Information and Communication Technology (ICT) and College Libraries in Bhutan for Educational Achievement: A Comparative Study

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Authors' contributions

This work was carried out in collaboration between all the authors. Author DS designed the study, managed the literature search and performed the statistical analysis. Author PD wrote the protocol, and wrote the first draft of the manuscript. Author NW managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Information is a vital and indispensable component of any education system. College libraries and internet facilities are the two information retrieval sources for academic works. This study aims to identify the preferable option (internet facilities vs library) for students for academic purposes. This cross-sectional questionnaire-based study recruited faculties, non-faculty staff, and students of Gedu College of Business Studies. The questionnaire was self-administered and responses were collected. Descriptive test was used for statistical analysis. The responses of 181 participants (male 53.6%; female 46.4%) were used for analysis (response rate 95.2%). Participants responded that internet was more easily accessible (74.1% vs 24.9%), more frequently used (78.5% vs 21.5%), for academic purpose (74.1% vs 24.9%), and holds more value in life of learners (60.7% vs 39.3%). Participants remain divided on the reliability of the source of information (internet 53.6 % vs library 46.4). However, the library was considered the cheaper (72.9% vs 27.1%) source of information. While 96.1 % of respondentsuse both sources, most (71.3%) participants feel that college should focus on developing internet

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facilities.Both libraries and the internet are used for academic purposes in college. However, there is a greater need to prioritize and invest in internet facilities for future educational needs.

1. INTRODUCTION

1.1 Problem Statement

Information is a vital and an indispensable component of any education system. For decades, both faculty and students have been actively using the library and ICT as the main source of their information. The college always strives to provide quality information to its users. College libraries and internet facilities are the only two information retrieval sources for all academic works.

Huge amount of resources is invested for the enhancement of ICT facilities and the Library facilities by the college management. The investment from the college management is almost the same in both of these areas. Nevertheless, the actual usage of these facilities and their impact on the student's learning is not known. There are still confusions as to which of these facilities are availed more by the students in their academic pursuit. The students are seen using ICT facilities more often than the library; nevertheless, there is no concrete evidence to prove the same. However, this study aims to find the most used facilities for the academic enhancement by our students. Besides, it will also guide the college management in prioritizing its budget judiciously for achieving the goals of academic excellence. Identification of this issue indeed will give us a direction and suggests us the right avenue for investment. Considering the study pattern of the students, this study looks forward in gaining insight into the changes and provides suggestions to the college management to have better plans to impart quality education to their students.

1.2 Research Question

Which amongst the two, college library or the college ICT facilities (internet) need stronger focus in terms of development with the primary aim to enhance academic excellence of the students?

1.2 Sub-questions

1. Which amongst the two, college library or the ICT facilities is used more by the students for their study purpose?
2. Which of the two facilities, college library or the college ICT facilities is easy in terms of accessibility for the students?
3. According to the dynamism of the education pattern, which of the two, college library or the ICT facilities is more economic and sustainable for the college in the long run?

2. REVIEW OF KEY LITERATURES

The basic function of any university is to conserve the existing knowledge, to transmit knowledge through teaching, and to create new knowledge through research. University library is considered as a power house of information and knowledge as its transformer and transmits this power to students, scholars, teachers' resources. According to Wilson LR and Tauber MF [1] the University functions as the conservator of knowledge and ideas, teaching, research, publication extension and services and interpretation. Reding as cited by Kumah [2] indicates that from a social, cultural and economic point of view libraries play a fundamental role in our society. They are the collectors and stewards of our heritage; they are organizers of the knowledge in the books they collect. Adele and Milheim [3] argue that "Libraries are not simply storehouses of books but provide proactive services to their users both from within the library's stock and from a wide range of external sources." According to Boakye [4], university libraries play very important roles in supporting the university's academic work. Without a library the university's academic work will not be successful, because the libraries provide services that help in teaching, research and learning.

Bao [5] surveyed 1998 and 2001 findings showing that the Internet continues to be an important component of library services in today and tomorrow's library. The majority of the

respondents used the Internet on a daily basis in 2001 as opposed to less than half the respondents in 1998. The data showed the librarian's major challenge in the new century remains that of how to help library users find what they are looking for through the Internet. When high-quality electronic collections are made available, people use them. Use of electronic journals increases every year. Among faculty members, graduate students, and other professionals, higher use of electronic journals is accompanied by a decrease in visits to the physical library Tenopir [6]. Research has confirmed that in terms of information seeking, today's researcher seems to be comfortable with using a wide variety of sources for information. Internet search engines, e-print servers, author websites, full-text databases, electronic journals, and print resources are all used to some degree by most students.

