1 (2.56)	03 (9.68)	12 (36.36)	18 (47.37)	49 (27.84)
Science Direct	22 (62.86)	7 (17.95)	05 (16.12)	30 (90.91)	27 (71.05)	91 (51.70)
Any other	05 (14.28)	04 (10.26)	06 (19.35)	05 (15.15)	06 (15.79)	26 (14.77)

Never consult	01 (2.86)	07 (17.95)	01 (3.22)	-		09 (5.11)

The *Table* X indicates the e-journals database mostly used by the respondents in their research work. The majority of the respondents in JMI prefer Science Direct (62.86%) and Wiley Interscience (42.86%). The majority of the respondents in DU prefer Sage Journals Online (38.46%), Jstor (25.64%) and Emerald (23.08%). The majority of the respondents in JNU prefer Jstor (96.77%) and Sage Journals Online (70.97%). The majority of the respondents in JH prefer Science Direct (90.91%) and Wiley Interscience (36.36%). The majority of the respondents in IPU prefer Science Direct (71.05%) and Wiley Interscience in their research work as compared to other e-journal databases.

Table XI: Commonly Used Search Engines to Retrieve Information

Search Engines	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Google	35 (100)	38 (97.43)	29 (93.55)	33 (100)	38 (100)	173 (98.29)
Yahoo!	06 (17.14)	18 (46.15)	02 (6.45)	06 (18.18)	09 (23.68)	41 (23.29)
Altavista	01 (2.86)	05 (12.82)	01 (3.22)	01 (3.03)	-	08 (4.54)
Any other	-	02 (5.13)	02 (6.45)	02 (6.06)	-	06 (3.41)

The *Table* XI indicates the details about the possible usages of search engines by the respondents. It reveals that only Google and Yahoo! are the most popular, widely used search engines. 100% respondents in JMI, DU, JH, IPU and 93.55% in JNU prefer Google search engine to retrieve the information relate to their research work.

Table XII: Commonly Used Search Techniques to Retrieve Information

Search Techniques	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Phrase Search	21 (60)	28 (71.79)	23 (74.19)	16 (48.48)	29 (76.31)	117 (66.48)
Truncation Search	02 (5.71)	09 (23.08)	02 (6.45)	02 (6.06)	02 (5.26)	17 (9.66)
Controlled Vocabulary	06 (17.14)	05 (12.82)	02 (6.45)	06 (18.18)	04 (10.53)	23 (13.07)
Field Search	24 (68.57)	18 (46.15)	14 (45.16)	23 (69.70)	17 (44.74)	96 (54.54)
Boolean Operators	03 (8.57)	07 (17.95)	03 (9.68)	01 (3.03)	02 (5.26)	16 (9.09)

The *Table* XII indicates the commonly used search techniques by the respondents to retrieve the information on the Internet. 68.57% in JMI and 69.70% respondents in JH prefer field search techniques. 71.79% in DU, 74.19% in JNU and 76.31% respondents in IPU prefer phrase search techniques to retrieve the information on the Internet related to their research work.

Table XIII: Method Used to Locate the Needed Information

Methods	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Assistance from the library staff	15 (42.86)	22 (56.41)	18 (58.06)	23 (69.70)	20 (52.63)	98 (55.68)
Guided by teachers/supervisors	02 (5.71)	07 (17.95)	02 (6.45)	05 (15.15)	-	16 (9.09)
Consulting the printed catalogues	09 (25.71)	25 (64.10)	22 (70.97)	08 (24.24)	14 (36.84)	78 (44.32)
Help of friends	01 (2.86)	06 (15.38)	07 (22.59)	03 (9.09)	02 (5.26)	19 (10.79)
Self	25 (71.43)	27 (69.23)	26 (83.87)	16 (48.48)	27 (71.05)	121 (68.75)

The *Table* XIII indicates the method used to locate the needed information in the library. The majority of the respondents in JMI (71.43%), DU (69.23%), JNU (83.87%) and IPU (71.05%) locate the needed information by self, whereas the majority of the respondents in JH (69.70%) locate the needed information with the assistance of the library staff.

