7. Data Analysis and Interpretation

Contents

7.1 Introduction

This chapter is based on primary data gathered by rigorous survey using structured questionnaire to obtain opinion from the users of the university libraries of state of the Gujarat. Data analysis is the most vital part of any research. The data collected is analysed, processed and represented in a meaningful manner to draw the desired conclusion to make sense to a researcher or the reader. This makes the understanding of the subject clearer. Analysis is conducted on the data collected from library staff working at various universities. It enables in drawing the desired final conclusion and brings about various changes in the existing systems. It helps in future decision making, strategy development and widens opportunity and direction for the future research.

7.2 Analysis of Demographic Data

7.2.1 Frequencies Demographic Variables

Frequency Analysis of Demographic Data collected for Age of respondents is represented in tabulation form in below table.

Table 7-1 Age of Respondents

Sr.	Variables	Sub Categories	Frequency	Percentage
1	Age	20 & Below	24	4.9
		21 – 30	183	37.3
		31 – 40	167	34.1
		41 – 50	75	15.3
		51 – 60	36	7.3
		61 & Above	5	1

From Table 7.1 We can say that Majority of respondents (37.3%) are from age group of 21-30 age. Followed by age group 31-40 (34.1%). Only 1% of

respondents are from age group of 61 & above. Representation of the same can be graphically presented by below chart 7.1.
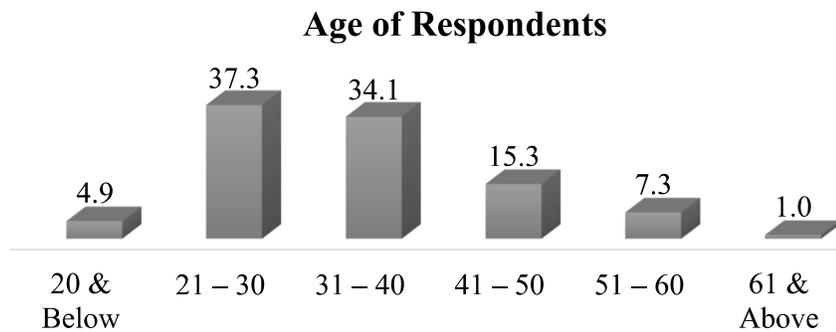
Age of Respondents

Figure 7-1 Age of Respondents

Representation of Gender of Respondents are tabulated in below table.

Table 7-2 Gender of Respondents

Sr.	Variables	Sub Categories	Frequency	Percentage
2	Gender	Male	262	53.5
		Female	228	46.5

From Above table 7.2, we can say that 53.5 % respondents are Male and 46.5 % respondents are Female. Same can be graphically represented in Chart 7.2
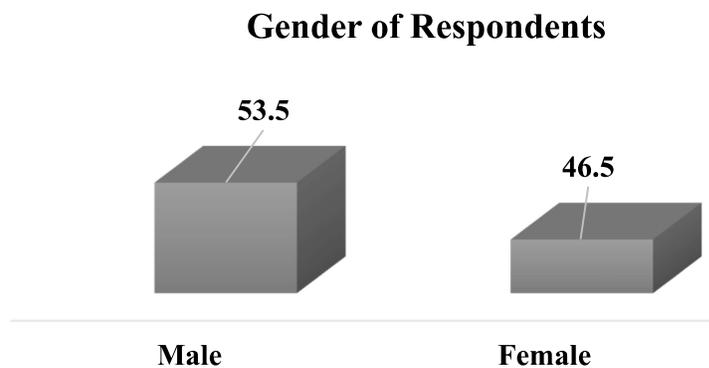
Gender of Respondents

Figure 7-2 Gender of Respondents

Sr.	Variables	Sub Categories	Frequency	Percentage
3	Designation of Library Users	U.G./P.G. Student	113	23.1
		Research Scholar	99	20.2
		Assistant Professor	231	47.1
		Associate Professor	40	8.2
		Principal/ HOD/ Dean of Faculty	7	1.4

From Above table 7.3, we can say that Majority of respondents (47.1%) are Assistant Professor followed by UG and PG Students (23.1%). While 20.2 % of Respondents are Research Scholars, 8.2% are Associate Professor and 1.4 % is Principal/ HOD or Dean of Faculty. Designatin of Library Users is represented in Chart 7.3

- U.G./P.G. Student
- Research Scholar
- Assistant Professor
- Associate Professor
- Principal/ HOD/ Dean of Faculty
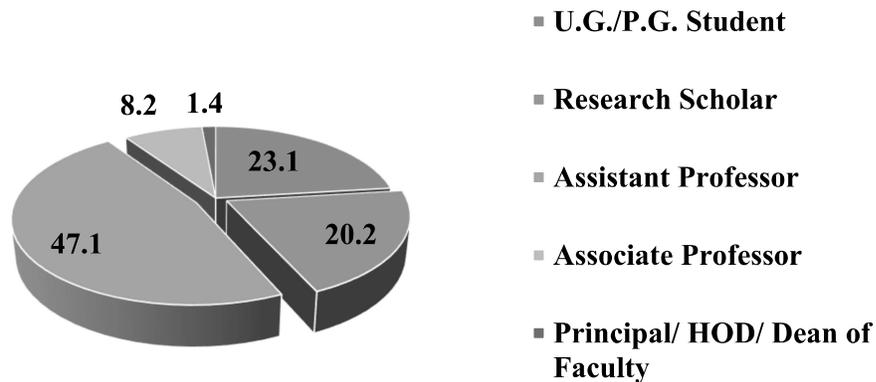
Figure 7-3 Designation of Library Users

7.2.2 Frequency analysis of data

Frequency Analysis of data collected is as under.

7.2.2.1   How often you visit your library?

Table 7-4 Users visit to library

Variable	Frequency of visit	Frequency	Percentage
How often you visit your library?	Daily	123	25.1
	Every alternate day	57	11.6
	Twice a week	94	19.2
	Weekly	103	21
	Fortnightly	82	16.7
	Monthly	31	6.3

From Above table 7.4 we can say that majority of users are visiting library. While analyzing data 25.1 % users admitted that they visit library on daily basis while 11.6 % and 19.2% are visiting every alternate day or twice a week. 21% users have reported that they visit library once a week. Only 6.3% of users have visited library once in a month. Same has been represented in graphical chart in 7.4.
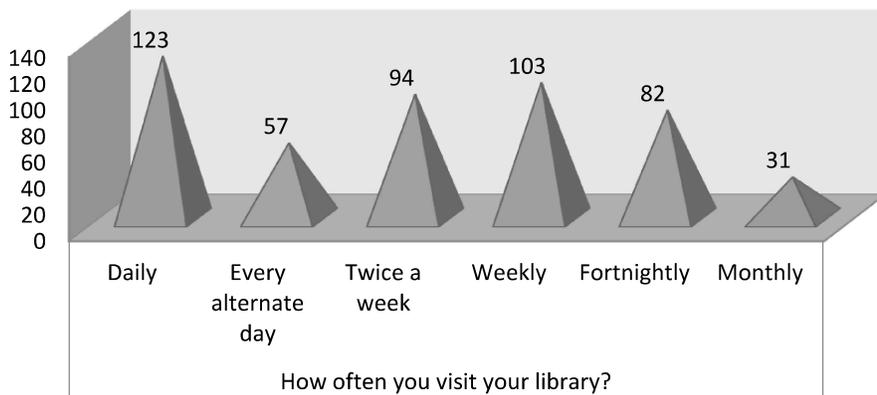
7-4 Users visit to library

7.2.2.2 Have you visited your university library website /portal?

Table 7-5 Visit of Library website / Portal

University library website /portal	Frequency	Percent
Yes	349	71.2
No	141	28.8
Total	490	100.0

In order to learn more about respondents' actual use of or familiarity with their university library, the researcher asked them if they had visited the library's website or portal. Majority of respondents 71.1% have replied positively about this question while 28.8% confess that they have not visited library portal or website. Same can be represented in chart

Figure 7-5 Visit of University Library Website

7.2.2.3 How often do you use Internet?

In order to check use of web 2.0 tools primarily users have to be use to with basic internet services. Below table is showing data of awareness and usage of internet on day to day base.

Table 7-6 Use of internet

Use of Internet	Frequency	Percent
Daily	302	61.6
Every alternate day	164	33.5
Twice in a week	9	1.8
Weekly	7	1.4
Fortnightly	7	1.4
Monthly	1	.2
Total	490	100.0

During collection of data majority of users 61.6% responded that they are daily users of internet and 33.5% use every alternate day. Only 0.2% users revealed that they are not using internet very often or once in a month.

How often do you use Internet?
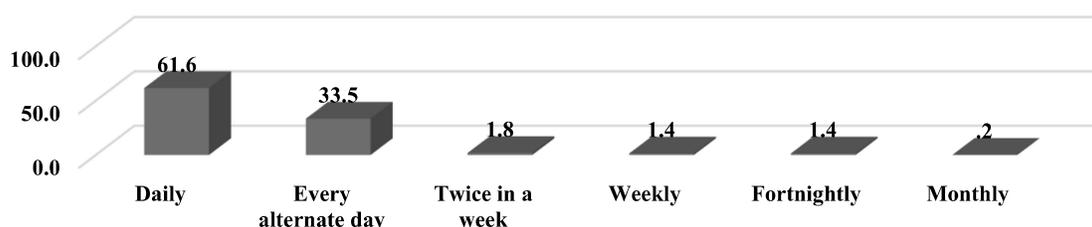
Figure 7-6 Use of internet

7.2.2.4   How much time do you spend online for acquiring and sharing knowledge and information?

Table 7-7 Time spending online for Academic use

Time	Frequency	Percent
<1 Hour in a day	124	25.3
1-3 Hour In a day	257	52.4
3-5 Hours in a day	67	13.7
More than 5 Hours	42	8.6
Total	490	100.0

Uses asked to respondent about how much time they spend online for academic use or acquiring or sharing knowledge and information. 52.4 % users have responded that they spend 1-3 Hour in a day for academic use. 25.3% uses are spending more than 1 hour in a day. 13.7% users are spending 3.5 hours and 8.6% users are spending more than 5 hours in a day for academic use.

How much time do you spend online for acquiring and sharing knowledge and information?
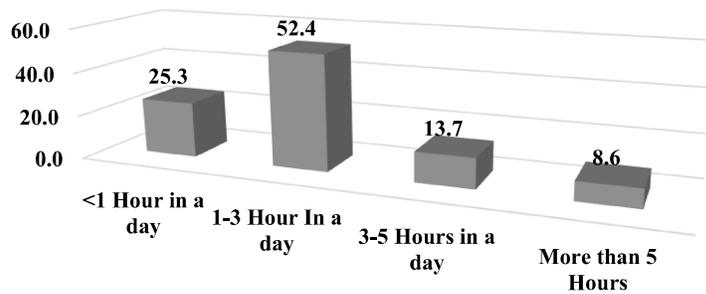
Figure 7-7 Time spend online

7.2.2.5   Does your Library provide internet facilities?

Table 7-8 Library providing Internet

Internet	Frequency	Percent
Yes	407	83.1
No	83	16.9
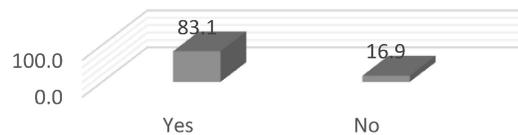
Figure 7-8 Library providing internet

Table 7.8 and Chart 7.8 represented that Majority of Libraries are provided Internet facility to its users.

7.2.2.6   How dependent you are on internet for academic purpose?

Table 7-9 Dependency on internet for academic purpose

Dependence on Internet	Frequency	Percent
Helpless without internet	80	16.3
Somewhat Dependent	229	46.7
Totally dependent	78	15.9
Dependent	75	15.3
Not at all Dependent	28	5.7
Total	490	100.0

How dependent you are on internet for academic purpose?
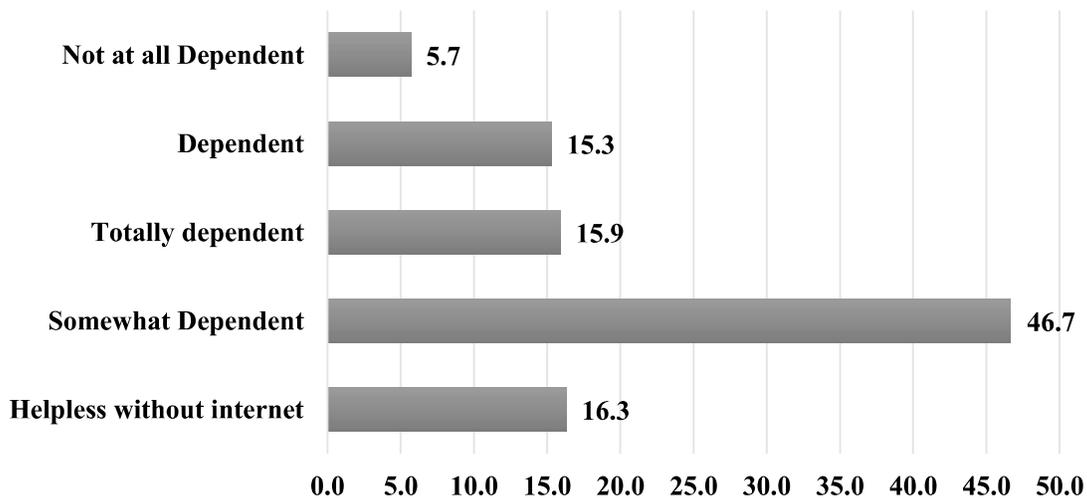
Figure 7-9 Dependency on internet for academic purpose

46.7 users have respondents revealed that they are somewhat dependent on Internet for academic purpose and 16.3% are helpless without internet. Only 5.7% told that they are not dependent on internet for any type of academics.

7.2.2.7   Where Do You Usually Use The Internet For Academic Purpose?

Table 7-10 Place of Using Internet for Academic Purpose

Where Do You Usually Use The Internet For Academic Purpose?			
Place	**Answer**	**Frequency**	**Percent**
Home	Yes	226	46.1
	No	264	53.9
	Total	490	100
Institute – University	Yes	229	46.7
	No	261	53.3
	Total	490	100
Library	Yes	105	21.4
	No	385	78.6
	Total	490	100
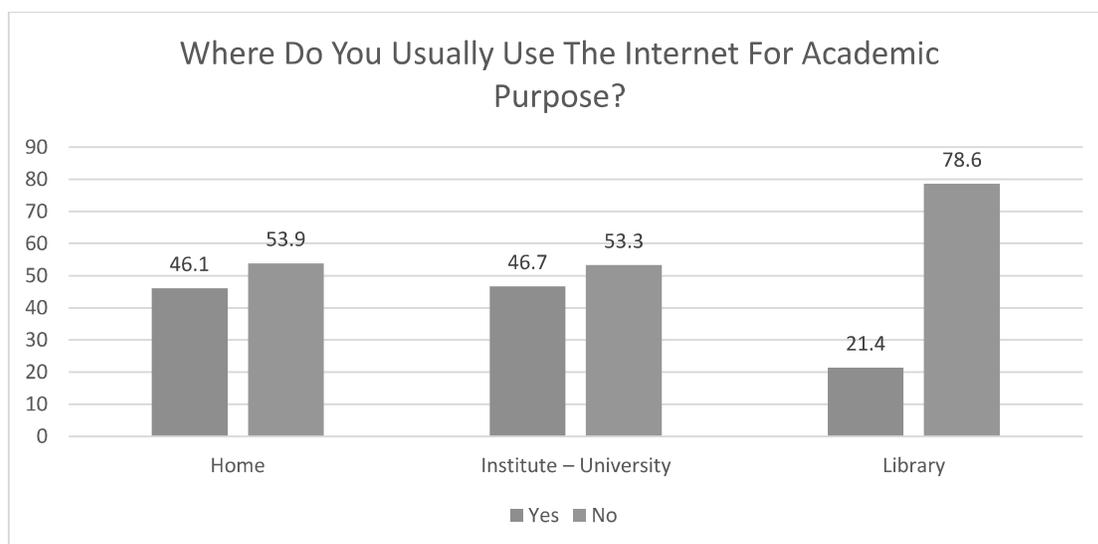
Figure 7-10Place of Using Internet for Academic Purpose

Respondents have revealed that Home and Institute – University internet facilities are preferred options for users (around 46-47 %) while library is least preferred place for internet use for academic activity.

