STUDENTS' PERCEPTION, ATTITUDE AND PREFERENCE FOR THE EXAMINATION MODES AT FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE

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MTECH/SSTE/FT/2018/8201

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FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMNETS FOR THE AWARD OF THE DEGREE OF MASTER OF TECHNOLOGY IN EDUCATIONAL TECHNOLOGY

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ABSTRACT

This study examined students' perception, attitude and preference for the examination modes at Federal University of Technology, Minna, Niger State. A descriptive survey design was adopted for this study. The sample size of 194 undergraduate students from 200 and 300 level (150 male and 44 female) in the department of educational technology were randomly and purposively drawn from the target population of 1,791 science and technology education (SSTE), out of the total population of 21,509 undergraduate students in FUT, Minna. The instrument used for data collection was a researchers' designed questionnaire. The instrument was structured into four sections; section A, B, C and D. Section A was used to collect demographic data while sections B, C, and D contained 10 items each which were used in data collection on students' perception, attitude and preference of examination respectively. The instrument was validated by two educational technology experts and one guidance counsellor from FUT, Minna. Using Crobach Alpha formular, a reliability co-efficients of 0.76, 0.77 and 0.75 were obtained for the variables perception, attitude and preference respectively. Six research questions were asked and three hypotheses were formulated and tested at 0.05 alpha level of significance. Mean and standard deviation were used to answer the research questions while data obtained for the three hypotheses were analyzed using independent t-test. The findings of the study indicated that students had a positive perception and attitude towards e-examination and a negative perception towards paper-pen examination and students preferred e-examination to pen-on-paper examination based on some performance influencing factors. Gender had an influence on the perception, attitude and preference of students towards the modes of examination. There was a significant difference between male and female students perception towards the modes of examination with $t=2.90$, $p= 0.04$ ($p<0.05$). There was a significant difference between male and female students attitude towards the modes of examination with $t=1.97$, $p= 0.05$ ($p=0.05$). There was no significant difference between male and female students preference for the examination modes with $t=1.13$, $p= 0.26$ ($p>0.05$). Based on the findings, the following recommendations were suggested: Undergraduate students in SSTE, FUT, Minna should be encouraged to have positive perception and attitude towards e-examinations and full adoption of e-examination in the university as it could improve their performance. Undergraduate students in SSTE, FUT, Minna should be encouraged to have positive preference of e-examinations and full adoption of e-examination in the university as it could improve their performance.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Information and communication technology is said to have brought unfathomed changes to almost all areas of our lives in recent years. It has transformed basic activities such as how we communicate with each other, travel around, teach and learn, treat illnesses, work and enjoy our leisure time. Technological change and globalization processes that have increased over the past years has created a new global economy "fueled by technology, driven by information and driven by knowledge" (Yusuf & Umar, 2018).

These technologies allow us to transmit information quickly and widely, linking distant places and various areas of endeavor in productive new ways, and create communities that just year's ago were inconceivable. It is not an overstatement to say that information and communication technology is positively changing the relationship between people and knowledge. Although learning has been transformed in many ways by information technology and it is used by students and teachers increasingly. Nevertheless, some major technology-aided teaching experiments have emerged and several factors suggest that digital technologies may eventually bring significant change throughout the educational sector (American Educational Research Association (AERA), 2017).

Technology is a powerful tool which is being used in transforming both teaching and learning process. It helps affirm and advance relationships between educators and learners, create new approaches to learning and collaboration, reducing long-standing equity and accessibility gaps, and adapt learning experiences to meet the needs of all learners. One of many areas technology has transformed learning is assessment method.

Assessment is one of the most appropriate ways of measuring students' learning in educational setting. There are several types of assessment, among such are assimilation assessment, performance assessment, self-assessment, peer assessments and lots more. Abdullahi (2013) sees assessment as a systematic process of gathering information or data on what the student knows on what has been taught. Nkwocha (2015) defined the word assessment as a formal 'test of knowledge or ability'. In higher education institutions, the assessment of academic progress takes different formats such as essays, assignments, test, practical, dissertations, examinations, projects and presentations. The importance of assessment in the educational sector cannot be overemphasized. It is very important not only to guide the development of individual students but also to monitor and continuously improve the quality of programs, inform prospective students and their parents and provide evidence of accountability to sponsors of education. According to Nworgu (2014), assessment refers to a systematic process of gathering data or information from a variety of sources in order to understand, explain, describe and improve learning. Nworgu (2014) further stated that assessment can either be formative or summative form; it is formative when it is used to improve, increase and reinforce learning during the learning process or session and summative when it is used to understand, explain and describe learning. Formative assessment is used to check for understanding during instruction or lesson and guide teacher's decision making about future guild or instruction. It also provides feedback to students so that they can increase or improve their performance. On the other hand, summative assessment is used among others to measure what students have learnt at the end of a unit, promote students and select students for entry into higher institution (Nworgu, 2014).

Various examination methods are being used in higher educational institutions to assess academic progress, such as test, assignments, presentations, examinations, among

others. These methods are referred to as traditional methods. Traditional examination method or mode refers to a conventional examination delivered or administered through question papers to which students respond in form of written answers to a limited choice of previously unseen examination questions, set in advance and answered in examination centers where invigilators (examination supervisors) prevent communication between students and prohibit the use of notes or other revision aids, except in situations of open test/examination. Some universities are now adopting the use of e-exam and e-marking through Electronic Examination which is also referred to as Computer Based Test (CBTS), Computer Assisted Testing, Computerized Assessment, Computer Aided Assessment (CAA), Computer Based Assessment (CBA), Online Assessment, Electronic-Assessment (E-assessment) and Web-Based assessment (Shute & Rahimi, 2017). Assessment, either formative or summative utilizes varieties of tools such as tests, questionnaires, rating scales, observation etc. Thus, assessment goes beyond mere testing or assessing. However, for selecting students for entry into higher institutions (such as the one conducted by the Joint Admission and Matriculation Board (JAMB)), test may be used. A test is a set of standard questions presented to an individual or group of individuals to answer or respond to (Chua & Don, 2013). Those questions contain some desirable characteristics which the examiner or tester is expecting from the examinee(s) or testee(s). The responses made by the examinee(s) or testee(s) are indications of the extent of the desired characteristics possessed. Nearly every aspect of assessment/test can be supported by technology in one way or another, from the administration of individual tests and assignment, to the management of assessment across a faculty's institution, from automatically marked on-screen test to tools to support human marking and feedback. Nworgu (2014) sees a test as a structured situation comprising a set of

questions to which an individual or test taker is expected to respond in which there are preferred answers to the questions. A test may be administered orally, on paper, on a computer or in a confined area that requires a test taker to physically perform a set of tasks based on the examinational preference.

Examination preference can be seen as a choice or favor of a form of examination over another. Examinational preference can be defined as imagined choice between alternatives in assessment and possibility of rank ordering of those alternatives (Hewson, 2012). In relation to this research, examinational preference is seen as the choice of students on the types or modes of examination over another. Examination mode ranges from oral to pen-on-paper and computer-based testing. In this study only two modes of examination will be examined which are e-examination and pen-on-paper examination.

Pen-on-paper examination or test is an assessment method wherein the problem or queries are penned, printed or drawn and the answers are penned too. Pen-on-paper examination is any general group of assessment tools in which students read questions and responds in writing (American Educational Research Association (AERA, 2017). In the past it was the only mode of examination in Nigeria but in recent times other modes of examination are springing up. It involves the use of both paper and pen for asking and answering questions.

The term e-assessment is an extensive one, covering a range of activities in which digital technologies are used in assessment. Such activities include the designing and delivery of assessment, marking by computer, or humans assisted by scanners and online tools and all processes of reporting, storing and transferring of data associated with public and internal assessments (AERA, 2017). AERA explains that modes of e-assessment as falling into two main categories: Computer Aided Assessment (CAA)

and Computer Based Assessment (CBA). They see CAA as the practice that relies in part on computers. For example, use of online discussion forums for peer-assessment, completion and submission of work electronically. Within this definition, the computer often plays no part in the actual assessment of responses but merely alleviate the capture and transfer of responses between candidate and human assessor. On the other hand, they refer to CBA as assessment delivered and marked by computer. Web-based assessment involves the use of assessment materials stored on a server and then available to students through web browser. The materials are completed online and marked immediately by the server software, the marks being stored for later use. However, the interest here is on electronic examination.

The American Educational Research Association (AERA) (2017) refers to e-examination as any psychological test or assessment that involves the use of digital technology to collect, process, and report the result of that assessment. Prisacari *et al*. (2017) see e-examination as test or assessment that is administered by computer in either stand – alone or dedicated network, or by other technology devices linked to the internet or world wide web, most of them using multiple choice questions. The computer provides an assessment interface for examinee and they input their answers and receive feedback via a computer.

E-examination is being used in Nigeria parastatals such as the Nigeria Immigration Service, Nigerian Armed Forces, Tertiary institutions such as Federal University of Technology, Minna, Joint Administration Matriculation Board, National Open University of Nigeria, University of Ibadan, University of Ilorin, University of Nigeria, Nsukka, University of Uyo, etc. They are registering and conducting electronic examinations for their students through the internet and other electronic networking devices (Abubakar & Adebayo, 2014).

From inception, Federal University of Technology Minna (FUT) mainly conducted its examinations using the traditional pen-on-paper examination but with the growing transformation technology has on education, FUT Minna switched from a traditional examination mode to a digitalize mode. In February 2010, FUT Minna started conducting e-examination for most 100 level students and entry applicants. With this change students developed attitude towards both modes of examination. Due to the fact that most students are not computer friendly (computer literate), the students could develop attitude towards e-examination mode of examination either positive or negative.

Attitude can be seen as a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence on the individual's response to all objects and situations to which it is related (Al-Momani, 2019). A simpler definition of attitude is a mindset or a tendency to act in a particular way due to individual's knowledge, experience and temperament. Attitudes structure is described in terms of three components: affective component (involves a person's emotions/ feelings about an attitude object), behavioral (or reaction) component (the way our attitude influences how we act or behave) and cognitive component (involves a person's belief/knowledge about an attitude object) (Al-Momani, 2019).

Attitudes can alter the perception of e-examination which in turn could affect the degree of their performance. Attitude as a major factor affecting learning processes, may be inherent hence has not attracted enough attention from all stakeholders in education and therefore, it is important to consider the fact that learners can mainly increase their learning outcomes as a result of their belief and attitude about the subject matter e.g. whether they like it or not and whether they see any value in it or not. Attitude is seen as more or less positive or negative emotions, beliefs, values and behavior and hence

affect individual way of thinking, acting and behaving which has a lot of implications to learning outcomes (Al-Momani, 2019). Attitudes though not directly observable are deduced from observable responses and behaviors' which reflect a pattern of beliefs and emotions. Attitudes towards e-examination are sometime associated with academic performance. Another important factor to consider in the full implementation of e-examination is the gender difference of the students.

Gender is a grammatical category of sex variation. It is the properties that differentiate organisms based on their reproductive roles (Adigun *et al*., 2015). Gender is a group of name given to two sex categories (Male and Female) into which most organisms are divided (Goni *et al*., 2015). Gender varies between male and female, therefore their reaction, attitude and perception about a thing or a process could vary in their sex difference. The way a male student sees or reacts to a mode of examination could be different from the way a female sees it. Gender difference could cut across attitude, performance, preference and perception. The way a person react, perform, choose and sees a mode of examination could differ across the sex difference. Another factor to examine that could influence the full implementation of e-examination is the perception of the student towards the modes of examination.

Perception is the way of conceiving or gaining knowledge about a particular thing or event. Perception is seen as mode of being aware about a particular thing via the sense organs. Arwa and Viswanathappa (2016) defines perception as a belief, image or idea an individual has as a result of how the individual feels, sees or understand a subject matter or a particular thing. It is also seen as the belief or understanding often held by many individuals based on how things look like. In relation to this research the perception of students is the way a student conceive or gain knowledge about the modes of examination. Due to some seen and unseen faults or errors that could occur in e-

examination, student develop negative perception about it. Sometime negative perception of student is due to the fact that they have little knowledge on the operations of an e-examination. A positive or negative perception of student towards the modes of examination may influence the performance of student.

Academic performance is the extent to which a student has attained his/her short or long-term educational goals (Alz'ubi, 2015). This means that performance measures the aspect of behavior that can be observed at a specific period. In relation to educational research, academic performance of a student can be regarded as the observable and measurable behavior of a student in a particular situation. For example, the academic performance of a student in social studies includes observable and measurable behavior of a student at any point in time during a course. Therefore, we can match academic performance with the observed behavior or expectation of achieving a specific statement or statement of educational intention in a research. Academic performance of students consists of scores obtained from teacher-made test, first term examination, mid-semester test, and so on. Low or high performance of students in examination can determine their attitude towards the examination preference.

Some condition/challenges of the examination modes such as delay in the release of results, the use of multiple-choice question, fill-in-the blank, yes or no, lack of sufficient systems to allow for non-batching of testees, stress of having to wait for so long to write a paper, non-provision for cheating opportunity by way of pre-arranged seating arrangement, jotting on question paper and passing it around, chatting with colleges during the exam, among other could have made students develop either negative or positive perception, attitude and preference for either pen-on-paper or e-examination modes of examination.

The 21st century Information and Communication Technology (ICT), examination techniques or methods are shifting from the traditional pen-on-paper, to technology-based examination methods such as e-examination. At the knowledge-centres namely colleges and universities in Nigeria, the pace of transformation has been relatively modest in key areas of learning and assessment (Urama, 2015). The full acceptance and use of e-examination is increasing each year. However, it has been observed that some unresolved problems associated with using it is performance preconception due to students' perception, attitude and preference, among others.

During the lock down period, the entire educational institutions in Nigeria had to be shut down and this in turn affected the education calendar of the academic section. In situations where the e-examination and other educational technologies of each institutions were in place and functioning effectively, the lock down period may not have affected the academic section as student could be at their various locations and still be assessed. The success or otherwise of the preference and full implementation of e-examination in Federal University of Technology, Minna, partly depends on student (stakeholder) attitude, perception, perceive usefulness, preference of examination modes, performance level, among others. However, the influence or the extent to which students' attitude, perception and preference have on their performance in both modes of examination in FUT, Minna is not known. How do the students react to the modes of examination? Do they have a positive perception towards the modes of examination? If they do, what is their attitude about the modes of examination? And which of the modes of examination do they prefer?

A negative or positive perception, attitude and preference for the examination modes in terms of their performance level could thereby affect the level of preference of such mode of examination. But the extent to which students' perception, attitude and

examination preference could affect their performance in the modes of examination is not certain. It is against this backdrop that this research seeks to assess students' perception, attitude and preference for the examination modes in FUT, Minna.

