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The Effect of Information Communication Technology (ICT) on the University Student Success

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Abstract-Information Communication Technology (ICT) played a vital role in many disciplines across the globe socially, economically and scientifically. ICT in education has brought a huge contribution towards resource availability and control in the research community as well as student learning capabilities, especially in the developed countries. Unfortunately, students faces some challenges in the Nigerian Universities on the use ICT to improve their success rate, such as lack of internet connectivity in the university, lack of internet facilities and lack of practical hands-on training on how to use computers, etc. This research was aimed to determine the effect of ICT on the University student success with a case study of Al-Qalam University Katsina, Nigeria.

Keyword: *information, communication, technology, impact, success, student, staff.*

I. INTRODUCTION

The impact of data communication technology (ICT) on student learning is currently in relevancy the utilization of digital equipment, primarily computers and internet facilities to facilitate teaching and learning. ICTs are the technologies accustomed conveying, manipulating and data storage through electronic means. They supply array to powerful tools that will help in transforming the current isolated teacher-centred and text-bound, student-focused interactive knowledge environment to fulfill these challenges learning instructions must embrace the new technologies and appropriate ICT tools for learning.
There are several numbers of things impacting the utilization of ICT within the education sector in developing countries; Nigeria particularly. The factors include an absence of funding to support the acquisition of technology. Meanwhile, the employment of ICTs in Nigeria and African countries generally is increasing and growing while there's a good deal of data about how ICTs are getting used in developing countries. there's generally limited time interval per month using ICTs by both teachers and students. Despite this, the new and emerging technologies challenge the normal process of teaching and learning, also the way education is managed while information and communication technology important area of study in its claim, it's having a serious [1].

To understand the processes and impacts of a globalizing technology like the internet, one must account for the historical development of that technology, the process of technology transfer in general, and the local cultural dynamics in a unique region. The internet accessibility diffused differently in different regions and among different sectors within those regions. While for historical and cultural factors, should demonstrate a different diffusion. This leads to different definitions of how internet technology is constructed within distinct regions and poses challenges for the development of the asymmetrical global scientific community by new ICTs.

Al-Qalam University Katsina (AUK), formerly Katsina University Katsina was established with intention to improving quality higher education for its citizens and it was the first Islamic University in Nigeria. The University commenced academic activities with four programs, such as: Islamic studies, Arabic, Hausa and Computer science.

ICT is an important area of study that can have a positive impact on teacher-student learning if harnessed effectively [2]. Considering ICT having a major impact across all academic fields, it

ensues easy worldwide communication that provide instant access to larger volume of data and speed up communication, ICT allow the student to gain access to information in every aspect related to their studies, events and ideas [3]. Unfortunately, there have been a quite number of factors that prevents the uptake of ICTs on students learning Tikam, (2014), such as, lack of training among established teaching and non-teaching staff, lack of support and motivation required among University staff to adopt ICT as teaching tool and lack of infrastructures necessary for deploying an effective platform for research and funding to support the purchase of the technology as well as databases subscriptions .

II. RESEARCH QUESTIONS

The following research questions would be explored:

1. What information communication technology do to the students of Al-Qalam University Katsina use often during their studies?
2. How often do the students of Al-Qalam University use information and communication technology?
3. How information and communication technology could be used as a platform on students learning achievement?

III. RELATED WORK

Since last few decades, computers are widely used all over the world for various reasons across almost every discipline [5]. Computer has many benefits as well as many drawbacks Kounev et al.(2017), Some of the main benefits of computer includes to helps gaining quality education, scientific research, medical reasons, entertainment, internet marketing, communication as well as e-commerce Kounev et al.(2017). Computer helps to study conveniently with vast resources available at your doorstep. Students were forced to consider subject such as information technology as compulsory core course in most of Nigerian Universities. Computers are used in so many field in our daily life and activity for both students, teachers, lecturers, government as well as private organizations, they all use computers to perform some tasks [7].

