

Information Use Pattern of Students of the Kenyatta University with a Focus on Gender and Cognitive Factors

Daniel Wambiri Muthee
School of Education
Kenyatta University, Nigeria

Johnson M. Masinde
School of Information Management
Central China Normal University
China



ABSTRACT: *Use of proper design enhances the utilization of gamification with game parts in a non-game environment. Parents use the gamification applications with the help of the Technology Acceptance Model. We have initiated a study and found that the use of gamification applications increases parenting performance, productivity, and effectiveness. Further results revealed that the parents are not intended to use gamification in their occupations and that people who influence their behaviors do not think that they should use gamification applications. For this work, a quantitative approach and data analysis is performed using the SPSS program. The experimental results are analyzed and interpreted by tabulating frequency, percentages, t-test and Anova tests. It is possible to extend this study which can able to provide training on how parents can use gamification applications for their children's education within the framework of the Technology Acceptance Model.*

Keywords: Gender, Cognitive Factors, Graduate Students, Information Seeking

Received: 19 January 2020, Revised 12 April 2020, Accepted 29 April 2020

DOI: 10.6025/jism/2020/10/3/82-96

Copyright: with Author

1. Introduction

Information seeking behaviour is broad and involves a set of actions that an individual takes to express information needs, seek information, evaluate and select information, and finally use this information to satisfy his/her information needs. It occurs when an individual senses a problem situation which internal knowledge do not satisfy, normally referred to as the mental state "Anomalous State of Knowledge" (ASK) (Kassim, 2017). (Tsia-ying Hsieh, 2015b) asserted that Information seeking is a natural and necessary mechanism of human existence. It is a basic activity of all people and is manifested through a particular way of behavior.

At the root of information seeking are personal cognitions which are known as cognitive needs. (Savolainen, 2013) argued that there are three categories of cognitive needs: Need for new information, need to elucidate the information held and need to confirm information held. The motives that give rise to cognitive needs resulting to information seeking are physiologi-

cal, affective and cognitive (Masinde, 2016). Cognitive approaches examine the individual user attributes as the main driving forces behind information seeking behaviour. Such approaches would help libraries to answer basic questions such as, why do students approach, stop or avoid using university libraries.

Studies have employed the expectancy theory in investigation of cognitive factors that influence information seeking (Masinde, 2016; Savolainen, 2013; Wu, 2014). The Expectancy Theory suggests that people are motivated if valence, instrumentality and expectancy are present. The variable investigated in the context of the above theory is gender. Gender has previously been identified as a variable shaping information seeking behaviour. Gender refers to a person's biology which is culturally valued and interpreted into locally accepted ideas of what it is to be a woman or man. Studies have revealed multiple physical, mental and social differences in seeking information between men and women (Savolainen, 2013; Tsia-ying Hsieh, 2015a). For instance, (Tsia-ying Hsieh, 2015a) stated that information seeking may vary according to the gender of the user, making it a variable in information seeking process.

The study of gender as a factor influencing human behaviour may therefore be helpful to have a better understanding about the cognitive and social bases of human information processing, and which may also have significant implications for designing information services and systems (Kassim, 2017). gender differences if any will therefore be investigated through correlation coefficient in the context of Expectancy Theory. The motivational process among the male and female will then be examined to establish whether Gender Influences Information Seeking behaviour of Graduate Students at Kenyatta University

1.1. Conceptual Framework

The conceptual model in this study is based on Expectancy Value Theory as propounded by (V.H. Vroom, 1964) and imported by (Campbell, 1970). The common factors are valence, expectancy, Instrumentality, value of outcome and Effort. These perceptions are tempered by service personnel's (interaction service quality) and users past experience. These last factors influence service users while they are performing the service.

Expectancy theory suggests that people are motivated if valence, instrumentality and expectancy are present. The variable being investigated in the context of the above theory is gender. Gender refers to a person's biology which is culturally valued and interpreted into locally accepted ideas of what it is to be a woman or man. The study assumes an awareness of cultural and biological identities among the respondents. It is significant that this research expected to develop a theoretical framework or model which can be used by academic libraries as a basis for developing both digital and reference desk service that would meet dynamic user needs. To do that gender differences if any were investigated through correlation coefficient in the context of Expectancy Theory. The motivational process among the male and female was examined to establish whether there was a difference.

2. Literature Review

Gender has been identified as one of the variables influencing information seeking (Khaola, 2015; Savolainen, 2013; Tsia-ying Hsieh, 2015b). For instance, (Khaola, 2015) in a study of cancer information service found that use of the service was mainly 80 per cent by women. In another study by (Sacks, 1994) as quoted by (Conrad, 2014) it was found that high school student attitudes towards computers and their use varied by gender. Gender was considered as a major predictor of internet use and attitudes. Males seemed to enjoy browsing for enjoyment while females tended to use it for work related purposes. Equally, (Rehman, 2016) observed that girls and boys differed in their search patterns when using library services to find specific questions. According to the study boys tend to use horizontal search methods when searching the web in which they iteratively submit searches and then scan the document snippets returned as search results. In contrast, Girls tend to employ vertical search methods in which they tend to open and browse the web pages returned by the search engine without reviewing the list or filtering out irrelevant results. In the end, the strategy adopted by most boys tends to provide superior search performance.