7.2.2.8 With What Device Do You Use The Internet?

Table 7-11Prefered device for academic use of internet

With What Device Do You Use The Internet?			
Device	**Answer**	**Frequency**	**Percent**
Desktop	Yes	140	28.6
	No	350	71.4
	Total	490	100
Mobile	Yes	366	74.7
	No	124	25.3
	Total	490	100
Tablet	Yes	41	8.4
	No	449	91.6
	Total	490	100
Laptop	Yes	247	50.4
	No	243	49.6
	Total	490	100
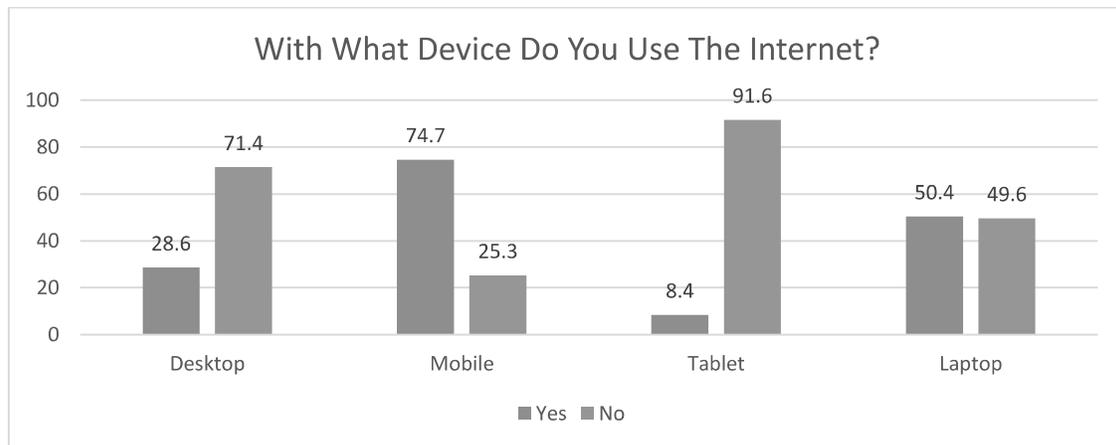
Figure 7-11 11Prefered device for academic use of internet

Majority of users (74.7%) replied that they preferred to uses mobile to use internet, almost half of the users (50.4%) preferred that they uses laptop for academic uses of internet while Desktop (28.6%) and Tablet (8.4%) are least preferred options for users to use.

7.2.2.9 How frequently you are using web 2.0 tools

Table 7-12 Frequency of using Web 2.0 tools

How Frequently you are using web 2.0 tools	Never	Fortnightly	Weekly	Every alternate day	Daily
Blogs (Blogger, WordPress)	136	109	96	81	68
Wikis (Wikipedia)	38	81	108	128	135
Instant Messaging (WhatsApp, F. Messenger, Hike)	13	19	46	78	334
RSS feeds (Feedly etc.)	140	88	122	95	45
Social Networking (FB, Instagram, Twitter)	41	43	81	107	218
Podcasts (YouTube, Swayam)	39	44	99	136	172
Tagging (Academia, Google Scholar, Research Gate, Orchid)	37	69	95	134	155
Mash up (Mapping and location)	74	92	129	112	83
Federated search (Discovery Search)	77	69	144	130	70
Personalized applications (Android Apps/ IOS apps)	55	82	106	122	125
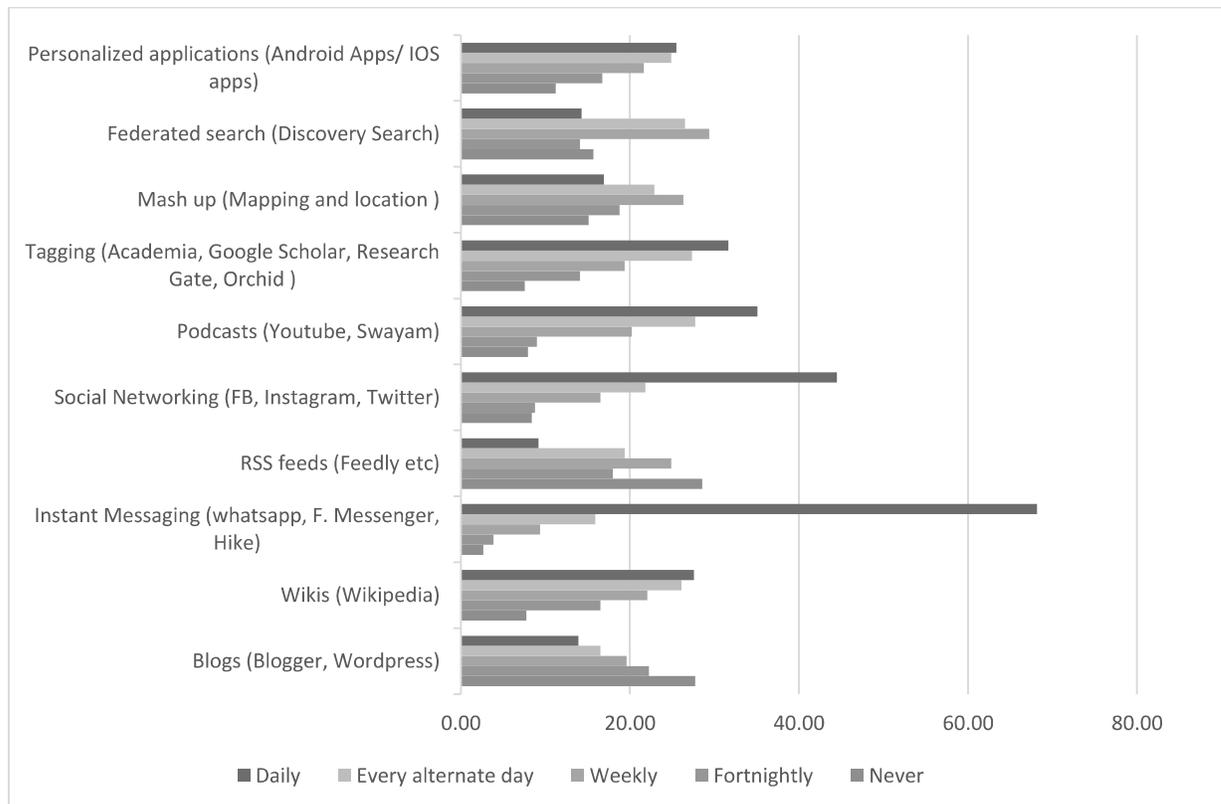
Figure 7-12 Frequency of using web 2.0 tools

Table 7-13 Frequency of Web 2.0 tools use Mean and Mean rank

How Frequently you are using web 2.0 tools	Mean	Rank
Blogs (Blogger, WordPress)	2.67	9
Wikis (Wikipedia)	3.49	5
Instant Messaging (WhatsApp, F. Messenger, Hike)	4.43	1
RSS feeds (Feedly etc.)	2.63	10
Social Networking (FB, Instagram, Twitter)	3.85	2
Podcasts (YouTube, Swayam)	3.73	3
Tagging (Academia, Google Scholar, Research Gate, Orchid)	3.61	4
Mash up (Mapping and location)	3.08	8
Federated search (Discovery Search)	3.1	7
Personalized applications (Android Apps/ IOS apps)	3.37	6

Table 7.13 is representation of Mean of using various web 2.0 tools. Majority of tools have Mean of more than 2.5 thus we can say that majority of library users are aware about various web 2.0 tools. Instant Messaging and social Networking are among topmost favourite tools of uses and Rss Feeds and Blogs are least used tools.

7.2.2.10   What is your purpose of using Web 2.0 technologies?

Table 7-14 Purpose of using Web 2.0 technologies

What is your purpose of using Web 2.0 technologies?	Never	Hardly Ever	Sometimes	Often	Always
Fun/Entertainment	32	56	139	121	142
Publishing Acquiring information (Postings on FB, WhatsApp, and Instagram. etc.)	20	35	111	162	162
Academic purposes	4	18	64	165	239
Accessing library services	29	58	118	167	118
Maintain online diaries	98	71	119	113	89
Professional collaborations	50	70	108	148	114

Contact with family members, friends, etc.	13	34	92	143	208
For Chat	28	42	92	159	169
View / Downloading Audio – Videos	16	37	103	154	180
Add tags to internet bookmarks, Research papers, Pictures, Graphs	21	49	109	160	151
Liven up websites	61	59	139	132	99
Search multiple websites	9	45	103	162	171
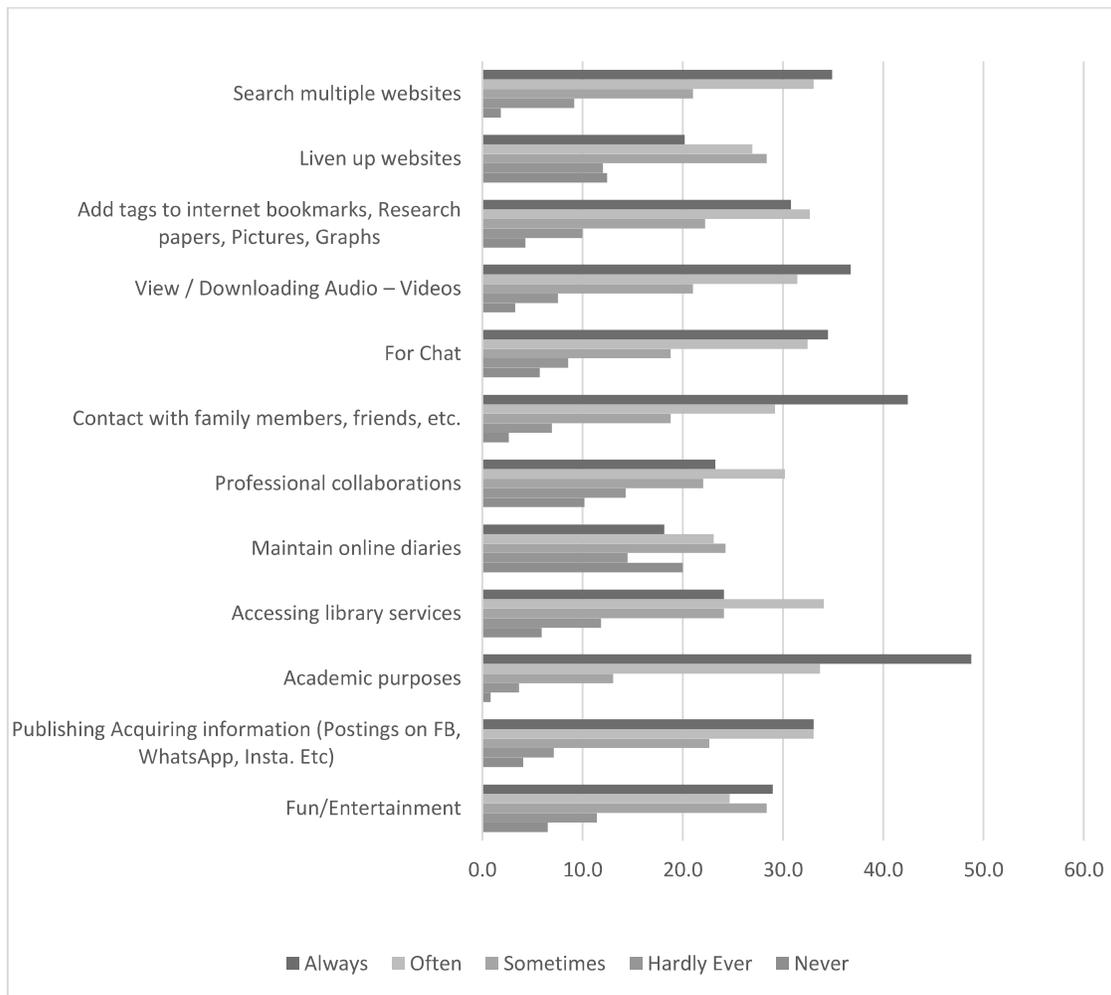
Table 7-15 Mean and Mean Rank of purpose of using Web 2.0

What is your purpose of using Web 2.0 technologies?	Mean	Rank
Fun/Entertainment	3.58	9
Publishing Acquiring information (Postings on FB, WhatsApp, and Instagram. etc.)	3.84	5
Academic purposes	4.26	1
Accessing library services	3.59	8
Maintain online diaries	3.05	12
Professional collaborations	3.42	10
Contact with family members, friends, etc.	4.02	2
For Chat	3.81	6
View / Downloading Audio – Videos	3.91	3
Add tags to internet bookmarks, Research papers, Pictures, Graphs	3.76	7
Liven up websites	3.3	11
Search multiple websites	3.9	4

From the above table 7.15, we can conclude that majority of constructs have mean of more than 3, thus we can conclude that majority of users are using web 2.0 tools very often. Majority of users are using web 2.0 tools for academic purpose followed by to connect with friends and family members and view or downloading audio and videos. While Maintaining Online diaries and Live on various website are least purposeful thing for users.