Growth of our nation had enhanced our educational system, Trusson et al. (2014), It seem that more and more often computers and technology are being used an educational sectors [9]. This trend of online learning, using long distance learning ,and trust on the internet for educational information is apparently being pushed forward to enhance the learning abilities among the

students [10]. It makes the learning and teaching environment more comfortable for teachers and students as the transfer of knowledge is easier nowadays. One example of the use of technology in educational system is the computerized learning materials with reference to the Oxford Advance Learners Dictionary [11].

ICT are information handling tool that are used to produce, store, process, distribute and exchanging information [3]. These different tools are now able to work together and combine to form inter connected to every corner of the world, promising potential accountability, improving the delivery of basic services and enhancing local development opportunities Encarta, (2009). ICT is an electronic based system of information transmission, reception, processing and retrieval which has drastically changed the way we think and the environment we live. Students who use ICTs gain deeper understanding of complex topic and concepts that is more likely to recall information and use it to solve problem outside the classroom/lecture hall [11], [12]. Teachers of English are facing a growing pressure to be more professional and highly capable of creating more engaging classrooms in order to respond to their students' needs in the digital era. ICT integration, therefore, should be an integral part of teaching instructions for student Hubbard,(2013).

The teachers who learn to integrate technology into existing curricula teach differently than teachers who did not have such training or support from the institution Christensen,(2002). Although many educational systems have quickly embraced digital technologies, the effective inclusion of these technologies into teaching practice has encountered, and continues to encounter, practical and pedagogical barriers (Wood, Specht, Willoughby, & Mueller, 2008).

Information and communication technologies (ICT) in Nigeria started in 1950’s according to the paper written on implication for further development of ICTs use in Nigerian institution, many different types of technology can be used to support and enhance learning. Techniques ranging from video content and digital moviemaking laptop computing and handheld technologies have been used classrooms /lecture hall to support teaching and learning processes. Similarly, new uses of technology such as pod casting are constantly emerging. Various technologies deliver different kinds of content and serve different purposes in the classroom/lecture hall. Word processing and e-mail promote communication skills; data base and spreadsheet programmer promote organizational skills; and modeling software promotes the understanding of science and mathematical concepts. It is important to consider how these electronic technologies differ and what characteristic make them important as vehicles for education mbah (2010).

Considering the Empirical view**,** this unit will give us a background view on information and communication technology (ICT) conducted by famous researchers. The ultimate goal of creating this learning environment is to boost learning outcomes. Education reforms require teachers to adopt new roles as more responsibilities for learning are given directly to the students. This change require that teachers be proficient in advising and guiding students through more autonomous, self-directed learning processes, while the same time monitoring curriculum standards achieved by students Brush, T.(2007).

Technology available in classrooms/lecture hall today ranges from simple tool-based application (e.g. word processors), to online repositories of scientific data. Other s are primary historical documents, handheld computers, closed-circuit television channels, and two way distance learning classrooms. Also asserts that even the cell phones can be used to learn, each technology is likely to play a different role in students learning. This research need to think about what kind of technologies are being used in classroom and for what purposes. Two general distinctions could then be observed from the literature. Students can learn from computers where technology are used essentially as tutors and serve to increase students basic skills an knowledge. More ever ,they can learn with computers where technology is used as tool that can be applied to a variety of goals in the learning process and can serve as a resource to help develop higher order thinking, creativity and research skills.

A number of recent studies have shown a positive relationship between the use of technology and academic achievement. Scholars and researchers found that students in technology rich environments experienced positive effects on achievement in all major subject areas Watson (2006). Students showed increased achievement in preschool through higher education for both regular and special needs children Kean et al.(2012). Students' attitudes toward learning and their own self-concept improved consistently when computers were used for instruction Walsh (2010).