Table XIV: Consult the OPAC System

Consult the OPAC	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	21 (60)	37 (94.87)	26 (83.87)	19 (57.57)	35 (92.10)	138 (78.41)
No	14 (40)	02 (5.13)	05 (16.12)	14 (42.42)	03 (7.89)	38 (21.59)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=2.54696E-05, χ^2-calculated value=26.46726898, χ^2-tabulated value=9.487729037, Significant=Yes						

The *Table* XIV indicates that the majority of the respondents in JMI (60%), DU (94.87%), JNU (83.87%), JH (57.57%) and IPU (92.10%) stated that they consulted the OPAC system to locate the needed information. Statistical application shows that there is a significant difference in the responses received regarding the consultation on OPAC system by the users of all the five universities.

Table XV: Information in the OPAC System

Opinion	***JMI (N=21)***	***DU (N=37)***	***JNU (N=26)***	***JH (N=19)***	***IPU (N=35)***	***Total (N=138)***
Adequate	08 (38.09)	09 (24.32)	09 (34.61)	04 (21.05)	13 (37.14)	43 (31.16)
Inadequate	01 (4.76)	02 (5.40)	03 (11.54)	02 (10.53)	-	08 (5.80)
Satisfactory	12 (57.14)	26 (70.27)	14 (53.85)	13 (53.85)	22 (62.86)	87 (63.04)
Total	21 (100)	37 (100)	26 (100)	19 (100)	35 (100)	138 (100)
α=0.05, Degree of freedom=8, p-value=0.52039394, χ^2-calculated value=7.151358037, χ^2-tabulated value=15.50731306, Significant=No						

The *Table* XV indicates that the majority of the respondents in JMI (57.14%), DU (24.32%), JNU (53.85%), JH (53.85%) and IPU (62.86%) stated that the information given in the OPAC system is satisfactory. The Chi-square value indicates that there is no significant difference in the responses received regarding the information available in the OPAC system among the users of all the five universities.

Table XVI: Able to Handle Computer without any Assistance

Ability	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	35 (100)	36 (92.31)	31 (100)	33 (100)	38 (100)	173 (98.29)
No	-	03 (7.69)	-	-	-	03 (1.70)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.02988253, χ^2-calculated value=10.72120943, χ^2-tabulated value=9.487729037, Significant=Yes						

The Table XVI indicates that the majority of the respondents in JMI (100%), DU (92.31%), JNU (100%), JH (100%) and IPU (100%) stated that they are able to handle computer without any assistance. Statistical application shows that there is a significant difference in the responses received regarding easily handling the computer without any assistance among the users of all the five universities.

Table XVII: Satisfaction with Computer Facilities

Satisfaction	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	30 (85.71)	19 (48.72)	25 (80.64)	24 (72.73)	34 (89.47)	132 (75)
No	05 (14.28)	20 (51.28)	06 (19.35)	09 (27.27)	04 (10.53)	44 (25)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.000266957, χ^2-calculated value=21.37378336, χ^2-tabulated value=9.487729037, Significant=Yes						

The *Table* XVII indicates that the majority of the respondents in JMI (85.71%), JNU (80.64%), JH (72.73%) and IPU (89.47%) are satisfied with the computer facilities provided in the library, whereas the majority of the respondents in DU (51.28%) are not satisfied with the computer facilities. The Chi-square value indicates that there is a significant difference in the responses received regarding the satisfaction with the computer facilities among the users of all the five universities.