7.2.2.11 Would you like your university library to provide library services using Web 2.0 technologies?

Table 7-16 Type of Services/ Information library should provide

What type of library and information services would you like your university library to Provide using Web 2.0 tools?	Never	Sometimes	Always
Posting General Information	30	145	315
Broadcasting News, Events(Programmes), announcement of Institution, University and college library	34	130	326
Giving information about new arrivals of books, periodicals and Information literacy instructions	30	127	333
Collecting feedback/suggestions	45	169	276
Publishing discussions/interviews	124	170	196
User orientation	49	177	264
Posting book reviews/book discussions	53	147	290
Publishing reports of institution and newsletters	39	166	285
Developing/managing library policies/procedures Resource listings	57	164	269
Providing online reference service	40	133	317
Providing guidance with library resources	33	137	320
Marketing library services	80	181	229
Library orientation tours	83	169	238
Sharing interviews/speeches	61	167	262
Videos of seminars/conferences/workshops	41	151	298
Audio/Video lectures of Teachers on the their subject	43	123	324
Allow users to assign tags to their favourite contents in library catalogue through personalized login	61	144	285
Providing simultaneous search on multiple library catalogues (OPACs)	49	159	282

From above table 7.16, we can conclude that users are demanding more and more library services and information with help of web 2.0 tools.
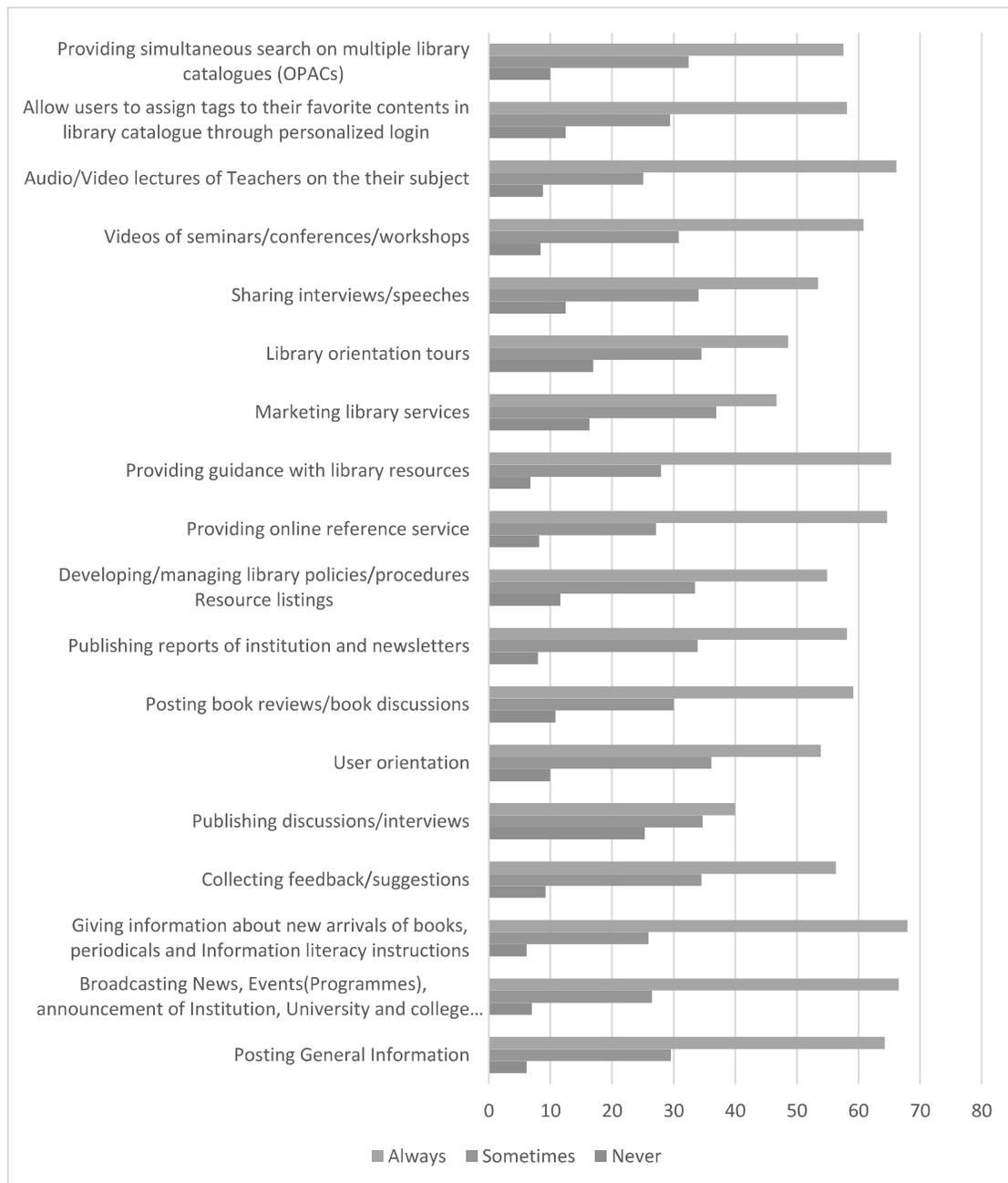
Figure 7-13 Type of Services/ Information library should provide

7.2.2.12 Obstacles from users point of view for implementation of web 2.0

Table 7-17 Obstacles in using web 2.0 tools

Obstacles	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Lack of awareness	23	41	106	157	163
Lack of skill	28	54	100	201	107
Lack of Connectivity	31	55	119	178	107
Lack of technical knowledge	27	72	115	167	109
Lack of technical support	29	72	116	157	116
Privacy concerns	27	58	152	146	107
Not Interested	54	84	151	134	67
Reluctance to Change	36	68	143	147	96
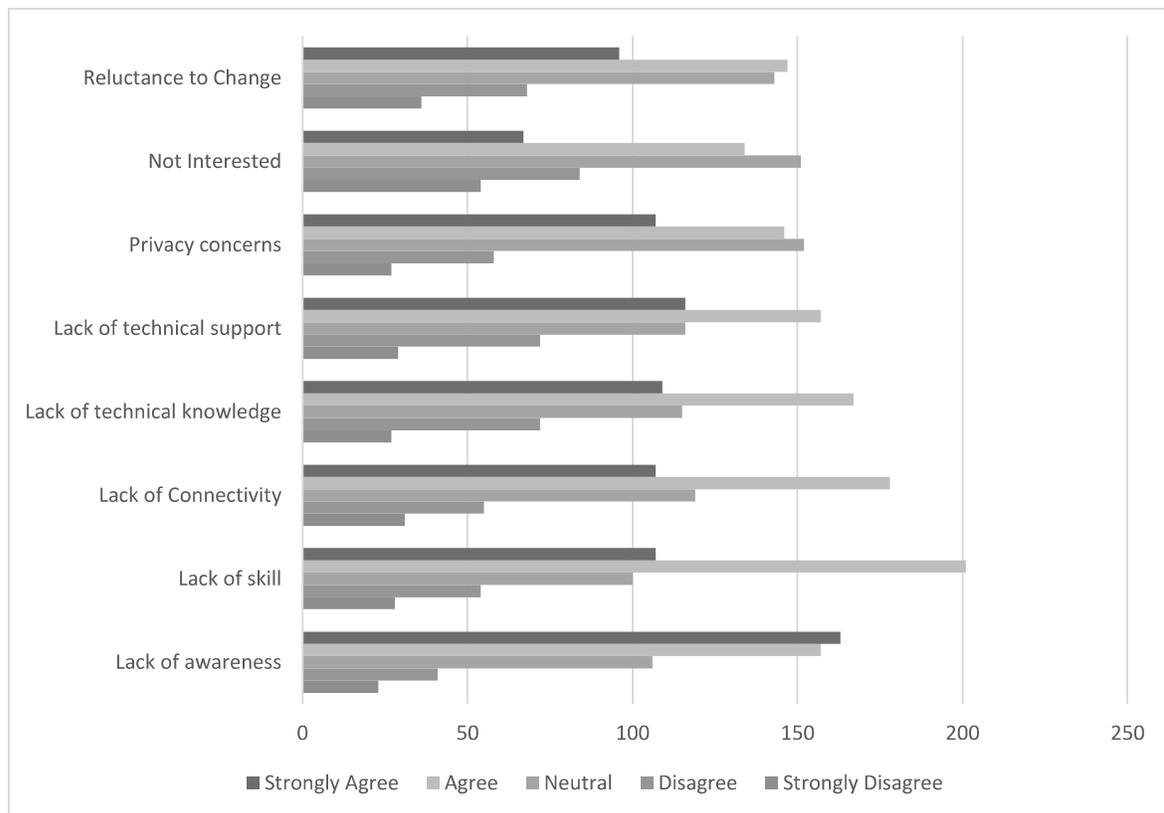
Figure 7-14 Obstacles in using web 2.0 tools

7.2.2.13　Frequency analysis of PE

Table 7-18 Frequency analysis of PE

Constructs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PE1 - Web 2.0 services are useful in my studies	5	5	57	160	263
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	7	11	61	192	219
PE3 - My academic performance increases after using these services	6	10	79	199	196
PE4 - The services make my academic activities easy to accomplish	6	13	93	180	198
PE5 - I can get required information well in time by using these services	10	14	69	197	200
PE6 - My productivity (output) increases in my studies by using these services	10	11	89	182	198
PE7 - I can get accurate information by using these services	8	17	89	188	188
PE8 - It is easy to use these services	11	11	83	207	178
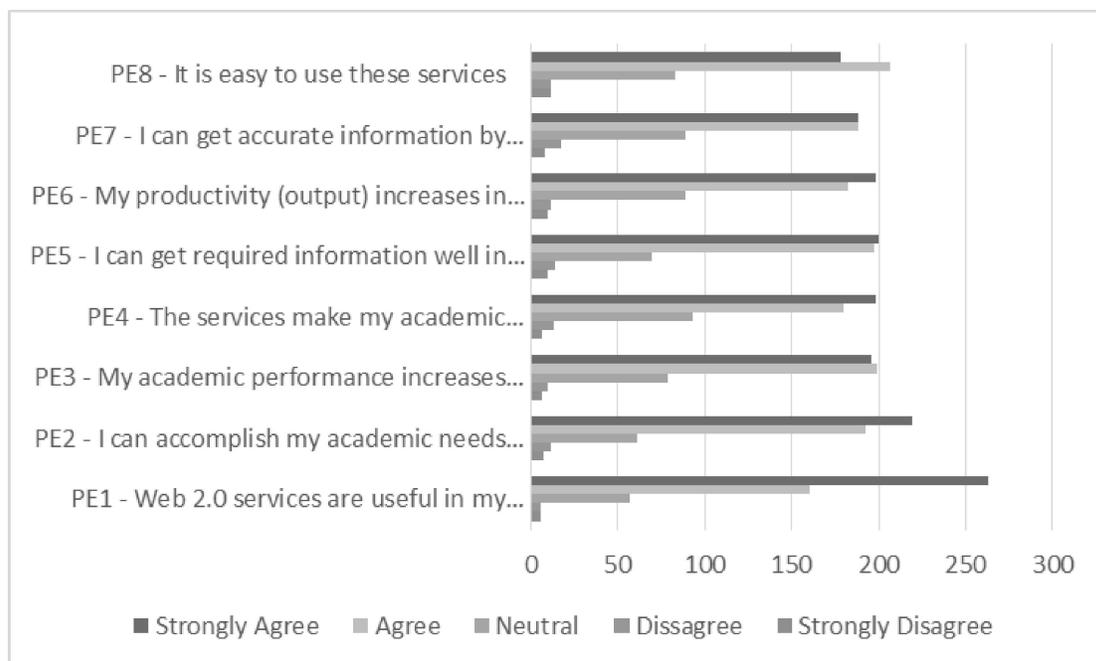
Figure 7-15 frequency of PE

7.2.2.14   Frequency analysis of EE

Table 7-19 Frequency analysis of EE

Constructs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EE1 - It is easy to navigate the library website	11	19	86	195	179
EE2 - I quickly find information from these services that I need	11	13	81	182	203
EE3 - Learning to use these services is easy for me	10	12	85	198	185
EE4 - It is easy to use this website even on a first visit	10	18	97	200	165
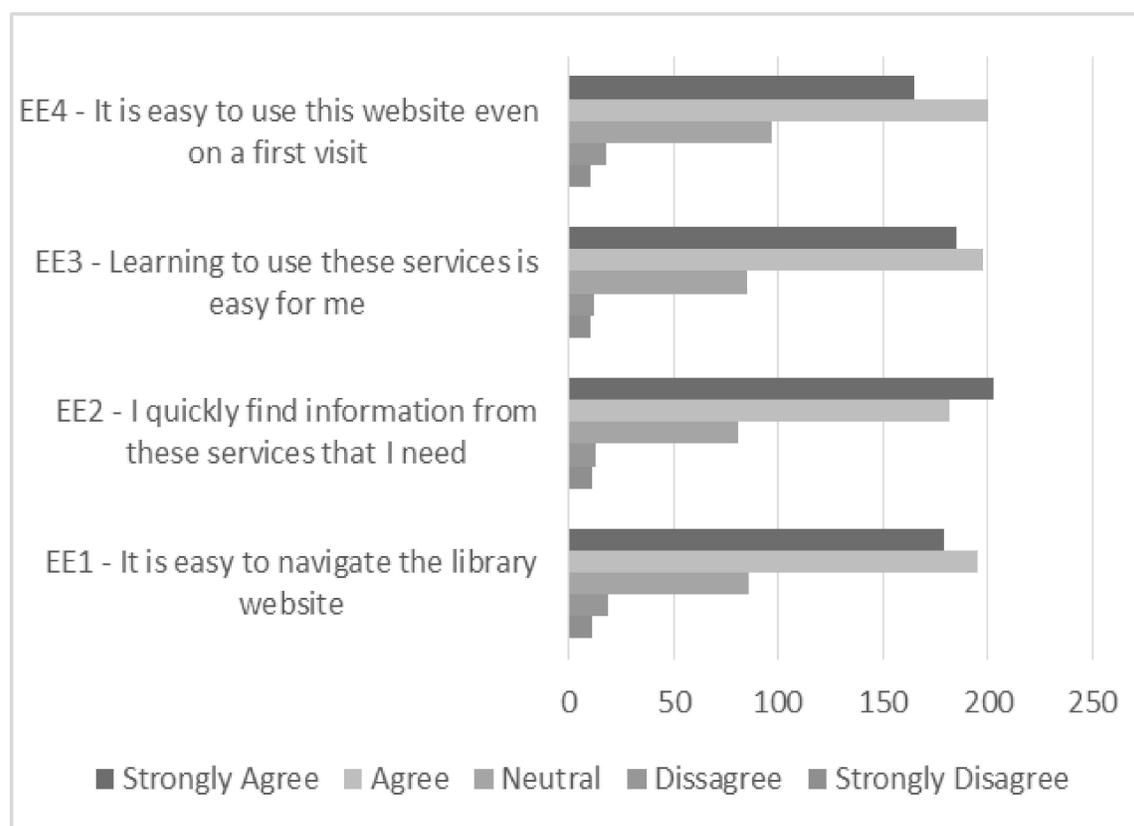
Figure 7-16 Frequency analysis of EE

7.2.2.15 Frequency analysis of SI

Table 7-20 Frequency analysis of SI

Constructs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SI1 - My tutors/teachers influence my behaviour to use these services	16	25	107	188	154
SI2 - Regional/main campus staff influences my behaviour to use these services	16	19	128	180	147
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	16	25	114	180	155
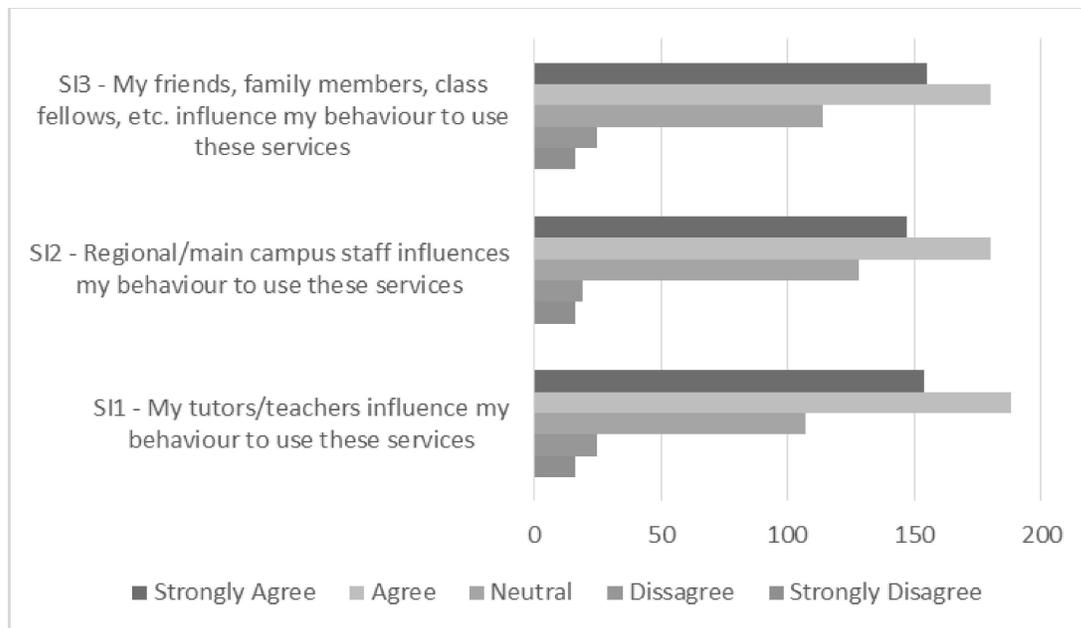
Figure 7-17 Frequency analysis of SI