McMahon (2009) in his study Western Australia high schools examined the relationship between students working in a technology-rich environment and their development of higher order thinking skills. He found that there are statistically significant correlations between studying within a technology-rich learning environment and the development of students' critical thinking skills. Length of time spent in the environment has a positive, non-linear effect on the development of critical thinking skills. Students with better developed computing skills scored higher on critical thinking activities "Measuring ICT impact against students' attainment and improvement of their basic skills is one way of assessing impact assessment, but one which

assumes a fixed education system in which school learning is primarily about mastering of a pre-determined body of knowledge, skills and understanding." Balanskat (2006), most reputable educational researchers today would agree that there will never be a direct link, because learning is mediated through the learning environment and ICT is only one element of that environment." Newhouse,(2002) "Students assume greater responsibility for their own learning when they use ICT, working more independently and effectively... ICT offers learners assignments better suited to individual needs and makes it easier to organize their own learning, through the use of, for example, digital portfolios "Balanskat (2006) This review set out to identify and evaluate relevant strategies in local, national and international research and initiatives related to measuring and demonstrating the impact of ICT in schools with regard to: students, learning and the learning environment; teachers and teaching strategies; organizational change; and other areas relevant to teaching and learning in Western Australia government schools."

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development of critical thinking skills. Students with better developed computing skills scored higher on critical thinking activities McMahon (2009).

Transforming teaching and learning by increasing access to and use of technology in classrooms has been at the center of most recent teaching reforms agenda (Cuban, 2001).However, as the second millennium begun, digital technology use increased around the world. In the education sector, technology integration started gathering momentum in 1994 and has continued. Educational technology can help students get the best education possible and make a smoother transition to the work force. Technology can act as a bridge to help students move beyond theoretical understanding Cuban,(2001)

IV. METHODOLOGY

Research methods are the various approaches, procedures as well as some sort of algorithms used in research to solve a perceived or current problems [13]. All the methods used by a researcher during a research study are termed as research methods that were essentially planned and the method include theoretical procedures, experimental studies, numerical schemes, statistical approaches, etc.

A. Area of the Study

This study utilized the survey of research design. A survey design deals with the gathering of information about a number of people by means of collecting relevant information from the selected samples. As such, the target population for this study comprises the impact of information and communication technology (ICT) with Al-Qalam University Katsina as a case study. The data for this research was collected from two sources which are as follows, such as Primary data source and Secondary data source. The questionnaire being the instrument for this research was administered in order to gather information from students of the university covered by this research. The Source for this data collection are from library, internet and journals past project and other literature that are related/similar to the study. For this research paper, a questionnaire is distributed to aiding data collection.

B. Population of the Study

The population of this research paper comprises some randomly selected students of Al-Qalam University Katsina. Since it is not possible to study the whole population due to financial and time constraints, a sample size of four (4) colleges were selected alphabetically to avoid bias to

enhance the accuracy and reliability of the results. The sample size for this research is 100 people. In the alphabetically selected faculties, 25 respondents were given questionnaires for each college making a total of 100 respondents. The colleges are: Education, Humanities, Natural and applied Science and Social and Management science (SMS).

C. Data Analysis Method

The arithmetic method that would be used in analyzing the data collected in this research work are discipline and inferential (chi square) technique. Descriptive method is used because it summarizes relative cumbersome data into a more manageable and easily interpreted form. This is usually expressed in percentage. Inferential technique is used to determine whether the observed values should be rejected or accepted based on the hypothesis tested to confirm the effect of social networking in an educational system.

V. RESULTS AND ANALYSIS

This section deals with extracting the significance of the data collected. Basically it focuses on the analysis of data interpretation and discussion of findings. To ensure meaningful analysis, the data for analysis acknowledged as follows: the analysis of the personal data, the analysis of response to questionnaire and hypothesis testing and interpretation.

A. Results and Analysis

In this research, 100 questionnaire were carefully distributed and 100% retrieved.

Table 1 below shows the gender distribution of the respondents and it was distributed as.

