



# Gender Differences in Utilization of Information and Communication Technology Among Students in Library and Information Science

Boma Torukwein David-West<sup>1</sup>, Joy Nneoma Akameze<sup>2</sup>

<sup>1</sup>Department of Library and Information Science, Faculty of Education, University of Port Harcourt, Port Harcourt, Nigeria

<sup>2</sup>Department of Sports and Exercise Medical Sciences, School of Sports and Exercise Medicine, University of Health and Allied Sciences, Ho, Ghana

## Email address:

boma.davidwest@uniport.edu.ng (Boma Torukwein David-West), jakameze@uhas.edu.gh (Joy Nneoma Akameze)

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**Abstract:** Information and communication technologies are very vital for everyday life. It has gained a lot of attention in the education sector. It also carries individual differences in its use and relevant skills. It is utilized in all areas of life for different purposes. The major objective of the study was to investigate how male and female undergraduates of Library and Information Science of University of Port Harcourt utilize Information and Communication Technology for academic and leisure purposes. The study adopted a descriptive survey research design. The target population comprised of undergraduate students, year 1 to year 4 of the Department of library and Information Science, University of Port Harcourt (2019/2020) session totaling (222). The study implemented the simple random sampling technique procedure. The study sample size was (111) proportionally distributed among all undergraduate students of Library and Information Science Department. Questionnaire was used for data collection, (222) copies of questionnaire were administered, 90 were returned which was deemed usable, thereby generating 81.08% response rate. The results were analyzed using mean(x) to answer the research questions and while z-test was used to test the hypotheses at 0.05 significant level. The study revealed that there is a significant gender difference in the utilization of ICT among undergraduates of Library and Information Science. Further findings revealed that female use ICT facilities for academic purposes more than their male counterparts. It was recommended among others that students need to effectively and efficiently explore ICT facilities to their advantage academically not for leisure for optimal performance in their studies.

**Keywords:** Gender, Utilization, Information, Communication, Technology, Undergraduate

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## 1. Introduction

### 1.1. Background

Information and Communication Technology (ICT) is a set of activities that is electronically through processing, transmission and display of information. Oye, N. D. et al. [25] asserts that information and communication technology (ICT) is applications, and services that involved computers, mobile phones, televisions, radio and satellite systems. It is the digital processing and utilization of information by the use of electronic computers which comprises the storage, retrieval, conversion and transmission of information. This is 21<sup>st</sup> century and information and communication

technologies (ICT) are penetrating more and more in all areas of life [10]. In order to achieve this rapid development of ICT in Nigeria and for ICT to permeate every sphere of our national development, the Federal Government in August 2011 created the Federal Ministry of Information and Communication Technology to ensure the transformation of Nigerian economy. According to Aribamikan, C. G. et al. [3], the Federal Government of Nigeria realized that the country was lagging behind in the race to become a digital society and saw the potential of ICT empowering people including the youths.

The role that ICT plays globally in revolutionizing education in the 21<sup>st</sup> century is undoubtable. Knowledge is the process of knowing through information, understanding

or skill that one gets from experience. More so, it is the total of what is available, the body of truth, information and principles acquired by humanities [10]. The digital revolution, which came as a result of knowledge and information explosion, has swept through university education and can be noted in several ways. First, lecturers' papers, books coursework, lecturers and even students' assignments are prepared using computers or laptops. Secondly, Wi-Fi is installed in most places on university campuses so that students can access it. David-West, B. T. [8] opined that the ability to retrieve information from online databases forms a prerequisite for information resources utilization. Therefore, it can be deduced from the foregoing that students are expected not only to be computer literate but have the necessary skills to utilize ICT facilities.

The importance of ICT in the educational sector especially institutions of higher learning cannot be over emphasized [13]. One of the components of computer-based communication means is the Internet. The Internet appears to be the largest computer network in the world today. Services like the e-mail file transference, documentation, library services and e-learning are all available in Internet services via Wi-Fi for Internet users [12]. University of Port Harcourt is among Institutions of Higher learning in Nigeria where ICT facilities have been made available to students especially Internet services. Though this is yet to be made available to all throughout the campus environment, the Donald Ekong Library, University of Port Harcourt made an unprecedented effort to lead by example in providing Wi-Fi for the students to access the Internet to assist students boost their research and academic activities. In this study, ICT does not only mean computers, it has to do with technological tools. These technological tools include laptop-computers, and internet (Wi-Fi).