Sulemani and Katsekpor [7] concluded that the access to the Internet by faculty has had an impact on their information seeking behavior. They prefer the use of electronic databases and full text journals to the traditional print indexes and abstracts and hardcopy publications. Several current studies including Niu, Hemminger, and Lown (2010) and Niu and Hemminger (2012) have found high dependency of faculty and graduate students on electronic resources online.

However, according to Ogungbeni and Haliso [8] internet has many other drawbacks like lack of comprehensiveness, coverage, the inability to distinguish between popular material and research work, lack of controlled vocabulary and also a casual approach of the web page designer often makes the web databases more difficult to search. The libraries can play a greater role in identification, listing, and classifying information sources and providing systematic approach to accessing the required information. This way they can take rightful place as human agent alongside the search engine in searching the Internet.

From the above literatures we came to know that despite the immense importance of library, the age of information technology has virtually taken over the learning paradigm of the graduates. So, the researchers would like to make a comparative study of the use of the college library and the college ICT facilities as a source of information by the undergraduate and postgraduate students of Gedu College of Business Studies, Royal University of Bhutan.

3.1 METHODOLOGY

This study is a cross-sectional questionnaire-based survey. The study adopted quantitative technique to bring out the comparative result of the college library and the college ICT facilities as a source of educational information source to the faculties and students of Gedu College of Bussiness Studies.

3.1 Study Population

The target population of this study was the faculties and students of the Gedu College of Bussiness Studies, which totals to approximately 1500 at present. The study frame includes all students pursuing full-time undergraduate or postgraduate education at the college. However, those who did not consent to participate in the study or absent during the day of data collection are excluded.

3.2 Sampling Technique

The stratified random sampling method was used to recruit study participants. The strata consisted of the four major desciplines, BBA, B.Com and MBA, and the faculties. A sampling frame consiting of the list of class roll numbers all the students in each strata was prepared. Computer generated random sampling propotianate to size of strata was used to recruit the students. All the faculties were be enrolled.

3.3 Sample Size

Alreck and Settle (1985) state that it is necessary to sample more than 10% of the population to obtain adequate confidence in for generalization. In line with this, the entire student population at the time of the study were taken in and a sample of 10% of the 1,500 students and derived a sample of 150 students from different disciplines. Considering, 10 % non-participation/absentisims the sample calculated is 165 students. Furthermore, all faculties are included as per their response rate however, only

3.4 Data Collection Tool

This research has used the quantitative method to explore and extract the required information for the most valuable result. Questionnaire was to gather statistical data about the responses. It was used to get information from the students on their study pattern and usage of various facilities.

Besides, to authenticate the usage of ICT facilities and library facilities, another set of questionnaires was prepared for the relevant stakeholders. Further, to further strengthen the validity of the information, a similar set of questionnaires is used to get the views of the teaching faculties, which have enabled to have views from both the students and the teachers. Questionnaires is the principal tool for this research.

3.5 Questionnaires

The questionnaire was prepared by the researcher. The target group will be the students from BBA, B.COM, MBA and the teaching faculties. The questionnaire will be filled by the students in the class. The respondents will be provided a mixture of closed questions, open questions and multiple-choice questions which will describe their response to a statement or item. The questionnaires will have a response scale 1-4 and all the information about the respondents required will be included.

3.6 Approach

Present study will be using quantitative approach of the research. Quantitative approach will be useful for analysing primary data obtained from different stake holders. This approach will be useful for studying the actual usage of ICT and Library by the students and the faculties and its impact on their academic performance. Besides, a small discussion with the head of the two departments, ICT and Library will help us get greater ideas on the same.

3.7 Data Collection Procedures

Primary data would be collected for the purpose of analyses and interpretation.

3.8 Primary Data

Primary data would be collected from the College of Business Studies approximately has around 1500 students and 68 teaching faculties. As per Alreck and Settle (1985) it is necessary to sample more than 10% of the population to obtain adequate confidence in for generalization. Accordingly, we shall consider the entire student population at the time of the study and take a sample of 10%of the 1,500 students. We will be getting a sample of 150 students from different disciplines. Considering, 10 % non-participation/absentisims the sample calculated

is 165 students. Furthermore, all faculties shall be included.