(Wu, 2014) also established that females tended to experience more difficulties finding information online. They felt less competent and comfortable using the internet. The study however found no link between females and low self-efficacy meaning it is not the gender variable that determines self-efficacy. While this study alluded to the fact that gender studies in general had been done, it tried to ground gender as a variable within the motivational process theory in the context of academic libraries.

(Brindesi, 2013) while investigating the factors that affect international students' information seeking behaviour as well

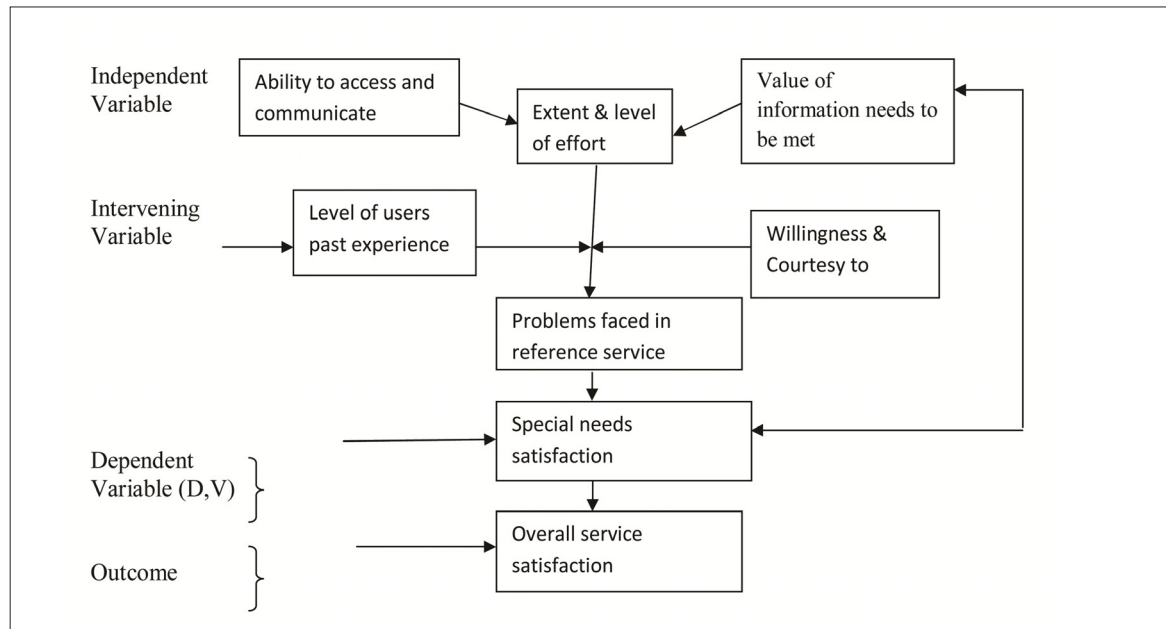


Figure of the Conceptual Framework

found out that female immigrants had higher social-cultural, and psychological adaptation scores than male immigrants. The female gender had lower competencies in using computerized library resources and technologies. According to (Brindesi, 2013) most database searching requires extensive computer use and familiarity, which affected their ability. Therefore, in this area, males were more satisfied and confident and had fewer difficulties than females. Another study by (Halder, 2010) also argued that gender is an essential variable in information seeking behaviour. The study stated that satisfaction with a service may vary according to the gender of the user.

In summary a review of literature revealed that the information needs as well as the information seeking behaviour, in general, among the male and female do not show any uniform and consistent pattern. The findings also have revealed that there are variations of needs and behaviour for seeking information among an individual man and woman. In this context, the study seeks to investigate gender and cognitive factors influencing Information Seeking of Graduate Students at Kenyatta University

3. Methodology

The purpose of this study was to investigate gender and cognitive determinants of library user's information seeking motivational process Kenyatta University. The determinants were based on (V.H. Vroom, 1964) expectancy theory of motivation. The theory suggests that individuals will be motivated if three factors are present:

Valence – They must value the outcome;

Expectancy: They should expect that they are capable of performing the behaviour that is instrumental to the outcome.

Instrumentality: They must believe that the desired behaviour is instrumental in achieving the valent outcome

To achieve the intended objective, this study focused on gender as one of the influencing factors of the cognitive factors that influence information seeking behaviour of learners at Kenyatta University library.

3.1. Research Design

This study utilized survey design as a framework for the collection of data. The survey research was cross-sectional and the data was collected using a questionnaire and focus group interview guide. The data collected was quantitative in nature and

was collected from the Department of Library and Information Science. The research then examined the relationship between gender and the cognitive factors that affect the information seeking process of users.

3.1.1. Variables

A variable is an attribute on which cases vary. Cases in this study were students who use the library. The independent variables in this study were the information needs and the expectancy levels. The dependent variable in this study was gender.

Value of Outcomes

According to (V.H. Vroom, 1964) value of outcome is the valence. The valence is an individual's subjective judgment about possible outcomes. There can be a discrepancy between the anticipated satisfaction from an outcome (valence) and the actual satisfaction from an outcome (value). Outcomes are need satisfactions. This variable referred to the anticipated value by library users when their information need is satisfied through the use of the service. An outcome is positively valent when a person prefers attaining it to not attaining it and outcome has a valence of zero when a person is indifferent to attaining it. This concept assessed differences among the male and female users with regards to their subjective judgment about possible outcome. A five point Likert scale was used on each of those aspects.