Table XVIII: Approach towards Library Staff for Help

Approach	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	28 (80)	38 (97.43)	27 (87.10)	28 (84.85)	34 (89.47)	155 (88.07)
No	07 (20)	01 (2.56)	04 (12.90)	05 (15.15)	04 (10.53)	21 (11.93)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)

α=0.05, Degree of freedom=4, p-value=0.210640853, χ^2-calculated value=5.849911612, χ^2-tabulated value=9.487729037, Significant=No

The *Table* XVIII indicates that the majority of the respondents in JMI (80%), DU (97.43%), JNU (87.10%), JH (84.85%) and IPU (89.47%) stated that they asked to library staff for help. The Chi-square value indicates that there is no significant difference in the responses received regarding approach towards library staff for help by the users of all the five universities.

Table XIX: Helpfulness of the Library Staff

Opinion	***JMI (N=28)***	***DU (N=38)***	***JNU (N=27)***	***JH (N=28)***	***IPU (N=34)***	***Total (N=155)***
Helpful	24 (85.71)	29 (76.31)	23 (85.18)	23 (82.14)	34 (100)	133 (85.81)
Unhelpful	03 (10.71)	04 (10.53)	-	02 (7.14)	-	09 (5.81)
Undecided	01 (3.57)	05 (13.16)	04 (14.81)	03 (10.71)	-	13 (8.39)
Total	28 (100)	38 (100)	27 (100)	28 (100)	34 (100)	155 (100)
α=0.05, Degree of freedom=8, p-value=0.091138763, χ^2-calculated value=13.65757914, χ^2-tabulated value=15.50731306, Significant=No						

The *Table* XIX indicates that the majority of the respondents in JMI (85.71%), DU (76.31%), JNU (85.18%), JH (82.14%) and IPU (100%) stated that library staff are helpful. Statistical application reveals that there is no significant difference in the responses received regarding helpfulness of the library staff from the users of all the five universities.

Table XX: Participation in Orientation/Training Programmes

Participation	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	02 (5.71)	10 (25.64)	01 (3.22)	-	07 (18.42)	20 (11.36)
No	33 (94.28)	29 (74.36)	30 (96.77)	33 (100)	31 (81.58)	156 (88.64)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.001807512, χ^2-calculated value=17.1499096, χ^2-tabulated value=9.487729037, Significant=Yes						

The *Table* XX indicates that the majority of the respondents in JMI (94.28%), DU (74.36%), JNU (96.77%), JH (100%) and IPU (81.58%) have not participated in orientation/training programmes such as Information Literacy & Competency, User Education, etc. The Chi-square value indicates that there is a significant difference in the responses received regarding participation in orientation/training programmes by the users of all the five universities.

Table XXI: Consult other Libraries for Information

Consult	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	33 (94.28)	37 (94.87)	25 (80.64)	30 (90.91)	30 (78.95)	155 (88.07)
No	02 (5.71)	02 (5.13)	06 (19.35	03 (9.09)	08 (21.05)	21 (11.93)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.09558131, χ^2-calculated value=7.892895306, χ^2-tabulated value=9.487729037, Significant=No						

The *Table* XXI indicates that the majority of the respondents in JMI (94.28%), DU (94.87%), JNU (80.64%), JH (90.91%) and IPU (78.95%) stated that they are consulting other libraries for information related to their subject or research field. Statistical application reveals that there is no significant difference in the responses received regarding consulting other libraries for information by the users of all the five universities.

Table XXII: Satisfaction Regarding E-resources Facility

Satisfaction Level	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Up to 25%	11 (31.43)	08 (28.51)	01 (3.22)	13 (39.39)	04 (10.53)	37 (21.02)

26 to 50%	10 (28.57)	14 (35.90)	11 (35.48)	05 (15.15)	06 (15.79)	46 (26.14)
51 to 75%	12 (34.28)	10 (25.64)	17 (54.84)	15 (45.45)	24 (63.16)	78 (44.32)
76 to 100%	-	-	01 (3.22)	-	04 (10.53)	05 (2.84)
Can't say	02 (5.71)	07 (17.95)	01 (3.22)	-	-	10 (5.68)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=16, p-value=8.36073E-06, χ^2-calculated value=52.7252816, χ^2-tabulated value=26.2962276, Significant=Yes						

The *Table* XXII indicates that the majority of the respondents in JMI (34.28%), JNU (54.84%), JH (45.45%) and IPU (63.16%) stated that their satisfaction level is between 51 to 75%, whereas the majority of the respondents in DU (35.90%) stated that their satisfaction level regarding e-resources facility provided by their respective libraries is between 26 to 50%. Statistical application indicates that there is a significant difference in the satisfaction regarding e-resources facility among the users of all the five universities.