More so, gender studies have reflected on every aspect of life which gains massive benefits from the utilization of technology [23], it is perceived that ICT should be used mostly for academic purpose when installed in the university, however there is always gender differences in utilization as observed by researchers such as Master, A. et al. [21] opined that prevalent theory and research assert that firmly held believes and cultural stereotypes might contribute to gender differences. Male students have greater access to hardware and spend more time using computers for leisure purposes; females are significantly more likely to use computers for school work [28]. Similarly, OFcom [24] asserts that female's utilization of ICT is for educational purposes to a greater extent than males may be widening the gender attainment gap, as research has also shown that high levels of leisure use of ICT may be positively associated with a negative impact on educational attainment. Similarly, the utilization of smart phones and tablets are part of students every day's life, it has become even more doubtful if it is still perceived as a male domain, and if girls use it less [27].

In this study with regards to knowledge and utilization of ICT facilities among students in Institutions of higher learning, it refers to the usefulness of provided ICT facilities for students

in the University of Port Harcourt. These includes research, use of the Internet, Computers and laptops, use of various software; communicate and exchange information such as email and web-based methods; use of digital cameras/video and video editing and upload files such as web-based mediums, presentations, applications, among others. It is against this backdrop Donald Ekong Library, University of Port Harcourt provided ICT facilities for the students. Prominent among these facilities is computers, laptop and Internet services (Wi-Fi). This Wi-Fi is installed in the department and can only be accessed by students within and around the departmental area. Access to these Internet facilities will ease the students learning, more especially in the area of research and other Internet uses so that the students don't spend money to buy data in order to have access to the Internet. However, both male and females make use of these ICT facilities but it has been observed that male students' utilization of the ICT facilities in and around the department differs from that of female students. Therefore, the authors seek to find out the various ways or purposes by which male and female students utilize the ICT facilities; whether they use them purely for academic purposes which it is meant for or for leisure. It is therefore pertinent to investigate the gender differences in the utilization of ICT facilities among undergraduates of Department of Library and Information Science, University of Port Harcourt.

## **1.2. Statement of Problem**

Information and communication technology is the digital processing and utilization of information by the use of electronic computers, which comprises the storage, retrieval, conversion and transmission of information. It was installed in the Department for students to use it effectively for their academic pursuit. Despite the effort of the department in ensuring that students have access to online materials for research and other academic engagement. Students appear not ready to seek for knowledge, or rigorous research on internet. They seem interested in passing exams, just concentrating on the lecture notes given to them. The male and female students appear not to make research so as to boost their knowledge which will encourage and boost the use of ICT in the proper direction and not for negative forms. It is against this backdrop that the researcher is carrying out this research on Gender differences in the utilization of information and communication technology among undergraduate students in the department of Library and Information Science, University of Port Harcourt.

## **1.3. Purpose of the Study**

The purpose of this study is to investigate how male and female undergraduates of Library and Information Science of University of Port Harcourt utilize Information and Communication Technology for academic and leisure purposes.

## **1.4. Research Questions**

To what extent do male and female undergraduate students

differ in the utilization of ICT facilities for academic purposes?

To what extent do male and female undergraduate students differ in the utilization of ICT facilities for leisure purposes?

### 1.5. Hypotheses

*Hypothesis 1:* There is no significant difference between male and female utilization of ICT facilities for academic purposes.

*Hypothesis 2:* There is no significant difference between male and female utilization of ICT facilities for leisure purposes.

## 2. Review of Literature

The advent of technologies has led to the utilization of information and communication technology which has become the direct determinant of the progress of nations, communities and individuals. Any country wishing to foster electronic distribution of information will need to have advanced communication system and this is why Nigeria as a nation could not be left out of this great technological advancement. Organizations worldwide including Institutions of higher learning knows ICT is inevitable in this 21<sup>st</sup> century. Adewoyin, J. A. [1] classified ICT into three groups namely: (i) information processing e.g. computer (ii) information dissemination e.g. communication via electromagnetic devices and system (iii) information presentation e.g. multimedia. ICT is described as a technological tools and resources used to create, organize, disseminate, communicate, store, retrieve and manage information.

ICT resources are electronic tools that can make teaching and learning more efficient and interesting. Tomte, C. [28] pointing out the usefulness of ICT in teaching and learning opined as follows: “electronic tools can make class more efficient; lectures more compelling, informative and varied reading assignments more intensive, interesting and accessible, lecturers' and students' papers more original and well researched”. Utilization of any e-resources depends largely on the lecturer or student's priority. Routine delivery of lectures, administrations of assignments, examinations, discussions, and paper presentations can be facilitated by using e-resources such as conferencing software, e-mail, power point software and computers. On the other hand, interactive white board and smart boards can be used to save in-class presentations in a web-compatible format for later review and discussion [25]. Hwee, L. T. & Rahman, T. A. [16] asserts that ICT use has provided organizations with cheaper and easier access to more accurate timely and useful information. Males and females use the internet connection for academic and leisure purposes.