1.2 Statement of the Research Problem

Since 2010 that e-examination was first introduced in FUT, Minna, no comprehensive study has been carried out especially in the area of establishing the extent to which the students accept it as an effective alternative to the traditional pen-on-paper they are used to. The need for an evidenced-based information on the relatively new approach to assessing FUT Minna, students led to carrying out this study which was to establish student's perception, attitude and preference to the examination modes. The study further established the influence of gender on the influence of the three dependent variables. In addition, factors accounted for the choice of students on the two independent variables were investigated. Hence, this study investigated students' perception, attitude and preference for the examination modes at Federal University of Technology, Minna.

1.3 Aim and Objectives of the Study

The study aimed at investigating students' perception, attitude and preference for the examination modes at Federal University of Technology, Minna. Specifically the study seek to:

1. Determine students' perception towards modes of examination based on their academic performance.
2. Determine students' attitude towards modes of examination based on their academic performance.

3. Examine students' preference for the examination modes based on their academic performance.
4. Examine the influence of gender on perception towards the modes of examination based on their academic performance.
5. Examine the influence of gender on attitude of students towards the modes of examination based on their academic performance.
6. Examine the influence of gender on preference for examination in terms mode based on their academic performance.

1.4 Research Questions

The following research questions guided the study:

1. What is the perception of students towards modes of examination based on their academic performance?
2. What is the attitude of students towards modes of examination based on their academic performance?
3. What is students' preference of examination modes based on their academic performance?
4. To what extent does students' gender influence their perception towards the modes of examination based on their academic performance?
5. To what extent does students' gender influence their attitude towards the modes of examination based on their academic performance?
6. To what extent does students' gender influence their preference for the examination modes based on their academic performance?

1.5 Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

HO_1: There is no significant difference between male and female students' perception towards the modes of examination based on their academic performance.

HO_2: There is no significant difference between male and female students' attitude towards the modes of examination based on their academic performance.

HO_3: There is no significant difference between male and female students' preference for the examination modes based on their academic performance.

1.6 Significance of the Study

The findings of this research would be of great help to, students, lecturers, school administrators, curriculum developers, examination bodies, educational organizations and educational researchers.

Students could benefit from the findings of this study as it enlighten them that their perception, attitude and preference of examination modes could influence their academic performance. The findings of this study could instigate the students to develop positive perception, attitude and preference towards e-examination as e-examination is accepted globally for assessment process.

Lecturers could also benefit from the findings of this study as it would enlighten them on the students' perception, attitude and preference of examination modes. The study will enlighten the lecturers about the conditions why students will prefer a mode of examination to another and how it could influence academic performance.

School administrators could benefit from this study as it could enlighten them on students' perception, attitude and preference of examination modes. And also enlighten

them on some areas of each modes of examination that needs quick attention in other to have improve them.

Curriculum developers might also consider the findings of this study useful as it will help in improving the curriculum in Nigeria. In the sense that, curriculum developers could infuse the use of electronic devices in teaching and assessment of students to improve perception, attitude and preference of examination modes.

Examination bodies in Nigeria might also consider the findings of this study useful it enlightens them on students' perception, attitude and preference of examination modes. And also some areas why a mode of examination is preferred to another and what to do to improve the other examination.

Educational organizations such as Nigeria Association of Educational Media and Technology (NAEMT), Science Teachers' Association of Nigeria (STAN) and Colleges of Education Academic Staff Union (COESU) among others would be charged in the area of organizing conference, workshops and seminars to update the knowledge of their members on modes of assessment.

Educational researchers could also consider the finding of this study as it serves as a spring board from which educational researchers can resort to for further research. It can help to serve as a reference materials to other researchers.

1.7 Scope of the Study

The study examined students' perception, attitudes and preference for the examination modes at Federal University of Technology, Minna, Niger State. The study was conducted at Federal University of Technology Minna where the sample size consisted of 200 and 300 level students as the sample should consist of students who had attempted both modes of examination in the institution. The Variables of this study

included; independent variables (modes of examination that is pen-on-paper examination and e-examination), dependent variables (perception, attitude and preference) and the moderating variable (academic performance and Gender). The instrument that was used for data collection on student's perception, attitude and preference was questionnaire and the research lasted for four (4) weeks.

1.8 Operational Definition of Terms

Academic Performance: This refers to the academic outcome of an assessment process in FUT.

Attitude: This can be seen as the disposition or state of mind of FUT, Minna students towards examination modes (pen-on-paper examination or e-examination).

E-examination: E-examination directly means electronic examination carried out in FUT, Minna. E-examination is examination carried out with the use of various electronic device such as computer system, laptop. In short term e-examination is examination carried out on a computer system in FUT, Minna.

Pen-on-paper Examination: refers to the mode of examination in FUT, Minna in which examination questions and answers are provided using paper and pen.

Perception: refers to the awareness or feeling of FUT, Minna student towards the modes of examination (pen-on-paper examination or e-examination) based on what the student sees, feels or perceives.

Preference: refers to the choice of FUT Minna student on the modes of examination; either paper-pen examination or e-examination.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Framework

Basic concepts as regards this research work were reviewed, such as perception, factors influencing students' perception towards modes of examination, students' perception in respect to performance, attitude, factors influencing students' attitude towards modes of examination, students' attitude in respect to performance, performance, factors influencing the performance of student, gender, gender influence on performance, examination preference, factors influencing examination preference, Federal University of Technology examination, pen-on-paper examination, e-examination and other factors that could affect the performance of students.

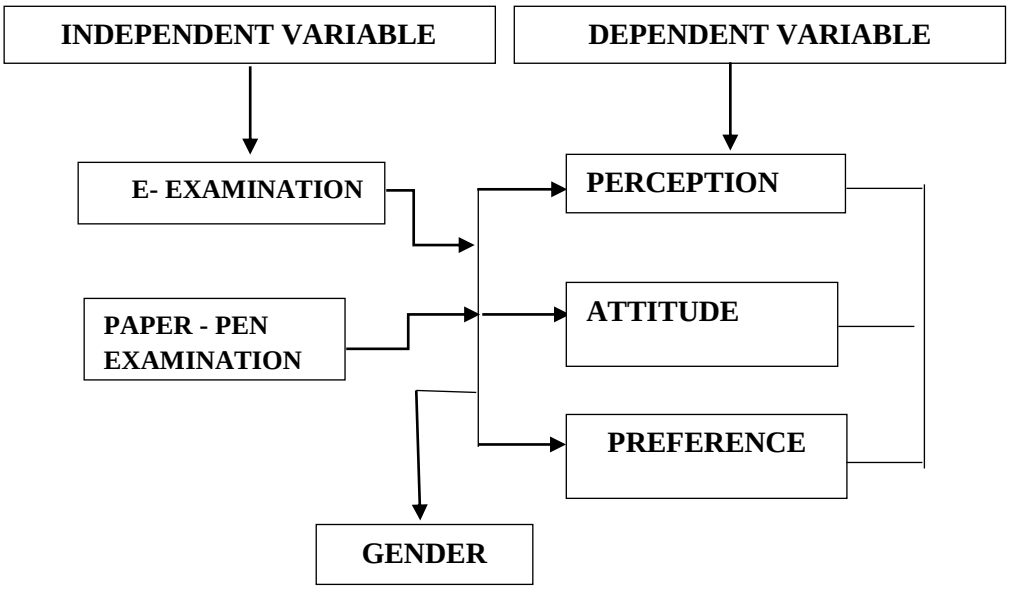

Fig 2.1: Relationship between the variables

Source: Researcher

2.1.1 Concept of perception

Perception is closely related to attitudes. Anene (2016) sees perception as the process of attaining or being aware or understand sensory information. It is regarded as the process by which an individual selects, organizes, and interprets a cause or stimuli into a meaningful and coherent picture of the world or the way we see the world around us. In other words, a person is confronted with a situation or condition, the person interprets the situation into something meaningful based on what he/she sees, previous knowledge or experiences. However, what an individual interprets or perceives could be completely different from reality.

We understand that humans perceive/see data, but we are not as sure of how they perceive/see such data. The way they see thing are totally different. We know that visualizations present data or information that is then perceived, but how are these visualizations perceived? How do we know that our visual representations are not interpreted differently by different viewers? How can we be sure that the data or information we present is understood? Many people had defined perception differently. Most define perception as the procedure of recognizing (being aware of), organizing (gathering and storing), and interpreting (binding to knowledge) information through the sense organs. Perception deals with the human senses that generate signals from the environment through sight, hearing, touch, smell and taste (Anene, 2016). Simply put, perception is the process by which we interpret the world around us, forming a mental picture or representation of the world. The brain makes presumptions about the world to overcome the inherent ambiguity in all sensory data, and in response to the task at hand. Perception of a student is basically the knowledge gained by the student concerning a particular concept or subject through the sense organs.

According to Urama (2015), perceptual process follows these steps:

Inputs**:** these are perceived objects, events, people, among others. That are received by the perceiver/seen.

Process**:** the received inputs are processed through selection, organization and interpretation.

Outputs**:** these refers to the end process of the perceived input. Output such as feelings, actions, attitudes, among others, is developed concerning the perceived input.

Behaviour: this is the last stage where behaviour displayed dependence on these perceived outputs that is the way the person reacts to the perceived input. The perceiver's behavior, in turn, generates response from the perceived and these responses give rise to a new set of outputs.

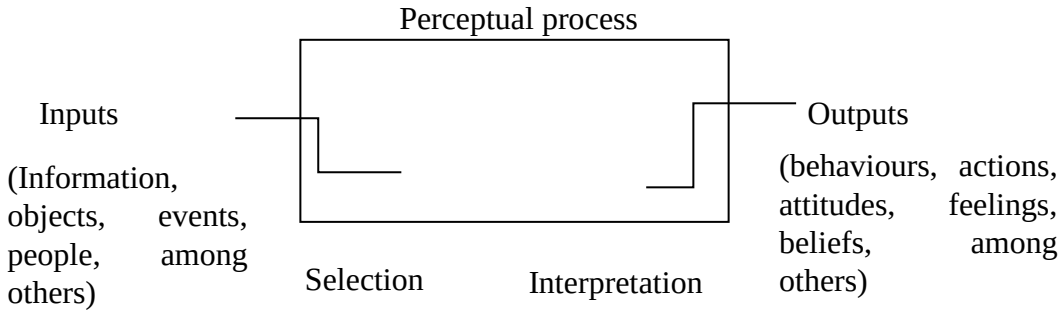

Fig 2.2: Perceptual Process: Model of the Perceptual Process Adapted from Organization Theory and Behavior

Source: Urama (2015)

In relation to this study, the inputs involve the visual information about the different modes of examination. The learner then processes the input by selecting, organizing and interpreting the information gained about the modes of examination that is by seeing, feeling, touching and reacting to the examination modes. This then produces the perception of the student concerning the modes of examination while influencing

the behavior of the student towards both mode of examination. The learner first sees the process in order to infer a perception about the process.

2.1.1.1 *Factors influencing students' perception towards modes of examination*

There are several factors or conditions that may influence the perception of students which may in turn affect their performance. This may include:

2.1.1.2 *Familiarity*

One of the many factors that influence perception of students is familiarity with the object or subject perceptive. Familiarity is an undue intimacy or personal knowledge or information about a person, subject or concept. Familiarity implies that, compared to others, we are better positioned to make observations leading to better relative ability to arrive at superior decisions about a particular situation (Urama, 2015). The more you seem to know a particular thing or situation, the better your perception about that thing or situation. However, you must note that for you to perceive someone accurately you must have generated accurate data on that person during the stage of observation. This is because the relationship between familiarity and accuracy is not always direct. Take for instance, a student who is used to writing pen-on-paper examination, the student no matter how knowledgeable the person is about computer usage, may tend to develop better perception about pen-on-paper examination than e-examination. By this the student may say pen-on-paper examination is much better, which is not completely true. But for the fact that the student is more familiar with pen-on-paper examination, the perception of the student is influenced.

2.1.1.3 *Perceiver's Attitude*

Attitude is a mental state involving belief and feelings and values and disposition to act in certain way (American Psychological Association, 2021). The perceiver's attitude could influence the way the perceiver sees things around the individual (Urama, 2015).

For instance, since no woman has ruled Nigeria since her independence in 1960, you are likely to develop the attitude that women are incapable of handling the challenges of leading this country, which has no empirical foundation. A learners' attitude could be influenced by the leaners' perception about a particular thing or situation. Take for instance, a student who had a negative attitude towards e-examination mode could in-turn develop negative perception towards it. Because the student does not like e-examination mode, the student could develop a negative perception about it. Therefore, it is important that a student have a positive attitude in order to be able to perceive things positively.

2.1.1.4. *Mood*

This is another important factor that affects the way the student perceive things. Mood can be said to be a characteristic or psychological state of feeling either happiness or sadness. Basically, the difference in our reaction to a particular situation is a function of the state of happiness or sadness in which we find ourselves, (that is our moods). Therefore, we tend to easily remember information that is associated with our moods more than those that do not (Anene, 2016). Accordingly, whenever we are in negative moods we generally tend to form negative impressions of others. For instance, a student in a great or good mood when e-examination is introduced, may tend to develop a good perception towards it. It is therefore essential that the student should be in a state of happiness.

2.1.1.5 *Self-concept of the perceiver*

The self-concept of the perceiver is also a critical determinant of perception. Self-concept simply means the way an individual defines an object or situation. The individualized knowledge of a person about an object or situation is seen as self-concept. People that possess positive self-concepts tend to perceive positive attributes

in other people or situation, while, those with negative self-concepts tend to perceive negative attributes in others. Therefore, greater apprehension one has about a concept or situation gives room for more accurate perception of the concept or situation (Anene, 2016). Using e-examination as an example, if the student personally knows all the operations of the electronic to be used, the student may tend to perceive e-examination as easy to pass. The more the student understands about a particular subject matter the better the perception.

2.1.1.6 *Cognitive structure*

The cognitive structure, that is, a person's pattern of thinking equally determines his/her perception in substantial ways (Anene, 2016). While some individuals are fain to perceiving physical characteristics such as height, weight, and appearance others pay more attention to central traits or personality dispositions. However, there are people that are capable of perceiving all these traits at the same time instead of focusing on only one aspect. Looking at the way e-examination is been carried out, for instance if the student do not think or look at the advantages of the examination mode, the students perception about it may be negative. Instead of seeing e-examination as an easier, faster and more accurate examination process, the individual looks at the activities involved in e-examination as stressful, could have a negative perception about the examination process. When an individual quickly sees the disadvantages of a process before the advantages, the person may generally have a negative perception about life itself. An individual way of thinking could affect the perception of the person.