Table 1 GENDER WISE RESULTS

GENDER	RESPONSES	PERCENTAGE
MALE	40	40.0%
FEMALE	60	60.0%
TOTAL	100	100%

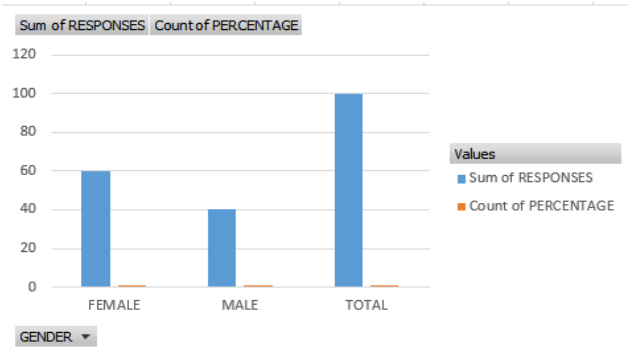

Figure 1 Analysis Of Gender Wise Distribution

The figure above indicate the gender respondents, where females having 60% against male respondents with 40%. And as such, this could be deduce that most of the respondents from the university are female consisting of 60.0% while male were as well 40.0%.

Table 2 AGE DISTRIBUTION OF THE RESPONDENTS

AGE	RESPONSES	PERCENTAGE
18- 20	39	39.0%
20- 25	41	41.0%
25- 35	13	13.0%
35- 40	7	7.0%
TOTAL	100	100%

Table 2 above indicates the age distribution results of the respondents for this study. Ranges from 18– 20 years and above.

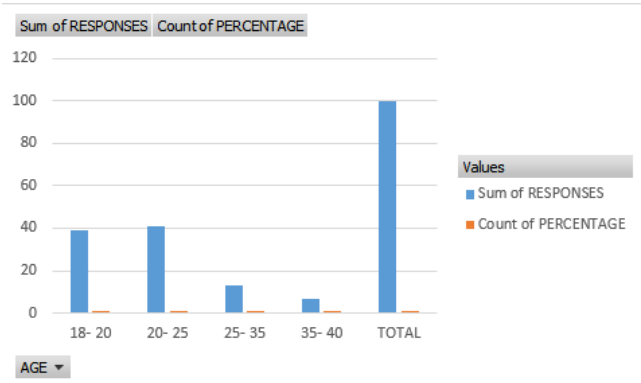

Figure 2 Age Wise Distribution

However, the analysis of the response indicates that most of the respondents fall within the age range of 20– 25 years with accumulation of 41.0% of the total respondents.

Table 3 COLLEGE WISE RESULTS DISTRIBUTION OF THE RESPONDENTS.

FACULTY	RESPONSES	PERCENTAGE
EDUCATION	25	25.0%
HUMANITIES	25	25.0%
NAS	25	25.0%
SMS	25	25.0%
TOTAL	100	100%

Table 3 above shows the college of the respondents used for this study. Where each college have the same number of the questionnaire been distributed.

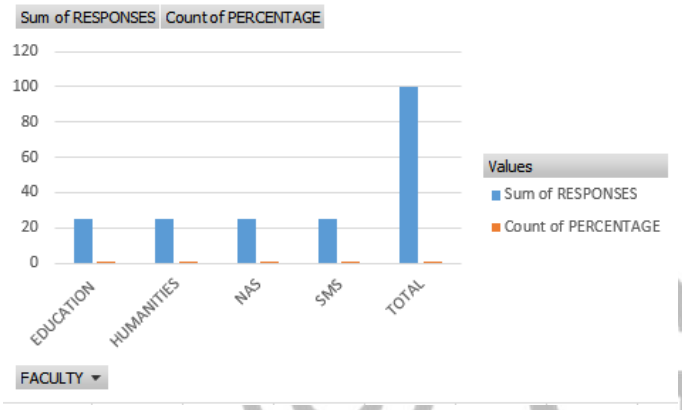

Figure 3 College wise Distribution of the Respondents

Figure 3 above indicate an analysis of the respondents distribution from their various college and the total number of all the respondents.

Table 4 CURRENT LEVEL OF THE RESPONDENTS

CURRENT LEVEL	RESPONSES	PERCENTAGE
100	30	30.0%
200	27	27.0%
300	23	23.0%
400	20	20.0%
TOTAL	100	100%

Table 4 above shows the current level of the respondents used for this study.