7.2.2.16   Frequency analysis of FC

Table 7-21 Frequency analysis of FC

Constructs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FC1 - I have resources (computer, Internet etc.) to use these services	9	12	72	189	208
FC2 - I have knowledge to use these services	10	16	72	193	199
FC3 - I have skills to use these services	8	14	83	183	202
FC4 - Online help is available to use these services	7	18	81	187	197
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	8	12	81	191	198
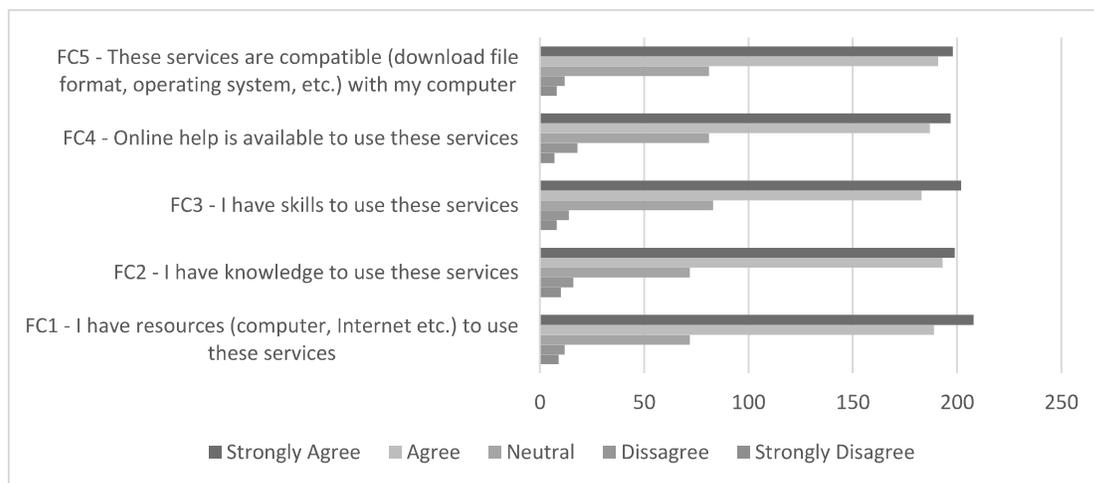
Figure 7-18 Frequency analysis of FC

7.2.2.17   Frequency analysis of BI

Table 7-22 Frequency analysis of BI

Constructs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BI1 - I like using these services for getting information	8	11	72	200	199
BI2 - I intend to continue using these Web-based services in my studies	7	8	90	191	194
BI3 - I feel I will keep on using these services even after my studies	7	11	74	200	198
BI4 - I will recommend the use of these services to other students	5	13	75	178	219
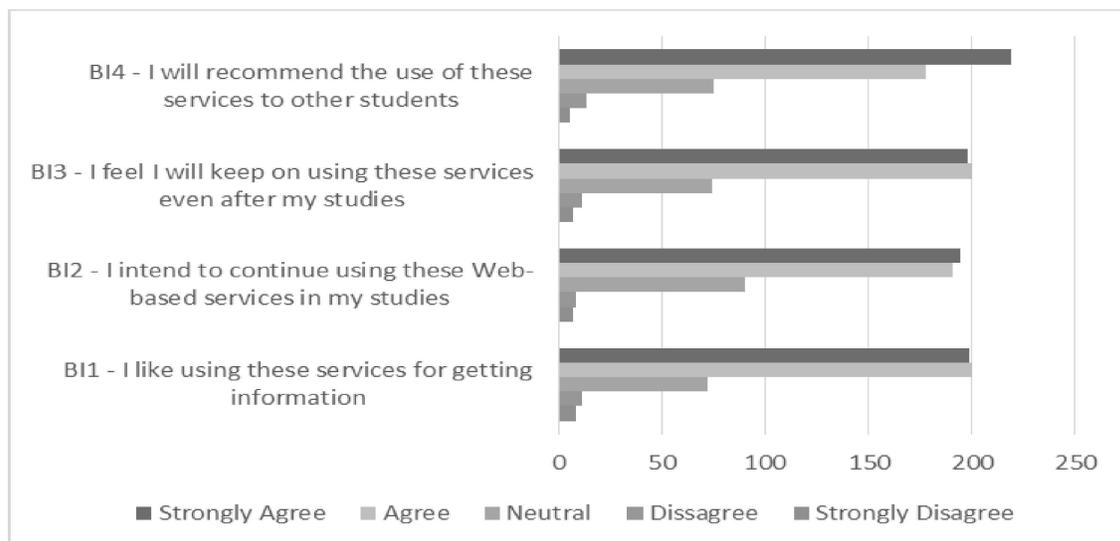
Figure 7-19 Frequency analysis of BI

Statistics	Mean	Std. Deviation
PE1 - Web 2.0 services are useful in my studies	4.37	0.807
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	4.23	0.858
PE3 - My academic performance increases after using these services	4.16	0.854
PE4 - The services make my academic activities easy to accomplish	4.12	0.892
PE5 - I can get required information well in time by using these services	4.15	0.909
PE6 - My productivity (output) increases in my studies by using these services	4.12	0.921
PE7 - I can get accurate information by using these services	4.08	0.92
PE8 - It is easy to use these services	4.08	0.905
EE1 - It is easy to navigate the library website	4.04	0.948
EE2 - I quickly find information from these services that I need	4.13	0.934
EE3 - Learning to use these services is easy for me	4.09	0.909
EE4 - It is easy to use this website even on a first visit	4	0.931
SI1 - My tutors/teachers influence my behaviour to use these services	3.9	1.011
SI2 - Regional/main campus staff influences my behaviour to use these services	3.86	0.997
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	3.88	1.018
FC1 - I have resources (computer, Internet etc.) to use these services	4.17	0.898
FC2 - I have knowledge to use these services	4.13	0.923
FC3 - I have skills to use these services	4.14	0.909
FC4 - Online help is available to use these services	4.12	0.911
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	4.14	0.892
INT1 - I like using these services for getting information	4.17	0.874
INT2 - I intend to continue using these Web-based services in my studies	4.14	0.87
INT3 - I feel I will keep on using these services even after my studies	4.17	0.865
INT4 - I will recommend the use of these services to other students	4.21	0.869

7.3   Findings from Inferential Statistics:

Inferential statistics allows us to make predictions ("inferences") from data. With inferential statistics, we take data from samples and make generalizations about a population. There are two main areas of inferential statistics (1)

Estimating parameters. This means taking a statistic from your sample data (for example the sample mean) and using it to say something about a population parameter (i.e. the population mean). (2) Hypothesis tests. This is where you can use sample data to answer research questions. For example, you might be interested in knowing if a new cancer drug is effective. Or if breakfast helps children perform better in schools. In this study Non-Parametric Test has been used as a part of inferential statistics.

Non-Parametric Tests are assumption free test because they make fewer assumptions than the other test. The analysis is then carried out on the rank rather than the actual data. By using the rank, effect of outliers can be eliminated. In this study Non-parametric Test like Mann-Whitney Test and Kruskal WallisTest & Chi- Square test have been used.

7.3.1 Findings from Mann-Whiteny Test

The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. The Mann-Whitney U test is often considered the nonparametric alternative to the independent t-test although this is not always the case. Some assumptions of this test are dependent variable should be measured at the ordinal or continuous level. Examples of ordinal variables include Likert items e.g., a 7-point scale or $5-$ point scale from "strongly agree" through to "strongly disagree", independent variable should consist of two categorical, independent groups. Example independent variables that meet this criterion include gender (2 groups: male or female)

In In this study, Mann-Whitney U Test is used to analyse difference in opinion about Web 2.0 Technology on Service of Libraries on the basis of gender. Five-

point Likert scale i.e. Strongly Agree to Strongly Disagree has been used for that purpose.

7.3.1.1 Influence of Gender on PE

H0: There is no difference in opinion of Gender on PE

H1: There is difference in opinion of Gender on PE

Table 7-23 Influence of Gender on PE

Statements (Sub-factors/Parameters)		N	Mean Rank	Sum of Ranks
PE1 - Web 2.0 services are useful in my studies	Male	262	245.46	64311.50
	Female	228	245.54	55983.50
	Total	490		
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	Male	262	244.60	64085.00
	Female	228	246.54	56210.00
	Total	490		
PE3 - My academic performance increases after using these services	Male	262	254.19	66597.50
	Female	228	235.52	53697.50
	Total	490		
PE4 - The services make my academic activities easy to accomplish	Male	262	244.97	64182.50
	Female	228	246.11	56112.50
	Total	490		
PE5 - I can get required information well in time by using these services	Male	262	244.36	64022.50
	Female	228	246.81	56272.50
	Total	490		
PE6 - My productivity (output) increases in my studies by using these services	Male	262	248.77	65177.00
	Female	228	241.75	55118.00
	Total	490		
PE7 - I can get accurate information by using these services	Male	262	250.35	65591.50
	Female	228	239.93	54703.50
	Total	490		
PE8 - It is easy to use these services	Male	262	254.19	66596.50
	Female	228	235.52	53698.50
	Total	490		

Table 7-24 Test Statistics: Influence of Gender on PE

Statements (Sub-factors/Parameters)	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
PE1 - Web 2.0 services are useful in my studies	29858.5	64311.5	-0.01	0.995
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	29632	64085	-0.16	0.87
PE3 - My academic performance increases after using these services	27591.5	53697.5	-1.57	0.117
PE4 - The services make my academic activities easy to accomplish	29729.5	64182.5	-0.1	0.925
PE5 - I can get required information well in time by using these services	29569.5	64022.5	-0.21	0.837
PE6 - My productivity (output) increases in my studies by using these services	29012	55118	-0.59	0.559
PE7 - I can get accurate information by using these services	28597.5	54703.5	-0.87	0.387
PE8 - It is easy to use these services	27592.5	53698.5	-1.56	0.119

As the p- value of all the sub factors is greater than 0.05 in above Table, so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of gender on PE. Opinion of female and male are same about PE

7.3.1.2 Influence of Gender on EE

H0: There is no difference in opinion of Gender on EE

H1: There is difference in opinion of Gender on EE

Table 7-25 Influence of Gender on EE

Statements (Sub-factors/Parameters)		N	Mean Rank	Sum of Ranks	Gender
EE1 - It is easy to navigate the library website	Male	262	250.92	65742.00	
	Female	228	239.27	54553.00	
	Total	490			
EE2 - I quickly find information from these services that I need	Male	262	253.67	66461.00	
	Female	228	236.11	53834.00	
	Total	490			
EE3 - Learning to use these services is easy for me	Male	262	248.89	65208.50	
	Female	228	241.61	55086.50	
	Total	490			
EE4 - It is easy to use this website even on a first visit	Male	262	251.18	65808.50	
	Female	228	238.98	54486.50	
	Total	490			

Table 7-26 Test Statistics: Influence of Gender on EE

Statements (Sub-factors/Parameters)	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
EE1 - It is easy to navigate the library website	28447	54553	-0.97	0.333
EE2 - I quickly find information from these services that I need	27728	53834	-1.47	0.143
EE3 - Learning to use these services is easy for me	28980.5	55086.5	-0.61	0.544
EE4 - It is easy to use this website even on a first visit	28380.5	54486.5	-1.01	0.312

As the p- value of all the sub factors is greater than 0.05 in Table 7, so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of gender on EE. Opinion of female and male are same about EE.

7.3.1.3 Influence of Gender on SI

H0: There is no difference in opinion of Gender on SI

H1: There is difference in opinion of Gender on SI

Table 7-27 Influence of Gender on SI

Statements (Sub-factors/Parameters)	N		Mean Rank	Sum of Ranks	Gender
SI1 - My tutors/teachers influence my behaviour to use these services	Male	262	258.42	67707.00
	Female	228	230.65	52588.00
	Total	490			
SI2 - Regional/main campus staff influences my behaviour to use these services	Male	262	254.61	66709.00
	Female	228	235.03	53586.00
	Total	490			
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	Male	262	261.42	68492.00
	Female	228	227.21	51803.00
	Total	490			

Table 7-28 Test Statistics: Influence of Gender on SI

Statements (Sub-factors/Parameters)	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
SI1 - My tutors/teachers influence my behaviour to use these services	26482	52588	-2.28	**0.023**
SI2 - Regional/main campus staff influences my behaviour to use these services	27480	53586	-1.61	0.108
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	25697	51803	-2.8	**0.005**

The mean rank in relation to **"SI1"** for the statement **"My tutors/teachers influence my behaviour to use these services"** is 258.42 for males and 230.65 for females but the (**P-value**) as shown in **Table** for this statement is less than 0.05, so we reject the null hypothesis at 5% level of significance which means

there is a significant influence of gender on SI. Male and Female tutors/teachers are explaining which serveries of library are useful for the students.

The mean rank in relation to **"SI3"** for the statement **"My friends, family members, class fellows, etc. influence my behaviour to use these services"** is 261.42 for males and 227.21 for females but the (***P-value***) as shown in **Table** for this statement is less than 0.05, so we reject the null hypothesis at 5% level of significance which means there is a significant influence of gender on SI. Male and Female friends, class fellows and family members influence the users for using library services.

7.3.1.4 Influence of Gender on FC

H0: There is no difference in opinion of Gender on FC

H1: There is difference in opinion of Gender on FC

Table 7-29 Influence of Gender on FC

Statements (Sub-factors/Parameters)	N	Mean Rank	Sum of Ranks	Gender
FC1 - I have resources (computer, Internet etc.) to use these services	Male	262	244.83	64146.00
	Female	228	246.27	56149.00
	Total	490		
FC2 - I have knowledge to use these services	Male	262	248.10	65003.50
	Female	228	242.51	55291.50
	Total	490		
FC3 - I have skills to use these services	Male	262	251.38	65862.00
	Female	228	238.74	54433.00
	Total	490		
FC4 - Online help is available to use these services	Male	262	247.63	64879.00
	Female	228	243.05	55416.00
	Total	490		
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	Male	262	250.97	65753.50
	Female	228	239.22	54541.50
	Total	490		

Table 7-30 Test Statistics: Influence of Gender on FC

Statements (Sub-factors/Parameters)	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
FC1 - I have resources (computer, Internet etc.) to use these services	29693	64146	-0.12	0.904
FC2 - I have knowledge to use these services	29185.5	55291.5	-0.47	0.64
FC3 - I have skills to use these services	28327	54433	-1.06	0.291
FC4 - Online help is available to use these services	29310	55416	-0.38	0.703
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	28435.5	54541.5	-0.98	0.326

As the p- value of all the sub factors is greater than 0.05 in Table 7.11, so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of gender on FC. Opinion of female and male are same about FC.

7.3.1.5 Influence of Gender on BI

H0: There is no difference in opinion of Gender on BI

H1: There is difference in opinion of Gender on BI

Table 7-31 Influence of Gender on BI

Statements (Sub-factors/Parameters)		N	Mean Rank	Sum of Ranks	Gender
INT1 - I like using these services for getting information	Male	262	244.14	63964.50	
	Female	228	247.06	56330.50	
	Total	490			
INT2 - I intend to continue using these Web-based services in my studies	Male	262	249.87	65466.00	
	Female	228	240.48	54829.00	
	Total	490			
INT3 - I feel I will keep on using these services even after my studies	Male	262	243.46	63786.00	
	Female	228	247.85	56509.00	
	Total	490			
INT4 - I will recommend the use of these services to other students	Male	262	246.49	64581.50	
	Female	228	244.36	55713.50	
	Total	490			

Table 7-32 Test Statistics: Influence of Gender on BI

Statements (Sub-factors/Parameters)	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
INT1 - I like using these services for getting information	29511.5	63964.5	-0.25	0.806
INT2 - I intend to continue using these Web-based services in my studies	28723	54829	-0.78	0.433
INT3 - I feel I will keep on using these services even after my studies	29333	63786	-0.37	0.713
INT4 - I will recommend the use of these services to other students	29607.5	55713.5	-0.18	0.857

As the p- value of all the sub factors is greater than 0.05 in Table 7.13, so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of gender on BI. Opinion of female and male are same about BI.