2.1.1.7 *Previous academic performance*

Performance could be seen as any recognized accomplishment. Previous academic performance of an individual could influence the way the individual sees or perceive

the examination modes. It is said that if a child participates in an activity and receive a good rewards he or she may likely want to participate in the same activity again. Previous performance of a student could affect or influence the perception of the student (Urama, 2015). Take for example, a student who do not perform well in mathematics examination in class could develop a negative perception towards mathematics. The same with the modes of examination, if the student performs very well in an e-examination, there is all tendency that the student will develop a positive perception towards e-examination. So therefore the better an individual performs in a mode of examination the more chances of developing a positive perception toward it.

2.1.2 Concept of attitude

Attitude has been described and defined by many and different experts and scholars in different ways. An attitude is seen as "a relatively enduring organization of beliefs, feelings, and behavioural tendencies towards socially significant objects, groups, events or symbols" (American Psychological Association, 2021). A simpler definition of attitude is a mindset or a tendency to act in a particular way due to either an individual's knowledge, experience or temperament. Individual's knowledge is seen as the information gathered through books, internet study, among others. Individual's experience is seen as the accumulation of knowledge or skill by a person that results from direct participation in an activity or event. And temperament is just the individual mood or disposition. Specifically, when we refer to an individual's attitudes, we are trying to explain an individual's behaviour. Why the individual behaves the way he/she behaves, the reason behind the action that took place. Attitudes are a complex combination of things we tend to call personality, beliefs, values, behaviors, and motivations. An attitude of an individual can be based on such personal factors of the individual. Attitude could be either positive or negative. Take for instance, we

understand when someone says, “he has a positive attitude toward learning” versus “he has a negative attitude towards learning.” This could simply be interpreted as the individual has a positive or negative predisposition about learning. It can likened to an individual liking learning or school versus the individual developing hatred towards learning. When we are speaking of an individual’s attitude, we are referring to the person’s emotions and behaviors, how a person reacts to a particular condition.

Attitudes can also be either learnt or acquired predisposition as a result of personal knowledge, experiences gained either indirect or direct interactions with object or subject within our environment which can be at home, with friends and family or in a learning environment and which yields certain beliefs and perceptions about the subject. In regards to this project, the attitude of a learner towards an examination preference can result from personal knowledge, experience (acquired or learnt) or interactions with specific conditions as regard to the examination modes. Attitudes influence ones social thought and helps us in organizing and evaluating a cause or situation into pleasant or unpleasant, useful or not useful, or negative or positive. This would have an effect on the learners behavior which though not directly observable may be inferred from observable responses arising from the beliefs, emotional response and behavior that determines whether they like the subject or not and whether they would be engaged or not. The learning outcome and achievement could be associated with the learners’ attitude and behavior (Abaidoo, 2018).

Attitudes are positive or negative views about a person, object, subject, idea or situation which influences individual choice of action and responses to challenges (Bandele & Olatunji, 2019). Many studies carried out has shown that people behave in conformity with their attitudes under the conditions that; the attitudes of the individual are as a result of personal experience; that one is experiencing or expecting a favorable outcome

or where the model is attractive and nice, popular or successful (American Psychological Association, 2021). A positive attitude towards the subject is an important factor or educational outcome that should be nurtured regardless of the achievement level of the learners who should be helped in order to bring out their best abilities. As a positive attitude could influence the ability of educational outcome of the learner and vice-versa. For instance, a student who has a positive attitude towards learning chemistry will tend to do better than a student who has a negative attitude. A positive attitude should be encourage at various from of life. It influences our social thought and help us to organize and evaluate stimuli into pleasant or unpleasant or negative or positive or useful or not useful. Attitudes have a strong effect on behaviour which helps in understanding and predicting peoples' behaviour in the world or a wide range of contexts.

Attitudes are psychological orientations developed as a result of one's experiences which influences a person's view of situations, objects, and people and how to respond to them either positively or negatively (Al-Momani, 2019). Knowledge acquired by the individual about a concept could influence the reaction of individual to that situation. For instance, students past experience or knowledge about computer usage can affect their attitude towards e-examination. Attitude of a student can also be influenced by situations or how they respond to a particular subject.

According to American Psychological Association (2021), attitude has different components such as:

Cognitive component: Your thoughts and beliefs about the subject.

Affective component: How the object, person, issues or situation makes you feel.

Behaviour component: How attitude influences your behavior.

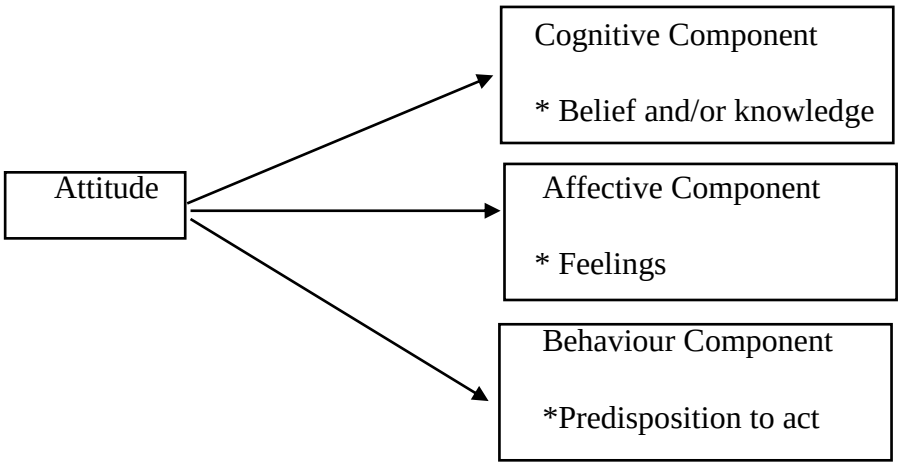

Fig 2.3: Components of attitude

Source: American Psychological Association (2021)

In relation to this study, attitude is the way a student react or a psychological orientation developed by the student towards both pen-on-paper examination and e-examination which could be as a result of the students' view and their reactions about both modes of examinations. Therefore, a positive or negative attitude developed by a student could be due to his/her belief and/or knowledge, feelings, reaction towards a particular subject matter experiences gained. Therefore favorable attitude should be nurtured and developed by the learner to enhance students' attitude towards learning and bring out their best potentials.

2.1.2.1 *Factors influencing students' attitude towards modes of examination*

There are factors or conditions that could influence the attitude of a student towards modes of examination. Such as individual choice, response to challenges, environmental factors, individuals' experience, peoples' view and individual knowledge among others.

2.1.2.2 *Individual response*

The explanation of attitude by Bandele and Olatunji (2019), stated that the choice and how the individual response or react to condition could influence the attitude of the

person. For example, an individual who chose not to go to school might have a negative attitude towards school. For more clarification, if an individual chose colour red for example, the individual perceives that colour red is nice than any other colour. In doing so the individual may develop a positive attitude towards anything in red and negative to any other colour. In like manner, preference is the choice of one mode of examination to another. The choice of a mode of examination could influence the attitude of students towards both modes of examination. Therefore the choice of an individual could influence the attitude of the said individual.

2.1.2.3 *Response to condition*

The way we react to a particular condition could influence the attitude of a person (Bandele & Olatunji, 2019). For example, a child who attends a particular school before is then taken to another school, the way the child first responds to the new environment could influence the learning attitude of the child. When a learner is posed with a mathematical problem for instance, the student response to the mathematical problem may affect the way he sees mathematics in general. If the student could unfold the mathematical problem then the student might develop a positive attitude not just to the topic taught in mathematics but to mathematics in general and vice-versa. When a student is given a condition/challenge, the response or reaction might affect the learners' attitude towards the subject matter. So the reaction of students towards either modes of examination may determine the attitude of the student towards the modes of examination.

2.1.2.4 *Environmental factor*

Environmental factor is a very important factor that influences the individuals' attitude. The surroundings of a student could influence the attitude of the student (Al-Momani,

2019). For instance, if a student is raised in an environment where people care less about school and more about money or building a family the student may very likely develop negative attitude towards school and learning. Like in some parts of Nigeria for example, where they believe that a girl child belongs to the kitchen and should focus more attention to her family, the girl child could most likely develop negative or lazy attitude towards schooling as it may all end up in the kitchen. In relation to this study, the environmental factor of each mode of examination could affect their attitude towards the modes of examination. Take for example, if the e-examination is conducted under a cool condition with adequate number of equipment needed for each student, no rush or pressure, it is most likely that the student will develop a positive attitude towards e-examination than pen-on-paper examination. Therefore the environment of an individual could affect the attitude of the individual towards the modes of examination.

2.1.2.5 *Experience*

According to Al-Momani (2019) definitions' on attitude, it was mentioned that experience could influence the attitude of an individual. Take for example, little children are mostly attracted to light (lantan or candle light lighted), they want to go towards it and try touching it. If the child was able to reach the light and touches it, it will definitely burn the child's hand therefore the child runs away from it. Anytime the child sees the light he/she runs from it due to the fact that the light had burnt the child before. Therefore the child has developed negative feeling towards the light. The same goes for students too. The student who had an experience about a condition before, the attitude of the student towards that condition could be influenced by the experience gained. Knowledge gained about a particular condition can influence the way we see it. Take for an instance mathematics, the knowledge of every student towards the subject is that it is difficult therefore the student could develop a negative attitude

towards the subject. In relation to this study, the experience of the student in a mode of examination could influence the attitude of the student. For example, a student who sat for an e-examination for the first time had challenges in the operation mode and then after the examination receives a poor result, will definitely develop a negative attitude towards e-examination. Therefore students' experience could affect the attitude of the student towards the mode of examination.

Other people's view or experience could also influence the attitude of a learner is concerning a particular condition. The way other people in the individual environment sees or their experiences about a particular cause or subject could influence the attitude of the said individual as it server as knowledge acquired (Al-Momani, 2019). A negative review of others about a concept can serve as experience to the individual even though the individual may not have participated in the concept or subject matter. Take for example, a student who has an elder one who had taken part of an examination mode before and the elderly one say the examination was very difficult or not easy to pass, this student might develop a negative attitude towards the mode of examination where he or she knows it or not. And this may in turn influence the performance of the student, as the student may develop the attitude that the examination is difficult to pass. Therefore whether the individual knows it or not another person's view or experience could affect the individual's attitude as this could build fear and courage in the individual.

2.1.3 Concept of academic performance

Performance is the measurement of student achievement across various academic subjects and periods. Performance of students are usually measures by teachers and educational officials using results from classroom test, assignments, projects, performance and graduation rates (Bossaert *et al.,* 2011). Performance is sometimes

referred to as academic performance or academic achievement. Academic achievement is the extent to which a student, teacher or educational institution has attained their short or long term educational goals. Performance is commonly measure through continuous assessment, test, project or examination (Bossaert *et al.,* 2011).

According to Abaidoo (2018), academic performance is the knowledge gained which is assessed or graded by marks assigned by a teacher and/or educational goals set by students and teachers to be achieved over a specific period of time. These goals are measured with the aid of continuous assessment, test or examination results. He explains that academic performance is a measure of educational outcome. It shows and evaluate the extent to which students, teachers and educational institution achieved their educational goals. Academic performance is measurable and observable behavior of a student within a specified period. It consist of scores obtained by a student in an assessment such as class exercise, test, mid-semester, mock and end of semester examination. Academic performance is based on measurable outcomes such as assignment, exercise, test and examination results (Abaidoo, 2018).

Lamas (2015) refers to academic performance as a measure of the indicative and responsive abilities that express, in an estimated way, what a person has learned as a result of a learning or training process. It is the product given by the students and it is usually expressed through school grades which are the result of an assessment that involves passing or not certain tests, subjects or courses. Performance as education involves writing, culture, theatre and performance to enrich the educational experience of students. This method seeks to increase the attendance and retention rates of the students who participated. MeCune and Entwistle (2011) defines academic performance as the level of knowledge shown in an area or subject compared to the norm and it is generally measured using the grade point average. Academic

performance of students could be influenced by the following factors such as the intellectual level, motivation, interest, personality, skills, self-esteem, study habit or student-teach relationship, among others.

2.1.4 Concept of gender

Gender is a general group name for male and female individuals. Parajuli and Thapa (2017) defines gender as the socially constructed differences between male and female person/individual. According to Adigun *et al.* (2015), gender could be seen as the range of physical, mental, biological and behaviour characteristics attributing to and differentiating between the masculine and feminine (Male or Female) gender or population. Scholars, policymakers, researchers and practioners have observed and seem to agree upon physically and socially constructed differences between male and female gender and its significant effects in their lives. It is of their own opinion that gender is one of such factors mentioned in literature to have considerable influence on students' academic performance.

2.1.4.1 *Gender influence on performance*

Many studies have been carried out on the influence of gender on the performance of students. In Parajuli and Thapa (2017) study, it was revealed that gender difference could have an effect on the academic performance of students. This is also in line with Shokri (2008), Cuadrado-Garcia *et al.* (2010), and Bahar and Asil (2018) studies which revealed that gender had a significant effect on the performance, attitude, perception and preference. But Ebenuwa-Okoh (2010), Adigun *et al.* (2015) and Goni *et al.* (2015), revealed that there was no significant difference in gender and academic performance of students. Based on the discrepancy, the study will examine gender difference in attitude, perception and preference in the modes of examination with respect to performance level.

2.1.5 Concept of examination preference

Examination preference simply refers to choice of one mode of examination over another. Preference as a latent tendency to consider something desirable or undesirable. By this statement, preferences are equivalent to attitudes and are typically measured through scale ratings or response latency measures (Hewson, 2012). Take for instance, when a set of colored balls are placed down and a person is asked to select just one ball for the balls available and the individual select a blue colored ball, that individual is said to prefer color blue than the other colors available. Preference is seen as a greater liking for one alternative over another or others. Learners' preference referred to as students' liking for some element(s) of learning and selected ways of interaction with the element(s) of learning (Bayerkin, 2014). Therefore, examination preference is seen as students' liking one mode of examination to another. In the two modes of examination, the choice of one over another could be referred to as examination preference. Some students may prefer e-examination mode other may not. It involves the selection one mode of examination (may be due to some factors considered) over another.