Effort to Performance Expectancy

This is the second variable in this study. It is the library users estimated probability that he or she can accomplish a task given effort. It is the likelihood that he or she can perform a task at a given level and that her/his effort will lead to successful performance. This was scored on a Likert scale. Three main areas were scored: the conviction that different genders will be able to use the service without problems and that different genders will be able to communicate with the librarians offering the service.

Effort by the User

This is the amount of energy library users exert in the information seeking process. According to (Porter, 1968) effort is influenced by the value of rewards. If the rewards can satisfy individuals needs for security, self-esteem, autonomy and self-actualization the rewards are considered valuable to the individual. Judging the value of rewards individuals determines the effort they put in a search. There is also perceived probability that there is a close relationship between effort and reward.

Service Performance/Accomplishment

Library services are produced interactively with the different genders. The study examined how well different genders performed the basic requirement of the reference service without difficulty. This variable focused on different genders role in service delivery. Access issues and challenges faced by the different genders while performing the tasks were assessed and scored.

User Perception Interaction Service Quality

Interpersonal interaction that take place during the service delivery between the reference librarian and the different genders were assessed. It considered the service provider's response, willingness, courtesy and ability. The different genders perception of the service quality assessed.

Users Past Experience

This refers to the previous and memorable experience a user has had with the service. It was the overall experience by the service user. This was important because it influenced the different genders' own convictions in their own effectiveness (Bandura, 1977) or self-efficacy.

Library User Service Satisfaction

This is the overall assessment of the service experience by the different genders. It was the subjective judgment of the service by the different genders. It included service features, attribution of service success or failure and perceptions of equity and fairness. Extent of the different genders' satisfaction, the likelihood of repeat use and the possibility of the users recommending the service to somebody else

3.1.2. Location of the Study

This study was carried out in Kenyatta University Library. The role of a library is to support teaching, learning and research.

Kenyatta University was selected because:

- i. The Post-Modern Library has the best postgraduate facilities inaugurated in 2010 with a sitting capacity of 6000 students. The investment took over 10 million USD.
- ii. New information technology based services are being offered by the library. It is important to find out the determinants of user behavior.
- iii. Kenyatta University has one of the largest number of graduate students (13,193). The library service requires to know how to meet the information needs of such users.

3.2. Target Population

The number of registered graduate students stood at 13,193 in 2017. This was the target population in this study.

3.3. Sampling Techniques

To select the participants, non-probability sampling or purposive sampling was used. The study targeted to collect data from a sample of 373 out of a total of 13193 postgraduate students. The design demanded that the data be collected at one point in time from a specified population (Ary, 2010) especially where the data collected was to be subject to correlation analysis. Postgraduate library users were intercepted in the postgraduate floor of the postmodern library. They explained the purpose of research and then requested to spare a few minutes to fill in the questionnaire. The instruments were collected as soon as they were filled.

Sample Size

Sample size was calculated by determining the sample size of an infinite population and then adjusting it to the sample size of the required population which was 13193 (Cochrun, 1977). For the purpose of this study, 95% confidence level was expected. This corresponded to a Z score of 1.96 and a 5% margin of error (Saunders, 2009). Given that the students (13193) have equal chance of being selected the sample was 373.

Calculation of Sample Size

Sample size was calculated by determining the sample size of the infinite population and then adjusting it to the sample size of the required population (Cochrun, 1977) Formulae of sample size for infinite population:

$$S = Z^2 * P * (1-P) / M^2$$

S = Sample size for the infinite population

Z = Z score

P = Population proportion (Assumed to be 50% = 0.5)

M = Margin of error

Z score determined based on confidence level

Confidence level = 95%

Z = 1.96

M = 0.05

Substitution of formulae [$S = (Z^2) * P * (1-P) / (M^2)$]

$$S = (1.96)^2 * 0.5 * (1-0.5) / (0.05)^2$$

$$S = 3.8416 * 0.25 / 0.0025$$

$$S = 384.16$$

Adjustment of the sample to the required population

Population of Kenyatta University Post Graduate Students is = 13193

Formulae for Adjusted Sample size = $(S) / 1 + [(S - 1) / \text{Population}]$

$$\text{Adjusted Sample size} = 384.16 / 1 + [(384.16 - 1) / 13193]$$

Adjusted Sample size for Kenyatta University Post Graduate Students = 373

3.4. Research Instruments

The study used a questionnaire which was developed on the basis of the objectives of the study and the variables. The variables were: Interaction service quality, Effort to performance Expectancy, User needs satisfaction, Service Performance (Service satisfaction), Effort by the user, Outcome, Value of outcomes, Users past experience and Gender relationship with cognitive variables.

3.5. Pretesting/Piloting study

A pilot study was carried out in Methodist University, Nairobi campus. This is a private university. It was selected because it has a library that offers digital information services. It is also well funded. This involved seeking permission from the University Librarian. Once permission was granted an appropriate date for distributing the questionnaire was fixed. About twenty participants were selected. The questionnaire was given out to them and collected later.

3.5.1. Validity

To collect data, the researcher ensured that the questionnaire is appropriate. This was done by testing internal consistency of the questionnaire. Reliability refers to the consistency of a measure of a concept. It entailed asking whether the measure was stable so that the study could be confident that the results relating to that instrument reliable and fluctuating. Cronbach's alpha coefficient was used to test reliability. The figure 0.70 alpha levels was employed as a rule of thumb to denote an acceptable level of reliability.

