IMPACT OF HUMAN-COMPUTER INTERACTION (HCI) ON USERS IN HIGHER EDUCATIONAL SYSTEM

(A CASE STUDY OF TAI SOLARIN UNIVERSITY OF EDUCATION, IJAGUN, IJEBU-ODE, OGUN STATE)

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CERTIFICATION

This is to certify that this research work was carried out by **ODEBUNMI ADEGBEMISOLA MODUPEOLUWA**, Matric Number: **17012411003** of the department of Computer Science, Tai Solarin College of Education, Omu-Ijebu.

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DEDICATION

This project is dedicated to Almighty God, the compassionate, the most gracious, the merciful and to my loving mother Miss. Olufadeji Olufadeke.

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First and foremost, praises and thanks to the God, the Almighty. For His showers of blessings, his provision, guidance and protection over my life and most especially for the success of this research work, will yet all glory, honour and adoration to my maker who knew the end of a man right from the beginning of the man. Thanks you Father for your endless love upon me.

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ABSTRACT

In this study, Human-Computer Interaction (HCI) perception and impact in Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State, Nigeria a higher learning environment was measured. The researcher gathered data from respondents (students) via interviews and questionnaires. The aims were to find out the level of impact of Human-Computer Interaction (HCI) on users in higher educational system in Nigeria in the school environment. The impact HCI in TASUED has been positive and it is shown that students becoming familiar with HCI concepts improve a user's interaction and efficiency. Not only should a computer be cognitively fit, but also the user should be cognitively/physically prepared to use the system.

KEYWORDS: *Human-Computer Interaction (HCI), Usability, Higher Education*

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The start of user experience in its primary form can be traced back to the 1800s. Since the 1850s, "ergonomics" has been widely applied in a number of different disciplines such as military, academia and aviation (Waterson & Sell, 2006; Benyon, 2010; Zink & Fischer, 2013). The goal of "ergonomics" or "engineering psychology" is to optimise machine design for human operation within design limitations (Grudin, 2012). In the 1940s, an identical label of "human factors" appeared during the World War II in North America as the driving force for research on machine and systems, after simple flaws in design led to accidents and loss of life (Bannon, 1991; D'Addessi et al., 2009; Ardito et al., 2013).

The study of Human-Computer Interaction (HCI) is the study of 'usability'; that is the study of the user's experience with the computer, Carroll (2011). Various theories offer explanations on the evolution of HCI as noted by Bannon (2010); these range from an academic perspective, business perceptions or even that of the everyday user. With the introduction of the internet, in today's economy and learning, the world has become a global village; where information sharing can be moved around the world for little or no cost, Samuel and Adeniyi (2015). With the help of a better understanding of humans and how they interact with computers, developers have been able to find a centre to strike a balance in producing what they perceive the computer users need to make their computer interaction easier.

Hewett et al (2012) defined Human-Computer Interaction (HCI) as a discipline concerned with the design, implementation, and evaluation of an interactive computing system for human use and for studying the major phenomena surrounding them. Also, HCI can be

defined as an experience an individual acquires when that individual comes in contact with a computer system. It is an independent discipline which strives to improve the quality of interaction humans have with computers. As the computer has become a critical part of our everyday society, it is, therefore, important to ensure that users have an excellent experience. So many principles have been created to guide computer developers in producing user-friendly systems; HCI has had an opportunity to play a role in providing and influencing user's experience – irrespective of the operating environments. In this study, the research would be looking at the influence HCI has on Higher Education and why it is necessary to promote its importance in a learning environment.

With the development of technology within the last three decades, there seems to be a demarcation, between those individuals who were born into a more stable technological environment and those who had to adapt to technological changes. Putting this in perspective, there seems to be a disparity between younger and older computer systems users in terms of how they perceive or use technology.

In higher educational learning, for example, there is a blend of people; people of different ages, from different ethnicity, academic or academic orientation. This mixture in higher educational institution gives rise to the curiosity of how people perceive and interact with these systems in a learning situation. The study focus on the of impact of human-computer interaction (HCI) on users in higher Educational System in Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State.

1.2 Statement of the Problem

The story of Human Computer Interaction uptakes in developed and developing countries so far, might not differ, especially, when talking about certain practices such as usability engineering, user experience and Human-Centred Design (HCD). For example, running a survey of the Icelandic software industry to determine how practitioners perceive the importance of usability and user involvements in software projects.