.   All the data would be collected from respondents through the following instruments.

1. Questionnaires will be prepared to obtain the information from students and the faculties. Open, closed and multiple-choice questions to extract the most accurate responses.
2. Discussion – A short discussion will be conducted with the head of ICT and Library heads. This discussion would help in validation and compiling of the final repost.
3. Random Sampling - As our target respondents are from the Gedu College of Business Studies, the sample will be taken from all level of studies in the college including the faculties.

3.9 Data Analysis Procedures

Responses from the collected data will be entered in excel and the statistical analysis and interpretion will be done using the Statistical Package for the Social Sciences (SPSS). Values of $P<0.05$ were consideredstatistically significant.The primary data would be analyzed using SPSS software.

3.10 Data Presentation

Descriptive result will be presented as frequencies with the corresponding percentages and tables. Analysis of Variance (ANOVA**)** and t-test will be performed to compare uses of library and internet by the students and faculties. As per the need of the study, the annexure would be prepared and placed at the end of respective chapters. All inferences of the study would be properly explained and link with the findings of the current literatures and would be presented in textual form.

All the data would be incorporated and analyzed without manipulating the same. In brief, the following ethical considerations would be considered to ensure the dictum.

1. Obtain a formal letter from the college seeking to collect data for the research from the office of DSA and DAA.
2. Formal office approval would be obtained to meet the students, faculties and the heads of ICT department and Library.
3. Do not use any copy right material without acknowledgement

4. Do not disclose the identity of the respondents.
5. Do not use the research data for any other purpose except for the proposed research.
6. No fabrication and falsification of data
7. Do not follow any other methods/ practices in the study which are considered unethical.

3.11 Significance of the Study

3.11.1 Benefit to the students

The learning process becomes enticing when the required facilities are made available to the students. This would enhance their thirst for learning. Once the most used facilities from the two is identified, the college management can divert its focus towards it try enhancing it from all the possible perspectives. Thus, the ultimate benefit would be derived by all the relevant parties which includes students, teachers and the college as a whole, as it accelerates the system towards achieving its target of academic excellence. Most importantly the students would be able to get the required materials on time and enable them to prepare for all their academic requirements without difficulty.

3.11.2 Benefit to the college

Today Gedu College of Business Studies is striving to cut down its expenditure without compromising the quality of education delivered. The management has been making every effort in maintaining all the facilities as par, which has become costly for the college. The proposed studies aim to study the use of Internet (ICT) facilities and Library by the students and through the comparative study to find out the most used facilities by the students and the faculties. Upon the completion of the research studies, we can provide an evidence-based feedback to the college management and guide them towards meaningful investment.

4. RESULTS AND DISCUSSION

4.1 Demographic Details

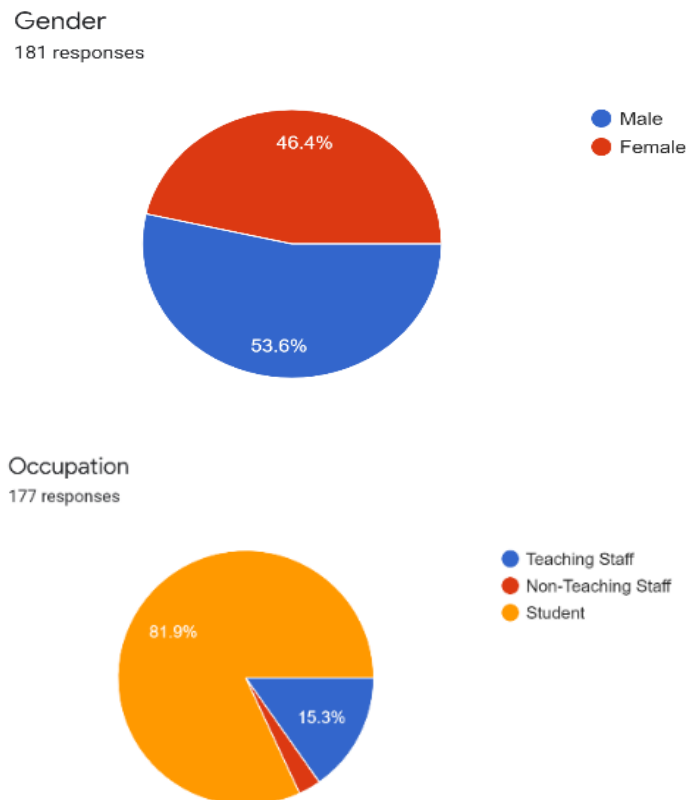The following are the demographic details of the respondents.