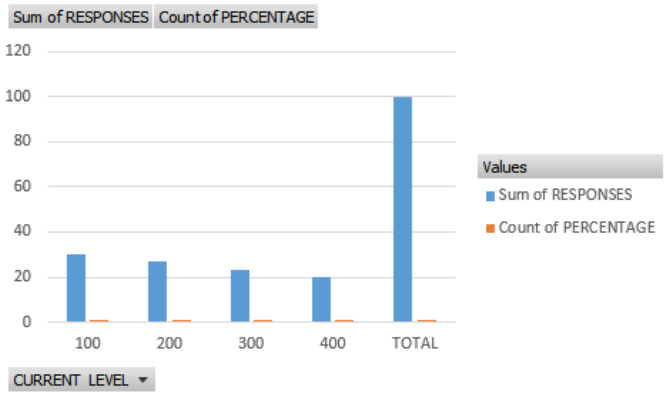

Figure 4 Current Level Wise Distribution Of The Respondents

From the analysis of current level wise distribution of the responses, its concluded that from the research most of the respondents are 100 level with highest percentage of 30.0%.

RQ: FOR HOW LONG YOU HAVE BEEN USING INFORMATION AND COMMUNICATION TECHNOLOGY.

Table 5 Responses to the Question Results

Time (Years) Range	RESPONSES	PERCENTAGE
LESS THAN 1 YEAR	19	19.0%
1 – 2 YEARS	34	34.0%
3 – 4 YEARS	26	26.0%
More than 4 YEARS	21	21.0%
TOTAL	100	100%

Table 5 above shows results of the response of the students regarding for how long you have been using information and communication technology. The analysis of the results is shown in the figure 5 below with the students from 1-2

Years has 34.0%, and that indicate the highest percentage.

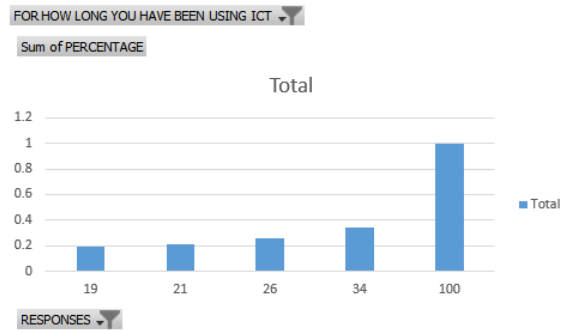

Figure 5 Results Analysis from the response of students

RQ: DOES INFORMATION AND COMMUNICATION TECHNOLOGY REALLY AFFECT STUDENT ON THEIR AREA OF STUDIES

Table 6 Research Question Results obtained

DOES INFORMATION ICT AFFECT STUDENT ON THEIR AREA OF STUDIES	RESPONSES	PERCENTAGE
YES	57	57.0%
NO	43	43.0%
TOTAL	100	100%

From the table 6 above, it shows that the response of the students regarding the belief that information and communication technology really affect student on their area of studies is YES with 57.0%

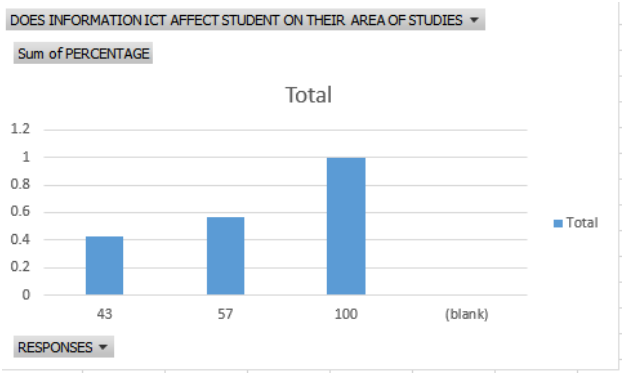

Figure 6 Analysis of the responses

RQ: DOES INFORMATION AND COMMUNICATION TECHNOLOGY IMPROVE ON THEIR ACADEMIC STATUS

Table 7 RQs Response Table

ICT Improve On Their Academic Status	Responses	Percentage
STRONGLY AGREE	16	16.0%
AGREE	32	32.0%
DISAGREE	28	28.0%
TOTAL	100	100%