Despite the articulated need for Human Computer Interaction, the current AIS model curricula do not include HCI materials or courses at the undergraduate level, although one elective HCI-oriented track is optional at the graduate level. The following are problems under investigations;

i. Negative influence of Human Computer Interaction among the students in higher education;
ii. It influence on the student's academic activities in the study area;
iii. It influence on Administrative and academic problems of using Human-Computer Interaction in higher institutions

1.3 Objectives of the Study

The Research Objectives was to investigate the degree of impact of human-computer interaction (HCI) on users in higher Educational System efficiency, exploring how students perceived the role of Human Computer Interaction in their learning process. The following specific objectives for this research work:

i. To what degree it influenced students' academic efficiency and also in relation to their administrative and academic staff; in totality;

ii. To examine the influence of Human Computer Interaction on the student's academic activities in Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State.

iii. To investigate the influence Human Computer Interaction on administrative and academic problems of using Human-Computer Interaction in higher institutions

1.4 Research Questions

The following are research questions for this study based on objectives studies in the study school.

i. What are the roles of Human Computer Interaction in the students learning processing?

ii. To what extent does Human Computer Interaction influenced student's academic efficiency and also in relation to their administrative and academic staff?

iii. What are the problems of using Human Computer Interaction on administrative and academic problems of using Human-Computer Interaction in higher institutions?

1.5 RESEARCH HYPOTHESIS

H_0: There is no significant relationship between Human Computer Interaction and students learning processing in TASUED.

H_{01}: There is significant relationship between Human Computer Interaction and students learning processing in TASUED..

1.6 SIGNIFICANCE OF THE STUDY

This research is important to the school authorities, government and all students of Nigeria society.

The study will enable the government to expand those factors that lead to.

Furthermore, the study aim adds knowledge to previous studies on the topic. Finally by examining the effect of terrorism on religiously activities in Nigeria will enrich the discussion on it and add to existing thesis and literature.

1.7 SCOPE OF THE STUDY

This study shall cover students of Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State. In this part, the researcher will make use of simple random sampling technique to select respondents from the populations of students in the state.

1.8 DEFINITION OF TERMS

Human-Computer Interaction: Human-Computer Interaction (HCI) as a discipline concerned with the design, implementation, and evaluation of an interactive computing system for human use and for studying the major phenomena surrounding them. The definition of Human-Computer Interaction depends on the situational context and the referent discipline being considered. (Carroll, 2011)

Higher Educational: This is any of various types of education given post-secondary institutions of learning and usually affording, at the end of a course of study. (Britannica, 2021)

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

Human-computer interaction can be viewed as two powerful information processors (human and computer) attempting to communicate with each other via a narrow-bandwidth, highly constrained interface (Tufte, 2009). As by the definition HCI knows as intersection of different disciplines such as computer science, behavioral science and several others. As the result there is real confusion in what HCI is, a science, a design science or an engineering discipline. Newell & Card (2005) defined HCI as a science; HCI is tempered by approximation, providing engineering-style theories and tools for designers. Carroll & Campbell (2009) defined HCI as a design science, developing a craft-based approach and new research methods to evaluate existing systems in their intended and tasks context, using the results to inform designers for the next generation of systems. The design and strategy of humans and computers intermingling to accomplish work effectively, exposed as an engineering discipline (Long & Dowell, 2009).

2.1 LITERATURE REVIEW

2.1.1 Evolution

As technology advances, the requirements of computer users are more demanding, the evolving nature of user requirements is reflected in the multiple tasks that can be performed by devices today e.g. voice control, touch screen devices and many more. According to Grudin (2012), the evolution of HCI from an academic standpoint was a revolution, using the innovation of libraries in the USA as an example and contrasting the effect of this innovation with its

European counterpart. He argued that the needs of the users were a catalyst to the evolution and HCI evolution varied in different countries according to their needs. Undoubtedly, HCI advancement is bound to impact different aspects of human life; the society in general, business, and the learning environment (Rosson et al, 2002); where productivity and efficiency of each user, employee or student are profitable and resourceful, Zhang et al (2006).