Table XXIII: Helpfulness of Library in Research Work

Opinion	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	29 (82.86)	37 (94.87)	29 (93.55)	33 (100)	37 (97.37)	165 (93.75)
No	06 (17.14)	02 (5.13)	02 (6.45)	-	01 (2.63)	11 (6.25)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.036839572, χ^2-calculated value=10.22265308, χ^2-tabulated value=9.487729037, Significant=Yes						

The *Table* XXIII indicates the respondents' opinion about what they felt about their respective libraries being generally helpful in pursuance of their research work. The above table reveals that the majority of the respondents in JMI (82.86%), DU (94.87%), JNU (93.55%), JH (100%) and IPU (97.37%) hold the view that they are getting help from their library. The Chi-square value indicates that there is a significant difference in the responses received regarding the helpfulness of library in research work among the users of all the five universities.

Table XXIV: Absence of Effective and Efficient Library Services Affecting Research Work

Opinion	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	28 (80)	29 (74.36)	23 (74.19)	33 (100)	35 (92.10)	148 (84.09)
No	07 (20)	10 (25.64)	08 (25.81)	-	03 (7.89)	28 (15.91)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.008931516, χ^2-calculated value=13.5364174, χ^2-tabulated value=9.487729037, Significant=Yes						

The research programme of a university very much depends on the efficiency of its library services extended to the users. If the library does not provide efficient services to its users, it adversely has an effect on their research programmes. The *Table* XXIV indicates that majority of the respondents in JMI (80%), DU (74.36%), JNU (74.19%), JH (100%) and IPU (92.10%) stated that their research work in the absence of efficient library services have been adversely affected. The Chi-square value indicates that there is a significant difference in the responses received regarding the absence of effective and efficient library services affecting research work among the users of all the five universities.

Table XXV: Lack of User' Orientation Programme Stands in the way of Research

Opinion	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	8 (22.86)	15 (38.46)	06 (19.35)	11 (33.33)	06 (15.79)	46 (26.14)
To some extent	21 (60)	24 (61.54)	15 (48.39)	17 (51.51)	25 (65.79)	102 (57.95)
No	06 (17.14)	-	10 (32.26)	05 (15.15)	07 (18.42)	28 (15.91)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=8, p-value=0.021109361, χ^2-calculated value=18.01566345, χ^2-tabulated value=15.50731306, Significant=Yes						

The *Table* XXV indicates that the majority of the respondents in JMI (60%), DU (61.54%), JNU (48.39%), JH (51.51%) and IPU (65.79%) stated that to some extent, lack of orientation programme comes in the way of their research work. Statistical application reveals that there is a significant difference in the responses received regarding the lack of user' orientation programme stands in the way of research from the users of all the five universities.

Table XXVI: ICT Enhances the Quality of Research

Opinion	***JMI (N=35)***	***DU (N=39)***	***JNU (N=31)***	***JH (N=33)***	***IPU (N=38)***	***Total (N=176)***
Yes	32 (91.43)	31 (79.49)	28 (90.32)	33 (100)	36 (94.74)	160 (90.91)
No	03 (8.57)	08 (28.51)	03 (9.68)	-	02 (5.26)	16 (9.09)
Total	35 (100)	39 (100)	31 (100)	33 (100)	38 (100)	176 (100)
α=0.05, Degree of freedom=4, p-value=0.127949093, χ^2-calculated value=7.154426264, χ^2-tabulated value=9.487729037, Significant=No						

The *Table* XXVI indicates that majority of the respondents in JMI (91.43%), DU (79.49%), JNU (90.32%), JH (100%) and IPU (94.74%) stated that Information and Communication Technology (ICT) enhances the quality of their research work. The Chi-square value reveals that there is no significant difference in the responses received regarding the ICT enhances the quality of research among the users of all the five universities.