Table 7 above the respondents on which says that the Information and communication technology improve student on their academic status is AGREE with 32.0%

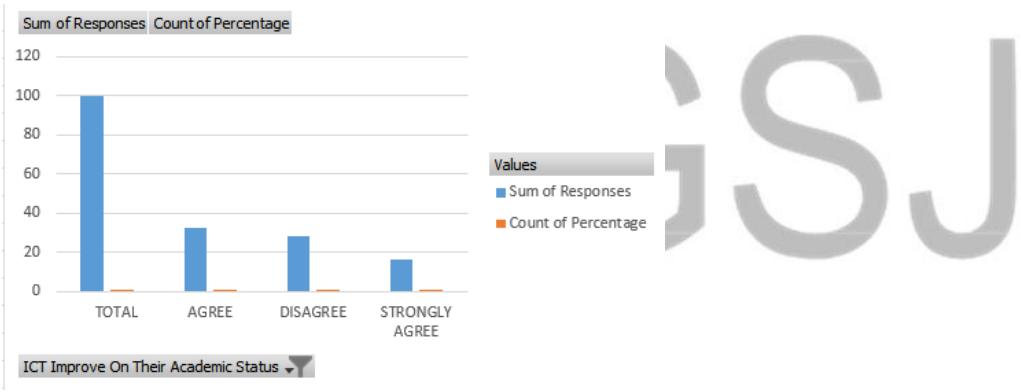

Figure 7 Analysis of the level of agreed to the RQ

RQ: DO YOU NEED INFORMATION AND COMMUNICATION TECHNOLOGY(ICT) IN YOUR INSTITUTION

Table 8 response to RQ

ICT IN YOUR INSTITUTION	RESPONSES	PERCENTAGE
YES	67	67.0%
NO	33	33.0%
TOTAL	100	100%

From the table 9 above, it shows that the response of the students regarding the belief that :do you need information and communication technology(ICT) in your institution is YES with 67.0%

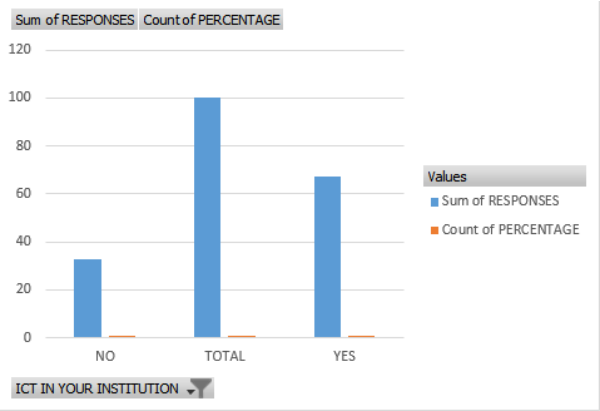

Figure 8 Response to RQ

4.4 Hypothesis testing and interpretation

Hypothesis 1

This hypothesis is tested using chi-square question 6 in the questionnaire is drawn for the purpose of testing this hypothesis.

TABLE 9: Question 8 from the questionnaire was drawn for the basis of hypothesis testing.

Table 9 Hypothesis Testing

VARIABLE	Fo	Fe	Fo – Fe	$[Fo - Fe]^2$	$\frac{[Fo - Fe]^2}{Fe}$
STRONGLY AGREE	20	25	-5	25	1.00
AGREE	40	25	15	225	9.00
DISAGREE	16	25	-9	81	3.24
STRONGLY DISAGREE	24	25	-1	1	0.96
TOTAL	100	100		X^2	14.20