2.1.2 Human Computer-Interaction Issues

Concerning a learning environment, systems need to be efficient, otherwise, users can brand their experience stressful and this can yield less productivity and acceptability. Nevertheless, that is not always the case; making efficiency the number one goal can bring complications. For instance, the Licence Application Mitigation Project (1990) in California, USA tried to speed up the process of giving licenses to increase efficiency and automate the licensing process for which they created a computer interface for people to fill in their details. It was not successful because they did not look into other factors critically such as complexity of the users and their differences. This was because the system developers had one goal on their mind; getting the system to work as soon as possible, and they did not put a lot of effort into the user's aspect, this caused complications after its installation.

Usability issues describe situations where users find themselves having difficulties using a system (Bennett, 1984), and this can lead to human errors. Human errors can be defined as occasions in which intended outcomes are not met due to distractions or the intervention of some chance agency (Whittingham, 2012). Reason (2000), explained the two approaches in relating to approaching error namely; The Persons Approach, where he explained that, this approach goes all the way to blame to the individuals for the incidents. While the System Approach focused on

improving and evaluating the system to reduce the error through provocative inventions. Reason also appraised the Swiss cheese model of system accidents as a very good model used in the systems approach to eliminate latent pathogens. He explained that the Swiss cheese model was used to reduce the amount of errors made by humans by ensuring systems were almost or completely latent pathogens free, Reason (2000) stated that "We cannot change the human condition, but we can change the conditions under which humans work" (p.769). However, In a learning environment, it would be thoughtful of system designers to produce systems that are reducing error provocative situations, and in doing this they have to ensure the system is cognitively fitting the user (Zhang et al, 2006).

2.1.3 Human Computer-Interaction Impact in the Medical Environment: Acharya & Oladimeji Case Study

Acharya and Oladimeji (2010) submit that while a percentage of medical deficiencies may be attributed to human factors, e.g. negligence, there is the widely ignored issue of the usability of devices that medical staff often have to operate, i.e. have they received proper training? Are these devices designed for easy adaptation? The impact of HCI in the medical field is significant given that the consequence of these devices not being easily adaptable may be harmful or in the worst cases, fatal.

Acharya & Oladimeji (2010) undertook a case study on an electric hospital bed; a common feature in most hospitals today. The authors note that they could "crash" the bed's software system, even though crashing the software system should be a programming problem; further adding that once the system was crashed, none of the bed's buttons worked, not even the cardiopulmonary resuscitation (CPR) button, thus leading a normal operator e.g. a nurse to

believe, in ordinary circumstances that a 'crash' be attributed to a programming error. In such an instance, this could prove very adverse given that a patient on the bed may need immediate CPR and in the event of an ineffective CPR button, this may undoubtedly lead to the demise of the patient; the authors also note the absence of an error recovery option. Stating that, in the event of a "crash" the only resolution was to unplug the bed by the resort to the bed's manual of which this paper contends that in the height of such panic, it is unlikely that a nurse under pressure will consider these options. The case study further noted deficiencies in the layout of buttons on the bed's remote control, noting that often doctors, nurses or even patients were confused as to the workings of the buttons.

The biggest benefit of the incorporation of HCI into any system is the satisfaction of the user. Regardless of the environment, the effective incorporation of HCI into any system guarantees better user experience thus leading the user to maximize his/her utilization of the system's potential, resulting in better results. Additionally, the incorporation of HCI into medical devices as exemplified in Acharya and Oladimeji's case study is very essential to ensuring patient safety and to a large extent increasing patient confidence in the hospital environment. Likewise, having a system not built around the user, this case demonstrates the difficulty the user may face while interacting with the system. If a user is not able to interact properly with a new system, this may result in rejection. In essence, every device should have a learnability feature that will enable the user to get familiar with the system as soon as they start using it.

The role of HCI in today's computer developmental stage ensures a high rate of computer utilization and friendliness with the user. According to the Chaos Project Report (2004), only 29% of information systems developed succeeded, 18% failed and the rest encountered challenges. The success of a computer system narrows down to the following: the goal of the

system, an individual's or the organizational perspective, as well as the user experience when using the system. The success of HCI has also brought about some challenges. Some examples of these include the software developer's ability to build a system that is perfectly able to fit the requirements of a user, as well as meeting the functional requirements (Rogers, et al, 2011).

