UITS Journal Volume: 4 Issue: 2
ISSN : 2226-3128

Correlation Analysis between Students' Access to ICT and Students' Performance: A Case Study on University Information Technology & Sciences (UITS)

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ABSTRACT

In modern day education, students are not supposed to be confined only within the learning in a classroom context. They are expected to explore the vast horizon of knowledge made available today through ICT. This paper explores the relationship between ICT and the performance of students at the undergraduate level. The research sample was taken from a group of undergraduate students studying Bachelor of Business Administration (BBA) at University Information Technology & Sciences (UITS). The study found that there is a weak negative correlation between students' access to ICT and the performance of the students. The findings also reveal that majority of the students are in the dark about the potential role of ICT in their academic life. Moreover, it has been found in the research that the ICT access provided to the students are not utilized to enhance academic performance but it is, rather, a source of recreation. The paper also suggests steps that, if taken, would ensure better use of ICT by the students and would in the long run develop a healthy and fruitful relationship between ICT and academic performance.

Keywords : *ICT, Students' Performance, UITS.*

INTRODUCTION

ICT (Information and Communication Technologies) has become a topic of discussion in the technological arena and its application in different sectors and education in particular. ICT are generally accepted as a modern instrumental tool that enables the educators to modify the teaching methods they use in order to increase the students' performance.

Educational institutions around the world adopted ICT as a method of teaching as well as offering ICT related academic programs. In Bangladesh, different educational institutions have adopted ICT as a method of teaching. University of Information Technology & Sciences (UITS) is one of the leading universities of Bangladesh offering ICT education through incorporating ICT related courses into the BBA and Master of Business Administration (MBA) programs. So it is

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the high time to assess the students' accessibility to ICT and its impact on the performance of students.

ICT includes technologies such as desktop and laptop computers, software, peripherals and connections to the Internet that are intended to fulfill information processing and communication functions. There is no standard definition for students' performance. The standard approach focuses on achievement and curricula, how students understand the courses and obtain their degrees or their marks. For the purpose of our study, we refer to their CGPA as the basis of performance. The higher CGPA indicates higher performance and the lower CGPA indicates lower performance.

OBJECTIVES OF THE STUDY

Primary objectives are: To find out the relationship between accessibility to ICT and performance of the undergraduate students of UITS.

Secondary objectives are:

1. To explore the reasons for students' not having access to ICT facilities;
2. To identify the causes why students cannot use whatever ICT access they have in order to enhance their academic performance;
3. To find out how students view the relationship between the use of ICT and their academic performance;
4. To explore how students spend their time while using ICT; and
5. To suggest measures that can be taken to overcome if any deviation is found.

METHODOLOGY OF THE STUDY

In order to achieve the objectives of this study, we have used both primary and secondary sources of information. Primary data have been taken from the respondents through a prepared questionnaire that included both open-ended and close-ended questions.

The sample of the research was chosen from the undergraduate students in the Faculty of Business Studies at the UITS. The research sample consisted of 74 students (those who have completed at least a couple of semesters) and a questionnaire was provided to them in order to fill it in.

The questionnaire was divided into two main areas. The first part of the questionnaire sought demographic characteristics of the respondents in the sample. The second part of the questionnaire focused on the students' knowledge and experience of using ICT. This part attempted to examine whether the respondents have computer and internet access, whether they use these for their academic purpose or other purposes like watching movies, social networking, listening to music or browsing only for entertainment.

In terms of data analysis, correlation analysis was used, applying SPSS, to identify the correlation between ICT on the Comprehensive Grade Point (CGPA) performance of the students. Different components of ICT were represented numerically for the purposes of statistical use.

Secondary sources for the research were different relevant articles from different journals, books, and conference papers. The findings of those researches have been accommodated into the literature review section and were helpful in finding the research gap.

LITERATURE REVIEW

The relationship between the use of ICT and students' performance in higher education is not clear, and there are mixed results in the literature. Earlier economic research has failed to provide a clear consensus concerning the effect on students' achievement.