7.3.1.6 Hypothesis Results - Mann-Whiteny Test

1. H0: There is no difference in opinion of Gender on PE - Accepted
2. H0: There is no difference in opinion of Gender on EE - Accepted
3. H0: There is no difference in opinion of Gender on SI - Rejected
4. H0: There is no difference in opinion of Gender on FC - Accepted
5. H0: There is no difference in opinion of Gender on BI - Accepted

7.3.2 Findings from Kruskal Wallis Test

The Kruskal Wallis test is the non-parametric alternative to the One Way ANOVA. Non parametric means that the test doesn't assume your data comes from a particular distribution. It is sometimes called the one-way ANOVA on ranks, as the ranks of the data values are used in the test rather than the actual data points. The test determines whether the medians of two or more groups are

different. The Kruskal Wallis test will tell you if there is a significant difference between groups. However, it won't tell you which groups are different. In this study Kruskal Wallis Test is used to analyse difference in opinion about Web 2.0 Technology on Service of Libraries on the basis of age group, designation etc. Five-point Likert scale i.e. Strongly Agree to Strongly Disagree has been used for that purpose.

7.3.2.1 Influence of Age of Respondents on PE

H0: There is no difference in opinion of Age of Respondents on PE
H1: There is difference in opinion of Age of Respondents on PE

Table 7-33 Influence of Age of Respondents on PE

Statements (Sub-factors/Parameters)	Age	N	Mean Rank
PE1 - Web 2.0 services are useful in my studies	20 & Below	24	266.13
	21 – 30	183	256.40
	31 – 40	167	235.82
	41 – 50	75	244.39
	51 – 60	36	228.43
	61 & Above	5	210.40
	Total	490	
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	20 & Below	24	245.31
	21 – 30	183	258.63
	31 – 40	167	242.46
	41 – 50	75	235.33
	51 – 60	36	206.74
	61 & Above	5	298.80
	Total	490	
PE3 - My academic performance increases after using these services	20 & Below	24	247.42
	21 – 30	183	254.73
	31 – 40	167	245.38
	41 – 50	75	234.07
	51 – 60	36	236.43

	61 & Above	5	139.40
	Total	490	
PE4 - The services make my academic activities easy to accomplish	20 & Below	24	256.25
	21 − 30	183	257.82
	31 − 40	167	242.48
	41 − 50	75	235.94
	51 − 60	36	223.19
	61 & Above	5	147.90
	Total	490	
PE5 - I can get required information well in time by using these services	20 & Below	24	234.77
	21 − 30	183	255.97
	31 − 40	167	241.41
	41 − 50	75	230.59
	51 − 60	36	245.88
	61 & Above	5	271.40
	Total	490	
PE6 - My productivity (output) increases in my studies by using these services	20 & Below	24	215.25
	21 − 30	183	263.45
	31 − 40	167	241.76
	41 − 50	75	236.03
	51 − 60	36	221.39
	61 & Above	5	174.40
	Total	490	
PE7 - I can get accurate information by using these services	20 & Below	24	236.40
	21 − 30	183	268.99
	31 − 40	167	232.19
	41 − 50	75	228.90
	51 − 60	36	237.47
	61 & Above	5	180.80
	Total	490	
PE8 - It is easy to use these services	20 & Below	24	230.88
	21 − 30	183	263.64
	31 − 40	167	242.85
	41 − 50	75	222.97
	51 − 60	36	227.32
	61 & Above	5	209.00
	Total	490	

Statements (Sub-factors/Parameters)	Chi-Square	Df	Asymp. Sig.
PE1 - Web 2.0 services are useful in my studies	3.967	5	0.554
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	6.416	5	0.268
PE3 - My academic performance increases after using these services	4.886	5	0.43
PE4 - The services make my academic activities easy to accomplish	5.936	5	0.312
PE5 - I can get required information well in time by using these services	2.634	5	0.756
PE6 - My productivity (output) increases in my studies by using these services	7.747	5	0.171
PE7 - I can get accurate information by using these services	9.99	5	0.076
PE8 - It is easy to use these services	7.047	5	0.217

As The P-value of the all the sub factors in Table 10 is greater than 0.05, so the null hypothesis has been accepted at 5% level of significance which means there is a not difference of opinion of age of respondents on PE. Respondents of different class of age group have same opinion about Performance Acceptancy.

7.3.2.2 Influence of Age of Respondents on EE

H0: There is no difference in opinion of Age of Respondents on EE

H1: There is difference in opinion of Age of Respondents on EE

Table 7-35 Influence of Age of Respondents on EE

Statements (Sub-factors/Parameters)	Age	N	Mean Rank
EE1 - It is easy to navigate the library website	20 & Below	24	266.52
	21 – 30	183	258.92
	31 – 40	167	237.20
	41 – 50	75	232.56
	51 – 60	36	227.90
	61 & Above	5	251.40
	Total	490	
EE2 - I quickly find information from these services that I need	20 & Below	24	235.81
	21 – 30	183	255.22
	31 – 40	167	236.28

	41 – 50	75	248.95
	51 – 60	36	228.89
	61 & Above	5	312.00
	Total	490	
EE3 - Learning to use these services is easy for me	20 & Below	24	209.29
	21 – 30	183	264.27
	31 – 40	167	238.96
	41 – 50	75	235.08
	51 – 60	36	230.31
	61 & Above	5	216.50
	Total	490	
EE4 - It is easy to use this website even on a first visit	20 & Below	24	213.48
	21 – 30	183	266.51
	31 – 40	167	249.41
	41 – 50	75	213.80
	51 – 60	36	205.67
	61 & Above	5	262.00
	Total	490	

Table 7-36 Test Statistics: Influence of Age of Respondents on EE

	Chi-Square	df	Asymp. Sig.
EE1 - It is easy to navigate the library website	4.46	5	0.485
EE2 - I quickly find information from these services that I need	3.808	5	0.577
EE3 - Learning to use these services is easy for me	7.054	5	0.217
EE4 - It is easy to use this website even on a first visit	**13.611**	**5**	**0.018**

The mean ranks in relation to **"EE4"** for the statement **"It is easy to use this website even on a first visit"** are 213.48 for the age group **20 & below**, 266.51 for the age group **between 21 to 30**, 249.41 for Age group **between 31 to 40**, 231.80 for age group **between 41 to 50**, 205.67 for the age group **between 51 to 60** and 262.00 for age **group 61 & Above** but the (*P-value*) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of age of respondents on PE. Respondents of different class of age group have difference in opinion about using the website even at first visit.

7.3.2.3 Influence of Age of Respondents on SI

H0: There is no difference in opinion of Age of Respondents on SI

H1: There is difference in opinion of Age of Respondents on SI

Table 7-37 Influence of Age of Respondents on SI

	Age	N	Mean Rank
SI1 - My tutors/teachers influence my behaviour to use these services	20 & Below	24	223.77
	21 − 30	183	254.45
	31 − 40	167	249.08
	41 − 50	75	232.81
	51 − 60	36	219.99
	61 & Above	5	276.70
	Total	490	
SI2 - Regional/main campus staff influences my behaviour to use these services	20 & Below	24	227.10
	21 − 30	183	250.39
	31 − 40	167	258.37
	41 − 50	75	228.42
	51 − 60	36	211.99
	61 & Above	5	222.70
	Total	490	
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	20 & Below	24	271.23
	21 − 30	183	260.25
	31 − 40	167	238.01
	41 − 50	75	226.29
	51 − 60	36	234.74
	61 & Above	5	198.10
	Total	490	

Table 7-38 Test Statistics: Influence of Age of Respondents on SI

	Chi-Square	Df	Asymp. Sig.
SI1 - My tutors/teachers influence my behaviour	3.788	5	0.58

to use these services			
SI2 - Regional/main campus staff influences my behaviour to use these services	5.786	5	0.328
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	5.954	5	0.311

As the p- value of all the sub factors is greater than 0.05 in Table – 7.19 so null hypotheses has been accepted at 5% level of significance which means that there is no difference in opinion of Age of Respondents on SI. Opinion of Respondents of difference class of age group is same.

7.3.2.4 Influence of Age of Respondents on FC

H0: There is no difference in opinion of Age of Respondents on FC

H1: There is difference in opinion of Age of Respondents on FC

Table 7-39 Influence of Age of respondents on FC

	Age	N	Mean Rank
FC1 - I have resources (computer, Internet etc.) to use these services	20 & Below	24	212.60
	21 – 30	183	260.11
	31 – 40	167	241.77
	41 – 50	75	229.32
	51 – 60	36	230.08
	61 & Above	5	346.80
	Total	490	
FC2 - I have knowledge to use these services	20 & Below	24	213.52
	21 – 30	183	264.94
	31 – 40	167	236.60
	41 – 50	75	241.01
	51 – 60	36	214.74
	61 & Above	5	273.40
	Total	490	
FC3 - I have skills to use these services	20 & Below	24	206.21
	21 – 30	183	265.40
	31 – 40	167	243.12
	41 – 50	75	226.33
	51 – 60	36	212.18
	61 & Above	5	312.50

		Total	490	
FC4 - Online help is available to use these services		20 & Below	24	214.10
		21 – 30	183	263.45
		31 – 40	167	238.38
		41 – 50	75	238.15
		51 – 60	36	224.53
		61 & Above	5	238.40
		Total	490	
FC5 - These services are compatible (download file format, operating system, etc.) with my computer		20 & Below	24	183.15
		21 – 30	183	267.54
		31 – 40	167	242.14
		41 – 50	75	233.92
		51 – 60	36	218.22
		61 & Above	5	220.40
		Total	490	

Table 7-40Test Statistics: Influence of Age of Respondents on FC

	Chi-Square	df	Asymp. Sig.
FC1 - I have resources (computer, Internet etc.) to use these services	8.489	5	0.131
FC2 - I have knowledge to use these services	8.407	5	0.135
FC3 - I have skills to use these services	11.455	5	0.043
FC4 - Online help is available to use these services	6.34	5	0.274
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	12.845	5	0.025

The mean ranks in relation to **"FC3"** for the statement **"I have skills to use these services"** are 206.21 for the age group **20 & below**, 265.40 for the age group **between 21 to 30**, 243.12 for Age group **between 31 to 40**, 226.33 for age group **between 41 to 50**, 212.18 for the age group **between 51 to 60** and 312.50 for age **group 61 & Above** but the (*P-value*) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of age of respondents on FC. Respondents of different class of age group have difference in opinion about skills to use these services.

The mean ranks in relation to **"FC3"** for the statement **"These services are compatible (download file format, operating system, etc.) with my computer"** are 183.15 for the age group **20 & below**, 267.54 for the age group **between 21 to 30**, 242.14 for Age group **between 31 to 40**, 233.92 for age group **between 41 to 50**, 218.22 for the age group **between 51 to 60** and 220.40 for age **group 61 & Above** but the (**P-value**) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of age of respondents on FC. Respondents of different class of age group have difference in opinion about services' compatibility with the computer.

7.3.2.5 Influence of Age of Respondents on BI

H0: There is no difference in opinion of Age of Respondents on BI
H1: There is difference in opinion of Age of Respondents on BI

Table 7-41 Influence of Age of Respondents on BI

	Age	N	Mean Rank
INT1 - I like using these services for getting information	20 & Below	24	250.75
	21 – 30	183	261.20
	31 – 40	167	232.51
	41 – 50	75	256.29
	51 – 60	36	205.68
	61 & Above	5	204.20
	Total	490	
INT2 - I intend to continue using these Web-based services in my studies	20 & Below	24	221.83
	21 – 30	183	265.72
	31 – 40	167	238.20
	41 – 50	75	232.87
	51 – 60	36	208.82
	61 & Above	5	316.50
	Total	490	
INT3 - I feel I will keep on using these services even after my studies	20 & Below	24	217.10
	21 – 30	183	267.89

	31 – 40	167	236.37
	41 – 50	75	233.61
	51 – 60	36	214.07
	61 & Above	5	272.10
	Total	490	
INT4 - I will recommend the use of these services to other students	20 & Below	24	245.29
	21 – 30	183	260.77
	31 – 40	167	239.88
	41 – 50	75	229.78
	51 – 60	36	219.04
	61 & Above	5	301.60
	Total	490	

Table 7-42Test Statistics: Influence of Age of Respondents on BI

	Chi-Square	df	Asymp. Sig.
INT1 - I like using these services for getting information	8.583	5	0.127
INT2 - I intend to continue using these Web-based services in my studies	10.447	5	0.064
INT3 - I feel I will keep on using these services even after my studies	10.101	5	0.072
INT4 - I will recommend the use of these services to other students	6.236	5	0.284

As the *p- value* of all the sub factors is greater than 0.05 in **Table** , so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of Age of Respondents on INT. Opinion of Respondents of difference class of age group are same about INT.

7.3.2.6 Influence of Designation on PE

H0: There is no difference in opinion of Designation of Respondents on PE

H1: There is difference in opinion of Designation of Respondents on PE

Table 7-43 Influence of Designation on PE

	Designation	N	Mean Rank
PE1 - Web 2.0 services are useful in my studies	U.G./P.G. Student	113	256.90
	Research Scholar	99	246.84
	Assistant Professor	231	244.29
	Associate Professor	40	210.40
	Principal/ HOD/ Dean of Faculty	7	283.07
	Total	490	
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	U.G./P.G. Student	113	259.81
	Research Scholar	99	243.20
	Assistant Professor	231	244.08
	Associate Professor	40	205.53
	Principal/ HOD/ Dean of Faculty	7	322.29
	Total	490	
PE3 - My academic performance increases after using these services	U.G./P.G. Student	113	241.75
	Research Scholar	99	237.59
	Assistant Professor	231	257.36
	Associate Professor	40	213.10
	Principal/ HOD/ Dean of Faculty	7	211.71
	Total	490	
PE4 - The services make my academic activities easy to accomplish	U.G./P.G. Student	113	257.60
	Research Scholar	99	233.46
	Assistant Professor	231	252.17
	Associate Professor	40	202.76
	Principal/ HOD/ Dean of Faculty	7	244.50
	Total	490	
PE5 - I can get required information well in time by using these services	U.G./P.G. Student	113	246.36
	Research Scholar	99	230.09
	Assistant Professor	231	254.00
	Associate Professor	40	221.63
	Principal/ HOD/ Dean of Faculty	7	305.43
	Total	490	
PE6 - My productivity (output) increases in my studies by using these services	U.G./P.G. Student	113	254.96
	Research Scholar	99	237.80
	Assistant Professor	231	247.69
	Associate Professor	40	226.76
	Principal/ HOD/ Dean of Faculty	7	236.43
	Total	490	

PE7 - I can get accurate information by using these services	U.G./P.G. Student	113	263.18
	Research Scholar	99	244.78
	Assistant Professor	231	244.73
	Associate Professor	40	202.33
	Principal/ HOD/ Dean of Faculty	7	242.43
	Total	490	
PE8 - It is easy to use these services	U.G./P.G. Student	113	245.57
	Research Scholar	99	253.92
	Assistant Professor	231	248.68
	Associate Professor	40	207.69
	Principal/ HOD/ Dean of Faculty	7	236.50
	Total	490	

Table 7-44 Test Statistics: Influence of Designation on PE

	Chi-Square	df	Asymp. Sig.
PE1 - Web 2.0 services are useful in my studies	4.585	4	.333
PE2 - I can accomplish my academic needs with use of web 2.0 services by library	7.602	4	.107
PE3 - My academic performance increases after using these services	5.204	4	.267
PE4 - The services make my academic activities easy to accomplish	6.493	4	.165
PE5 - I can get required information well in time by using these services	5.094	4	.278
PE6 - My productivity (output) increases in my studies by using these services	1.804	4	.772
PE7 - I can get accurate information by using these services	6.235	4	.182
PE8 - It is easy to use these services	3.840	4	.428

As the *p- value* of all the sub factors is greater than **0.05** in Table 7.25 so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of designation of Respondents on PE. Opinion of Respondents of difference class of age group is same. Opinion of all the designated persons is same for PE.