2.1.6 Brief history of Federal University of Technology Minna

The Federal University of Technology, Minna is a federal government owned university in Nigeria. It was established on 1st February 1983. The objective for its establishment is to give effect to nation's drive for the much-needed self-reliance in Science, Engineering and especially Technology. The pioneer vice-chancellor was Professor J. O. Ndagi who served from 1983 to 1990 and the then pioneer registrar was Late Dr. B. P. Sawa who served from 1983 to 1986. At inception, the university acquired on a permanent basis, the facilities of the former Government Teachers' College, Bosso which now serves as the Bosso campus of the university. The university

then acquired 10650 hectares of land at Gidan-Kwano, along the Minna-Kataergi-Bida Road which now serves as the permanent site to carter for the inevitable expansion. FUT, Minna, presently have ten schools/faculties which are: School of Agriculture and Agriculture Technology, School of Electrical Engineering and Technology, School of Innovative Technology, School of Environmental Technology, School of Information Communication Technology, School of Infrastructure, Process Engineering and Technology, School of Life Science, School of Physical Education, School of Post Graduate Studies and School of Science and Technology Education.

2.1.6.1 *Brief history of Federal University of Technology Minna examination*

Since the inception of the federal university in 1983, the university basically conducted examinations in the traditional way which was mainly involved pen-on-paper examination. But in February 2010, the university approved the use of e-examinations. From the year 2010 FUT, Minna conducts e-examinations for mainly 100 level students of the university and aspired applicants to the university.

2.1.6.2 *Federal University of Technology Minna policies on e-examination*

In FUT Minna, there are policies put in place that governs the e-examination process. The policies states that all entrance examination into the university will be conducted through e-examination. For all 100 level students, e-examination is compulsory for all courses. E-examination are conducted in batches depending on the population of the students and the availability of computer system. For each course, a time is assigned to conduct the examination for all the students.

For the remaining levels (200 to 500), e-examination is not compulsory. E-examination could be conducted for any level of students with a population less than 500 depending on the choice of the mode of examination by the lecturer in charge of the course. But in situation where the total population is more than 500 and the lecturer in charge of

the course finds it difficult to mark the scripts, such lecturer could also opt for e-examination. For 200 to 500 level students, e-examinations is a choice depending on the lecturer in charge of the course.

2.1.7 Concept of pen-on-paper examinations

Pen-on-paper examination is an old traditional form of examination all over the world. Pen-on-paper examination is an examination wherein the problem, questions or queries are penned down, printed or drawn and the answers are also penned down too (Pam, 2013). Pen-on-paper assessment refers to a traditional student assessment formats such as written tests that asks students to use pencils or pen to fill in answers on a sheet which is then submitted for manual grading on paper too (Bruce, 2018).

Forms of pen-on-paper examination based on the types of response format includes: Multiple-choice response format, Short answer response format, Essay response format (Ibrahim, 2015).

Multiple-choice response format: This is a type of pen-on-paper examination format that requires the student to choice one from the options given. With a multiple-choice format, a large sections of topics could be covered using a single test and question poised are easy to score. But it is time consuming to formulate good questions to test the knowledge of the student (Ibrahim, 2015).

Short answer response format: This form of pen-on-paper examination format requires the student to pen down the short answer that is correct. It sometimes come in a 'fill-in-the-blank space' question or question that require short response to it (Ibrahim, 2015). It is good form of paper-pen examination as the student may tend to remember things more when penned down. And it requires less time formulate compared to multiple-choice form of examination.

Essay response format: It is a form of examination that requires the student to pen down all knowledge the student have concerning the question poised (Ibrahim, 2015). This format of examination may not be able to cover a large area of topic on subject matter. It requires less time to write but they are time consuming to score.

2.1.7.1 *Merits of pen-on-paper examinations*

There are a number of merits or advantages of using pen-on-paper mode of examination. These includes: It is easy to score, it is portable (that is, it is light-weighted compared to e-examination which requires computer gadget) and can be used in any setting, it is manual in nature that is, one don't require electricity or power saving device to undergo or score result, computer skills are not required to write a pen-on-paper examination or to score it. The only skills needed are reading and writing skills only, it is flexible and cheap to set up, computer equipment are not required in order to write or score the examination, examination guide or technical assistance are not required in a pen-on-paper examination (except in the case of the physically challenge person who requires a guide, monitor writer and reader) (Ibrahim, 2015).

2.1.7.2 *Challenges of pen-on-paper examinations*

There are challenges or limitations in using pen-on-paper mode of examination. The first is malpractice. The rate of malpractice in a paper-pen examination compared to other mode of examination is high. Some types of malpractice that occur in paper-pen examination mode are: Bringing in unauthorized materials, writing on desks and walls or fans, coping from other candidate or student in the examination, exchange of scripts during exams, removing booklets from the exam hall, bringing scripted paper to the exam hall, changing script covers during submission, changing of scores by teachers, writing on body part, spying others work (Ibrahim, 2015).

In addition to malpractices on the part of the students, the process of providing final results is very tedious due to some conditions such as: Manual marking, inconsistencies in marking, risk of collection and collation of scripts, possible loss or damage of some scripts, increased financial implication to conduct the exams, delay in result presentation, long distance travel to go for the examination (Alabi *et al*., 2012), missing score or grades (Ogini, 2018).

2.1.8 Concept of e-examination

The challenges associated with pen-on-paper examination gave rise to the use of e-examination mode of examination. E-examination is simply electronic examination. Electronic examination is a product of information and communication technology (ICT) that was developed to solve problems and limitations associated with conducting pen-on-paper examination. E-examination is an electronic examination that students take independently in an e-examination Centre or at the individuals' place. The students are free to select the time of their examination from the reservation calendar or a specified time (Adebayo & Abdulhamid, 2014). Such examination has some advantages over pen-on-paper examinations and could include new multimedia simulations and software test items which gives higher validity in respect to professional work practice (Jimoh *et al*., 2012). As stated before e-examination could also be referred to as online testing or assessment. According to Zubairu *et al*. (2018), online assessment is gaining popularity and acceptance by many examination bodies and higher institutions of learning. Researchers took to their deck and conducted various researches to ascertain the feasibility, importance, acceptability and the possible challenges the system might encounter. Ogini (2018) sees e-examination as simply testing or examination conducted or delivered through the use of computer systems or technology related devices. The examination is thus technology based. E-

examination could at times referred to as computer based test. Oduntan *et al*. (2015) define computer based tests "as "assessment that are administered by computer in either stand-alone devices linked to the internet mostly multiple choice questions". In short e-examination is an examination carried out on an electronic device such as computer system at a designated time frame.

E-examination was defined by Adebayo and Abdulhamid (2014) as the process in which examinations are administered, taken and scored electronically. Adebayo and Abdulhamid (2014) further explains that e-examination entails questions being delivered into a computer workstations (intranet and internet) and candidates answering the questions on the computer. The process of writing this examination mode is completely paperless. The use of e-examination simplifies the entire testing cycle, including generation, execution, evaluation, presentation and archiving or storing. This simplification saves time and money while improving reliability. A key element in e-examination is that fewer educational officials are required to supervise each examination.

Abdelrahman (2020) sees e-exam as a form of assessment in which the computer or electronic devices are an integral part question papers' delivery, response storage, marking of responses or reporting of results of a test. E-examination involves the use of computers for evaluating students' learning. Due to the inclusion of informational and communication technology (ICT) in education, it is therefore necessary to reconsider and rethink, modify or adapt the conventional examination techniques. Electronic assessment tools have limited and reduce the duties of the teacher and assisted in performing examination decisively. It can be employed in creating more effectual learning by testing a series of knowledge, understanding, skills, among others. E-examination present powerful methods for meeting the new challenges of designing

and implementing assessments that go beyond the traditional practices and help in recording a wide range of cognitive knowledge and skills (Daramola, 2017). E-examinations are tests administered to student by electronic devices (Dembitzer *et al*., 2018). It is used to deliver, mark or analyze test or examinations to student through electronic devices. Rastaminezhard (2019) reported that e-examination although has many advantages more than paper-pencil examination still has some draw back such as time-consuming, process associated with learning and setting up the e-testing system, giving individual feedback, re-entering comment, software errors and lots more.

2.1.8.1 *Merit of e-examination mode*

In contrast to paper-pen mode of examination, of e-examination has a lot of advantages such as: That integrated well designed online formative assessment can have significant positive effect on learning, the questions are more explicit and where there are images they are clearer and better described than the paper-pen, ease of use and understanding, when properly managed it can totally curb exam malpractice, time of repeating exams can be increased within a given period of time several numbers per semester or year with less financial implication, it can be design to provide result or scores immediately exam is over, it is more convenient to use once it has been set up, better security, easy correction or flexibility of test, it gives instant feedback, the environment for the testing is both controlled and monitored. This has helped reduced the pains of pen-on-paper examination which included ever increasing examination malpractices' in conducted examinations (Ogini, 2018).

2.1.8.2 *Challenges of e-examination*

Despite the fact that of e-examination has helped reduce the demerit of using pen-on-paper mode of examination, there are so many challenges in using of e-examination mode of examination such as: Initial capital to set up and start a standard e-examination

mode of examination is high, high cost of ICT equipment, high cost of internet bandwidth in third world countries, power supply, insufficient equipment, low level of computer literacy, technical assistance (Alruwais *et. al.*, 2018).

2.2 Theoretical Framework

In this section, three related theories on attitude, perception and preference of examination was reviewed.

2.2.1 Theory on attitude (Social Judgment Theory (SJT))

Sheriff *et al*. (1965) proposed the known Social Judgment Theory (SJT) to explain the invisible behaviour of how individuals assess and change their opinions based on interaction with others. The basic idea of SJT is that attitude change of an individual is a discernment process. According to SJT, describing the stand of an individual as at a point in a succession of possible opinions is not adequate because the individual's degree of tolerance is also important in determining his/her response to external stimuli and persuasion (Chua *et al*., 2014).

Specifically, a portrayed point of view is satisfactory to an individual if it is perceived to be adequately close to the individuals' own stand point. This portrayed point of view is said to be in the individuals' latitude of acceptance. A portrayed point of view is unsatisfactory to an individual if it is perceived to be adequately different from the individuals' own stand point. This portrayed point of view is said to be in the individuals' latitude of rejection. A portrayed point of view is neither acceptable nor rejectable if it is perceived to be neither near or far from the individual's own stand point. This point of view is said to be in the individuals' latitude of non-commitment. Distinctly these three latitudes differ from individual to individual and they depend on factors such as individuals' ego involvement and the individuals' familiarity of the subject of discussion (Chua *et al*., 2014). When the portrayed point of view is in one's

latitude of acceptance and or rejection or perhaps also in the nearby latitude of non-commitment, assimilation (Contrast) occurs in the sense that the presented opinion is perceived to be closer to and or farther from one's stand point than it truly is. Moreover, this positively-assessed and or negatively-assessed point of view may cause the individual to move his/her stand point close to and or away from it. The greater the difference between the portrayed point of views and the individuals' point of view, the more resultant attitude change in general (Salazar, 2017)

In simple, SJT explains why some persuasive information are accepted and the other information rejected by a number of individuals. This individuals consist of individual listeners who have their own unique latitude or an attitude that falls along an attitudinal continuum (Mallard, 2010). Each individual is "anchored" in one of the three latitude continuum as stated in Chua *et al*. (2014), where an information is received with trust and positive regard, this is the latitude of acceptance; latitude of rejection, where the information is received with scepticism and disconfirming regard; and latitude of non-commitment, where the information is received with neutrality or disinterest (Mallard, 2010).

In line with this research, SJT explains that the attitude of the student towards the modes of examination depends on how the student regards the modes of examination (information). Some may accept one and reject the other or some may be neutral (do not have a preference). The way a student regards the modes of examination will determine the attitude of such student towards the mode of examination.

2.2.2 Theory on perception (Intentionalism theory)

In intentionalism, perceptual experience is an issue of mentally exemplifying the external world. The way we see things around us. One perceive mentally-independent

objects when one represent them as being a certain way. It could not necessarily be the way the object is but the way the object is represented in one's minds. Intentionalists argue that the phenomenal lineament that an individual is aware of in perceptual experience are properties of mentally-independent objects; they do not belong to some inner state or object, nor is one aware of something mentally-dependent. However, the phenomenal character of an experience is due to the representational or intentional properties of the experience. Take for instance, e-examination mode of examination, it is not necessarily difficult to undergo but the way the student sees the mode of examination (personally) will determine the perception of the student. So therefore the way a person perceive something generally depends on the experience or way the individual see the thing. Which is in line with this project, as the researcher want to evaluate whether or not the way a student perceive a mode of examination may or not affect the performance of the student.

Intentionalism has become fairly popular as of late, and a diversity of intentionalist approaches have been recently defended (Harman, 1990; Tye, 1992, 1995). Because perception is understood in terms of exemplifying the view is sometimes even described simply as committed to the idea that experiences are representations. Intentionalism is sometimes called "representationalism" (Bence, 2016; Berger & Bence, 2016; Genone, 2016). However, for this study "intentionalism" will be used in a large extent because there are other views that understand perceptual experience as involving possessing representational properties. So simply, perception can be said to be representation of an object in ones' mind.

In explaining perception, Harman (1990) calls attention to what he calls "the intentionality of experience": Our experience of the world has content that is, it represents things as being a certain way. In particular, perceptual experience represents

a perceiver as if in a particular environment, take for example, as standing by the edge of a cliff. Perceptual experiences are developed in representational terms, as having intentional content, and are understood in terms of such content. The content of an experience is the way it represents objects or things as being. In short, the perception of a person about an object or thing is developed through the appearance of the object or thing, knowing and understanding the object or thing. In line with this project, the perception of a student concerning the modes of examination is developed by the way the examination modes appears, knowing and understanding of the examination modes. So it can be said that having an experience about a thing determine the perception developed towards it. This experience could involve the appearance or the way the person see the object, the knowledge on the subject (what the person knows about it or not) and then understanding it. Knowing a particular is a bit different from understanding it. Take for instance, I know what a printer does but I do not understands how it operate. So after consider all about the object or thing then perception is develop. This could be interpreted that, the perception of a student could affect or influence the performance of the student. In the sense that, negative perception could result to less care or less interest to either of the examination modes.

Intentionalists emphasize that what we are aware of in experience are not mental objects or qualities, but rather properties of external objects. For example, Harman (1990) considers someone, Eloise, looking at a tree: …what Eloise sees before her is a tree… That means, the content of her visual experience is of the view that she is presented with a tree, not with an idea of a tree. By chance, Eloise's visual experience involves some sort of mental picture of the environment. It does not actually mean that she is aware of a mental picture. If there is a mental picture, it may be that what she is actually aware of is whatever is represented by that mental picture; then that mental picture

exemplifies something in the world, not something in the mind. Simply perception is not about what is developed in the head or mind but what is develop based on sight. The properties that appear to Eloise for example, the colors of the tree are properties of the tree, as it is represented to her. They are not the properties of some mental object. In relation to this study, perception of students about either of the modes of examination is not developed or formed in the head or mind of the student by rather by what the student sees (that is the properties, characteristic, method, merit and demerit of the modes of examination).