The instrument already developed for this study was a multiple-item measure for each concept for example outcome, E P Expectancy and past experience. This was done to avoid the potential problems associated with overreliance on a single indicative measure. The study used Cronbach's alpha coefficient to test consistency of the questions. Each variable achieved a coefficient greater than 7.

3.6. Data Collection Techniques

Survey research asked questions about people's gender, beliefs, opinions, characteristic's and behaviour. Survey questionnaire was used as a source of data. The data collected described the variable of gender as a factor that influences information seeking among the students. (Carol, 2003) argues that the types of conclusions that can be drawn vary by the type of questions asked and the method used. The type of questions asked were categorized as:

- i. Preference questions which focused on the gender of the participants and what they thought about a library service.
- ii. Reported behaviour and likely behaviour focusing on what different genders say they do in terms of making choices to use or avoid using the library.

3.7. Data Analysis Techniques

The data collected was quantitatively analysed. The following steps were followed:

- i. Organize and learning the data.

- ii. Summarize the findings using averages, and is presented inform of tables.
- iii. A correlation analysis was done to examine how closely the variables were connected. These variables were ones identified to have some bearing on information seeking. Correlation research helped in understanding the relationships between gender and the factors which were being considered in this study as the ones which were likely to drive information seeking among graduate students. The correlation coefficient ranges from +1 showing a perfect positive correlation and a -1 showing a negative correlation.
- iv. The connections between variables were explored through finding out associations of two variables to a significant level using chi-square as a statistical test. It was tested as $P < 0.05$ (1 in every 20).

The study also used multiple regression analysis to interpret the results. This allowed exploration of interrelationship among the variables.

3.8. Logistical and Ethical Considerations

All studies need to abide by some ethical principles. This study took great care with the issues that arise in relations between the research and research participants. This included harm, confidentiality Informed consent and Invasion of privacy.

4. Findings, Interpretation and Discussion

The purpose of this study was to determine gender and cognitive factors influencing Information Seeking of Graduate Students Kenyatta University. The study was based on the expectancy theory of motivation. The findings are discussed and interpreted below

4.1. General and Demographic Information

This section presents data on personal characteristics in the study. These were based on gender. The respondents for this study were postgraduate students at Kenyatta University main campus library. The data was collected in November and December 2017. This enabled the study to access both regular, IBP and DVSOL students. Students participated out of an expected sample size of 373. However, 4 responses were struck from the study during data cleaning. A total of 369 were analysed. Of these 222 (60.1 per cent) were male and 147 were female (39.9 per cent). Table 1 below shows the demographics of the study.

Table 1 representing gender of the participants.

Gender of the participants	
Male	222
Female	147
Total	369

Table 1. General and Demographic Information

Relationship between Cognitive Factors and Gender

4.2. Outcomes and Gender

The outcome in this study meant Information needs satisfaction. It had four main elements as follows:

- Helpfulness of the service given by librarians.
- Satisfaction with information acquired through face to face reference service.

- Usefulness of information by reference librarians.
- Satisfaction acquired through digital reference service.

Nearly three quarters of male students (72.6 per cent) reported that librarians gave helpful information and an almost equal proportion (71.2 per cent) of female students felt that the information given to them by face-to-face reference service was helpful. There seemed to be no difference between male and female students on the helpfulness of information given to them. On the relationship between gender and helpfulness of information given to them a correlation coefficient of - .003 was found. The two variables related negatively. The score on the issue of satisfaction did not show significant differences among male and female as shown in the tables below. A very small number was dissatisfied with the information acquired through face-to-face reference service as shown by those who disagreed with the statement. About one-fifth (24.0 per cent) of female students were not decided on whether they were satisfied or not whereas twenty per cent of their male counterparts were also undecided.

Satisfaction and Gender

A total of 64.5 percent (male) and 56.4 per cent of female agreed that information given to them by reference librarians was useful. Further analysis showed that less than one-fifth of female (19.3 per cent) and male (15.7 per cent) strongly disagreed that the information given by face-to-face reference librarians was useful. Table 2 below shows the Satisfaction and Gender.

Gender	Satisfaction	Dissatisfaction
Male	64.5	15.7
Female	56.7	19.3

Table 2. below shows the Satisfaction and Gender

Satisfaction with Information Acquired through Digital Reference

There was a difference of opinion (12 per cent) between male and female on the satisfaction with information acquired though digital reference. The male seemed to be more satisfied than female. A total of 62.0 per cent of male and 50.3 per cent female were satisfied with information acquired through digital. There seemed to be a no significant difference of opinion among the male and female on indicator of satisfaction with information acquired through digital reference service. A correlation of - 0.84 was established between gender and outcomes.

4.3. Gender and Value of Outcome

On assessing whether there were gender differences on the cognitive variable of “value of outcomes”, three issues were considered:

- Desirability of information needed to be met;
- Importance for information needs to be met,
- And value of information needs to be met through face-to-face reference service.

Table 1 shows the importance of information needs to be met through face-to face and gender.