A study conducted by Ayoob, M. L. & Bhat, A. N. [5] gender differences in attitude about information and communication technology among University students. The study provided insight about male and female students at University level in terms of information communication

technology use. The study revealed that gender differences existed regarding access to ICT among University students. The study recommended that educational institutions should create awareness about the use of ICTs.

More so A study conducted by Basavaraja, M. T. & Kumar, S. B. T. [7] gender disparities in the use of ICT: a survey of students in urban schools. The study found that there is significant association between the place ( $p=0.05$ ) and frequency ( $p=0.02$ ) of use of computers and gender. The study revealed that there are significant differences in the problems faced by students while using computers.

A study investigated by Gnamb, T. [14] the development of gender differences in information and communication technology (ICT) literacy in middle adolescence. The study revealed that small differences in ICT literacy between boys and girls. Similar study on use of internet facilities, eBooks', and reference books by Ahmed, H. [2]. The study revealed that there is no difference in ICT usage.

Nacri, H. [22] in the study gender discrepancies in the use of ICT in high education, according to the study gender differences turn out to be statistically significant when it comes to video games, boys exhibit more regular or intensive gaming while girls play more occasionally.

A study by Jo Tondeur et al. [18] investigated a study on gender differences in the IDT profile of University students. A quantitative analysis. The study revealed that women have a less positive attitude towards computers in general. However, their attitude towards computers for educational purposes does not differ from men. In the same way, being female is negatively related to computer use for leisure activities.

Selwyn, N & Bullon, K. [27] suggest that there is little to traditional difference in the ICT activities by boys and girls in school. The differences that do exist between boys and girls use of ICT at school may be largely due to boys spending more time at school playing computer games. Valentine, G. [30] found that boys were more intensive users of ICT for leisure.

Another study by Kent, N., & Facer, K. [19] reputed that 46% of boys and 35 percent of girls use computer for fun every day. These differences however should not mask the fact that girls do of course spend a significant amount of time using ICT for leisure purposes, particularly for online social networking [24]. According to traditional gender stereo types, girls are more zealous in educational activities than boys [11].

Illomaki, L. [17] conducted a study on does gender have a role in ICT among Finnish teachers and students. The study revealed that male teachers and students estimated their skills on a higher level than females, but in second phase, female students use and competencies were close to male teachers. There was a distinction between low use at school and high use during leisure time.

Empirical studies confirm that girls are more engaged in educational activities such as reading for enjoyment or learning for school than boys [20]. Time use study by Gracia, P. et al. [15] shows that girls spend more time for educational

activities than boys. Also, Drabowicz, T. [9] reports a higher educational ICT use for boys than girls. The study sought to find out the uncertainty surrounding the utilization of information and communication technologies by male and female students either for educational activities or leisure purposes. It is against this backdrop the study seeks to examine the gender difference in the utilization of information and communication technology by undergraduate students in the Library and Information Science Department University of Port Harcourt.

### 3. Methods and Procedure

Descriptive survey research design was adopted for this study. The population of the study comprised all the two hundred and twenty-two (222) undergraduate students of the Department of Library and Information Science. (2019/2020) session, the sample of the study was (111) students representing 50% of the population. The simple random sampling technique was adopted giving every member of the

population equal opportunity to be selected. The instrument titled "Gender Differences in Utilization of ICT Questionnaire" (GDUICTQ) was used to elicit information from the respondents. The instrument was validated by experts in the field of study. Reliability was by test re-test method using Pearson Product Moment Correlation ( $r$ ) and a correlation coefficient of 0.85 was obtained, indicating that the instrument was consistent, reliable and good for the study. The researcher and three (3) trained research assistants administered the (111) instruments to the respondents. At the end, 90 instruments were retrieved representing 81.08% return rate. Mean ( $\bar{x}$ ) was used to answer the research questions, while z-test was used to test the hypotheses at 0.05 level of significant and degree of freedom of 88.

### 4. Results

*Research question 1:* To what extent do male and female undergraduate students differ in the utilization of ICT facilities for academic purposes?

**Table 1.** Mean ( $\bar{x}$ ) scores of respondents on the extent male and female undergraduate students differ in utilization of ICT facilities for academic purposes.