Importantly, according to intentionalism, the representational or intentional properties of an experience completely determine its phenomenal features (Tye, 1992). A perceptual experience is a certain way, or has the phenomenal character it does, because of how the individual is representing the world. It simply deals with the way a person sees the world. In relation to this study, the way a student sees a particular mode of examination might determine the perception of the student on the mode of examination, which could affect the performance of the student.

2.2.3 Theory on preference (Preference Theory (PT))

Dyer and Jia (2013) proposed the theory of preference to explain the fundamental aspects of individual choice behaviour, such as how to identity and quantify an individual's preferences over a set of alternatives and how to construct appropriate preference representation functions for decision making. The basic categories of preference theory can be divided into characterization of preferences under conditions or risk and over alternatives described by a single or multiple attribute. Preference under condition of certainty deals with the "strength of preference" notion that involves comparisons of preference difference between pairs of alternatives. It deals with the valve of the function; what a preference has to offer. Preference under risk (that is

lotteries or gambles) presumes that the probabilities of the outcomes of the lotteries (processes) are provided to the decision maker. It deals with probability outcome.

Preference Theory states that preferences cannot sensibly be defined in term of expected benefit. Whether an agent prefers X to Y can be defined by whether an agent would ever choose Y from any set of alternative including X. Whether the agent actually faces a choice between X and Y is irrelevant. Preference should instead be defined in terms of statements about what agent would choose (Imai, 2016). In relation to this study, the choice of one mode of examination by a student should not be defined in terms of expected benefit but what the student chooses. The choice of e-examination mode of examination should not be determined by the benefit of e-examination mode of examination but by the choice of the student.

Dyer and Jia (2013) says that the choice of a person is an evidence of preference- that gives information about people's beliefs. One can infer a person's preferences from the choice picked. PT identifies preference with action. In relation to this study, the choice of a student determines the preference of the student. If a student picks pen-on-paper examination mode then that is the preference of the student.

PT studies the fundamental aspects of individual choice behavior such as how to identify and qualify an individual's preference over a set of alternatives and how to construct appropriate preference representation functions for decision making (Dyer & Jia, 2013). The choice of a student over a set of alternatives could be used to construct the right preference representation function to make a decision about something. The choice of pen-on-paper mode of examination can be used to determine the preference representation function (preference level) and how it could affect or influence the performance of the student.

An important feature of PT is that it is based on rigorous axioms (factors) which characterize individual's choice behaviour. These preference axioms (factors) are essential for establishing preference representation function and provide the rationale for the quantitative analysis of preference. PT could also provide insight into complex decision situations and guidance for simplifying decision problems (Dyer & Jia, 2013). In relation to this research, there are factors to consider or factors that affect an individual's choice. If all factors are considered, then the student could make a choice. Factor such a skills needed, attitude, perception and more. When these factors are consider by the student then the student could make a choice. So therefore preference of a student could be affected by factors or axioms.

2.3 Empirical Studies

Empirical studies were reviewed under the following headings, such as attitude of students towards both e-examination and pen-on-paper examination, perception of students towards both e-examination and pen-on-paper examination, examination preference of students towards both e-examination and pen-on-paper examination, gender towards performance in both modes of examination and their performance in both modes of examination.

2.3.1. Related empirical studies on perception of students towards e-examination and pen-on-paper examination

Jimoh *et al*. (2012) conducted a study on students' perception of computer based test for examining undergraduate Chemistry Course. The study was carried out in the University of Ilorin. The study was guided by six research questions. The sample for the study was made up of 48 students who had taken test on CBT in Chemistry. The sample was made of 37 (77.8%) males and 11 (22.9%) females. The instrument for the study was a questionnaire developed by the researchers. Percentages, mean and

standard deviation were used to answer the research questions. The study showed that majority (95.8%) of students said they were competent with the use of computer. 75% said their computer anxiety was only mild or low but notwithstanding they have not fully accepted the testing mode, with only 29.2% in favor of it, due to the impaired validity of the test administration which they reported as being many erroneous chemical formulas, equations and structures in the test items even though they have nonetheless identified the achieved success the testing has made such as immediate scoring, fastness and transparency in making. The study of Jimoh *et al*. (2012), reviewed was concerned with perception of students towards the use of CBT in chemistry course, this present study was on the attitude and perception of students toward both modes of examination in FUT, Minna.

Ozden *et al*. (2014) conducted a similar study on students' perception of online assessment. The sample for the study was 46 students. Questionnaire and interview were used for data collection. The findings of the study revealed that students perceived online assessment as an effective testing mode. While the Ozden *et al*. (2014) study reviewed was concerned with perception of online assessment, the present study was concerned with perception of students in the modes of examination in FUT, Minna.

Sanni and Mohammad (2015) conducted a study to investigate the perception of students on the use of computer based testing in examinations at ABU, Zaria center. Problems encountered by the student and prospective methods of enhancing CBT acceptance in Nigeria were also documented. Using survey research method, a total of 300 questionnaires were administered to students who participated in the 2014 UTME at Ahmadu Bello University (ABU), Zaria center and 237 were adequately completed and found usable representing (79%). The finding revealed among others, that majority of the respondents confirmed that CBT can curb examination malpractice. Majority of

candidates were also found to prefer CBT than the conventional way of writing examination. The Chi-square and Pearson's correlation analysis showed that the respondents preferences for CBT was sensitive across gender, age distribution and student faculty. While improving electricity supply was identified as critical in enhancing CBT Exams, poor ICT skill on the part of student and the invigilators were identified as the major problem facing the implementation of JAMB CBT Exam. The paper recommends the need for JAMB to create more awareness on CBT in order to enhance JAMB CBT examination in Nigeria. Although the study reviewed was based on CBT mode of examination, this present study was based on both modes of examination in FUT, Minna.

Anene (2016) conducted a study which empirically assessed student's perception of Joint Admission and Matriculation Board (JAMB) Computer Based Examination in Nnamdi Azikiwe University, Awka, Anambra state, Nigeria. The study was orchestrated on five objectives. The study found that student generally perceived Joint Admission and Matriculation Board computer based examination as a concrete and rewarding experience and also computer based examination as more enjoyable than paper based examination. The study also revealed that poor computer literacy affect students' perception on computer based examination and lack of a well-designed examination instructor on the use of computer based examination. Based on these findings it was concluded that the management of Joint Admission and Matriculation Board should take into cognizance the perception of students towards computer based examination for full operational of the innovative techniques in Nigeria. The study reviewed was based in Nnamdi Azikiwe University, Awka, Anambra, this present study was based on both modes of examination in FUT, Minna.

Jamiludin *et al*. (2017) conducted a study on students' perception towards National examination 2017: Computer-Based-Test or Paper Based Test. The study adopted a Wonder Share Quiz Creator (WSQC) program to design test in senior high school of Kedari. Data was collected through questionnaire, interview, observation and quiz. The study indicated that students did poor in Computer based test and well in Paper based test therefore they had a negative perception of Computer Based examination. The study reviewed was based on National examination for senior high school of Kendair while the present study was based on undergraduate examination in FUT, Minna.

Okocha *et al*. (2017) conducted a study on students' perception and acceptance of Computer Based Testing using Landmark University students as a case study. The study adopted descriptive analysis and regression analysis were carried out using Statistical Package for Social Science Software (SPSS). 168 returned questionnaire were used for analysis. The result of the findings indicated that 95.2% of respondents had positive perception on the use of CBT generally for examination. The reviewed study focused only on CBT examination in Landmark University while this present study focused on both modes of examination in FUT, Minna.

Washburn *et al*. (2017) conducted a study on evaluation of performance and perceptions of electronic vs paper multiple-choice exams. The study used a controlled trial to evaluate the impact of testing methodology on examination performance in many courses that were transitioning from the traditional paper based exams to electronic-based exams. 134 first year veterinary students and 11 PhD/MS students were used as the sample size. Multiple choice exam were administered for both CBT and PBT. The study revealed that the students had an understanding that there were potential positives to electronic format, such as faster grading, saves paper and possibly better preparation for electronic board exams. However, they did not feel these

advantages out weighted the perceived disadvantages. The study therefore indicates that student perceived paper based testing as much better than computer based testing. Both studies were on computer based testing and paper-pen test. The study reviewed was no multiple-choice examination while the present study was based on all forms of examination in FUT, Minna.

2.3.2. Related empirical studies on attitude of students towards e-examination and pen-on-paper examination

Hosseini *et al*. (2014) carried out a study to examine the comparability of test result of computer base test and paper-pencil test among English Language learners in Iran. The study aimed at examining the score comparability of institutional multi-choice reading comprehension test in two testing method which were paper-based and computer-based test taken by Iranian first-year English students in Azad university of Tehran, Iran. In order to discover the results, the study examined the impact of computer based test on the test score results and exploring the relationship between particular test takers' characteristics such as prior computer familiarity and compute attitude as well as test performance with their test scores. Two equivalent tests were administered to participants on two different occasions. The study made use of utilizing matched t-test to compare the means of the two test modes. The findings of the research indicated that the attitude of student towards computer base test had no significant influence on performance of students. Both the reviewed study and the present study are based on computer base examination and pen-on-paper examination. The study reviewed was based on English language in Iran, this present study was based on FUT, Minna examinations modes.

Dammas (2016) carried out an investigation on the attitude of students towards Computer Base Test in chemistry course at Saudi Arabia Jeddah. Quantitative approach

was used in carrying out the study. Survey questionnaire was adopted using convenience-sampling techniques. The sample consisted of 6o undergraduate students who had taken the examination on CBT were selected from the department. The findings of the study showed that 83.7% of respondent had a positive attitude towards CBT mode of examination. Generally, the findings of the study showed that student had favorable experience with CBT and it would earn it effectiveness in the context of assessments methods. The study reviewed was based on chemistry course in Saudi Arabia Jeddah, this present research was based on all course offered in FUT, Minna.

Falode *et al.* (2016) carried out a study on Students' attitude towards e-examination in Federal University of Technology Minna, Nigeria. The study adopted survey research design. A sample size of 280 undergraduate students consisting of 40 (20 male and 20 female) first year students across the seven schools in the institution. E-examination Attitudinal Questionnaire (EAQ) was used for data collection. Three research questions and two hypotheses were formulated in the study in which mean and standard deviation were used to answer the research questions raised and Kruskal-Wallis H Test non-parametric statistic was used to test the hypothesis. The findings of the study indicated that the students had positive attitude towards e-examination with an average mean of 2.61 out of 5. There was no significant difference in mean attitude score of students across the seven undergraduate schools (x^2 (6) = 2.27, P=0.89). Although both study are based in FUT, Minna, the reviewed study was based on students' attitude towards e-examination only but the present study was based on attitude, perception and preference to both e-examination and pen-on-paper examination based on their academic performance.

Albanna and Abu-Safe (2019) conducted an investigation on student's attitude towards computer based and traditional paper-pencil testing for the "General Physics II" course

at the German Jordan University. A quantitative approach was used, using survey questionnaire was implemented to collect data. The sample used for this study were 59 undergraduate students enrolled. First exam was administered using pen-on-paper testing and the second exam using computer based test. The findings of the study indicated that there was significant difference in students' attitude towards computer based testing and pen-on-paper testing. Both the study reviewed and the present study are both on attitude of student towards Computer based testing and pen-on-paper mode of exam. The study reviewed was based on general Physic II in German Jordan University, this present study is based on both modes of examination in FUT, Minna.

Al-Momani (2019) conducted an investigation on attitude of undergraduate students towards using e-examination for assessment in Jordan. A quantitative approach was used, using survey questionnaire was implemented to collect data. A purposive sample of 93 undergraduate students were selected from the university. However only 87 questionnaires out of the 93 questionnaire distributed was considered valid. A mean of 3.89 was obtained indicating that the undergraduate students at Jordan had a positive attitude towards e-examination for assessment. The study reviewed was based on only E-examination in Jordan, this present study was based on both modes of examination in FUT, Minna.

Abdelrahman (2020) conducted a study on the usage of electronic test versus pen and paper tests: the experience of Delta State University. The study adopted experimental research method. A total of 90 first-year student served as the sample. It made use of 50 multiple choice items both electronic test and pen and paper test. Questionnaire was used in data collection on attitude of student. The findings of the study indicated that students' attitudes towards e-test changed positively. Both studies were on e-examination and pen-on-paper examination but the reviewed study was based on

English examination and made use of 100 level student only while the present study was based on all examination in FUT, Minna from 200 and 300 level students.

2.3.3. Related empirical studies on students preference of examination for e-examination and pen-on-paper examination

Lim *et al.* (2006) carried out a study to investigate students' preference: computer-based versus pen-and paper. The study obtain feedback from final year medical students of National University of Singapore on their preferred mode of testing for examination conducted in the department (paper 3 with 30 multiple choice question featuring clinical vignettes and modified essay questions, MEQ, paper) and the reasons underlying their preference. An online survey was carried out on 213 final year undergraduates, in which they were asked if they thought that the CBT format was preferable to the pen-and-paper (PNP) format and why. 114 out of 213 (53.5%) students completed the online survey. For paper 3, 91 (79.8%) felt that CBT was preferable to PNP, 11(9.6%) preferred the PNP format and 12 (10.5%) were unsure. For the MEQ, 62 (54.4%) preferred CBT over PNP, 30 (26.3%) preferred PNP format and 22 (19.3%) were unsure. Reasons given to explain preference for CBT over PNP for paper 3 included independence from seating position, better image quality (as image were shown on personal computer screens instead of projected onto a computer screen) and the fact that CBT allowed them to proceed at their own pace. For the MEQ, better image quality, neater answer scripts and better indication of answer length in CBT format were cited as reasons for their preference. The study reviewed and the present study were both concerned with CBT. However, the study reviewed was carried out in Singapore while the present was based in FUT, Minna on both modes of examination.

Tella and Bashorun (2012) conducted a study on attitude of undergraduate students towards computer based test: a case study of University of Ilorin, Nigeria. The study

revealed that more than average of the students' population preferred Computer Based Tests to Paper Based Test. The study, it revealed that 89(44.5%) respondents think electronic examination is better than the pen-paper examination, 77(38.5%) respondents believe pen-on-paper examination is better than the electronic examination. However, 34(17%) respondents have undecided opinion. This means that they neither choose pen-paper nor electronic examination system. The study indicated that majority of the respondent believe e-examination is better than the pen-paper examination. Despite having huge number that oppose this opinion, it obviously shows that higher number of the students have accepted electronic examination system. The study reviewed and the present research was based on both CBT and paper-pen mode of examination preference. However, this study was based in FUT, Minna.