The male students (63.3 per cent) agreed that it was very valuable for their information needs to be met through face-to-face reference service although one-fifth (18.4 per cent) however disagreed. About 68.4 per cent of female students agreed whereas 16.5 per cent disagreed with the statement that it was very valuable for their information needs to be met through face-to-face reference service. Majority of both male (63.3 per cent) and female (68.4 per cent) agreed that it was very valuable for their information needs to be met through face-to-face reference service. Those who felt that it was not valuable for their information needs to be met through face to face reference service ranged between (female) 16.0 to 18.0 per cent (Male). There did

not seem to be significant differences between the gender perception on the value of outcome variable.

Table 3. below show the Gender and Value for Information needs to be met through.

Gender of respondent	Very valuable for info met through ref service										Total	
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree			
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Male	17	7.9	23	10.5	40	18.3	84	38	56	25.3	220	100
Female	12	7.9	13	8.6	22	15.1	59	40.1	41	28.3	147	100
Total	29	7.9	36	9.7	62	17.1	143	38.8	97	26.5	367	100

Table 3. Gender and Value for Information needs to be met through reference service

A similar finding was obtained on the importance for their information needs to be met through face-to-face reference service (62.6 per cent male and 68.0 per cent female). On whether it was desirable for their information needs to be met through face-to-face reference service 67.6 per cent male and 70.3 per cent female agreed with the statement that it was important for them to have their information needs met through face-to-face reference service. An equal number (14.5 per cent male and 14.5 per cent female) disagreed with the statement. Table 4 and figure 1 below show the importance and desirability of information needs to be met through face-to face and gender.

Gender of respondent	Very important for info met through ref service										Total	
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree			
Male	13	5.8	27	12.1	43	19.6	97	43.8	41	18.8	221	100
Female	9	6	15	10	24	16	72	49.3	28	18.7	148	100
Total	22	5.9	42	11.2	67	18.2	169	46	69	18.7	369	100

Table 4. Importance of Information Needs to be Met through Face-to Face and Gender

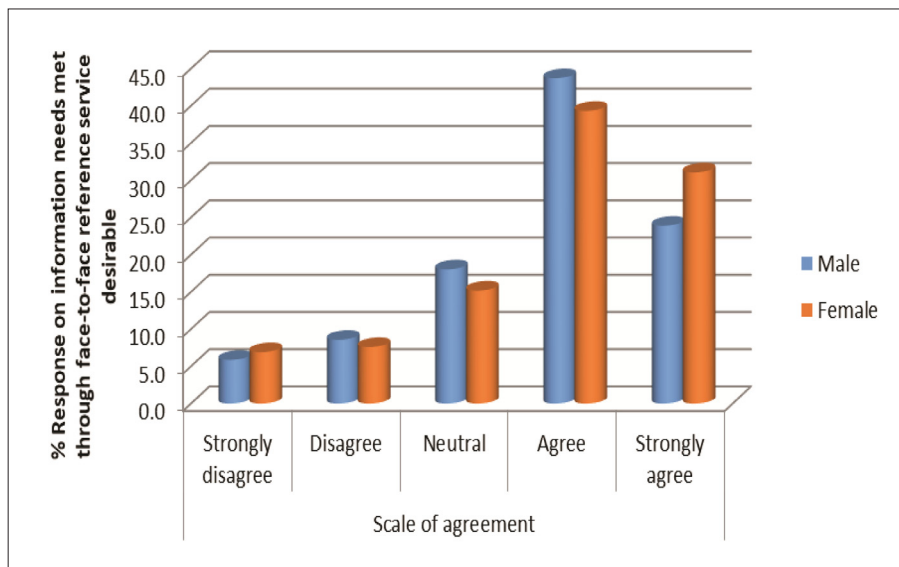


Figure 1. Desirable for Information needs to be met through Ref. Service

Considering gender and value of outcome there seemed to be no gender difference on the issues of desirability (68.7 per cent), importance (64.7 per cent) and value (65.3 per cent) of needs to be met through face-to-face reference service. The gender variable showed a -0.52 correlation to value of outcome. This was a medium negative correlation between the two variables. This was considered significant at 0.05 level of significance.

Those who didn't think it was valuable, important and desirable for the information needs to be met through face-to-face were comparatively few in the three indicators.

4.4. Gender and Interaction Service Quality

Interaction service quality was assessed in two ways: -

- Willingness of face-to-face personnel to help.
- Courteousness of face-to-face reference service personnel

Over half (53.1 per cent) of the male students thought that the service personnel had a high or very high willingness to help. The female respondents who rated the service personnel's willingness to help as both high and very high were 36.1 per cent. There was a difference of rating between male and female of 17.0 per cent. Of the students who rated willingness to help as low or very low the situation was as shown in Table 5 below.

Gender of respondent	Rating willingness of face-to-face reference service personnel to help										Total	
	Very low		Low		Neutral		High		Very high			
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Male	18	8.3	34	15.4	51	23.2	96	44.3	19	8.8	218	100
Female	22	15.1	34	23	37	25.7	42	28.9	11	7.2	146	100
Total	40	11.1	68	18.4	88	24.2	138	38.2	30	8.2	364	100

Table 5. Willingness of Face-To-Face Ref. Service to help by Gender

The male respondents rated the service personnel's courtesy to be high (39.7 per cent) or very high (10.5 per cent). This meant that about half (50.2 per cent) of the male respondents rated the service personnel's courtesy positively. The female students rated the service personnel's courtesy as high (9.5 per cent) and very high (9.4 per cent). Table 6 below shows Courteousness of face –to-face Reference Service Personnel.