7.3.2.7 Influence of Designation on EE

H0: There is no difference in opinion of Respondents' Designation on EE

H1: There is difference in opinion of Respondents' Designation on EE

Table 7-45 Influence of Designation of EE

	Designation	N	Mean Rank
EE1 - It is easy to navigate the library website	U.G./P.G. Student	113	258.51
	Research Scholar	99	250.55
	Assistant Professor	231	241.60
	Associate Professor	40	223.15
	Principal/ HOD/ Dean of Faculty	7	220.64
	Total	490	
EE2 - I quickly find information from these services that I need	U.G./P.G. Student	113	247.51
	Research Scholar	99	234.19
	Assistant Professor	231	255.48
	Associate Professor	40	204.29
	Principal/ HOD/ Dean of Faculty	7	279.00
	Total	490	
EE3 - Learning to use these services is easy for me	U.G./P.G. Student	113	247.88
	Research Scholar	99	236.82
	Assistant Professor	231	252.64
	Associate Professor	40	224.63
	Principal/ HOD/ Dean of Faculty	7	213.64
	Total	490	
EE4 - It is easy to use this website even on a first visit	U.G./P.G. Student	113	253.77
	Research Scholar	99	237.40
	Assistant Professor	231	253.27
	Associate Professor	40	191.69
	Principal/ HOD/ Dean of Faculty	7	277.64
	Total	490	

Table 7-46 Test Statistics: Influence of Designation of EE

	Chi-Square	df	Asymp. Sig.
EE1 - It is easy to navigate the library website	2.795	4	0.593
EE2 - I quickly find information from these services that I need	6.394	4	0.172
EE3 - Learning to use these services is easy for me	2.53	4	0.639
EE4 - It is easy to use this website even on a first visit	8.514	4	0.074

As the **p- value** of all the sub factors is greater than **0.05** in Table 7.27, so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of Designation of Respondents on EE. Opinion of all the designated persons is same for EE.

7.3.2.8 Influence of Designation on SI

H0: There is no difference in opinion of Respondents' Designation on SI
H1: There is difference in opinion of Respondents' Designation on SI

Table 7-47 Influence of Designation on SI

	Designation	N	Mean Rank
SI1 - My tutors/teachers influence my behaviour to use these services	U.G./P.G. Student	113	244.81
	Research Scholar	99	236.33
	Assistant Professor	231	253.88
	Associate Professor	40	219.10
	Principal/ HOD/ Dean of Faculty	7	260.86
	Total	490	
SI2 - Regional/main campus staff influences my behaviour to use these services	U.G./P.G. Student	113	243.91
	Research Scholar	99	237.81
	Assistant Professor	231	258.46
	Associate Professor	40	202.10
	Principal/ HOD/ Dean of Faculty	7	200.36
	Total	490	
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	U.G./P.G. Student	113	263.12
	Research Scholar	99	233.63
	Assistant Professor	231	247.21
	Associate Professor	40	226.53
	Principal/ HOD/ Dean of Faculty	7	180.71
	Total	490	

Table 7-48 Test Statistics: Influence of Designation on SI

	Chi-Square	df	Asymp. Sig.
SI1 - My tutors/teachers influence my behaviour to use these services	2.993	4	.559

SI2 - Regional/main campus staff influences my behaviour to use these services	7.411	4	.116
SI3 - My friends, family members, class fellows, etc. influence my behaviour to use these services	5.148	4	.272

As the *p-* **value** of all the sub factors is greater than 0.05 in **Table 7.29** , so null hypothesis has been accepted at 5% level of significance which means that there is no difference in opinion of Designation of Respondents on SI. Opinion of all the designated persons is same for SI.

7.3.2.9 Influence of Designation on FC

H0: There is no difference in opinion of Respondents' Designation on FC

H1: There is difference in opinion of Respondents' Designation on FC

Table 7-49 Influence of Designation on FC

	Designation	N	Mean Rank
FC1 - I have resources (computer, Internet etc.) to use these services	U.G./P.G. Student	113	243.43
	Research Scholar	99	237.24
	Assistant Professor	231	255.73
	Associate Professor	40	197.94
	Principal/ HOD/ Dean of Faculty	7	329.79
	Total	490	
FC2 - I have knowledge to use these services	U.G./P.G. Student	113	254.42
	Research Scholar	99	239.03
	Assistant Professor	231	249.99
	Associate Professor	40	209.45
	Principal/ HOD/ Dean of Faculty	7	251.00
	Total	490	
FC3 - I have skills to use these services	U.G./P.G. Student	113	253.69
	Research Scholar	99	247.89
	Assistant Professor	231	246.88
	Associate Professor	40	202.53
	Principal/ HOD/ Dean of Faculty	7	279.50
	Total	490	
FC4 - Online help is available to use these services	U.G./P.G. Student	113	257.56
	Research Scholar	99	250.45
	Assistant Professor	231	244.15

	Associate Professor	40	210.13
	Principal/ HOD/ Dean of Faculty	7	227.43
	Total	490	
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	U.G./P.G. Student	113	247.42
	Research Scholar	99	244.57
	Assistant Professor	231	256.74
	Associate Professor	40	183.05
	Principal/ HOD/ Dean of Faculty	7	213.71
	Total	490	

Table 7-50Test Statistics: Influence of Designation on FC

	Chi-Square	df	Asymp. Sig.
FC1 - I have resources (computer, Internet etc.) to use these services	9.920	4	.042
FC2 - I have knowledge to use these services	4.018	4	.404
FC3 - I have skills to use these services	5.174	4	.270
FC4 - Online help is available to use these services	4.083	4	.395
FC5 - These services are compatible (download file format, operating system, etc.) with my computer	11.047	4	.026

The mean ranks in relation to **"FC1"** for the statement **"I have resources (computer, Internet etc.) to use these services"** are 243.43 for U.G./P.G. Students, 237.24 for the Research Scholar, 255.73 for Assistant Professor, 197.94 for Associated Professor and 329.79 for Principal/HOD/Dean of the faculty but the (*P-value*) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of respondents on FC. Designated respondents have difference in opinion about recourses to use these services

The mean ranks in relation to **"FC5"** for the statement **"These services are compatible (download file format, operating system, etc.) with my computer"** are 247.42 for U.G./P.G. Students, 244.57 for the Research Scholar, 256.74 for Assistant Professor, 183.05 for Associated Professor and 213.71 for Principal/HOD/Dean of the faculty but the (*P-value*) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level

of significance which means there is a significant influence of respondents on FC. Designated respondents have difference in opinion about compatibility of users' device with web 2.0 services.

7.3.2.10 Influence of Designation on BI

H0: There is no difference in opinion of Respondents' Designation on FC
H1: There is difference in opinion of Respondents' Designation on FC

Table 7-51 Influence of Designation on BI

	Designation	N	Mean Rank
INT1 - I like using these services for getting information	U.G./P.G. Student	113	256.50
	Research Scholar	99	240.97
	Assistant Professor	231	252.42
	Associate Professor	40	193.51
	Principal/ HOD/ Dean of Faculty	7	200.57
	Total	490	
INT2 - I intend to continue using these Web-based services in my studies	U.G./P.G. Student	113	253.97
	Research Scholar	99	244.50
	Assistant Professor	231	249.78
	Associate Professor	40	183.06
	Principal/ HOD/ Dean of Faculty	7	338.50
	Total	490	
INT3 - I feel I will keep on using these services even after my studies	U.G./P.G. Student	113	256.32
	Research Scholar	99	237.26
	Assistant Professor	231	251.81
	Associate Professor	40	188.26
	Principal/ HOD/ Dean of Faculty	7	306.21
	Total	490	
INT4 - I will recommend the use of these services to other students	U.G./P.G. Student	113	254.73
	Research Scholar	99	237.85
	Assistant Professor	231	253.77
	Associate Professor	40	176.83
	Principal/ HOD/ Dean of Faculty	7	324.29
	Total	490	

Table 7-52 Test Statistics: Influence of Designation on BI

	Chi-Square	df	Asymp. Sig.
INT1 - I like using these services for getting information	8.624	4	.071
INT2 - I intend to continue using these Web-based services in my studies	13.086	4	.011
INT3 - I feel I will keep on using these services even after my studies	10.756	4	.029
INT4 - I will recommend the use of these services to other students	15.286	4	.004

The mean ranks in relation to **"INT2"** for the statement **"I intend to continue using these Web-based services in my studies"** are 253.97 for U.G,/P.G. Students, 244.50 for the Research Scholar, 249.78 for Assistant Professor, 183.06 for Associated Professor and 338.50 for Principal/HOD/Dean of the faculty but the (**P-value**) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of respondents on INT2. Designated respondents have difference in opinion about continues using these Web-based services in their studies.

The mean ranks in relation to **"INT3"** for the statement **"I feel I will keep on using these services even after my studies"** are 256.32 for U.G,/P.G. Students, 237.26 for the Research Scholar, 251.81 for Assistant Professor, 188.26 for Associated Professor and 306.21 for Principal/HOD/Dean of the faculty but the (**P-value**) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of respondents on INT3. Designated respondents have difference in opinion about keep on using these Web-based services after their studies.

The mean ranks in relation to **"INT4"** for the statement **"I will recommend the use of these services to other students"** are 254.73 for U.G,/P.G. Students, 237.85 for the Research Scholar, 253.77 for Assistant Professor, 176.83 for Associated Professor and 324.29 for Principal/HOD/Dean of the faculty but the (**P-value**) as shown in **Table** for this statement is less than 0.05, so the null hypothesis has been rejected at 5% level of significance which means there is a significant influence of respondents on INT4. Designated respondents have difference in opinion about recommending the use of these services to other students.

7.3.2.11 Hypothesis Results - Kruskal Wallis Test

1	H0: There is no difference in opinion of Age of Respondents on PE	Accepted
2	H0: There is no difference in opinion of Age of Respondents on EE	Rejected
3	H0: There is no difference in opinion of Age of Respondents on SI	Accepted
4	H0: There is no difference in opinion of Age of Respondents on FC	Rejected
5	H0: There is no difference in opinion of Age of Respondents on BI	Accepted
6	H0: There is no difference in opinion of Designation of Respondents on PE	Accepted
7	H0: There is no difference in opinion of Designation of Respondents on EE	Accepted
8	H0: There is no difference in opinion of Designation of Respondents on SI	Accepted
9	H0: There is no difference in opinion of Designation of Respondents on FC	Rejected
10	H0: There is no difference in opinion of Designation of Respondents on BI	Rejected

7.3.3 Chi-Square Tests: Age Designation and Gender vs Web 2.0 Tools

To check association influence of Age on Web 2.0 tools used by users we have used Pearson Chi-Square test.

7.3.3.1 Cross Tabulation between Age and Web 2.0 tools used

H0: There is no association between Age and Using Web 2. 0 Tools

H1: There is an association between Age and Using Web 2. 0 Tools

Table 7-53 Test Statistics: Chi- Square Test Age and Web 2.0 tools

Web 2.0 tools Pearson Chi-Square		Value	Asymp. Sig.(2-sided)	Results
Age	Blogs (Blogger, Word press)	32.527a	0.038	Rejected
	Wikis (Wikipedia)	42.813a	0.002	Rejected
	Instant Messaging (whatsapp, F. Messenger, Hike)	27.105a	0.132	Accepted
	RSS feeds (Feedly etc)	21.213a	0.385	Accepted
	Social Networking (FB, Instagram, Twitter)	21.037a	0.395	Accepted
	Podcasts (YouTube, Swayam)	49.392a	0	Rejected
	Tagging (Academia, Google Scholar, Research Gate	21.656a	0.359	Accepted
	Mash up (Mapping and location)	25.839a	0.171	Accepted
	Federated search (Discovery Search)	23.163a	0.281	Accepted
	Personalized applications (Android	22.137a	0.333	Accepted

P Value in the above table 7.53 for Age and Blogs (Blogger, Wordpress), Wikis (Wikipedia) and Podcasts (Youtube, Swayam) is less than 0.05 so null hypothesis cannot be accepted which means that there is an association between Age of library users and Web 2.0 tools regards to above tools. For rest of all web 2.0 tools we cannot reject null hypothesis hence we accept alternative hypothesis.

7.3.3.2 Cross Tabulation between Gender and Web 2.0 tools used

H0: There is no association between Gender and Using Web 2. 0 Tools

H1: There is an association between Gender and Using Web 2. 0 Tools

Table 7-54 Test Statistics: Chi- Square Test Gender and Web 2.0 tools

Web 2.0 tools Pearson Chi-Square		Value	Asymp. Sig.(2-sided)	Results
Gender	Blogs (Blogger, Wordpress)	9.120a	0.058	Accepted
	Wikis (Wikipedia)	8.293a	0.081	Accepted
	Instant Messaging (whatsapp, F. Messenger, Hike)	.973a	0.914	Accepted
	RSS feeds (Feedly etc)	6.406a	0.171	Accepted
	Social Networking (FB, Instagram, Twitter)	4.156a	0.385	Accepted
	Podcasts (Youtube, Swayam)	3.051a	0.549	Accepted
	Tagging (Academia, Google Scholar, Research Gate	7.630a	0.106	Accepted
	Mash up (Mapping and location)	3.361a	0.499	Accepted
	Federated search (Discovery Search)	3.973a	0.41	Accepted
	Personalized applications (Android	2.747a	0.601	Accepted

In above table 7.54, p-value for all Web 2.0 tools are = <0.05 hence, we cannot reject H0 at 5% level of significance. This indicates there is significant association between Gender of users and web 2.0 tools used by them.

7.3.3.3 Cross Tabulation between Designation of Library users and Web 2.0 tools used

H0: There is no association between Designation of library users and Web 2. 0 Tools used

H1: There is an association between Designation of library users and Web 2. 0 Tools used

Web 2.0 tools Pearson Chi-Square		Value	Asymp. Sig.(2-sided)	Results
	Blogs (Blogger, Wordpress)	28.056a	0.031	Rejected
	Wikis (Wikipedia)	24.931a	0.071	Accepted
	Instant Messaging (whatsapp, F. Messenger, Hike)	13.122a	0.664	Accepted
	RSS feeds (Feedly etc)	24.542a	0.078	Accepted
Designation of Library Users	Social Networking (FB, Instagram, Twitter)	37.646a	0.002	Rejected
	Podcasts (Youtube, Swayam)	26.496a	0.047	Rejected
	Tagging (Academia, Google Scholar, Research Gate	19.064a	0.265	Accepted
	Mash up (Mapping and location)	25.875a	0.056	Accepted
	Federated search (Discovery Search)	10.403a	0.845	Accepted
	Personalized applications (Android	27.297a	0.038	Rejected

P Value in the above table 7.55 for Designation of library users and Blogs (Blogger, Wordpress), Social Networking (FB, Instagram, Twitter), Podcasts (Youtube, Swayam) and Personalized applications (Android Apps/ IOS apps is less than 0.05 so null hypothesis cannot be accepted which means that there is an association between Designation of library users and Web 2.0 tools regards to above tools.

7.3.4 Factor Analysis

A statistical technique known as factor analysis is used to express variation among connected, observable variables in terms of a possibly smaller set of unobserved variables known as factors. In other words, it's feasible that changes in three or four seen variables, for instance, mostly reflect changes in fewer unobserved ones. In response to unobserved latent variables, factor analysis

looks for such joint fluctuations. Models for the observed variables include "error" terms and linear combinations of the potential components. Later, the set of variables in a dataset can be reduced using the knowledge learned about the dependencies between observed variables. This method is computationally equal to a low rank approximation of the observed variable matrix. In Behavioural Sciences, Social Sciences, Marketing, Product Management, Operations Research, and other applied disciplines that deal with massive amounts of data, factor analysis, which has its roots in psychometrics is used.