Joshua *et al*. (2015) carried out a study on computer based testing in Nigeria's University entrance matriculation examination: readiness and acceptability of critical stake-holders. The research found out that 79% of them preferred PPT, and only 21% of them preferred CBT. The study reviewed and the present research was based on both CBT and pen-on-paper mode of examination preference. However, the reviewed study was on UTME examination while this study was based on modes of examination in FUT, Minna.

Okocha *et al*. (2017) conducted a study on students' perception and acceptance of Computer Based Testing using Landmark University students as a case study. The study adopted descriptive analysis and regression analysis were carried out using Statistical Package for Social Science Software (SPSS). 168 returned questionnaire were used for analysis. The findings of the study indicated that the preference rate of computer varied in the different courses taken. 43.2% of student were not in support of conducting CBT for physic, 37.8% of student were not in support of conducting CBT

for chemistry, 17.9% of student were not in support of conducting CBT for general studies, 16.7% of student were not in support of conducting CBT for Total man concept, 15.5% of student were not in support of conducting CBT for entrepreneurial studies, 10.7% of student were not in support of conducting CBT for use of Library and information Technology. Larger percentage of each department preferred paper based test to computer based test. The reviewed study focused only in Landmark University mean while this present study was based in FUT, Minna.

Washburn *et al.* (2017) conducted a study on evaluation of performance and perceptions of electronic vs paper multiple-choice exams. The study used a controlled trial to evaluate the impact of testing methodology on examination performance in many courses that were transitioning from the traditional paper based exams to electronic-based exams. 134 first year veterinary students and 11 PhD/MS students were used as the sample size. Multiple choice exam were administered for both CBT and PBT. The findings of the study indicated that the student had a strong preference for paper based test over electronic multiple-choice examination. Both studies were on computer based testing and pen-on-paper test. The study reviewed was no multiple-choice examination while the present study was based on all forms of examination in FUT, Minna.

2.3.4 Related empirical studies on gender difference towards the performance of students in e-examination and pen-on-paper examination

Shokri (2008) conducted a study on gender differences in academic performance: the role of personality traits. The study adopted Big Five Inventory (BFI) as the instrument and a sample size of 419 students (166 Male and 253 Female) was selected. Multi-variance Analysis of Variance (MANOVA) and path analysis was used in analysis. The result of the findings showed that the indirect and total effects of gender on academic

performance only by conscientiousness and neuroticism factors were significant. The finding of the study indicated that gender had an influence on academic performance of student. The reviewed study was just on academic performance of student but the present study was based on the gender attitude, perception and examination preference with respect to performance on both modes of examination.

Ebenuwa-Okoh (2010) conducted a study on the influence of age, financial status and gender on academic performance among undergraduate. One research question was asked and three hypotheses were formulated. Correlational research design was adopted while simple random sampling method was used in sampling the sample size of 175 respondents. The instrument used for this study had face and content validity and Cumulative Grade Point Average (CGPA) was also collected and used in analysis. The findings of the study revealed that gender is not a significant predictor for academic performance. The reviewed study was on gender influence on performance generally while the present study was based on Gender attitude, perception and examination preference towards the modes of examination with respect to performance.

Hillier (2014) conducted a study on the very idea of e-exams: students (pre)conceptions. The study adopted survey research design. 488 students (37% male and 63% females) were examined. 20 items were examined using a 5 likert rating scale. Man-Witney's V Test across programs was used in data analysis. The findings of the study showed that the female student gave a stronger agreement ratings than the male. The female students had a good perception of e-examination than the male student. The reviewed study was only on gender perception of e-examination. The present study examined both modes of examination and attitude and preference of student.

Adigun *et al.* (2015) carried out a study on the effect of gender on students' academic performance in computer studies in secondary schools in new Bussa, Borgu local

government of Niger state. The study made use of questionnaire of 30 multiple-choice items drawn from SSCE past questions as set by the WAEC in 2014 for data collection. The sample size consisted of 275 students in public and private school around the area. The study made use of independent t-test for analysis. The result of the findings indicated that even though the male students had slightly better performance compared to female students, it was not significant. The result shows that the male had a little bit better performance in computer studies than the female but there was no significant difference. The reviewed study examined the gender difference with respect to their performance level in computer science while the present study was based on gender attitude, perception and examination preference towards the modes of examination with respect to performance.

Jeong (2015) conducted a study on the scores of students on computer based test and paper pencil test. The findings of the study showed that the male mean computer based test were significantly different in comparison to paper pencil test scores in only one of four academic areas whereas, female had statistically significant lower scores on three of four academic areas for computer based test scores, indicating that there is a gender gap on computer usage. The reviewed study and present study are both on paper and pencil test and computer test. But the present study examined gender based on attitude, perception and examination preference.

Sanni and Mohammad (2015) conducted a study to investigate the perception of students on the use of computer based testing in examinations. Problems encountered by the student and prospective methods of enhancing CBT acceptance in Nigeria were also documented. Using survey research method, a total of 300 questionnaires were administered to students who participated in the 2014 UTME at Ahmadu Bello University (ABU), Zaria center and 237 were adequately completed and found usable

representing (79%). The finding revealed among others, that majority of the respondents confirmed that CBT can curb examination malpractice. Majority of candidates were also found to prefer CBT than the conventional way of writing examination. The Chi-square and Pearson's correlation analysis showed that the respondents preferences for CBT was sensitive across gender, age distribution and student faculty. The findings of the study revealed that there was a significant difference in the gender performance of students. Although the study reviewed was based on CBT mode of examination, this present study was based on both modes of examination performance in FUT, Minna with regards to gender.

Falode *et al.* (2016) carried out a study on Students' attitude towards e-examination in Federal University of Technology Minna, Nigeria. The study adopted survey research design. A sample size of 280 undergraduate students consisting of 40 (20 male and 20 female) first year students across the seven schools in the institution. E-examination Attitudinal Questionnaire (EAQ) was used for data collection. Three research questions and two hypotheses were formulated in the study in which mean and standard deviation were used to answer the research questions raised and Kruskal-Wallis H Test non-parametric statistic was used to test the hypothesis. There was no significant difference in the attitude of male and female students towards e-examination across the seven undergraduate schools (x^2 (1) = 0.00, P=0.98). Although both study are based in FUT, Minna, the reviewed study was based on students' attitude towards e-examination only but the present study was based on attitude, perception and preference to both e-examination and pen-on-paper examination in terms of their performance.

Hardcastle *et al*. (2017) conducted a study on comparing student performance on paper-pencil and computer-based tests. The study made use of the performance of students who took either a pen-on-paper test or one of the two different computer based test

containing multiple-choice items assessing science ideas. Rasch modelling was used to describe student performance. The study made use of two different CBT format, CBT-TAO (Open Assessment Technologies) and CBT-AAAS (American Association for the Advancement of science) assessment website where users can create their own tests. The finding of the study indicated that there was no difference in the performances of male and female in the different test modality. The study reviewed examined performance different in gender while the present study examined PPT and e-examination performance in FUT, Minna with respect to gender.

Parajuli and Thapa (2017) conducted a study on gender differences in the academic performance of students. The study employed the use of questionnaire in data collection and result of student and divisions score by students as measures of academic performance of the students were obtained from the district education office (DEO) of Kaski. The sample size of the study was 240 student who passed the district level standard exam of grade eight in 2016 from public and private schools in Lekhnath Municipality, Kaski, Nepal. The study revealed that there was a significant gender differences in academic performance of students. The female student were found to have outperformed the male counterparts. By this the study shows that there is a difference between the performances of students. The study reviewed examined performance different in gender in public and private schools in Lekhnath Municipality, Kaski, Nepal while the present study examined performance difference in PPT and e-examination performance in FUT, Minna with respect to gender.

Punter *et al.* (2017) conducted a study on gender difference in computer and information literacy: An exploration of the performance of girls and boys in ICILS 2013. The study made use of confirmative factor analysis model in analysis. The study was based in European countries. 20 (14 years old students) were randomly selected in

each sampled schools in each 21 countries. The findings of the study showed that girls outperformed the boys in the examination. The reviewed study was based on only gender in e-examination. The present study examined gender on both modes of examination in terms of attitude, perception and examination preference.

Bahar and Asil (2018) conducted a study on the attitude of students towards e-assessment: influence of gender, computer usage and level of education. E-assessment rating scale was used in the study. The sample size of 853 associate degree, undergraduate and graduate students. A mimic modelling approach was utilized following a confirmatory factor analysis. The findings of the study revealed that male students exhibited significantly more positive attitudes to e-assessment than female on test characteristics. The study reviewed examined different in gender attitude of e-assessment while the present study examined both PPT and e-examination performance in FUT, Minna with respect to gender.

McClelland and Cuevas (2020) conducted a study on a comparison of computer based testing and paper and pencil testing in mathematics assessment. The study examined whether the testing medium impacted the students' performance in math assessment. The study was conducted in a school district in north Georgia. 80 6^{th} grade students (34 boys and 46 girls) from the four math classes were examined. The study made used of result from test administered both computer based test and paper pencil test and a survey question. The finding showed that gender did not have an impact on students' performance in both modes of examination. The reviewed study and the present study were both based paper and pen examination. While the reviewed study was based on mathematics in Georgia, the present study examined on all courses in FUT, Minna.

2.3.5 Related empirical studies on performance of students in e-examination and pen-on-paper examination

Daly and Waldon (2002) carried out a study on introductory programming, problem solving and computer based assessment. The study discovered that student acceptance of CBT is dependent on their performance. Though there has been a diverse opinion among students on its acceptance. The study reviewed was based on students acceptance CBT mode of examination with respect to performance alone, this research was based on the performance of students of FUT, Minna in both modes of examination.

Bodmann and Robinson (2004) conducted an experimental study to compare speed and performances differences among computer-based (CBT) and paper-pencil tests (PPTs). In the experiment, 55 undergraduate students enrolled in the subject of educational psychology, participated in the study. The students were already familiar with computer-based tests. Both CBTs and PPTs contained 30 multiple choice questions items with 35 minute of time limit. Approximately half class (28 students) took the first test on the computer and the rest preferred first test on paper. Procedures shifted for the second tests, with the first group receiving PPTs and second group CBTs with a gap of two weeks. It was concluded that undergraduates completed the CBT faster than PPT with no difference in scores. The study reviewed was based on speed performance of both mode of examination, this study was based on just the performance of the student in both modes of examination in FUT, Minna.

Escuder *et al*. (2011) carried out a study to compare higher education dental undergraduate student performance in online assessments with performance in traditional paper-based tests and investigate students' perception of the fairness and acceptability of online tests and showed performance to be comparable. The project

design involved two parallel cross-over trials, one in year 3 (n = 132) of the dental curriculum, one in year 5 (n = 134). A total of 266 students under took related tests of the same knowledge base in both online and traditional paper formats. Order of presentation of the test form was randomized. 132 students in year 3 additionally completed questions concerning their perceptions of the acceptability and fairness of the online examination process. Focus group discussion were held with groups of students (n = 30) from both year 3 and 5 to explore their perceptions of the online format. The results were analyzed using repeated measures ANOVA with the order of presentation being entered as a variable in the analysis. The results of the study showed that for both years 3 and 5 students, there was a high degree of consistency in performance between the two versions of the test, although a minority of students rated the online test as acceptable and 90% felt that online format did not disadvantage them even in a "high stakes" situation. The study reviewed was related to the present research in that, both studies examined students' perception of student to both mode of examination with respect to performance. The reviewed study was on dental student while this resent study is based in FUT, Minna.

Bayazit and Askar (2012) conducted a study on performance and duration difference between on-line and paper pencil tests. The study examined a test administered to Turkish University students across the two testing modes. The finding of the study indicated that the mean score for the paper pencil test was slightly higher, the difference was not statistically significant. The findings of the study showed that there was no significant difference in the performance of students in both modes of examination. The reviewed study and the present study are both on the two modes of examination. The reviewed study was based in Turkish while the present study was based in FUT, Minna.

Chua (2012) conducted a study on the effects of computer based testing on test performance and testing motivation. The study employed a Solomon four-group experimental design (2X3 factorial design) on a group of student teachers (n = 140) to compare CBT and PPT on test performances (test score), testing time and testing motivation. Results indicated that CBT mode is more reliable in terms of internal and external validity. The CBT significantly reduced testing time and developed stronger self-efficacy, intrinsic and social testing motivation in the participants. The study reviewed focused on effect of CBT on performance while the present study focused on both mode of examination performance.

Hardcastle *et al*. (2017) conducted a study on comparing student performance on paper-pen and computer-based tests. The study made use of the performance of students who took either a pen-on-paper test or one of the two different computer based test containing multiple-choice items assessing science ideas. Rasch modelling was used to describe student performance. The study made use of two different CBT format, CBT-TAO (Open Assessment Technologies) and CBT-AAAS (American Association for the Advancement of science) assessment website where users can create their own tests. The finding of the study indicated that there was no difference in the performances of male and female in the different test modality. There was no significant difference in scores of pen-on-paper test and CBT-TAO. The study reviewed is related to the present study in that both studies examines students' performance in both pen-on-paper test and Computer Based test. The study reviewed examined performance in different CBT examination while the present study focused on just PPT and e-examination in FUT, Minna.

Washburn *et al*. (2017) conducted a study on evaluation of performance and perceptions of electronic vs paper multiple-choice exams. The study used a controlled

trial to evaluate the impact of testing methodology on examination performance in many courses that were transitioning from the traditional paper based exams to electronic-based exams. 134 first year veterinary students and 11 PhD/MS students were used as the sample size. Multiple choice exam were administered for both CBT and PBT. The findings of the study indicated that despite the fact that the students preferred paper based test to computer based test, their performance level was better on electronic examination. Both studies were on computer based testing and pen-on-paper test. The study reviewed was no multiple-choice examinations in veterinary school while the present study was based on all forms of examination in FUT, Minna.

Abdelrahman (2020) conducted a study on the usage of electronic test versus pen and paper tests: the experience of Delta University. The study adopted experimental research method. A total of 90 first-year student served as the sample. It made use of 50 multiple choice items both electronic test and pen and per test. A 50 multi-choice test was used to examine the performance of the students. The findings of the study showed that e-test affects positively on students' achievement rather than paper-pencil test. Both studies were on e-examination and pen-on-paper examination. The reviewed study was based on English examination and made use of 100 level student only while the present study was based on all examination in FUT, Minna from 200 level and 300 level students.