		Percent	Total Per cent
Male	Low	15.4	23.7
	Very low	8.3	
Female	Low	23.0	38.1
	Very Low	15.1	

Table 6. Courteousness of face –to-face Reference Service Personnel

Courteously and Gender

The female students considered service personnel courteousness to be below average (38.9 per cent). Overall one-third (30.9 per cent) of female respondents considered service personnel's courteousness to be low or very low, whereas one fifth (21.0

per cent) of male respondents rated the service personnel's courtesy to be either low or very low. Despite the differences between male and female, gender did not seem to be significant enough. Overall interaction service quality and gender showed a negative relationship (-0.156). This meant that gender and interaction service quality were negatively correlated. Gender and interaction service quality related to each other negatively.

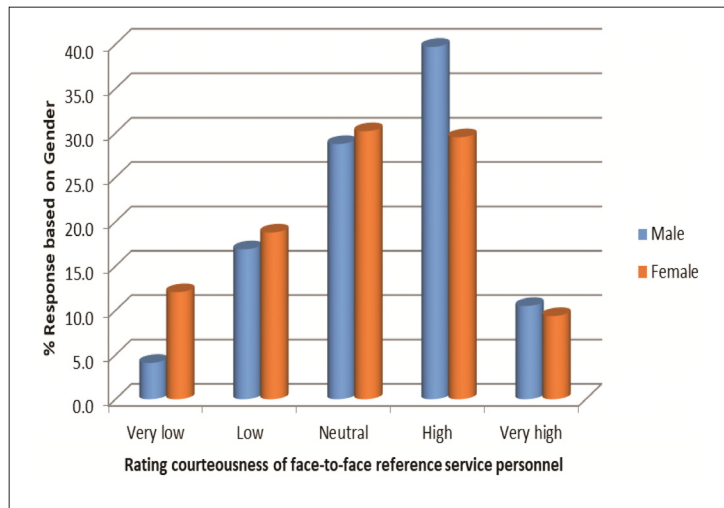


Figure 2. Courteousness and Gender

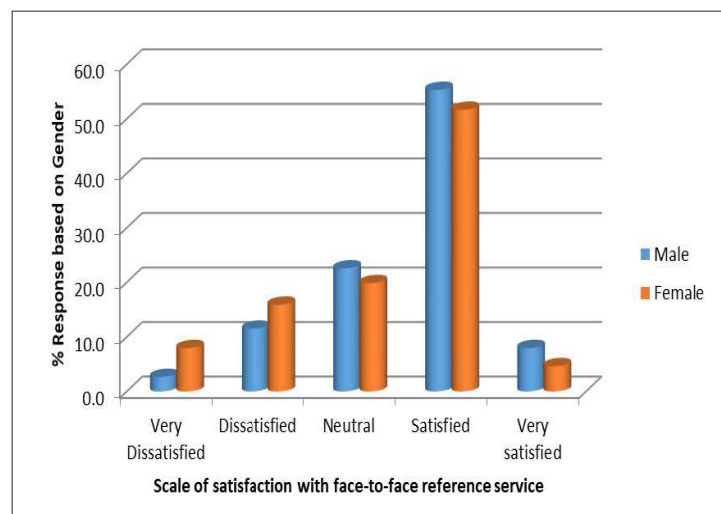


Figure 3. Satisfaction with face- to- face reference service and Gender

4.5. Gender and overall satisfaction with face-to-face reference service

The level of satisfaction of male (63.3 per cent) and female (56.3 per cent) students was comparatively close to the overall group satisfaction (68.0 per cent). A correlation of -0.100 was found between overall satisfaction and gender. Figure 3 below shows Satisfaction with face-to-face reference service and Gender .

This meant that gender and overall satisfaction were negatively correlated. The dissatisfaction level was higher among the female (24.0 per cent) than male students.

That results agreed with the satisfaction ratings in that the female students were less satisfied than male students. Equally, on the likelihood of using face-to-face reference service in the future more male students (68.6 per cent) were likely to do so than female students (61.6 per cent). The ratings for likelihood to use the service in the future and the likelihood of recom-

mending the service to friends and colleagues were comparatively close among male and female students. They were both likely to use the service and recommend the service to friends.

Gender of respondent	Likelihood of use of face-to-face reference service in future										Total	
	Very unlikely		Unlikely		Neutral		Likely		Very likely			
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Male	16	7.5	28	12.8	24	11.1	137	62.4	14	6.2	219	100
Female	11	7.3	32	21.9	14	9.3	84	58.3	5	3.3	146	100
Total	27	7.4	60	16.4	38	10.3	221	60.7	19	5	365	100