Principal component analysis (PCA) and factor analysis are similar but not the same. While PCA is a descriptive statistical method, latent variable models, including factor analysis, use regression modelling techniques to test hypotheses producing error terms. The question of whether the two techniques are equivalent or not has generated a great deal of debate in the field (see exploratory factor analysis versus principal components analysis).

Factor Analysis was carried out on eight variables, namely:

• Lack of awareness

• Lack of skill

• Lack of Connectivity

• Lack of technical knowledge

• Lack of technical support

• Privacy concerns

• Not Interested

• Reluctant to Change

Table 7-56 Test Statistics: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.87
Bartlett's Test of Sphericity	Approx. Chi-Square	2484.94
	df	28
	Sig.	0

Kaiser-Meyer-Olkin Measure of Sampling Adequacy should be greater than .70 indicating sufficient items for each factor. Here, the result of the KMO is 0.87 is which greater than 0.7. Bartlett's Test of Sphericity should be significant (less than .05), indicating that the correlation matrix is significantly different from an identity matrix, in which correlations between variables are all zero. Here, Bartlett's test of Sphericity (Significance − 0.000) indicates that factor analysis done with 8 variables is significant.

Table 7-57 Communalities of Factors

Obstacles will be faced in implementing Web 2.0 tools in your university library.	Initial	Extraction
[Lack of awareness]	1.000	.603
[Lack of skill]	1.000	.723
[Lack of Connectivity]	1.000	.720
[Lack of technical knowledge]	1.000	.820
[Lack of technical support]	1.000	.786
[Privacy concerns]	1.000	.481
[Not Interested]	1.000	.843
[Reluctant to Change]	1.000	.795

Extraction Method: Principal Component Analysis.

The relationship between the variable and all other variables is represented by these communalities (i.e., the squared multiple correlation between the item and all other items). The table above demonstrates that all communalities are greater

than 0.5. Therefore, it may be said that in subsequent study, some of the aforementioned variables need to be removed. The researcher addresses this by adding a 0.5 threshold limit for factor loading when doing the study.

Table 7-58 Test Statistics: Total Variance Explained

Total Variance Explained

Comp onent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Tota l	% of Varianc e	Cumula tive %	Total	% of Varianc e	Cumula tive %	Total	% of Varianc e	Cumula tive %
1	4.75 5	59.440	59.440	4.755	59.440	59.440	3.835	47.934	47.934
2	1.01 7	12.711	72.150	1.017	12.711	72.150	1.937	24.217	72.150
3	.692	8.644	80.794						
4	.484	6.056	86.850						
5	.355	4.435	91.285						
6	.331	4.134	95.419						
7	.229	2.861	98.280						
8	.138	1.720	100.000						

Extraction Method: Principal Component Analysis.

The Total Variance Explained table breaks down the variance into its eight potential components. It is important to note that three components meet the common criterion for usefulness, which is that their Eigen values (a measure of explained variance) are greater than 1.0. A factor explains less information than a single item would have explained when the Eigen value is less than 1.0. The majority of researchers would not deem the knowledge acquired from such a component sufficient to support preserving it. Thus, if you hadn't indicated otherwise, the computer would have "rotated" four factors in order to get the

optimal four-factor answer. It can be concluded that these two factors extracted from the 8 variables explain about 72.150 % variance of total variance.
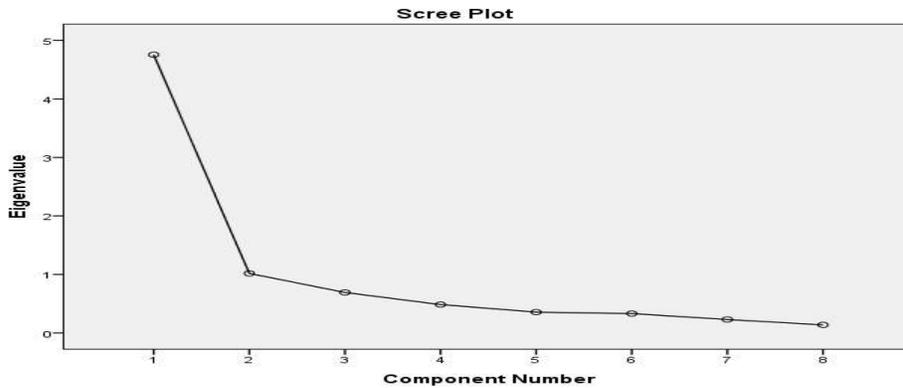
7-20 Factors Scree Plot

Eigen values and Scree Plot suggest that there should be three factors to be considered. In the above chart Factors lying on the X-axis are of no use but factors lying on the Y-axis are useful. **It can be seen that there are two factors lying with Y -axis.**

Table 7-59 Component Matrix

obstacles will be faced in implementing Web 2.0 tools in your university library	Component	
	1	2
[Lack of technical knowledge]	.857	
[Lack of technical support]	.850	
[Lack of skill]	.840	
[Lack of Connectivity]	.818	
[Lack of awareness]	.772	
[Privacy concerns]	.693	
[Reluctant to Change]	.693	.562
[Not Interested]	.606	.690

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Table 7-60 Rotated Component Matrix

Rotated Component Matrix[a]

	Component	
	1	2
[Lack of technical knowledge]	.890	
[Lack of technical support]	.863	
[Lack of Connectivity]	.822	
[Lack of skill]	.795	
[Lack of awareness]	.710	
[Privacy concerns]	.590	
[Not Interested]		.899
[Reluctant to Change]		.831

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 2 iterations.

The Rotated Factor Matrix table, which contains these loadings, is the key for understanding the results of the analysis. Note that the computer has sorted the performance of 8 obstacles will be faced in implementing Web 2.0 tools in your university library into two overlapping groups of items, each which has a loading of |.50| or higher |.50| means the absolute value, or value without considering the sign, is greater than .50). Actually, every item has some loading from every factor, but there are blanks in the matrix where weights were less than |.50|. Within each factor (to the extent possible), the items are sorted from the one with the highest factor weight or loading for that factor to the one with the lowest loading on that first factor.

Component Transformation Matrix

Component	1	2
1	.868	.496
2	-.496	.868

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The content of the items with high loadings for each component have been examined by the researcher to determine whether they make conceptual sense and can be labelled. The factors' labels are shown below.

Obstacles have been faced in implementing Web 2.0 tools in your university library

1. Lack of Familiarity, Competence and Assistance :

Obstacles for implementation of web 2.0 in university library from users perceptive are Lack of familiarity which can be seen in construct of lack of technical knowledge and support. This is main obstacle as library is open for all type of users and in education system if there are advanced learners, there are also slow learners. Same is the case with library users. Not everyone coming to library or using library resources are competent enough to learn or well verse with advanced tech. additionally, there isn't a good environment, such as connectivity or skill support, for these users to accept and employ new technology-based services. Users have not directly adopted any new technology or services that libraries have implemented. It must first go through typical human behaviour. In accordance with Web 2.0 tools there is also threat of uses privacy. Libraries have to make its system well organised, users oriented and secure to win uses trust.

2.   Unwillingness to change the mind-set

Humans naturally test new things and require them to meet certain standards in order to feel satisfied. It is human behaviour that we usually don't change our mind set very easily so as the case with library users. They are sometimes very much affected and use to with old system that they don't preferred to accept change. This reluctance is also major obstacle in implementation of web 2.0 tools for librarians as user may not accept and use new services that are offered by library. As library is service organisation, It it very necessary to gain users trust and acceptance.

7.3.5 SEM Analysis and Measurement Model

The UTAUT model's linkages were assessed using the structural equation modelling (SEM) technique, which was also utilised to test the variables' assumptions. SEM was chosen because it provides a statistical methodology that enables a hypothesis testing approach to structural examination of data that a chosen model represents.

7.3.5.1   Mean Score and Std. Deviation of Construct

Table 7-61 Mean score and standard deviation of each item in the questionnaire related to the research model constructs

Variable	Mean	Std. Deviation	Construct Definition / Items in Questionnaire
PE : The Degree to which an individual Library User believed that Web 2.0 service tools will improve his/her Performance			
PE1	4.37	0.807	Web 2.0 services are useful in my studies
PE2	4.23	0.858	I can accomplish my academic needs with use of web 2.0 services by library
PE3	4.16	0.854	My academic performance increases after using these services
PE4	4.12	0.892	The services make my academic activities easy to accomplish
PE5	4.15	0.909	I can get required information well in time by using these services
PE6	4.12	0.921	My productivity (output) increases in my studies by using these services
PE7	4.08	0.92	I can get accurate information by using these services
EE : The Degree to which an individual Library User believed that ease is associated with use of Web 2.0 service tools			
EE1	4.04	0.948	It is easy to navigate the library website
EE2	4.13	0.934	I quickly find information from these services that I need
EE3	4.09	0.909	Learning to use these services is easy for me
EE4	4	0.931	It is easy to use this website even on a first visit
SI : The Degree to which an individual Library User perceived that others also use of Web 2.0 service tools			

SI1	3.9	1.011	My tutors/teachers influence my behaviour to use these services
SI2	3.86	0.997	Regional/main campus staff influences my behaviour to use these services
SI3	3.88	1.018	My friends, family members, class fellows, etc. influence my behaviour to use these services
FC : The Degree to which an individual Library User believed that organisational and technical infrastructure exist to ssupport him/her			
FC1	4.17	0.898	I have resources (computer, Internet etc.) to use these services
FC2	4.13	0.923	I have knowledge to use these services
FC3	4.14	0.909	I have skills to use these services
FC4	4.12	0.911	Online help is available to use these services
FC5	4.14	0.892	These services are compatible (download file format, operating system, etc.) with my computer
EE : The Degree to which an individual Library User intent to use of services with Web 2.0 tools provided			
BI1	4.17	0.874	I like using these services for getting information
BI2	4.14	0.87	I intend to continue using these Web based services in my studies
BI3	4.17	0.865	I feel I will keep on using these services even after my studies
BI4	4.21	0.869	I will recommend the use of these services to other students

Table 7.61 describes all variables used in the research, the item description, and descriptive statistics (mean and standard deviation (SD)) of the measured item. The mean values of all the items ranged from 3.86 to 4.37 on five point Likert scale while the SD has a range of 0.807 to 1.018 of the survey questions, UTAUT questionnaire was composed of 23 questions and 5 constructs.

7.3.5.2 Construct reliability and validity

Internal reliability, convergent validity, and discriminant validity are the ways to examine a model's robustness. Cronbach's Alpha was used to test the internal consistency of our measurement model and to develop composite reliability, with 0.70 serving as the benchmark for acceptable internal consistency. A value of 0.50 should be available to have convergent validity when calculating the average variance extracted (AVE), which measures convergent validity.

Table 7-62 The Measurement model: Reliability and validity results

Construct	Items	Item Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
BI	BI1	0.892	0.917	0.918	0.941	0.800
	BI2	0.916				
	BI3	0.894				
	BI4	0.876				
EE	EE1	0.862	0.906	0.909	0.934	0.780

	EE2	0.877				
	EE3	0.894				
	EE4	0.898				
FC	FC1	0.842	0.921	0.922	0.941	0.760
	FC2	0.896				
	FC3	0.896				
	FC4	0.856				
	FC5	0.869				
PE	PE1	0.77	0.935	0.937	0.948	0.721
	PE2	0.822				
	PE3	0.863				
	PE4	0.878				
	PE5	0.86				
	PE6	0.847				
	PE7	0.872				
	PE8	0.801				
SI	SI1	0.922	0.900	0.901	0.938	0.834
	SI2	0.909				
	SI3	0.908				
BI: Behavioural Intention; EE : Effort Expectancy ;FC : Faciliting Condition; PE: Performance Expectancy; SI : Social Influence						

The calculated Cronbach's alpha and build composite reliability results are shown in table 7.62 above. The range of Cronbach's alpha values was 0.94 to 0.9. Values for construct composite reliability were in the 0.934-0.95 range, which is a sign of high internal dependability. The AVE as well as the predicted build loadings are both satisfactory. As a result, the measurement model for the investigation adequately satisfies the convergent validity requirements.

7.3.5.3 Discriminant validity

Table 7-63 The Measurement Model: Inter construct correlation matrix

	Behavioural Intention	Effort Expectancy	Facilitating Condition	Performance Expectancy	Social Influence
BI	0.895				
EE	0.769	0.883			
FC	0.849	0.776	0.872		
PE	0.822	0.839	0.785	0.84	
SI	0.672	0.762	0.697	0.706	0.913

According to The Fornell Larcker criterion, the cross-loading matrix and square root of each AVE were used to test the measurement model's discriminant validity. A construct's square root of AVE must be higher than its correlation with other constructs in order to obtain a suitable level of discriminant validity. For the model to have discriminant validity, the diagonal values in the constructs' correlation matrix must be bigger than the entries in the corresponding rows and columns. All of the notions exhibit appropriate discriminant validity in the data, according to the findings at Table 7.63.

An indicator should have a stronger outer loading (correlation) on the related constructs than any other cross loading. The table has columns for the construct and rows for the indicators to measure cross loading. All of the loadings, as can be seen, are greater than the cross-loadings, indicating that the discriminant validity has been established. In below table 7.64 value of outer loading BI1,BI2BI3,BI4 on the BI construct are 0.893,0.916,0.894 and 0.874 which are higher than the cross loading of any other construct of PE, EE, FC or SI and so as the case with all other outer loadings. Higher outer loading are displayed with dark shading.

Table 7-64 Cross Loading for Discriminant Validity

Construct	BI	EE	FC	PE	SI
BI1	0.893	0.710	0.804	0.760	0.601
BI2	0.916	0.688	0.775	0.722	0.622
BI3	0.894	0.656	0.732	0.709	0.585
BI4	0.874	0.694	0.725	0.723	0.598
EE1	0.629	0.861	0.643	0.657	0.645
EE2	0.644	0.878	0.637	0.694	0.625
EE3	0.707	0.894	0.719	0.767	0.673
EE4	0.728	0.898	0.733	0.748	0.740
FC1	0.716	0.666	0.842	0.644	0.596

FC2	0.728	0.690	0.896	0.675	0.611
FC3	0.719	0.641	0.896	0.645	0.568
FC4	0.740	0.685	0.856	0.697	0.625
FC5	0.793	0.696	0.869	0.701	0.635
PE1	0.633	0.634	0.640	0.772	0.514
PE2	0.658	0.655	0.633	0.825	0.544
PE3	0.681	0.686	0.659	0.873	0.596
PE4	0.712	0.685	0.665	0.884	0.588
PE5	0.746	0.721	0.679	0.866	0.604
PE6	0.701	0.708	0.650	0.853	0.615
PE7	0.706	0.742	0.666	0.866	0.642
SI1	0.624	0.703	0.642	0.631	0.923
SI2	0.613	0.706	0.637	0.644	0.910
SI3	0.605	0.678	0.630	0.619	0.907

HTMT is a calculation that represents the real correlation between two constructs, if they were entirely reliable. HTMT is the geometric mean of the average correlations of indicators measuring the same construct divided by the sum of all correlations of indicators across constructs. In conclusion, the HTMT ratio can be used to assess the discriminant validity of a model by comparing the correlations between and within traits. A higher-than-0.9 HTMT value indicates a lack of discriminant validity.

Table 7-65 HTMT Ratio

Heterotrait-monotrait ratio (HTMT)	
EE -> BI	0.841
FC -> BI	0.922
FC -> EE	0.846
PE -> BI	0.879
PE -> EE	0.881
PE -> FC	0.832
SI -> BI	0.740
SI -> EE	0.841
SI -> FC	0.765
SI -> PE	0.753

HTMT Ration in above table 7.65 for FC -> BI; PE -> BI and PE -> EE are above .09 which indicates a lack of discriminant Validity.