These literatures show mixed results. On the one hand, some research demonstrates that there is no evidence of a key role for ICT in higher education [1, 2, 3, 16, 17] . On the other hand, some studies show a real impact of ICT on students' achievement [4, 5, 6]

Coates [6] surveyed three matched pairs of face-to-face and online principles of economics courses taught at three different institutions. The students' score in the Test of Understanding College Level Economics (TUCE) given at the end of the term is used as the measure of learning outcomes. After taking into account selection bias and differences in student characteristics, they report that the average TUCE scores are almost 15% higher for the face-to-face format than for the online format.

Anstine and Skidmore [13] surveyed two matched pairs of on-campus and online courses, one in statistics, and the other in managerial economics. They report that after taking into account student characteristics and selection bias, students in the online format of the statistics class exam scored 14.1% less than in the traditional format, whereas, for the managerial economics class, the test scores within both formats were not significantly different.

Navarro and Shoemaker [14] surveyed a matched pair of on-campus and online sections of a class on principles of macroeconomics. The students self-selected the instruction format, with each section having approximately 30 students, and there was no difference in the demographic composition of each section. They used a simple comparison of means of test scores and reported no significant difference in academic performance between the two formats.

Terry, Lewer and Macy [15] surveyed 240 students in a program offering courses in the three formats of online, on-campus, and hybrid. Using a standard regression model where final exam score is the dependent variable and student characteristics are the independent variables, they report that predicted exam scores for students in the online courses were significantly less than those of students in the on-campus and in the hybrid formats. However, with the comparison of exam scores between students in the hybrid and students in the

on-campus classes, there was no significant difference.

Brown and Liedholm [7] surveyed students in a matched pair of online and face-to-face principles of Economics course taught by the same teacher. They reported that exam scores, after taking into account differences in student characteristics, were approximately 6% higher for the on-campus format than for the online format. They attribute the relatively better performance in the on-campus classes to the benefit of in-person teacher-student interactions, and attribute the relatively poorer performance of the students in the online class to the lack of self-discipline necessary for successful independent learning in the online environment.

Leuven [8] concluded that there is no evidence for a relationship between increased educational use of ICT and students' performance. In fact, they find a consistently negative and marginally significant relationship between ICT use and some students' achievement measures. They further argue that students may use ICT to increase their leisure time and have less time to study. Online gaming and increased communications channels do not necessarily mean increased achievement.

On the other hand, different studies revealed that there is a relationship between the use of ICT and the performance of the students.

Kulik's [9] meta-analysis study revealed that, on average, students who used ICT-based instruction scored higher than students without computers. The students also learned more in less time and liked their classes more when ICT-based instruction was included.

Sosin [4] constructed a database of 67 sections of introductory Economics, enrolling 3,986 students, taught by 30 instructors in 15 institutions in the United States of America (USA) during the spring and autumn semesters of 2002. They found significant, but low, positive impact on student performance due to ICT use. But they showed that some ICT seems to be positively correlated to performance while others are not.

Fuchs and Woessman [5] used international data from the Programme for International Student Assessment (PISA). They showed that while the bivariate correlation between the availability of ICT and students' performance is strongly and significantly positive, the correlation becomes small and insignificant when other students' environment characteristics are taken into consideration.

The analysis of the effects of these methodological and technological innovations on the students' attitude towards the learning process and on students' performance seem to be evolving towards a consensus, according to which an appropriate use of digital technologies in higher education can have significant positive effects both on students' attitude and their achievement.

Attwell and Battle [10] examined the relationship between having a home computer and school performance, for a sample of approximately 64,300 students in the USA. Their findings suggest that students, who have access to a computer at home for educational purposes, have improved scores in reading and mathematics.

Coates [6] showed that students in on-campus courses usually score better than their online counterparts, but this difference is not significant.

Li [11] pointed out: "First, web-based instruction presents information in a non-linear style, allowing students to explore new information via browsing and cross-referencing activities. Second, web-based teaching supports active learning processes emphasized by constructivist theory. Third, web-based education is enhanced understanding through improved visualization and finally, the convenience with which it could be used any time, at any place".