Furthermore, being able to build a system successfully for a universal user takes a lot of hard work due to the diversity of human variance, different ethics and the understanding and interpretation of information displayed. However, with these challenges, the discipline has grown stronger by overcoming some of these challenges with the progress of technology and the finding of new and innovative solutions, for example, Apple iPhones.

2.2 THEORETICAL FRAMEWORK (MODELS)

A model describes the way of interaction between user and computer.

2.2.1 Norman's model of interaction

Norman concentrates on user's view. With the help of psychology, Norman describes the user's cognitive process as the interaction with technology in daily life. Norman's model is divided into two phases: execution and evaluation. Each phase is divided into several steps. As the whole it contains seven distinct steps.

The identified steps are:

- Forming the goal;
- Forming the intention;
- Specifying an action;
- Executing the action;
- Perceiving the state of the world;

- Interpreting the state of the world;
- Evaluating the outcome;

2.2.2 The Interaction Model

Abowd and Beale defined this framework of interaction as translation between languages. They state both a common interaction framework and a translation within the framework. Abowd and Beale framework concentrate on four components and each has its own unique language. Those are;

- User
- Input
- System
- Output

2.2.3 Structure of HCI

Human Computer-Interaction, as the name suggests, comprises three major parts within the framework: the user, the computer, and the interaction, indicates the ways they work together to achieve goals. The diagram below shows three main components of human computer interaction.

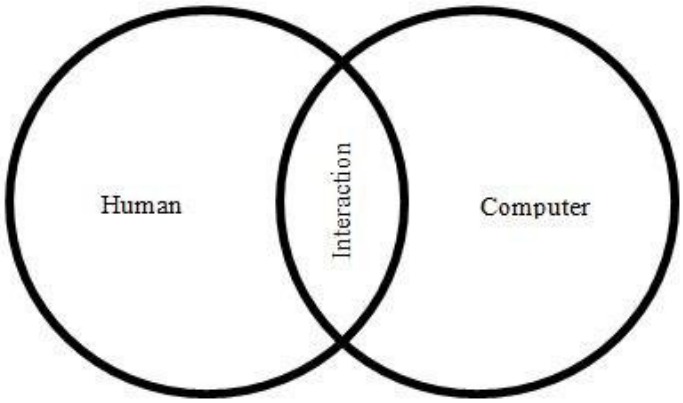

Figure 1: *The three components of Human Computer-Interaction*

2.2.4 The user

The user analysis is a critical part of user-centered systems design. The public or the user of Human Computer-Interaction could be considered as the user of systems. They may vary based on the purposes and task they have in the system. The distinct characterization of users depends on above task and purpose with their experience on it. Danino (2001) stated that the user of HCI is whoever using technology to try to get the job done.

2.2.5 The computer

Danino (2001) stated that the computer in HCI denotes to any technology that comprises from desktop computers to generalized computer systems; even an embedded system or an information processing engine can be viewed as "computer". A computer is a device used for general purpose and it carry out several arithmetic and logical operation with the human help. The way of interaction with computers is not limited with traditional shape of the computer because of the incredible technological development. But Human computer Interaction is

focused on interfaces involved in man and machine. Each and every device consist some kind of user interface for its usage. Normally it involves with huge amount of interaction.

2.2.6 The interaction

The major component in Human Computer Interaction is interaction between man and machine. Normally human interact with other human through speech. At the same time they support their expression with some body gestures, emotions and certain expressions. The non-cognitive properties of a computer system on the user must be looked carefully, because humans always have a solid tendency to respond on a computer in same ways as they react to the practical world (Reeves & Nass, 2006).

2.3 RESEARCH ON ACADEMIC SUPPORTIVE DEVICES

Input efficiency takes major role in learning supportive devices. In most cases learning supportive devices use to gather or acquire lecture notes in real time. Interaction styles mention to the dissimilar ways of communication in between human and computer. Different systems use different interactions styles. But some common interaction styles are there, those are individually evaluated.

2.3.1 Command line languages

This is one popular mode of interaction between humans and computers. Here the computer accepts some typed meaningful commands. Usually user can type one command at a time, thus it is very slow in taking data in. Particular application process or execute the sub sequent inputs given by user and give some feedbacks.