S/No	Questionnaire items	Male Student (45)		Female Students (45)		Mean ( $\bar{x}$ ) set	Rank order	Remark
		$\bar{x}$	St.D	$\bar{x}$	St.D			
1.	I use it to download materials for my assignments and projects	2.00	0.65	3.33	0.38	2.67	2 <sup>nd</sup>	High Extent
2.	I read online with it	2.44	0.60	2.88	0.40	2.63	3 <sup>rd</sup>	High Extent
3.	I use it to attend conferences	2.44	0.60	3.44	0.38	2.94	1 <sup>st</sup>	High Extent
4.	I use to read my mails	2.20	0.65	3.17	0.56	2.59	4 <sup>th</sup>	High Extent
5.	Aggregate Mean ( $\bar{x}$ ) Score	2.20	0.63	3.21	0.43	2.71		

Data on Table 1 describes the mean ( $\bar{x}$ ) scores and standard deviation of the extent male and female undergraduate students differ in the utilization of ICT facilities for academic purposes. The mean ( $\bar{x}$ ) score of male undergraduate students utilization of ICT facilities for academic purposes (2.20) is lower than the criterion mean ( $\bar{x}$ ) of 2.50 while the mean ( $\bar{x}$ ) score of female undergraduate students utilization of ICT facilities for academic purpose (3.21) is higher than the criterion mean ( $\bar{x}$ ) of 2.50. This means that to a high extent, female students utilize ICT

facilities for academic purpose more than their male counterparts following the rank order from 1<sup>st</sup> to 4<sup>th</sup>. The aggregate mean scores ( $\bar{x}$ ) of 2.71 further explained that to a high extent female students uses it to download materials for assignment and projects, read and join online classes, attend conferences with it, and read mails with it, more than their male counterparts that underutilize ICT facilities.

*Research question 2:* To what extent do male and female undergraduate students differ in the utilization of ICT facilities for leisure purposes?

**Table 2.** Mean ( $\bar{x}$ ) scores of respondents on the extent male and female undergraduate students differ in the utilization of ICT facilities for leisure purposes.

S/No	Questionnaire items	Male Student (45)		Female Students (45)		Mean ( $\bar{x}$ ) set	Rank order	Remark
		$\bar{x}$	St.D	$\bar{x}$	St.D			
1.	I use it to watch films and play football betting	3.55	0.30	2.44	0.65	2.99	1 <sup>st</sup>	High Extent
2.	I use it to play computer games	3.37	0.38	2.37	0.60	2.87	2 <sup>nd</sup>	High Extent
3.	I Face book with it	2.88	0.40	2.11	0.55	2.49	4 <sup>th</sup>	Low extent
4.	I play music with it and also chat with friends	3.33	0.35	2.00	0.65	2.67	3 <sup>rd</sup>	High Extent
5.	Aggregate Mean ( $\bar{x}$ ) Score	3.28	0.36	2.23	0.61	2.76		

Data on Table 2 presented the mean ( $\bar{x}$ ) scores and standard deviation of the extent male and female undergraduate students differ in the utilization of ICT facilities for leisure purposes. The mean ( $\bar{x}$ ) score of male undergraduate students' utilization of ICT facilities purpose (3.28) is higher than the criterion mean ( $\bar{x}$ ) score of 2.50 while the mean ( $\bar{x}$ ) score of female undergraduate students' utilization of ICT for leisure purposes (2.23) is lower than the

criterion mean ( $\bar{x}$ ) of 2.50. Thus, to a high extent the male student utilizes the ICT facilities for leisure purposes more than their female counterparts following the rank order from 1<sup>st</sup> to 4<sup>th</sup>. The aggregate mean ( $\bar{x}$ ) of 2.50. Thus, to a high extent the male student utilizes the ICT facilities for leisure purposes more than their female counterparts following the rank order from 1<sup>st</sup> to 4<sup>th</sup>. The aggregate mean( $\bar{x}$ ) of 2.76 goes to confirm that to a high extent the male students use it

to watch films and play football betting, use it to play computer games, use it to play music and chat with friends, more than their female counterparts who to a lower extent use it for leisure.

Hypothesis 1: There is no significant gender difference between the mean ( $\bar{x}$ ) scores of male and female undergraduate students in the utilization of ICT facilities for academic purposes.

**Table 3.** Z - test computation ( $Z - cal = 2.10$ ).

	N	$\bar{x}$	St.D	P	Z – cal	Z – crit	Decision
Male students	45	2.20	0.63	0.05	2.10	+ 1.96	Significant
Female students	45	3.21	0.43				

In Table 3, the calculated Z-value with 2.10 was greater than the critical Z-value of + 1.96 at 0.05 level of significance. This explained that the null hypotheses is rejected showing that there is a significant difference between male and female undergraduate students in the

utilization of ICT facilities for academic purposes.

Hypothesis 2: There is no significant difference between male and female undergraduate students in the utilization of ICT facilities for leisure purposes.