McClelland and Cuevas (2020) conducted a study on a comparison of computer based testing and paper and pencil testing in mathematics assessment. The study examined whether the testing medium impacted the students' performance in math assessment. The study was conducted in a school district in north Georgia. 80 6^{th} grade students (34 boys and 46 girls) from the four math classes were examined. The study made used of result from test administered both computer based test and paper pencil test and a

survey question. The findings of the showed that paper pencil test had a higher mean score of 81.04 compared to computer based test of 74.81 for the first test while 80.13 for paper pencil test and 77.63 for computer based test for the second test. The findings of the mean score difference was statistically significant but different in each test. The finding showed that there was a difference in performance for each test in the two modes of examination. The reviewed study and the present study were both based paper and pen examination. While the reviewed study was based on mathematics in Georgia, the present study examined on all courses in FUT, Minna.

2.4 Summary of Literature Reviewed

Literature were reviewed on three main areas of this study namely conceptual framework, theoretical framework and empirical studies. Under the conceptual framework variables such as concept of attitude, factors influencing attitude of student towards the modes of examination, attitude of students in respect to performance level, concept of perception, factors influencing perception of student towards the modes of examination, perception of students in respect to performance level, concept of performance, factors influencing performance of student, concept of gender, gender differences on performance, examination preference, FUT, Minna brief history, FUT, Minna examination history, pen-on-paper mode of examination (Merit and Challenges), e-examination (Merit and Challenges) and other factors that could influence performance of student apart from attitude, perception and examination preference.

Under the theoretical framework, three theories were reviewed. Social Judgment Theory (SJT), Intentionalism and Preference Theory (PT) were reviewed in relation to the variables (attitude, perception and preference) of this study.

From the empirical studies reviewed, it was found out that various individuals have various attitude towards the both mode of examination. But in those study, only one study was conducted on both attitude of student in pen-on-paper examination and e-examination none in terms of their performance level and only one on FUT, Minna examination modes. It was also found out by various individuals study reviewed on the various perception of students towards the both mode of examination. Most of the study were just based on perception towards CBT alone and none in terms of their performance level. And none on FUT, Minna examination. Individuals also conducted various studies on preference in the two modes of examination but none was based on their academic performance level and none on FUT, Minna examination. Studies were also carried out on gender towards performance but very few were conducted on both pen-on-paper examination and e-examination, few with respect to attitude, perception and preference, none in terms of their performance level and none on FUT, Minna examinations. On performance as an independent variable, various view were reviewed but very few were on pen-on-paper examination with none on FUT, Minna examination. Due to the discrepancy in the findings of the studies reviewed, this necessitated the present study which aims at investigating student's attitude, perception and examination preference towards modes of examination in FUT, Minna.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The research design that was adopted for this study is descriptive survey research design. Survey research design is a method of investigating the relationship between two variables using resultant data that were collected from a sample of respondents through survey and questionnaires. Survey research design was adopted due to the fact that it involves the systematic collection of data through the use of questionnaire about a group of respondents having a mutual interest. In relation to this study, survey research design will enable the researcher to measure the relationship between the dependent (perception, attitude and preference) and independent variables (pen-on-paper examination and e-examination) without the researcher manipulating or controlling either of them.

3.2 Population of the Study

The population for this study comprised of all 21,509 undergraduate students in FUT, Minna, Niger State. The target population for this study comprises of all 1,791 undergraduate students of School of Science and Technology Education (SSTE). See appendices B.

3.3 Sample and Sampling Techniques

The sample consisted of 200 and 300 level undergraduate students in one of the departments in School of Science and Technology Education. Multi-stage sampling technique was used in this study. In the first stage, a simple random sampling technique was used in sampling one department out of the three departments in School of Science and Technology Education (SSTE). While purposive sampling technique was used in

selecting the level of the students as the sample size should consist of students who had both attempted paper-pen and e-examination in FUT, Minna in order to obtain results for this research work. The sample for the study consisted of all 200 and 300 level students from the department of Educational Technology, FUT, Minna. Hence, the sample size of 194 undergraduate students from 200 and 300 level students from the department of Educational Technology were selected. See appendices B.

3.4 Research Instrument

A researcher designed questionnaire titled "Questionnaire on Students' Perception, Attitude and Preference towards Modes of Examination" (QSPAPME)" was used for data collection. Questionnaire can be used to assess and measure information that an individual possesses such as likes, dislikes, interest, attitude, perception, preference and belief of the individual or a group of individuals by inquiring about how they feel or think about issues. QSPAPME was divided into section A, B, C and D. Section A was used to collect demographic data such as gender and level of students, Section B consisted of 10 items that were used in collection of data on students' perception towards the two modes of examination based on their academic performance, Section C consisted of 10 items that were used in collection of data on students' attitude towards the two modes of examination based on their academic performance and Section D consisted of 10 items that were used in collection of data on students' examination preference. The response mode for the items was a four point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) will be awarded 4, 3, 2, and 1 point(s) respectively and a decision mean of 2.5 was used. When the mean was less than 2.5, the interpretation to the research question was regarded as negative and when the mean was 2.5 and above the response to the research question was regarded as positive

3.5 Validity of the Instrument

To determine the appropriateness, content coverage in terms of acceptability, relevance and adequacy to the stated objectives of the study, the researcher-structured questionnaire was validated by two experts in Educational Technology Department from FUT, Minna, and one guidance counsellor from FUT, Minna. All suggestions and observations raised by the experts were used to modify the final draft of the instrument.

3.6 Reliability of the Instrument

The reliability of the research instrument was determined after the conduct of a pilot test on 45 students from the Department of Science Education who had attempted both pen-on-paper and e-examination in FUT, Minna, who were part of the population of the study, but not part of the sample size. The questionnaire was administered and retrieved by the researcher after completing it. A reliability coefficient index of 0.76, 0.77 and 0.75 for the variables perception, attitude and examination preference were obtained respectively using Cronbach Alpha formula to measure the internal consistency of the items.

3.7 Method of Data Collection

Introductory letter was collected by the researcher from the Department of Educational technology, Federal University of Technology, Minna which was presented to the appropriate authority of the sampled schools to have access to the students of the school for this study in the first week. The second week was used by the researcher in briefing the respondents on the main objectives of the study and how to fill the questionnaire to ensure that valid data are collected. The researcher then personally administered the questionnaire to the respondents with the help of one research assistant who was trained on the rudiment of the study in the third week. The instrument was retrieved

immediately upon completion from respondents for analysis. The fourth week was used for data analysis and the study lasted for four weeks.

3.8 Method of Data Analysis

The analysis and interpretation of data collected through the questionnaire was done using descriptive and inferential statistics. The research questions one to six were answered using mean and standard deviation. For the three null hypotheses raised, scores obtained were converted to percentage then independent t-test was used to test the hypotheses. The hypotheses were tested at alpha level of 0.05. The Statistical Package for Social Science (SPSS) version 23.0 was used for the analysis.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Data Obtained from the Research Questions

Research Question One: What is the perception of students towards modes of examination based on their academic performance?

Table 4.1: Mean and Standard Deviation of Students' perception towards Pen-on-Paper Examination and E-Examination

S/N	Statement	N	Mean	Std. Deviation	Decision
1	Looking at pen-on-paper examination, it seems easier to undergo and also pass.	194	2.06	.99	Disagree
2	I get nervous using any technology, I will perform better in pen-on-paper examination.	194	2.31	.90	Disagree
3	Both e-examination and pen-on-paper examination have the same question, I see no reason why I can't do well in either mode of examination.	194	2.65	.94	Agree
4	Judging by my performance in pen-on-paper examination seems to have better result than e-examination.	194	2.48	.63	Disagree
5	Due to the technical issues associated with e-examination, it is better to undergo pen-on-paper examination as it could influence performance.	194	2.62	.92	Agree
6	Gender is not the factor, pen-on-paper examination is observed to have better result.	194	2.05	.71	Disagree
7	In e-examination when the time is up, it submits examination answers immediately but in pen-on-paper examination time is not constant, therefore in pen-on-paper examination there is a chance to do better.	194	2.46	.85	Disagree
8	With e-examination, results are almost instant reducing the stress of waiting for results. Therefore e-examination is better compared to pen-on-paper examination.	194	2.59	.77	Agree
9	With pen-on-paper examination, I can express my thought more therefore giving me the opportunity to do better than in e-examination.	194	2.62	.81	Agree
10	From observation both mode of examination could have a better result, if more study is done.	194	2.69	1.04	Agree

Decision Mean 2.5 and above

Table 4.1 shows the mean and standard deviation perception response of students towards pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. The table shows that items 3, 5, 8, 9 and 10 indicated a mean greater than 2.5 (Agree) while 1, 2, 4, 6 and 7 indicated a mean less than 2.5 (Disagree). The table indicates that the students have a positive perception towards e-examination and a negative perception towards pen-on-paper examination based on their academic performance.

Research Question Two: What is the attitude of students towards modes of examination based on their academic performance?

Table 4.2: Mean and Standard Deviation of Students' Attitude towards Pen-on-Paper Examination and E-examination

S/N	Statement	N	Mean	Std. Deviation	Decision
1	I feel that pen-on-paper examination is much easier to write than e-examination.	194	2.14	.78	Disagree
2	The modes of examination do not matter, I think I will do well in either.	194	2.66	.79	Agree
3	E-examination are not easy to undergo, therefore I think I will do better in pen-on-paper examination.	194	2.08	.91	Disagree
4	It is a general belief that students' performance in e-examination are usually low.	194	2.21	1.04	Disagree
5	I think I will perform better in an examination that involves paper and pen only.	194	2.35	.77	Disagree
6	E-examination involves technical-know-how, so I think I will do better in pen-on-paper examination that does not need a technical-know-how.	194	2.19	.89	Disagree
7	E-examination marking is more accurate compared to pen-on-paper examination.	194	2.89	1.01	Agree
8	I did well in an e-examination before therefore I think I will do better in any e-examination.	194	2.29	.88	Disagree
9	Many students choose e-examination over pen-on-paper based examination in terms of performance.	194	2.43	.79	Disagree
10	Federal University of Technology examinations are generally difficult to pass, it does not matter the mode of examination.	194	2.14	.88	Disagree

Decision Mean 2.5 and Above

Table 4.2 shows the mean and standard deviation of attitude of students' towards pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. The table shows that items 2 and 7 indicated mean greater than 2.5 (Agree) while items 1, 3, 4, 5, 6, 8, 9 and 10 indicated mean less than 2.5 (Disagree). The table indicates that the students have a positive attitude towards e-examination and a negative attitude towards pen-on-paper examination based on their academic performance.

Research Question Three: What is students' preference of examination modes based on their academic performance?

Table 4.3: Mean and Standard Deviation of Students Preference towards Pen-on-Paper Examination and E-Examination

S/N	Statement	N	Mean	Std. Deviation	Decision
1	I prefer pen-on-paper examination to e-examination when it comes to performance.	194	1.94	.98	Disagree
2	I prefer e-examination to pen-on-paper examination when it comes to result accuracy.	194	3.14	.81	Agree
3	Either of the two is ok, I will do well in both.	194	2.36	.71	Disagree
4	I prefer pen-on-paper examination to e-examination because it is financially economical to undergo. It does not involve the use of technology instrument.	194	2.31	.87	Disagree
5	I prefer e-examination to pen-on-paper examination because it seems better to undergo.	194	2.19	.78	Disagree
6	I prefer e-examination to pen-on-paper examination because of time economy as it could influence performance.	194	2.29	.69	Disagree
7	I prefer e-examination to pen-on-paper examination when it comes to safety of examination script.	194	2.74	.97	Agree
8	I prefer pen-on-paper examination to e-examination when it comes to power supply as it could influence performance.	194	2.70	1.00	Agree
9	I prefer pen-on-paper examination to e-examination when it comes to flexibility of examination. E-examination seems rigid.	194	2.16	.88	Disagree
10	I prefer e-examination to pen-on-paper examination when it comes to addition of multimedia items. As addition of multimedia items could help in understanding the questions better, thereby increasing the chance to perform better.	194	3.04	1.16	Agree

Decision mean 2.5 and Above

Table 4.3 shows the mean and standard deviation preference of students towards pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. The table shows that items 2, 7, 8 and 10 indicated mean greater than 2.5 (Agree) while items 1, 3, 4, 5, 6 and 9 indicated a mean less than 2.5 (Disagree). The table indicates that the students preferred e-examination to pen-on-paper examination based on result accuracy, easy of undergoing, financial implication, flexibility, safety of examination script and addition of multimedia items but pen-on-paper examination is preferred based on time economy, power supply and ease of undergoing the examination.

Research Question Four: To what extent does students' gender influence their perception towards the modes of examination based on their academic performance?

Table 4.4: Mean and Standard Deviation of Male and Female Students Perception Towards Pen-on-Paper and E-Examination

Gender	N	Mean	Std. Deviation	Mean Difference
Male	150	62.50	10.48	
				5.17
Female	44	57.33	10.12	

Table 4.4 the mean and standard deviation of male and female students' perception towards both pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. From the table, the mean and standard deviation of male students are X= 62.50 with SD= 10.48 while the mean and standard deviation of female students are X= 57.33 with SD= 10.12 with a mean difference of 5.17. This indicates that gender of students has an influence on their perception towards the modes of examination based on their academic performance. If the difference in mean is significant or not, will be determined using t-test.

Research Question Five: To what extent does students' gender influence their attitude towards the modes of examination based on their academic performance?

Table 4.5: Mean and Standard Deviation of Male and Female Students Attitude Towards Pen-on-Paper and E-Examination

Gender	N	Mean	Std. Deviation	Mean Difference
Male	150	58.98	6.55	
				2.28
Female	44	56.71	7.37	

Table 4.5 shows the mean and standard deviation of male and female students' attitude towards pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. From the table, the mean and standard deviation of male students are X= 58.98 with SD= 6.55 while the mean and standard deviation of female students are X= 56.71 with SD= 7.37 with a mean difference of 2.28. This indicates that gender of students has an influence on their attitude towards the modes of examination based on their academic performance. If the difference in mean is significant or not, will be determined using t-test.

Research Question Six: To what extent does students' gender influence their preference for the examination modes based on their academic performance?