It has some considerable advantages, but the interaction becomes a dialogue only, particularly the human is the lively side and face more workload than computer. Two important pros and cons of command line languages related with academic supportive devices are listed in Table 1.

Table 1: *Pros and Cons of Command line languages*

Pros	***Cons***
Cheap	Low visibility
Flexible	Error handling

Because of low visibility of command line languages are hard to use in real time environments as well as in academic supportive devices too. Error correction mechanism is very important in academic supportive devices because of its real time usage. But this facility is very much lack in such command line languages.

2.3.2 Menus

As the name indicate the menu interface exactly borrows its name from the list of dishes or food items that can be chose in a restaurant or food corner. In same way, a menu interface offers the user with a pre-defined static list of selections in an onscreen fashion. A collection of choices displayed on the screen where the selection and execution of one or more of the selections results in a transformation in the state of the interface (Preece, 2014). There are four brave categories of menus:

- ✓ Pull-down menus
- ✓ Pop-up menus
- ✓ Hierarchical menus
- ✓ Contextual menus

Two important pros and one cons of menus related with academic supportive devices are listed in Table 2.

Table 2: Pros and Cons of Menus

Pros	Cons
No need to recall	Limited
Logical Group	

Here in menus a very big drawback is it is limited, normally academic inputs are not limited to defined choices. Thus it is not suitable at all for academic supportive devices.

2.3.3 Graphical and direct manipulation

The direct manipulations involve in representing the data or information through graphical format. Table 3 indicates the pros and cons of direct manipulation related with learning academic supportive devices.

Table 3: Pros and Cons of Direct Manipulation

Pros	Cons
User sensitive	Limited
Flexible	

Here in direct manipulation a very big drawback is it is limited as like menus, normally academic inputs are not limited to defined choices. Even though it is user sensitive and can easily understand in real time situations.

2.4 RESEARCH ON DEVICES SUPPORT THE TEACHING PROCESS

By considering teaching supportive devices, output efficiency takes major role rather than input efficiency. Normally these devices use to convoy or spread thoughts of teachers to the

learners. In most cases teachers like to have user friendly remote devices or controllers for each teaching supportive devices they use.

Teachers prefer interoperation in between the devices, need to transfer or convert material from one teaching supportive device to another. At the same time they prefer a way of moving materials to learning supportive devices, it enable them to distribute their materials in real time.

Further they pointed out the following functionalities to support their teaching;

- Better graphics resolution
- Widespread and distinguishable buttons or navigations
- Better visibility of text, image, audio and video
- On time graphical outputs
- Convenience and mobility
- Security and safety
- Speech and handwriting recognition

2.4.1 Voice recording

Voice is natural way of interaction in academic environments. But continuous voice output is tough to gather or achieve. Even though it is easy to record the voice through interfaces in academic supportive devices with minimum error rate without interruption, much of the argument under voice as input.

Research in finding the way to gather voice input and integrate it into multimode interface is particularly significant. In this case use microphone is simple to get voice input, may

have to face problems when having noisy environment. In such cases it is important to integrate parallel input mechanism to avoid loss of data or lecture inputs.

2.4.2 Hand writing recognition

It is also a natural way interaction, even better than voice input. Student can avoid the unwanted conversation here by using handwriting recognition interfaces.

The interfaces with hand writing recognition can be cooperative in reduce the use of other input devices such as mouse and keyboard, and hence reduces the time in inputting. It is useful in solving or writing mathematical or diagrammatical inputs.

2.5 LITERATURE REVIEW

The researcher found some significant review factors in both learning and teaching supportive devices. Shniderman (2006) stated that the researchers have found that re-design of the human computer interface can create a considerable difference in learning time, performance, speed, error rates and user satisfaction.

In this research, the researcher are concerned in understanding suitable strategies for academic supportive device implementations. Some important refined methods of implementing academic supportive devices are given.

CHAPTER THREE

RESEACH METHODOLOGY

3.1 RESEARCH DESIGN

A good example size must as far as possible not leave essential characteristics of the target population. A specific number of people would be selected for acquired data needed for this research. These numbers of people (students) would be gotten from the members selected school (TASUED).

3.2 RESEARCH POPULATION

The students of Tai Solarin University of Education were used as research population which was needed in acquiring relevant information in the course of this study. The characteristics of the population to be used will depend on age, sex, and religion.