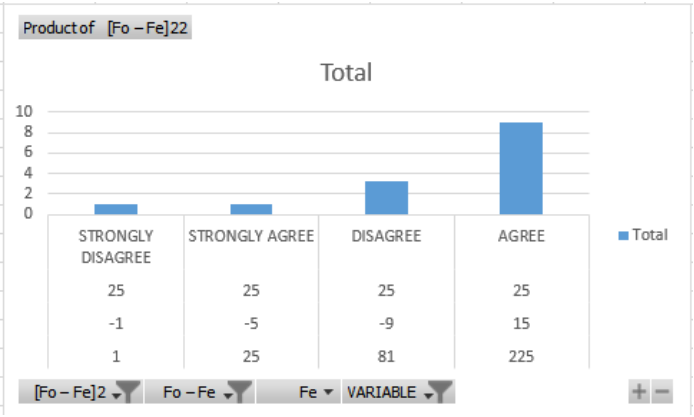

Figure 9 Analysis of the Hypothesis

Where Fo = observed value

Fe = expected value

X^2 = chi-square

$\sum$ = summation

Fe = Fo/N = 100/4 = 25

Degree of freedom = k - 1= 2 – 1 = 1

Level of confidence is 95% i.e. 0.95%. This critical value X^2 =1 at 0.05 significant level = 3.841.

Since the table of critical value (3.841) is lower than the calculated value (21.16) we accept the hypothesis (H1) which states those information and communication technology improve students achievement.

Hypothesis 2

Question 9 of the questionnaire is drawn for the basis of testing the hypothesis.

Table 10 Hypothesis two Testing

VARIABLE	Fo	Fe	Fo – Fe	$[Fo – Fe]^2$	$\frac{[Fo – Fe]^2}{Fe}$
STRONGLY AGREE	48	25	23	529	21.16
AGREE	19	25	-6	36	1.44
DISAGREE					

	21	25	-4	16	0.64
STRONGLY DISAGREE	12	25	-13	169	6.76
TOTAL	100	100		X^2	30.00

Xr = 0.5, degree of freedom = K – 1 = 2 – 1 = 1. Critical value X^2 = 1 at 0.5 significant level = 3.841.

Since the table of critical value (3.841) is lower than the calculated value which is (30.00) we then accept the hypothesis which states that information and communication technology enhance students capability and success.

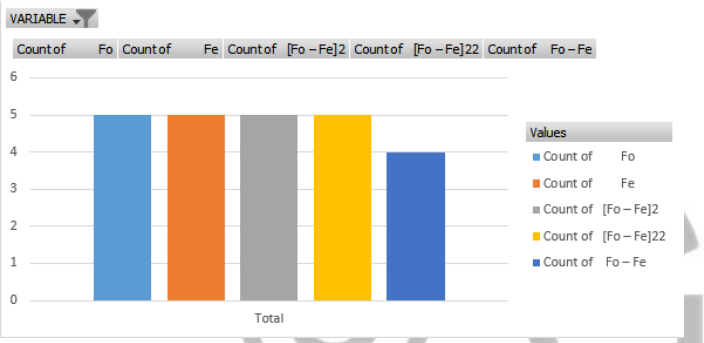

Figure 10 Analysis of Hypothesis two

B. Research Finding-

Based on the research and hypothesis being carried out there is a strong relationship between student achievements and use of information and communication technology. From the analysis obtained from the questionnaire and hypothesis tested, there is a very strong assurance that most of student using ICT can guarantee the student achievement which will in turn enhances the student good achievement on their status.

VI. SUMMARY OF FINDINGS

The impact of ICT on learning is currently in relation to the use of digital media, primarily computers and internet to facilitate teaching and learning, also to find out weather information and communication technology enhances student achievement on their area of studies. Findings from the study reveals that the majority of the respondents are of the opinion that the use of

information and communication technology allow student to have access on their materials of studies and for better achievement on their studies at the University.

VII. CONCLUSION

A survey was conducted to identify the issues at possible way of improving information and communication technology enhances student achievement on their area of studies at the university

With the current COVID-19 pandemic situations, information and communication technology the lecturers and student have better way of their teaching and learning respectively, handle varieties of task, communicate and store information related to their studies etc. Even though the problem facing information and communication technology and it effect on their achievement. information and communication technology can also enhance studies achievement on student and help them meet with the demand on their achievement.