Fig. 1. Demographic details of the respondents

The total respondent for the study were 181, (84 female and 97 male). Majority of the respondents were students (81.9%). To make the study more reliable, the perspectives of 33 elders are included (18.1%), including both the teaching faculties and non-teaching.

4.2 Reliability Test

The reliability test for the twenty items set for the study is as shown below.

Since the Cronbach's alpha is above 0.7, all the items are reliable.

The inference that we can derive for the above table is that 59.24% of the total participants has a positive response towards the use of library facilities. However, 60.2% of the respondent visit library once in a month, and the daily visitors are far less (20.1%) and less than half of the respondents (45.065) agree that they visit library for their academic need. This figure gives us a hint that the library facilities has remained underused.

77.13% of the respondents agreed that the library facilities are accessible. Which also means that college library is user friendly and all sorts of arrangements are made for the users to locate the materials inside the library.

The resources available in the library are found useful and reliable by 63.7% of the respondents. Out of the remaining respondents, 21.2% totally disagree and 15.2% are neutral. This gives a hint that not all students find useful and reliable materials in the college library.

The last item confirms the students' actual usage of the library facility. 34.8% of the students agree that they rely solely on the college library for their study purpose. However, 32.5% plainly disagrees on the same. From this figure it can be concluded that though the functioning of the library is very good, very less students actually utilize the college library as their main resource for the study purpose.

The inference that we can derive for the above table is that 54.47% of the total participants has a positive response towards the use of internet facilities. Almost equal number of respondent (45.8% - daily, 44.7% - weekly, and 41.9% - monthly), with an average of 44.5% which shows that the students use internet facilities more frequently.

50.4% of the respondents agreed that the internet facilities are easy to access and 20.96% 0f the respondents fell that the internet facilities are not easily accessible. This figures hints that college internet facilities are accessible only to the half of the students, however, it is the 20.96% respondents who felt difficult in using the ICT facilities provided by the college. This confirms although students try using internet for their study purpose, they are not able to access it properly due to poor network connectivity.

The resources available in the internet are found useful and reliable by 69.36% of the respondents. Out of the remaining respondents, 7.46% totally disagree and the remaining are neutral. We get to understand here that a majority of the respondents feel that the internet is a useful and reliable source of information for their studies.

The last item confirms the students' actual usage of the internet facilities by the students. 53% of the students agree that they rely solely on the college internet facilities for their study purpose. However, 17.1 % plainly disagrees on the same. More than half of the respondents rely solely on the internet as they find it easy to access, reliable and useful for their study purpose.

In order to get achieve the objectives of the research, the perspective of the respondents was also taken into consideration. The usage of the internet facilities amongst the students is more, 78.5% of the students responded saying that they use the internet for their study purpose and 21.5% use the library for the same. Similarly, 74% of the respondents feel that it is easy to access the internet and 25.9% finds access to

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.805	10

Chart A. Items on Library Usage

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.841	10

Chart B. Items on ICT Usage

Table 1. Question on library

Theme	Question	Agreed %	Disagreed %
Students visiting library (Frequency).	I visit library once in a day for study purpose	20.4%	46.9%
	I visit library once in a week for study purpose.	54.6%	25.4%
	I visit library once in a month for study purpose.	60.2%	25.4%
Sub-Total (Average)		**45.06%**	**32.56%**
Accessibility	The library is easily accessible	79%	6%
	The library registration process is easy.	80.6%	5.5%
	Academic material in the college library are easy to locate.	71.8%	10.4%
Sub-Total (Average)		**77.13%**	**7.3%**
Usefulness and reliability of library materials	The academic material in the library is useful.	79.5%	0.4%
	The academic materials in the library are updated.	52.4%	10.4%
	Academic materials of my choice are made available by the library.	59.1%	10.4%
Sub-Total (Average)		**63.7%**	**21.2%**
I solely rely on library for my study purpose		34.8%	32.5%
Grand -Total (Average)		**59.24%**	**17.33%**