Table 7. Likelihood of using face-to-face service in future Gender

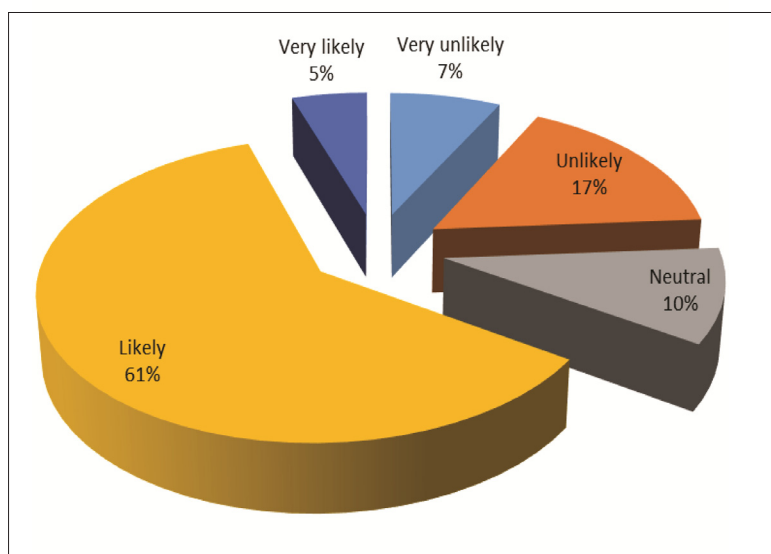


Figure 4. Likelihood of use of Face- to- Face Ref. Service in the Future

Only 15.6 per cent of male and one fifth (23.8 per cent) female students were not likely or very unlikely to recommend the face-to-face reference service to friends and colleagues. Overall library user satisfaction with the service was negatively correlated with gender. The decisions of recommending or not recommending face-to-face reference service to friends and colleagues was not likely to be influenced by gender. Table 6 and Figure 4 below shows the likelihood of using face- to- face reference service in the future.

4.6. Gender and Effort by Users of Face-to-face Reference Service

Effort by the user of reference service was considered in the following ways:

- Extent of use of reference service
- Level of effort spent using face-to-face reference service.

The respondents' scores between male and female on the extent use of face-to-face reference service were close. The majority (69.6 per cent) of male respondents considered the extent of use to be either low (21.3 per cent) or medium (48.3 per cent). The female (73.0 per cent) assessed the extent of their effort to be either low (27.6 per cent) or medium (45.4 per cent) as well. Both male and female scored the extent of use of face-to-face reference to be either low or medium. One fifth of male

assessed their extent of effort to be high (20.0 per cent) and 16.4 per cent of female. A small proportion rated their effort to be very high (4.3 per cent) male and 5.9 per cent female. There seemed to be an insignificant difference between male and female.

On relationship between gender and extent of use of face-to-face reference service there was a negative correlation of $-.054$.

Rating the level of effort spent using face-to-face reference service, it was reported to be mainly low (24.0 per cent) and medium (48.8 per cent) for male. The female had a combined level of 70.4 per cent clustered around low and medium effort. Both male (72.8 per cent) and female (70.4 per cent) rated their level of effort very closely together.

On relationship between gender and extent of use of face-to-face reference service, a negative correlation of $-.054$ was found. Gender did not seem to influence effort by both male and female.

On whether there was a difference between male and female, the extent use of face-to-face reference service was also close. The majority (69.6 per cent) of male considered the extent of use to be either low (21.3 per cent) or medium (48.3 per cent). The female (73.0 per cent) assessed the extent of their effort to be either low (27.6 per cent) or medium (45.4 per cent). Both male and female assessed the extent of use of face-to-face reference to be either low or medium. One fifth of male assessed their extent of effort to be high (20.0 per cent) (16.4 per cent) female. A small proportion rated their effort to be very high (4.3 per cent) male and (5.9 per cent). There seemed to be an insignificant difference between male and female. Rating the level of effort spent using face-to-face reference service it was found to be mainly low (24.0 per cent) and medium (48.8 per cent) for men. The female had a combined level of 70.4 per cent clustered around low and medium effort. Both male (72.8 per cent) and female (70.4 per cent) rated their level of effort very closely together. On the correlation between gender and effort, there was a negative correlation ($r = 0.54$). A medium negative correlation was established.

4.7. Performance/Accomplishment of the Service and Gender

Performance of the service was assessed in two ways:

- Problems faced with digital reference service
- Problems faced communicating with reference librarian.

On a scale of five items the respondents were required to agree or disagree with two statements provided.

About 58.6 per cent of male and 54.9 per cent of female students reported that they had problems with digital reference service. About 12.3 and 12.6 per cent of both male and female respectively were neutral. This should mean that in both male and female over 60 per cent had problems with digital reference service. Only about one-third (28.9 per cent) of male and a similar proportion of female (32.5 per cent) reported that they did not have problems with digital reference service. Performance/Accomplishment of service by users was found to be negatively correlated to gender by -0.47 .

On the problems faced with communicating with reference librarian 49.4 per cent (male) and 40.8 per cent (female) reported that they did not have problems. At the same time one third, (31.6 per cent) male and 34.2 per cent of female acknowledged that they had problems with communication with reference librarians. Hence about half of the respondents (both male and female) could communicate with reference librarians without problems. Both female and male had very close findings on the variable of communicating with reference librarians. A negative correlation coefficient of -0.02 was found between gender and ability to communicate with reference librarian.

4.8. Users Past Experience and Gender

Users past experience was assessed in two main areas:

- Experience with reference service
- Experience with digital reference service

Users experience with face-to-face reference service was rated to be mainly low (27.6 per cent) and medium (44.2 per cent).