3.3 RESEARCH FRAME

The frame work of the research work is limited to the topic (Impact of Human-Computer Interaction (HCI) on users in higher Educational System in Nigeria (A case study of Tai Solarin University of Education).

3.4 RESEARCH SIZE

Due to the fact that the research cannot cover the entire students of Tai Solarin University of Education sampling technique will be used to select fifty (50) students to represent the entire population.

3.5 SAMPLING METHOD

In order to obtain an objective result sampling technique were to be used in this study. This is because the respondents were selected randomly which gives every member of the population equal chance of being selected. Also in obtaining relevant information with regards to the research topic. Fifty (50) questionnaires were administered randomly to select individual's useful information.

3.6 DATA COLLECTION PROCEDURE

In order to obtain correct and up to date accurate information relating to the topic of the research project. Self administered questionnaire written in English language would be adopted. Both primary and secondary data were used in gathering data for this research work. The primary data would be obtained by the use of questionnaires and personal interview while secondary data were obtained through the study of existing materials.

3.7 DATA ANALYSIS

Chi-Square method shall be used in analyzing the result obtained from the research work that is data collection would be organized into frequency distribution table and sample percentage statistic method will be used to analyze the demography characteristics of the respondents while the chi-square will be used as a statistic tool in testing hypothesis.

CHAPTER FOUR

DATA PRESENTATION

4.1 INTRODUCTION

This chapter is devoted to the preservation analysis and interpretation of the data gathered in the course of this study. The data are based on the number of copies of the questionnaire completed and returned by the respondents.

The data are presented in tables and the analysis is done using the chi-square statistic.

4.2 DATA INTERPRETATION

Table 1: Sex Distribution

SEX	FREQUENCY	PERCENTAGE
Male	19	38%
Female	31	62%
Total	**50**	**100**

Source: Field Survey, 2021.

Table 1 above shows the sex distribution of the respondents used for this study. 38% respondents which representing male while 62% respondents which representing female.

Table 2: Age Distribution

Age	Frequency	Percentage
Below 25 years	11	22%
26 – 30 years	21	42%
31 – 35 years	18	36%
Total	**50**	**100**

Source: Field Survey, 2021.

Table 2 shows the age grade of the respondents used for this study. 22% respondents which represent below 25 years, 42% respondents which represent 26 – 30 years in the age while 36% respondents which 31 – 35 years.

Table 3: Religion Distribution

Religion	Frequency	Percentage
Christianity	32	64%
Islam	18	36%
Traditionalist	-	0%
Total	**50**	**100**

Source: Field Survey, 2021.

This table shows that religion distribution of the respondents 64% respondents were Christianity, 36% respondents were Islam, while 0% respondents are traditionalist.

Table 4: Response to question 4: The role of Human Computer-Interaction in learning is usually underrated.

Items	Frequency	Percentage
Yes	35	70%
No	15	30%
Total	**50**	**100**

Source: Field Survey, 2021.

This table presents the respondents to question 4, 70% respondents answer 'Yes' while 30% respondents answered 'No' to the above statement.

Table 5: Response to question 5: Students do not appreciate or appropriately consider the use of Human Computer-Interaction the study area.

Items	Frequency	Percentage
Yes	34	68%
No	16	32%
Total	**50**	**100**

Source: Field Survey, 2021.

This table present the responses to question 5, where 68% respondents answered 'Yes' and 32% respondents answered 'No' that students do not appreciate or appropriately consider the use of human computer-interaction the study area.

Table 6: Response to question 6: Human Computer-Interaction plays a crucial role in today's learning assimilation in Nigeria.

Items	Frequency	Percentage
Yes	33	66%
No	17	34%
Total	**50**	**100**

Source: Field Survey, 2021.

This table presents the responses to question 6, 66% respondents answered 'Yes' while 34% respondents answered 'No' that Human Computer-Interaction plays a crucial role in today's learning assimilation in Nigeria.

Table 7: Response to question 7: Human Computer-Interaction has definitely "crawled" into the academic institutions, giving cushions to the staff and students by opening out different options to which learning is being progress.

Items	Frequency	Percentage
Yes	40	40%
No	10	60%
Total	**50**	**100**

Source: Field Survey, 2021.