From the above we can understand that there are mixed bag results regarding the relationship between the use of ICT and the performance of the students. But no study has earlier been conducted at UITS regarding this topic. What would be the relationship between the accessibility to ICT and the performance of the students of undergraduate students of UITS? Since, both positive and negative relationship may come out; a study on this topic to identify the exact relationship between these two variables would provide the real scenario.

FINDINGS

1. Naturally, in this decade student performance in higher education and information and communication technology are highly interrelated. But, surprisingly in this study the value of Pearson correlation is (-.050). That means, there is a very weak negative relationship existing between students' access to ICT and the performance of the students. For those who have more access to ICT, there is a possibility that their CGPA may likely to decrease and vice versa. Like other surveys that have been conducted in the last couple of decades in many educational institutions, here we have seen there is no impact of ICT on the performance of the undergraduate students of UITS.

Table-1: **Correlations**

		CGPA	ICT
CGPA	Pearson Correlation	1	-.050
	Sig. (2-tailed)	.	.672
	N	74	74
ICT	Pearson Correlation	-.050	1
	Sig. (2-tailed)	.672	.
	N	74	74

What may be the possible causes of this result should be scrutinized. One major cause is that the students do not use ICT for the academic purpose. This fact is also supported by the survey. Table 2 shows the attitude of the students whether they spend most of the time for the purpose of listening music, watching movies, unnecessary browsing, etc. while using computer.

Table-2: Students' view point

No of students	17	29	23	5	74

About 62% students of Business faculty of UITS believe that the students of business spend most of the time for listening music, watching movies, browsing for other forms of entertainment like social networking and so on.

2. We found another mixed result. When the students have been asked to say about their own status about the use of ICT, they answered the following:

Table-3: Students' answers about whether they use ICT for their academic purpose

	Strongly agree	Agree	Disagree	Strongly disagree	Total
No of students	13	42	16	3	74

Interestingly, about 74 % of the respondents said they use ICT for their academic purposes. Even though our survey result did not support this statement.

3. Students' attitude towards ICT is positive as well which is also contradictory with the correlation analysis. Table-4 shows the attitude of the students regarding this statement *"Those who have computer and internet their results are good."*

Table-4: Students' view point about the relationship between access to ICT and its impact on their examination

	Strongly agree	Agree	Disagree	Strongly disagree	Total
No of students	8	38	25	2	73

** One has missing value*

About 63% students agreed that computer and internet enhance the academic performance of the students.

RECOMMENDATIONS

1. It has been found through this study that students, who do use ICT, use it mostly for non academic purposes. In order to ensure that the ICT facilities are accessed to enhance academic performance, this trend has to be minimized.
2. There should be enough logistical support within the academic institutions in order to allow all students to have regular access to ICT facilities.

3. Some students are averse to using ICT. Such notions should be reversed with initiatives taken by the educational institutions themselves if we are to enjoy the fruits of technological progress.
4. Educational institutions need to take an active initiative to introduce the students to ICT by highlighting ways through which it can be of great help in enhancing their academic performance. This would make the use of ICT much more relevant to academic tasks.

SCOPE OF FURTHER RESEARCH

This study is only a beginning in exploring the impact of ICT on students' performance at the undergraduate level. The findings of the research provide future researchers with ample scope for further in-depth study on the subject matter. A very interesting idea would be to compare the impact of ICT on students' performance in private universities with that of students in the public universities of the country.

CONCLUSION

In a world where technology is playing an ever important role in everyday life, it is essential to encourage and enhance the use of ICT in the academic arena to stay up-to-date with the rest of the world as well as to avail the opportunities that the modern world has to offer. In this context, this study reveals that we still have a long way to go as long as our orientation to ICT as an important tool to enhance academic performance is concerned. If proper steps are taken by the academic institutions to promote the use of ICT for academic purposes by taking into consideration the findings and recommendations of this study, then we can hope to overcome such an unwanted scenario and move forward to having a technology savvy student base.

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