This meant that about 71.8 per cent of the respondents rated their experience to be mainly medium and low. Only about 8.9 per cent were neutral. About one-fifth (19.2 per cent) reported that they had high or very high experience with face-to-face reference service. These rating scores were comparatively close for both male (70.7 per cent) and female (73.5 per cent). Separately the respondents who reported that their level of experience with face-to-face reference service was mainly low or medium. A similar pattern was found on those respondents who considered their experience to be high (19.7 per cent) and female (18.6 per cent). Both male and female scored their experience similarly on the face-to-face reference service.

A negative correlation coefficient of $-.010$ was found. Gender and level of experience were negatively correlated. The level of experience with digital reference service was mainly low (20.7 per cent) and medium (33.1 per cent). This meant that about half of the male (54.2 per cent) and female (53.3 per cent) had low and medium experience. Apparently 37.6 per cent of male and 37.5 per cent (female) considered their experience with digital to be high. An analysis of the level of experience in both male and female showed that it was close and there was little difference. A negative correlation of $-.026$ was found between level of experience with digital and gender.

4.9. Cognitive Factors and Gender

Previous studies had found two main positions on gender and user services. Some found that there was a difference between male and female on use of service (Brindesi, 2013; Ford, 2001; Halder, 2010). Some studies (Brown, 2001; Tsia-ying Hsieh, 2015b) found no gender difference among students' use of digital library between male and female (Rehman, 2016) This study found no gender differences in all the variables considered including interaction service quality, outcome (need satisfaction,) service satisfaction, user's performance of service, past experience, expectancy and effort. The implication of this was that there is no need for mainstreaming gender in service programming in the library service.

5. Conclusions

This study examined whether there was a relationship between gender and the cognitive factors being studied. The study found that there was no relationship between gender and all the cognitive variables. Information seeking was not affected by gender as there was no gender based difference. There were more similarities between male and female on the cognitive information seeking. Gender made no difference in predicting cognitive information seeking.

The implication of this finding was that the library need not develop any interviewing strategies to develop mental images/experience based on gender.

References

- [1] Bandura, A. (1977). Self-efficacy: towards unifying theory of behavioural change. *Psychological Review*, 84 191-215.
- [2] Brindesi, H., Monopoli, M., Kapidakis, S. (2013). Information seeking and searching habits of Greek physicists and astronomers: a case study of undergraduate students. *Proceedings in Social and Behavioural Sciences*, 73, 785- 793.
- [3] Brown, P., Challagala, G., Ganesan, S (2001). Self-efficacy as a moderator of information seeking effectiveness. *In Journal of applied psychology.*, 86 (5), 1043-1051.
- [4] Campbell, J. P. D., M. D. Lawler, E. E., Weick, K. E. (1970). *Managerial Behavior; Performance and Effectiveness*. Newyork: McGraw-Hill Book Company.
- [5] Carol, T. (2003). Use and Users of electronic Library resources: an overview and analysis of recent research studies. Council on Library and Information resources.
- [6] Cochran, W. G. (1977). *Sampling Techniques* Willy & Sons. Conrad, S. (2014). Toward Improved Discoverability of Scholarly Content: *Cross-Sector Collaboration Essentials Collaborative Librarianship*, 6 (1), 42-46.
- [7] Ford, N., Miller, D., Moss, N. (2001). The role of individual differences in internet searching: an empirical study. *Journal of the American Society for Information Science and Technology*, 52, p 1049-1066.
- [8] Halder, S., Ray, A., Chakrabarty, P. K. (2010). Gender differences in information seeking behaviour in three universities in West Bengal, India. *The International Information & Library Review*, 42 (4), 242-251.

- [9] Kassim, N. A. (2017). Evaluating users' satisfaction on academic library performance. *Malaysian Journal of Library & Information Science*, 14 (2), 101-115.
- [10] Khaola, P. M., M. (2015). Perception of library service quality, satisfaction and frequency of use of library resources. *Journal of humanities and social sciences*, 7(1), 44-52.
- [11] Masinde, J. M. (2016). Investigation of mobile library user needs of international students based on the expectancy theory of motivation. *Research journal of library sciences*, 4(5), 14-30.
- [12] Porter, L. W. L., E. E. (1968). *Managerial attitudes and performance*. Dorsey Press.
- [13] Rehman, S. U. (2016). Measuring service quality in public and private sector University libraries of Pakistan. *Pakistan journal of information management & libraries*, 13(1), 1-11.
- [14] Saunders, M., Lewis, P., Thornhill, A. (2009). *Research Methods for Business Students*. Pearson.
- [15] Savolainen, R. (2013). Approaching the motivators for information seeking: viewpoint of attribution theories. *Library and Information Science research and International Journal*.
- [16] Tsia-ying Hsieh, K.-c. W. (2015a). The Influence of Gender Difference on the Information-seeking Behaviors for the Graphical Interface of Children's Digital Library. *Universal Journal of Educational Research*, 3, 200 - 206.
- [17] Tsia-ying Hsieh, K.-c. W. (2015b). The Influence of Gender Difference on the Information-seeking Behaviors for the Graphical Interface of Children's Digital Library. *Universal Journal of Educational Research*, 3, 200 - 206.
- [18] Vroom, V. H. (1964). *Work and motivation*. Wiley.
- [19] Wu, K. C., Tang, Y. M., Tsai C. Y. (2014). Graphical interface design for children seeking information in a digital library. *Visualization in Engineering*, 2(5).