Table 2. Questions on ICT

Theme	Question	Agree	Disagree
Students accessing ICT facility (Frequency).	I use ICT facilities of the college once in a day for study purpose	45.8%	32%
	I use ICT facilities of the college once in a week for study purpose	44.75%	33.7%
	I use ICT facilities of the college once in a month for study purpose	41.9%	35.3%
Sub-Total (Average)		**44.15%**	**33.66%**
Accessibility	The ICT and internet lab facilities are easily accessible	37.5%	33.7%
	ICT registration process is easy.	48.6%	19.3%
	Academic material in the internet are easy to locate	65.1%	9.9%
Sub-Total (Average)		**50.4%**	**20.96%**
Usefulness and reliability of internet sources	The academic materials available online are useful	75.1%	7.1%
	The academic material in the internet sources are updated	67.9%	7.1%
	Academic materials of my choice are available in the internet.	65.1%	8.2%
Sub-Total (Average)		**69.36%**	**7.46%**
I solely rely on internet for the study purpose		53%	17.1%
	Total	**54.47%**	**20.3%**

Table 3. Perspective

Question	Number of respondents for Internet	%	Number of respondents for Library	%
Which is more easily accessible to you for your academic purpose?	134	74.1%	47	25.9%
Which one do you frequently use for academic purpose?	142	78.5%	39	21.5%
Which hold more value in the lives of learners?	110	60.7%	71	39.3%
Enhancement of which of these facilities in the college can help you excel in your academic endeavor.	119	65.8%	62	34.2%
Which mode of teaching is cheaper for you?	49	27.1%	132	72.9%
Which do you think is the most reliable source of information	97	53.6%	84	46.4%
In the future, which do you think will be used more for academic purpose by the students?	148	81.7%	33	18.3%
At present which of these facilities should college focus to develop?	129	71.3%	52	28.7%
In the long term, improving which of these facilities would the college benefit?	112	61.9%	69	38.1%
Total Mean		**63.88%**		**36.14%**

Which one of the following would you prefer the most for academic purpose in the present world?

181 responses

- Only ICT
- Only Library
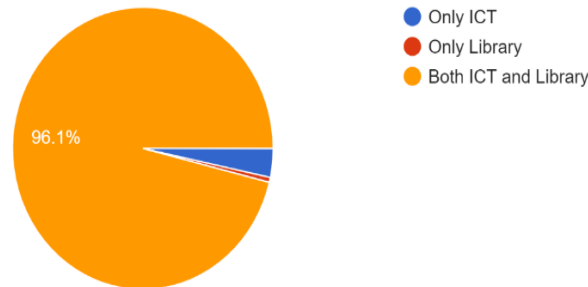- Both ICT and Library

96.1%

Fig. 2. Preference

library much easier. The last three questions show the future perspective of the two facilities in the college. 61.9% of the respondents feel that by improving of the internet facilities, the college will benefit in the longer run. Similarly, 71.3% respondents feel that the college at present should focus on the improvement of the internet facilities. And 81.7% respondents feel that improving of the internet would directly help the students in their academic endeavor in near future.

The majority of the respondents (65.8%) feel that improving the internet facilities in the college can help them excel in their academic pursuit. The mean for internet facilities (63.8%) over (36.14%) for the library.

The last part of the research questionnaire asked the preferences of the respondents with three options as Only ICT, Only Library and Both ICT and Library. 96.1% of the respondents shared their preferences for both ICT and Library.

5. CONCLUSION

Both the internet and library facilities are preferred by the students and staff however, the college internet facilities are used more and frequently by the students for their academic purpose as they find it easy access in comparison with the library. Besides, students also find that internet (69.36% agreement and 7.46% disagreement) is usefulness and more reliable source of information than the college library (63.7% agreement and 21.2% disagreement).

6. RECOMMENDATION

College Management need to prioritize budget and plan to improve the ICT facilities within the college as majority of the students rely on the internet for their study purpose. However, the college library must also be kept intact with all the relevant resources for the students.

CONSENT AND ETHICAL APPROVAL

The study design and protocol shall be submitted to the Institutional Ethical Committee of the Gedu College of Bussiness Studies for review and approval. The study shall adhereto the tenets of the Declaration ofHelsinki for human participation. As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s). A copy write material would be used with proper acknowledgement. The required information would be collected from the key informants without disclosing their identity and it would only be used for the research purpose.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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