Table 7-66 HTMT Confidence intervals bias corrected

	Original sample (O)	Sample mean (M)	Bias	2.5%	97.5%
EE -> BI	0.841	0.840	0.000	0.787	0.886
FC -> BI	0.922	0.921	-0.001	0.883	0.954
FC -> EE	0.846	0.846	0.000	0.777	0.899
PE -> BI	0.879	0.878	-0.001	0.832	0.917
PE -> EE	0.881	0.881	0.000	0.835	0.919
PE -> FC	0.832	0.831	-0.001	0.767	0.879
SI -> BI	0.740	0.739	-0.001	0.669	0.804
SI -> EE	0.841	0.841	-0.001	0.785	0.891
SI -> FC	0.765	0.764	-0.001	0.700	0.827
SI -> PE	0.753	0.752	-0.001	0.688	0.812

It is necessary to determine whether the HTMT ratio deviates significantly from 1 because the matrix shows that all HTMT values are lower than 0.9. To accomplish this, we must develop a Bootstrap report and generate HTMT confidence interval bias corrected. Below table 7.66 give view of Confidence interval bias corrected. The last two column labeled 2.5% and 97.5% show the lower and upper bounds of the 95% (bias corrected and accelerated) confidence interval As can be seen all confident interval does not includes the value of 1, therefore the HTMT ratio are significant.

7.3.5.4 Evaluation of Formative Measurement Model

To maximise the explained variance of the endogenous latent variables, PLS-SEM estimates parameters. On the basis of how effectively the model predicts the endogenous variables, it is assessed. The collinearity, significance of the path coefficient, level of R2, f2 impact size, predictive relevance Q2, and q2 effect size are the fundamental criteria for assessing the structural model in PLS SEM.

The Variance Inflation Factor is a related metric of collinearity (VIF). The VIF values of each predictor construct in the structural model must be analysed in order to determine collinearity.

The table 7.67 indicate VIF values of all combination of endogenous construct (represented by the columns) and corresponding predictor (represented by the rows)

Table 7-67 Collinearity statistics (VIF) Inner Model

Inner model	BI	EE	FC	PE	SI
BI					
EE	4.143				
FC	3.080				
PE	3.509				
SI	2.582				

According to the result in Display 7.67 PE has the highest VIF value (3.509). We can say that VIF values are uniformly under the threshold value of 5. Therefore, collinearity is not an issue for the model.

Table 7-68 Collinearity statistics (VIF) Outer model

Outer model	
	VIF
BI1	2.822
BI2	3.506
BI3	2.982
BI4	2.561
EE1	2.409
EE2	2.640
EE3	2.832
EE4	2.835
FC1	2.406
FC2	3.618
FC3	3.605
FC4	2.587

FC5	2.658
PE1	2.462
PE2	2.933
PE3	3.261
PE4	3.657
PE5	3.337
PE6	3.141
PE7	3.084
SI1	3.055
SI2	2.752
SI3	2.696

According to the result in Table 7.68 FC2 has the highest VIF value (3.618). We can say that VIF values are uniformly under the threshold value of 5. Therefore, collinearity is not an issue for the model.

The path coefficients have standardized value approximately between -1 and +1. Path coefficients close to +1 represent strong positive relationships that are usually statistically significant. When the path coefficient value is very low or close to 0 they are usually not significantly different from zero.

Table 7-69 Path coefficients

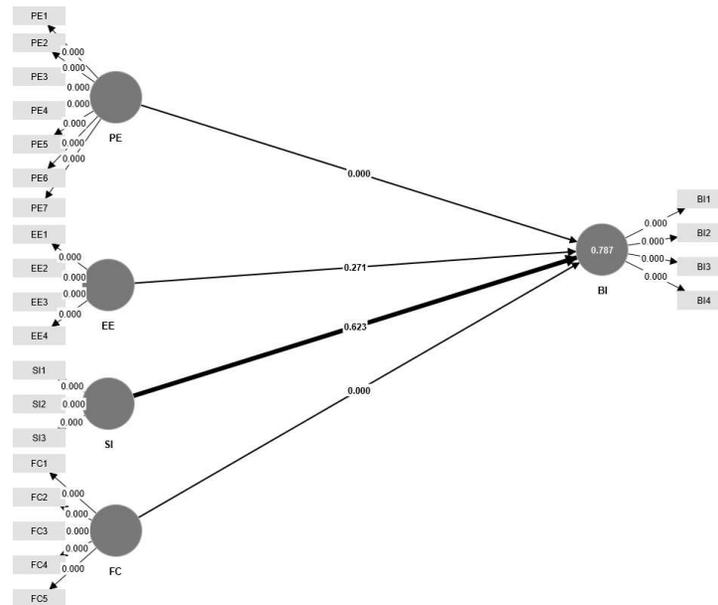| Path coefficients	
EE -> BI	0.080
FC -> BI	0.509
PE -> BI	0.344
SI -> BI	0.019
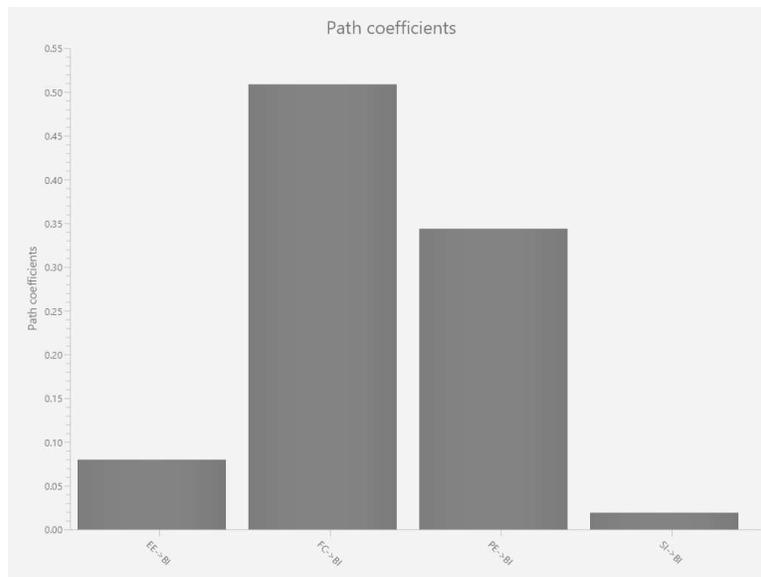
7-21 Path coefficients

We can say that the most important driver for and the most important driver for

Use of web 2.0 tools from users point of view (BI) is Facilitating Conditions provided to users FC (0.509) followed by Performance Expectancy (0.344). Some of structural model relationship showed several path coefficients had rather low values, for example SI -> BI is 0.019 and EE -> BI is 0.080.

Whether a path coefficient is significant, it should be evaluated for its standard error that can be attained from bootstrapping. The bootstrapping standard error calculate the empirical t values and p values for all structural path coefficient. When an empirical t value is larger than the critical value, we conclude that the coefficient is statistically significant (at a certain error probability or significance level). Generally used critical values for two tailed tests are 1.96 (significance level = 5%).

Instead of reporting t values and p values, it is suggested also to report the bootstrap confidence interval, which shows whether a path coefficient is significantly differ from zero. The bootstrap confidence intervals is based on standard error derived from bootstrapping and specify the range into which the

true population parameter will fall assuming a certain level of confidence (e.g., 95%). If a confidence interval doesn't include zero for an estimated path coefficient, the hypothesis that the path equal zero is rejected and we conclude a significant effect.

7-22Path model showing p value

Table 7-70 Path coefficients: Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EE -> BI	0.080	0.079	0.073	1.101	0.271
FC -> BI	0.509	0.508	0.054	9.493	0.000
PE -> BI	0.344	0.345	0.053	6.507	0.000
SI -> BI	0.019	0.020	0.039	0.492	0.623

Assuming a 5% significance level, we find that relationship in the structural model FC -> BI (p=0.000) and PE -> BI (p=0.000) are significant. But EE -> BI (p=0.000) and SI -> BI (p=0.000) are not significant.

Table 7-71 Confidence intervals

	Original sample (O)	Sample mean (M)	2.5%	97.5%
EE -> BI	0.080	0.079	-0.053	0.231
FC -> BI	0.509	0.508	0.398	0.607
PE -> BI	0.344	0.345	0.239	0.445
SI -> BI	0.019	0.020	-0.058	0.096

Looking at the significance level, we find that in the relationship of FC -> BI, for a probability error (significant level of 5%) the confidence interval has a lower bound of 0.398 and an upper bound of 0.607. We find that path coefficient in the relationship of FC -> BI, is significant because zero does not fall within the confidence interval. Same as the relationship of PE -> BI, for a probability error (significant level of 5%) the confidence interval has a lower bound of 0.239 and an upper bound of 0.445. We find that path coefficient in the relationship of PE -> BI, is significant because zero does not fall within the confidence interval.

7.3.5.5 Hypothesis Testing

1. Effort expectancy has impact on student behavioural intention to use the Web 2.0 technology for library use.
2. Facilitating Condition has impact on student behavioural intention to use Web 2.0 technology for library use.
3. Performance expectancy has impact on students' behavioural intention to use Web 2.0 technology for library use.
4. Social influence has impact on student behavioural intention to use Web 2.0 technology for library use.

Table 7-72 Hypothesis Testing

	T statistics (|O/STDEV|)	P values	Confidence Interval
EE -> BI	1.101	0.271	(-0.053,0.230)
FC -> BI	9.493	0.000	(0.397,0.606)
PE -> BI	6.507	0.000	(0.238,0.444)
SI -> BI	0.492	0.623	(-0.057,0.096)

From Above table 7.72, we can say that for H1that is EE -> BI t value 1.101 < 1.96; p value 0.271>0.05 and zero is falling within confidence interval (-0.053,0.230) which is negative to positive so H1 is not supported.

H2 that is   FC -> BI t value 9.493 > 1.96; p value 0.000 < 0.05 and zero is not falling within confidence interval (0.397,0.606) which is Positive to positive so H2 is supported.

H3 that is PE -> BI t value 6.507 > 1.96; p value 0.000 < 0.05 and zero is not falling within confidence interval (0.238,0.444) which is Positive to positive so H3 is supported.

H4 that is SI -> BI t value 0.492 < 1.96; p value 0.623>0.05 and zero is falling within confidence interval (-0.057, 0.096) which is negative to positive so H4 is not supported.

7.3.5.6 Total effects

Table 7-73 Total Effects

Total effects	
EE -> BI	0.08
FC -> BI	0.509
PE -> BI	0.344
SI -> BI	0.019

From Above Table we can say that among of all constructs, Facilitating Conditions towards Behavioural Intention has the strongest total effect on

(0.509), followed by Performance Expectancy (0.344), Effort Expectancy (0.080) and Social Influence is lowest total effect (0.019) on BI.

By Total Effect table we can conclude that, it is advisable to the education institution or university library to focus on Facilitating Condition provided to users.

7.3.5.7 Coefficient of Determination (R^2 value)

The coefficient of determination (R^2) is the most widely used metric to assess the structural model. The coefficient shows how much of the variance in the endogenous constructions can be accounted for by all of the exogenous constructs that are connected to it. This coefficient is calculated as the squared correlation between the actual value and anticipated value of a particular endogenous component.

The R^2 value ranges from 0 to 1, with higher score indicating higher levels of predictive accuracy. In marketing issues research, R^2 values of 0.75, 0.5 or 0.25 for endogenous latent variable can be described as substantial, moderate, or weak

Table 7-74 R^2 the Coefficient of Determination

R-square	R-square	R-square adjusted
BI	0.787	0.785

From Above table we can read that R^2 is 0.787 so that we can conclude that our model has Substantial predictive value.
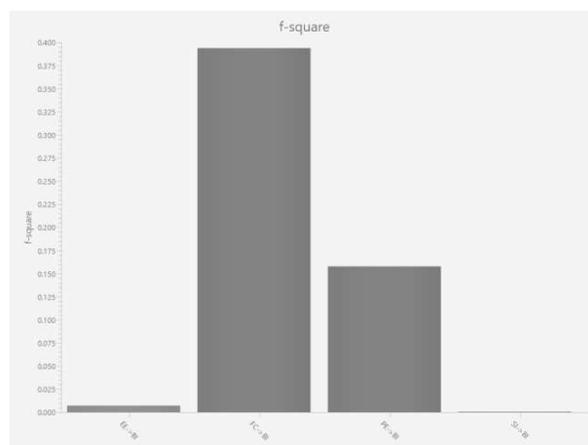
7.3.5.8 Effect Size f^2

To evaluate whether the omitted constructs has a substantive impact on the endogenous constructs, we can calculate the change in R^2 when it is omitted from the model. This measured is referred to as the f^2 effect size.

R^2 included and R^2 excluded means the R^2 values of the endogenous latent variable when a selected exogenous latent variable is included in or excluded from the model. As a guideline for assessing f^2 are that values of 0.02, 0.15, and 0.35, represent small, medium, and large effects, whereas f2 values less than 0.02 indicate that there is no effect (Cohen, 1998)

Table 7-75 Effect Size f2

f-square	BI	EE	FC	PE	SI
BI					
EE	0.007				
FC	0.394				
PE	0.158				
SI	0.001				

7-23 Effect Size f2

From Above table we can conclude that FC has large effect size of 0.394 on BI, while PE having Medium effect size of 0.158 and EE and SI have Small Effect size on BI.

7.3.5.9 Model Fit

Table 7-76 Model fit

	Saturated model	Estimated model
SRMR	0.043	0.043
d_ULS	0.507	0.507
d_G	0.414	0.414
Chi-square	1195.929	1195.929
NFI	0.891	0.891

According to Smart PLS index SRMR and NFI is having threshold limit of SRMR < 0.08 and NFI > 0.90. We have our model's SRMR value 0.043 which is lesser than given threshold limit and NFI nearer to limit so we can conclude that our model has strong fitting power.

7.3.5.10 Q^2 PLS Predict and Model Predictive power

Blindfolding was a sample re-use technique. It allows calculating Stone-Geisser's Q^2 value (Stone, 1974; Geisser, 1974), which represents an evaluation criterion for the cross-validated predictive relevance of the PLS path model. But Smart PLS has discontinue blindfolding method from SMART PLS 4 onwards. The method does not provide an out-of-sample assessment of predictive power. However, the PLS predict option provides the results required for a predictive power assessment. So I have find Q^2 from PLS Predict method to find Predictive power of Model.

Table 7-77 MV Prediction Summery

	Q²predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
BI1	0.687	0.489	0.337	0.495	0.33
BI2	0.632	0.528	0.354	0.532	0.35
BI3	0.579	0.562	0.38	0.586	0.399
BI4	0.588	0.559	0.39	0.568	0.393

According to guidelines provided (Shmueli et al., 2019) if all Q2 predict for all indicators are > 0 then, predictive relevance is confirm. We have all indicators (0.687, 0.632, 0.579, and 0.588) > 0 in above table 7.77, so our model is having predictive relevance. Further they guided that if the Q² value is positive; the prediction error of the PLS-SEM results is smaller than the prediction error of simply using the mean values. In that case, the PLS-SEM model offers better predictive performance. Our model has smaller PLS SEM_RMSE than LM_RMSE in all indicators. This can be seen in below table.

Table 7-78 Final Result PLS Predict

	Q²predict	PLS-SEM_RMSE	LM_RMSE	Result
BI1	0.687	0.489	0.495	PLS-SEM < LM
BI2	0.632	0.528	0.532	PLS-SEM < LM
BI3	0.579	0.562	0.586	PLS-SEM < LM
BI4	0.588	0.559	0.568	PLS-SEM < LM

From Above Table 7.78 we can say that all indicators BI1 to BI4 have lesser values than LM, We can say that Model has high Predictive Power.