Further research should be investigated to determine ICT has been enforced to all students and staff of the University in order to enhance their studies and working capabilities respectively. University organization should also ensure that the office technology are trained and retrained from time to time.

Reference

[1] F. S. Bidabadi and H. Yamat, "Learning style preferences by Iranian EFL freshman university students," *Procedia - Soc. Behav. Sci.*, vol. 7, no. 2, pp. 219–226, 2010, doi: 10.1016/j.sbspro.2010.10.031.

[2] S. Iqbal, M. L. M. Kiah, N. B. Anuar, B. Daghighi, A. W. A. Wahab, and S. Khan, "Service delivery models of cloud computing: security issues and open challenges," *Security and Communication Networks*, vol. 9, no. 17. John Wiley and Sons Inc., pp. 4726–4750, Nov. 25, 2016, doi: 10.1002/sec.1585.

[3] M. C. P. Arante, "Information and Communication Technology (ICT): The role and its impact to Maritime University's Online Distance Education," *International Conference on Research and Innovation in Information Systems, ICRIIS*, 2013. https://ieeexplore.ieee.org/document/6716677 (accessed Nov. 07, 2020).

[4] M. V. Tikam, "Impact of ICT on Education," *Int. J. Inf. Commun. Technol. Hum. Dev.*, vol. 5, no. 4, pp. 1–9, Mar. 2014, doi: 10.4018/ijicthd.2013100101.

[5] S. Damas *et al.*, "Forensic identification by computer-aided craniofacial superimposition: A survey," *ACM Comput. Surv.*, vol. 43, no. 4, p. 27, Oct. 2011, doi: 10.1145/1978802.1978806.

[6] S. Kounev, J. O. Kephart, A. Milenkoski, and X. Zhu, *Self-aware computing systems*. Springer International Publishing, 2017.

[7] P. Perera, M. Bandara, and I. Perera, "Evaluating the impact of DevOps practice in Sri Lankan software development

organizations," *16th Int. Conf. Adv. ICT Emerg. Reg. ICTer 2016 - Conf. Proc.*, pp. 281–287, 2017, doi: 10.1109/ICTER.2016.7829932.

[8] C. R. Trusson, N. F. Doherty, and D. Hislop, "Knowledge sharing using IT service management tools: Conflicting discourses and incompatible practices," *Inf. Syst. J.*, vol. 24, no. 4, pp. 347–371, 2014, doi: 10.1111/isj.12025.

[9] L. Tamatea and G. A. A. M. Pramitasari, "Bourdieu and programming classes for the disadvantaged: a review of current practice as reported online—implications for non-formal coding classes in Bali," *Res. Pract. Technol. Enhanc. Learn.*, vol. 13, no. 1, Dec. 2018, doi: 10.1186/s41039-018-0068-x.

[10] E. Indriasari, S. H. Supangkat, and R. Kosala, "Digital transformation: It governance in the agile environment a study case of Indonesia high regulated company," *Int. J. Sci. Technol. Res.*, vol. 9, no. 4, pp. 1557–1562, Apr. 2020.

[11] H. Shi, "Maximising Computer Science student career opportunity through ICT industry placements," *3rd International Multi-Symposiums on Computer and Computational Sciences, IMSCCS'08*, 2008. https://ieeexplore.ieee.org/document/4760329 (accessed Nov. 07, 2020).

[12] M. C. P. Arante, "Information and Communication Technology (ICT): The role and its impact to Maritime University's Online Distance Education," in *International Conference on Research and Innovation in Information Systems, ICRIIS*, 2013, pp. 1–5, doi: 10.1109/ICRIIS.2013.6716677.

[13] G. Benguria, J. Alonso, I. Etxaniz, L. Orue-Echevarria, and M. Escalante, "Agile Development and Operation of Complex Systems in Multi-technology and Multi-company Environments: Following a DevOps Approach," in *Communications in Computer and Information Science*, 2018, vol. 896, pp. 15–27, doi: 10.1007/978-3-319-97925-0_2.