This table presents the responses to question 7, 40% respondents answered 'Yes' and 10% respondents answered 'No'.

Table 8: Response to question 8: The role of Human Computer-Interaction in students learning is its effectiveness?

Items	Frequency	Percentage
Yes	34	68%
No	16	32%
Total	**50**	**100**

Source: Field Survey, 2021.

This table presents the responses to question 8, 68% respondents answered 'Yes' and 32% respondents answered 'No' that the role of human computer-interaction in students learning is its effectiveness.

Table 9: Response to question 9: The use of computer in doing course work supported the students statements with "it's time saving, because of spell check and editing".

Items	Frequency	Percentage
Yes	42	84%
No	08	16%
Total	**50**	**100**

Source: Field Survey, 2021.

This table presents the responses to question 9, 84% respondents answered 'Yes' and 16% respondents answered 'No' the use of computer in doing course work supported the students statements with "it's time saving, because of spell check and editing".

Table 10: Response to question 10: Most students prefer doing their work on paper instead of using computers?

Items	Frequency	Percentage
Yes	46	92%
No	04	8%
Total	**50**	**100**

Source: Field Survey, 2021.

This table presents the responses to question 14, 92% respondents answered 'Yes' and 8% respondents answered 'No'.

4.3 ANALYSIS FINDINGS

Testing for the hypothesis the following hypothesis are stated in null and alternative form.

H_0: There is no significant relationship between Human Computer Interaction and students learning processing in TASUED.

H_{01}: There is significant relationship between Human Computer Interaction and students learning processing in TASUED.

The formular for computing chi-square is given below:

$$X^2 = \frac{\sum (oi - ei)}{ei}$$

X^2 = Chi-Square

oi = Observed Value

ei = Expected Value

e = Summation of Figures

Df = Degree of Freedom

Therefore ei = eoi

Number of options (N)

DECISION RULE

The decision states of the calculated Chi-Square value is greater than tabulated value, than accept the alternative hypothesis and reject the null hypothesis.

Also, if the tabulated value is greater than the calculated value then reject the alternate hypothesis and accept the null hypothesis.

HYPOTHESIS:

H_0: There is no significant relationship between Human Computer Interaction and students learning processing in TASUED.

H_{01}: There is significant relationship between Human Computer Interaction and students learning processing in TASUED.

X^2 Calculated is based on responses from respondents Question 10 was used in testing this hypothesis.

Computation X^2 for hypothesis One

Options	**oi**	**ei**	**oi – ei**	**$(oi - ei)^2$**	**$(oi - ei)^2/e$**
Yes	46	25	21	441	17.64
No	04	25	-21	441	17.64
Total	**50**	**50**		**882**	**35.28**

Source: Field Survey, 2021.

$$oi = \frac{\sum oi}{N} = \frac{46 + 4}{2}$$

$$= \frac{50}{2} = 25$$

ei = 25

X^2 = $\frac{\sum (oi - ei)^2}{ei}$ = $\frac{882}{25}$ = 35.28

X^2 = calculated = 35.28

Degree of freedom = (N – 1)

When n = 2

2 – 1 = 1

Df = 1 at 0.05 level of significance

= 3.841

X^2 Calculated = 35.28

X^2 tabulated = 3.841

According to decision rule accept H_1 when X^2 calculated is greater then X^2 tabulated. Therefore alternative hypothesis is accepted and null hypothesis is rejected.

The result therefore states that is there is significant relationship between Human Computer Interaction and students learning processing in TASUED.

4.4 DISCUSSION OF FINDINGS

The section present discussion of the result of findings of the research study undertaken from the formulated hypothesis.

Hypothesis One: This shows that X^2 (Chi-square) calculated 35.28 is greater than X^2 (Chi-Square) tabulated 3.841. Hence the null hypothesis is rejected which the alternative hypothesis is accepted which states that there is significant relationship between Human Computer Interaction and students learning processing in TASUED.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 SUMMARY

This research was designed to examine the Impact of Human-Computer Interaction (HCI) on users in higher Educational System in Nigeria (A case study of Tai Solarin University of Education).

Within the short period, this study investigated among other things, Impact of Human-Computer Interaction (HCI) on users in higher Educational System in Nigeria. Chapter one focused on the general introduction of the subject matter. Also, an attempt was made to introduce the research topic at the early chapter of this Project.