**Table 4.** Z – test Computation ( $Z - cal = 2.33$ ).

	N	$\bar{x}$	St.D	P	Z – cal	Z – crit	Decision
Male students	45	3.28	0.36	0.05	2.33	+ 1.96	Significant
Female students	45	2.23	0.61				

Table 4 showed that the calculated z-value with 2.33 was greater than the critical Z -value of + 1.96 at 0.05 level of significance. Thus, the null hypotheses are rejected indicating that there is a significant difference between male and female undergraduate students in the utilization of ICT facilities for academic purposes.

## 5. Discussion of Findings

### 5.1. The Extent Male and Female Undergraduate Students Differ in the Utilization of ICT Facilities for Academic Purposes

The findings revealed that to a high extent, the female students utilize ICT facilities for academic purpose more than their male counterparts following the rank order from 1<sup>st</sup> to 4<sup>th</sup>. The aggregate mean ( $\bar{x}$ ) scores of 2.71 further affirmed that to a high extent the female students use it to download material for assignment, read and join online classes with it, attend conferences with it and read mails with it, more than their male counterparts that underutilizes ICT facilities. The test of hypothesis one showed that there is a significant difference between the mean ( $\bar{x}$ ) scores of male and female undergraduate students in the utilization of ICT facilities for academic purposes. In line with the findings Basavaraja, M. T. & Kumar, S. B. T. [7] found that there is significant association between the place ( $P=005$ ) and frequency ( $P=002$ ) of use of computers and gender, maintaining that there is significant differences in the problems faced by students while using computers. The study of Gnamb, T. [14] established that small differences exist in ICT utilization between boys and girls for academic purposes. The study of Nacri, H. [22] confirmed in his study gender discrepancies” in the use of ICT in higher education” that gender differences turnout to be boys are more statistically significant when it comes to video games, playing music

exhibit more regularly engaged than the girls. Jo Tondeur et al. [18] study further revealed that women have a less positive attitude towards computer games or videos for educational purposes unlike the men. This means that the female students utilize the ICT facilities for academic purposes more than their male counterparts who just frequently use it for video, games and playing music instead of strictly academic purposes.

### 5.2. The Extent Male and Female Undergraduate Students Differ in the Utilization of ICT Facilities for Leisure Purposes

The findings x-rayed that to a high extent the male students utilize the ICT facilities for leisure purpose more frequently than to their female counterparts following the rank order from 1<sup>st</sup> to 4<sup>th</sup>. The aggregate mean ( $\bar{x}$ ) of 2.76 goes to affirm that to a high extent the male students use it to play computer games, uses it to play music and chat with friends, more than their female counterparts who to a low-extent use it for leisure This findings coincides with the study of Selwyn, N & Bullon, K. [27] who found out that there is little difference in the activities undertaken by boys and girls in school, which may be largely due to boys spending more time at school playing computer games, chatting with friends and playing music. Kent, N., & Facer, K. [19] categorically reported that 46 percent of boys and 35 percent of girls uses it for fun every day. Thus, buttress and agree with the findings that to high extent boys use ICT for social networking, games, chatting, viewing, video and entrainment more than the girl’s folk. This means that the male students have greater access to hardware and spend more time using computer for leisure purposes while female are significantly more likely to use computers for school work. Logan, S. & Johnson, R. [20] study simply put that girls are more engaged in educational activities such as reading and searching for academic materials in the computer instead of engaging in leisure.

## 6. Conclusion

Information and communication technologies are very vital for everyday life. It has gained a lot of attention in the education industry.

To this end it is important to draw attention to a major fact that students of Library and Information Science should tap into benefits of ICT facilities being provided for them by the Donald Ekong Library which includes having access to the internet facilities that is not commonly found in other departments and the positive use of the facilities. OFcom [24] asserts that high level leisure use of ICT may be positively associated with a negative impact on educational attainment. Effective and adequate utilization of ICT facilities makes for realization of optimal educational result.

## 7. Recommendation

1. Students need to effectively and efficiently explore ICT facilities to their advantage academically not for leisure for optimal performance in their studies.
2. The library and information science department should always give orientation to students on the effective utilization of ICT facilities to enhance their academic performance.
3. Students should be discouraged from using ICT facilities for leisure that has no bearing on their education.

## 8. Implications of the Study

Information and communication technology is a vital tool for the 21<sup>st</sup> century education. It is provided in the department for undergraduate students to improve their academic performance but instead of using it for positive outcome it is mostly used for leisure there by defeating the purpose of its provision. Male and female undergraduates should use it in the proper direction to improve their academic performance.

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