VI. FINDINGS OF THE STUDY

Major findings of the study are:

[1] Response rate of the research scholars (74.67%) is more than the response rate of the faculty members (64%).
[2] The majority of the respondents (65.34%) are male
[3] The majority of the respondents (46.59%) visit to their libraries as and when needed.
[4] The majority of the respondents visit their libraries to borrow and return the books (62.50%) and to access e-resources (59.66%).
[5] The majority of the respondents made a suggestion for subscribing e-resources (21.59%) as compared to print resources (14.77%).
[6] More requests were attended regarding e-resources subscription (73.68%) as compared to print resources (69.23%).
[7] The majority of the respondents used print resources (98.86%), e-journals (94.89%) and online databases (61.93%) in their research work. E-books (35.79%) and audio-visual materials (9.66%) are less used by them in their research work.
[8] The majority of the respondents stated that the collection of e-journals (39.20%) is adequate, collection of print resources (43.18%) and online databases (38.07%) are satisfactory.
[9] The majority of the respondents have been consulting Science Direct (51.70%) in their research work as compare to Jstor (32.39%), Sage Journals Online (31.25%) and Wiley Interscience (27.84%), etc. Credo Reference (0.57%) is less used by them.
[10] The majority of the respondents (98.29%) have been using Google search engine to retrieve information related to their research work.
[11] The majority of the respondents (66.48%) have been using Phrase search techniques as compare to other techniques such as Field search (54.54%), Controlled vocabulary (13.07%), Truncation (9.66%) and Boolean operators (9.09%), etc.
[12] The majority of the respondents (68.75%) search the relevant materials related to their research work by self.
[13] The majority of the respondents (78.41%) stated that they consult the OPAC system to locate the needed information in their respective libraries.
[14] The majority of the respondents (63.04%) stated information given in the OPAC system is satisfactory.
[15] The majority of the respondents (98.29%) of the respondents stated that they are able to handle computer without any assistance.
[16] The majority of the respondents (75%) are satisfied with computer facilities.
[17] The majority of the respondents (88.07%) stated that they asked to staff for help.

[18] The majority of the respondents (88.64%) have not participated in orientation/training programmes such as Information Literacy & Competency, User Education, etc.

[19] The majority of the respondents (88.07%) stated that they are consulting other libraries for information related to their subject or research field. It is obvious that a large number of researchers are using other libraries besides their own respective university libraries.

[20] The majority of the respondents (44.32%) stated that their satisfaction level is between 51 to 75% regarding e-resources facilities provided by their respective libraries.

[21] The majority of the respondents (93.75%) stated that their respective libraries being generally helpful in pursuance of their research work.

[22] The majority of the respondents (84.09%) stated that their research work have been affected in the absence of effective and efficient library services.

[23] The majority of the respondents (57.95%) stated that to some extent, lack of user' orientation programmes come in the way of their research work.

[24] The majority of the respondents (90.91%) stated that Information and Communication Technology (ICT) enhances the quality of their research work.

VII. CONCLUSION

Now-a-days, university libraries play a very important role in making the university's academic programmes successful. In library literature, the 'Library' has been recognized as the heart of an educational institution and a centre for research. It is said to be like a hub of a wheel whose spokes radiate out to all the departments of learning. As the prime necessity for a university is a good library with the balanced and adequate collection, which can satisfy the needs of the university faculties, research scholars, students and help them to promote in advanced study and research programmes. The role of the library professionals is much more significant as they are to handle the information. It is very important for them to know the information and also to provide it to the researchers who need it, at the right time.

REFERENCE

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