Moreso, this research concerned itself with the review of literature relevant to the topic at hand as well as searching for the appropriate theories to support the topic by different authors, professionals or writers and scholars.

Furthermore, in chapter three research design and various methods through which respondents were picked; data sourced and analyzed were highlighted as well as limitation encountered by the researcher in the course of undertaking the research exercise.

Much more, data presentation and analysis were also shown with the various instruments of data analysis such as simple percentage chi-square method and descriptive explanation were used by the researcher during the course of the write up. The total number of fifty (50) respondents was used for the research work.

From the findings of the results, it was discovered that majority of the respondents are female and found within the age range of 26 – 30 years.

Furthermore, from the test of the hypothesis, it was found out that alternative hypothesis was accepted by the respondents in the hypothesis: “There is significant relationship between Human Computer Interaction and students learning processing in TASUED”.

5.2 CONCLUSION

In the above research, human computer interaction literature is reviewed as well as technological matters like interaction styles are studied and pros and cons are dogged. And the researcher searched for better interaction styles among the existing ones. At the same time she found dome best "fit" in between a human and a computer in terms of interaction.

While designing moral, effective and user-friendly interfaces for an academic supportive device, several disputes have to be considered. This research suggests a theoretical support in the area of human computer interfacing in designing academic supportive devices.

In this research work, the researcher has deliberated the promising use of Human Computer Interaction in academic supportive devices to attain top levels of interaction between user and academic devices.

The study concluded that there is significant relationship between Human Computer Interaction and students learning processing in TASUED.

5.3 RECOMMENDATIONS

The first recommendation is that since it has been established that computer reduces drudgery and improve learning outcomes, Human Computer-Interaction related courses should be introduced not only for the computer and science-related courses but also for every academic pursuit at the university level including for such disciplines like Nursing and Law.

This will help increase awareness and make such individuals better adapted to coping in a world that is increasingly driven by technology. This does not mean that all individuals must be highly knowledgeable or must use the highly developed system but the use of computers with appropriate functionality will improve the quality of life of individuals even in a learning environment.

In doing this, there will be positive change by non-computer compliant disciplines in higher education towards the use of the technology and HCI will increase positively which invariably will reduce the demarcation between those who appreciate computer and use it, those who just appreciate it and those who don't appreciate nor use it.

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APPENDIX

QUESTIONNAIRE
TAI SOLARIN COLLEGE OF EDUCATION, OMU=IJEBU, OGUN STATE

IMPACT OF HUMAN-COMPUTER INTERACTION (HCI) ON USERS IN HIGHER EDUCATIONAL SYSTEM IN NIGERIA QUESTIONNAIRE

Dear Respondents,

I am final year students of the above-named institution in the department of Computer Science carrying out a research on ***"Impact of Human-Computer Interaction (HCI) on users in higher Educational System in Nigeria (A case study of Tai Solarin University of Education)".***

The information supplied in this study is to be used purely for academic purpose and not for any other purpose; your information will be kept confidentially.

Thanks for your co-operation.

Yours faithfully,

Odebunmi Adegbemisola Modupeoluwa
17012411003
Researcher

SECTION A – BIO-DATA

1. Sex: Male ( ) Female ( )
2. Age: Below 25years ( ) 26 – 30 years ( ) 31 – 35years ( )
3. Religion: Christianity ( ) Islam ( ) Traditionalist ( )

SECTION B

IMPACT OF HUMAN-COMPUTER INTERACTION (HCI) ON USERS IN HIGHER EDUCATIONAL SYSTEM

S/NO	STATEMENT	YES	NO
4.	The role of Human Computer-Interaction in learning is usually underrated.		
5.	Students do not appreciate or appropriately consider the use of Human Computer-Interaction the study area.		
6.	Human Computer-Interaction plays a crucial role in today's learning assimilation in Nigeria.		
7.	Human Computer-Interaction has definitely "crawled" into the academic institutions, giving cushions to the staff and students by opening out different options to which learning is being progress.		
8.	The role of Human Computer-Interaction in students learning is its effectiveness?		
9.	The use of computer in doing course work supported the students statements with "it's time saving, because of spell check and editing".		
10.	Most students prefer doing their work on paper instead of using computers?		