Table 4.6: Mean and Standard Deviation of Male and Female Students Preference Towards Pen-on-Paper and E-Examination

Gender	N	Mean	Std. Deviation	Mean Difference
Male	150	62.80	9.80	
				1.83
Female	44	60.97	7.87	

Table 4.6 shows the mean and standard deviation of male and female students' preference towards pen-on-paper and e-examination in FUT, Minna, Niger State. A

total of 194 students responded to the 10 items. From the result, the mean and standard deviation of male students are X=62.80 with SD= 9.80 while the mean and standard deviation of female students are X=60.97 with the SD= 7.87 with a mean difference of 1.83. This indicates that gender of students has an influence their preference towards the modes of examination based on their academic performance. If the difference in mean is significant or not, will be determined using t-test.

4.2 Hypotheses Testing

Research Hypothesis One: There is no significant difference between male and female students' perception towards the modes of examination based on their academic performance.

Table 4.7: T-test result of the Perception Score of Male and Female Students towards Pen-on-Paper and E-Examination

Gender	N	Df	Mean	Std. Deviation	t-value	p-value
Male	150	192	62.50	10.48	2.90	0.04^{s}
Female	44		57.33	10.12		

Significant at 0.05 ($p<0.05$)

Table 4.7 shows the t-test result of the perception score of male and female students towards pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. From the table, t=2.90, p= 0.04. The p-valve is less than the level of significance, hence the hypothesis one was rejected. This indicates that there is a significant difference between male and female students' perception towards the modes of examination based on their academic performance.

Research Hypothesis Two: There is no significant difference between male and female students' attitude towards the modes of examination based on their academic performance.

Table 4.8: T-test result of the Attitude Score of Male and Female Students towards Pen-on-Paper and E-Examination

Group	N	Df	Mean	Std. Deviation	t-value	p-value
Male	150	192	58.98	6.55	1.97	0.05^{s}
Female	44		56.71	7.37		

Significant at 0.05 (p=0.05)

Table 4.8 shows the independent sample t-test results of the attitude score of male and female students to pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. From the table, t=1.97, p= 0.05. The p-valve is equal to the level of significance, hence the hypothesis one was rejected. This indicates that there is a significant difference between male and female students' attitude towards the modes of examination based on their academic performance.

Research Hypothesis Three: There is no significant difference between male and female students' preference for the examination modes based on their academic performance.

Table 4.9: T-test result of the Preference Score of Male and Female Students towards Pen-on-Paper and E-Examination

Gender	N	df	Mean	Std. Deviation	t-value	p-value
Male	150	192	62.80	9.80	1.14	0.26^{ns}
Female	44		60.97	7.87		

NS: Not Significant at 0.05 (p>0.05)

Table 4.9 shows the t-test result of the preference score of male and female students towards pen-on-paper and e-examination in FUT, Minna, Niger State. A total of 194 students responded to the 10 items. From the table, t=1.14, p= 0.26. The p-valve is greater than the level of significance, hence the hypothesis one was retained. This

indicates that there is no significant difference between male and female students' preference towards the modes of examination based on their academic performance.

4.3 Summary of the Findings

1. The findings of the study exhibited that students have a positive perception towards e-examination and a negative attitude towards pen-on-paper examination based on their academic performance in FUT, Minna.
2. The findings of the study exhibited that students have a positive attitude towards e-examination and a negative attitude towards pen-on-paper examination based on their academic performance in FUT, Minna.
3. The findings of the study exhibited that students preferred e-examination to pen-on-paper examination based on some factors influencing their academic performance such as result accuracy, financial implications, safety of examination script, flexibility and addition of multimedia items. But pen-on-paper examination is preferred based on time economy, power supply and ease of undergoing the examination in FUT, Minna.
4. The findings of the study depicted that gender of students had an influence their perception towards the modes of examination based on their academic performance in FUT, Minna.
5. The findings of the study depicted that gender of students had an influence their attitude towards the modes of examination based on their academic performance in FUT, Minna.
6. The findings of the study depicted that gender of students had an influence their preference for the examination modes based on their academic performance in FUT, Minna.

7. The findings of the study indicated that there was a significant difference between male and female students' perception towards the modes of examination based on their academic performance in FUT, Minna.
8. The findings of the study indicated that there was a significant difference between male and female students' attitude towards the modes of examination based on their academic performance in FUT, Minna
9. The findings of the study indicated that there was no significant difference between male and female students' preference in the modes of examination based on their academic performance in FUT, Minna.

4.4 Discussion of Findings

The findings of the study exhibited that the students have a positive perception towards e-examination and a negative attitude towards pen-on-paper examination based on their academic performance in FUT, Minna. The findings of the study is in agreement with that of Ozden *et al.* (2014) findings which investigated students' perception of online assessment. The study showed that students perceived online testing assessment as an effective testing mode. The study was on only online testing while this study was based on both pen-on-paper and e-examination. This study also agrees with the findings of Sanni and Mohammad (2015) which investigated the perception of students on the use of computer based testing in examination at ABU, Zaria center. The study revealed that majority of the students at Ahmadu Bello University perceived that CBT is better compared to the conventional pen-on-paper examination mode. Both study were on pen-on-paper and e-examination. But the study was on ABU, Zaria UTME center while this study was based in FUT, Minna.

Anene (2016) findings were in agreement with the findings of this study. Which investigated students' perception of JAMB computer based examination in Nnamdi Azikiwe University, Awka, Anambra state, Nigeria. The findings of the study revealed that students perceived that CBT of JAMB was enjoyable compared to paper based examination. Both studies were based on pen-on-paper and e-examination. But the study was based in Nnamdi Azikiwe University while this study was based in FUT, Minna. Okocha *et al.* (2017) findings agrees with the findings of this study which investigated students' perception and acceptance of CBT in Landmark University. The study indicated that 95.2% of students of Landmark University had a positive perception of CBT generally for examination. The study was only on e-examination in Landmark University while this study was on both pen-on-paper and e-examination in FUT, Minna.

The finding of this study disagrees with the findings of Jimoh *et al.* (2012) which investigated students' perception of CBT for examining undergraduate Chemistry course in University of Ilorin. The study showed that only 29.2% of students offering chemistry course in the University of Ilorin was in favour of using CBT examination mode due to many errors in chemical formulas, equation and structures in the test items. The study was based on CBT on Chemistry course in University of Ilorin while this study was based on both pen-on-paper and e-examination in FUT, Minna. The findings of Jamiludin *et al.* (2017) disagrees to the findings of this study which investigated students' perception towards National examination 2017: computer-based-test or paper-based-test. The study revealed that students poorly in CBT and well in paper based test therefore they had a negative perception of CBT. Both studies were based on CBT and PPT. but the study was based on National examination 2017 while this study was based in FUT, Minna.

Washburn *et al.* (2017) findings disagrees with the findings of this study which evaluated the performance and perception of electronic vs paper multiple-choice exams. The study reveal that the students had an understanding of the positive potentials of electronic format of examination but feels that the disadvantages out weights the advantages. Both studies were based on pen-on-paper and electronic examination.

The findings of the study indicated that the students have a positive attitude towards e-examination and a negative attitude towards pen-on-paper examination based on their academic performance in FUT, Minna. The findings of the study is in agreement with that of Dammas (2016) who carried out an investigation on the attitude of students towards computer based test in chemistry course at Saudi Arabia Jeddah. The study found out that 83.7% of the students offering chemistry course in Saudi Arabia Jeddah had a positive attitude towards CBT examination and it would earn it effectiveness in the context of assessments method. The study was alike with this study as it investigated students' attitude towards computer base test. But the study was on CBT alone in chemistry course in Saudi Arabia Jeddeh while this study was on both paper-pen and e-examination in school of science education in FUT, Minna. Falode *et al.* (2016) findings were also in agreement with the findings of this study which investigated students' attitude towards e-examination in FUT, Minna. The study indicated that the students had positive attitude towards e-examination with an average mean of 2.61 out of 5. Both studies were based in FUT, Minna. But the study was on e-examination alone while this study investigated both pen-on-paper and e-examination.

Albanna and Abu-safe (2019) findings was also in agreement with this study. Which carried out an investigation on students' attitude towards computer based and pen-on-paper testing for the General Physics II course at the German Jordan University. The findings of the study indicated that students had a positive attitude towards CBT. Both

studies were based on computer based and pen-on-paper examination. But the study was based on General Physic II course at German Jordan University while this study was based in FUT, Minna. Abdulrahman (2020) findings was also in agreement with the findings of this study. As the study investigated the usage of electronic test versus pen and paper tests in Delta State University. The findings of the study revealed that students had a positive attitude towards e-test change in Delta state University. Both studies were on both electronic examination and pen-on-paper examination. But the study was based on only 100 level students in Delta state University while this study was based on 200 and 300 level students in FUT, Minna.

The findings of the study depicted that the students preferred e-examination to pen-on-paper examination based on some factors influencing academic performance such as result accuracy, financial implications, safety of examination script, flexibility and addition of multimedia items. But pen-on-paper examination is preferred based on time economy, power supply and ease of undergoing the examination in FUT, Minna. The findings of the study is in agreement with that of Lim *et al.* (2006) which investigated students' preference: computer-based versus pen-on-paper. The study indicated different percentages of preference two papers. With reasons like better image quality, students pace, independence from seating position and better indication of answer length. For paper 3, 79.8% preferred CBT to PNP and for MEQ, 54.4% preferred CBT to PNP. Both studies were based on CBT and PNP. Tella and Bashorun (2012) findings were in line with this study which investigated attitude of student towards CBT in University of Ilorin. The findings revealed that only 44.5% of students preferred CBT to PBT, 38.5% students PBT to CBT and 17% undecided thereby indicating that they neither preferred CBT nor PBT. Both studies were based on CBT and PNP.

The findings of Okocha *et al*. (2017) also agrees with this study which investigated students' perception and acceptance of CBT in Landmark University. The study indicated that the preference rate of computer varied in the different courses taken. 43.2% of student were not in support of conducting CBT for physic, 37.8% of student were not in support of conducting CBT for chemistry, 17.9% of student were not in support of conducting CBT for general studies, 16.7% of student were not in support of conducting CBT for Total man concept, 15.5% of student were not in support of conducting CBT for entrepreneurial studies, 10.7% of student were not in support of conducting CBT for use of Library and information Technology. Larger percentage of each department preferred paper based test to computer based test. Both studies were based on CBT and PNP.

The finding of this study disagrees with the findings of Joshua *et al.* (2015) which investigated readiness and acceptability of critical stake-holders on CBT in Nigeria's University entrance matriculation examination. The study reveals that 79% of students preferred PPT and only 21% preferred CBT. Both studies were based on CBT and PNP. Washburn *et al.* (2017) findings disagrees with the findings of this study which evaluated the performance and perception of electronic vs paper multiple-choice exams. The study revealed that the students had a strong preference for paper based test over electronic examination. Both studies were based on CBT and PNP.

The findings of the study indicated that gender of students had an influence their perception towards the modes of examination based on their academic performance in FUT, Minna. The findings of the study is in agreement with the findings of Hillier (2014) which investigated students (pre)conception of e-exams. The study revealed that there exist a gender difference in the perception of students towards e-examination. The study was on gender influence on e-examination only while this study is based on

gender influence on both pen-on-paper and e-examination. Adigun *et al.* (2015) findings were in agreement with this study which investigated the effect of gender on students' academic performance in computer studies. The study indicated that the male students outperformed the female students. The study was on gender influence in computer studies only while this study is based on gender influence on both pen-on-paper and e-examination. Sanni and Mohammad (2015) findings were also in agreement with the findings of this study which investigated the perception of students on the use of computer based testing. The study revealed that perception of student was sensitive across gender. The study was on gender influence on CBT only while this study is based on gender influence on both pen-on-paper and e-examination.

The finding of this study disagrees with the findings of Hardcastle *et al.* (2017) which compared students' performance on pen-on-paper and computer-based test. The study found out that gender has no influence on the performance of students in both modes of examination. Both studies were on gender influence on pen-on-paper and e-examination.

The findings of the study indicated that gender of students had an influence their attitude towards the modes of examination based on their academic performance in FUT, Minna. The findings of the study is in agreement with the findings of Jeong (2015) which investigated the scores of students on CBT and PPT. The study revealed that there exist a gender gap on computer usage. Both studies were based on CBT and PNP on gender. Parajuli and Thapa (2017) findings were in agreement with this study which investigated the gender difference in the academic performance of students. The study found out that the female student outperformed the male students. The study was just based on gender on academic performance but this study was on gender and pen-on-paper and e-examination. Bahar and Asil (2018) findings were in agreement with

this study which investigated the attitude of students towards e-assessment: influence of gender, computer usage and level of education. The study found out that the male students exhibited significant more positive attitude than the female. The study was based on gender influence on e-assessment alone but this study was based on gender influence on both pen-on-paper and e-examination.

The finding of this study disagrees with the findings of Falode *et al.* (2016) which investigated students' attitude towards e-examination in FUT, Minna. The study found out that gender has no difference in the attitude of male and female students towards e-examination across the seven undergraduate schools. The study was on gender influence on e-examination only while this study is based on gender influence on both pen-on-paper and e-examination. The finding of this study also disagrees with the findings of McClelland and Cuevas (2020) which compared computer based testing and paper-pencil testing in mathematics assessment. The study found out that gender has no influence on the performance of students. Both studies were based on CBT and PNP on gender.

The findings of the study depicted that gender of students had an influence their preference for the examination modes based on their academic performance in FUT, Minna. The findings of the study is in agreement with the findings of Punter *et al.* (2017) which investigated gender difference in computer and information literacy: An exploration of the performance of girls and boys in ICILS 2013. The study revealed that the female students outperformed the male counterpart in ICILS 2013. The study was on gender influence on computer and information literacy only while this study is based on gender influence on both pen-on-paper and e-examination. The finding of this study disagrees with the findings of McClelland and Cuevas (2020) which compared CBT and PPT in mathematics assessment. The study found out that gender has no

influence on the performance of students. Both studies were on gender influence on both PPT and CBT.

The findings of the study depicted that there was a significant difference between male and female students' perception towards the modes of examination based on their academic performance in FUT, Minna. The findings of the study is in agreement with that of Hilier (2014) findings which investigated students (pre)conception of e-examination. The study found out that the female students had a statistical significant stronger perception of e-examination than that of the male counterpart. The study was on gender influence on e-examination only while this study is based on gender influence on both pen-on-paper and e-examination. Sanni and Mohammad (2015) findings were also in agreement with the findings of this study which investigated the perception of students on the use of CBT. The study revealed that there was a significant difference in the gender performance of students. The study was on gender influence on e-examination only while this study is based on gender influence on both pen-on-paper and e-examination.

The finding of this study disagrees with the findings of Adigun *et al.* (2015) which investigated the effect of gender on students' academic performance in computer studies. The study indicated that though the male students had slightly better performance than the female students, it was no significant. The study was on gender influence on academic performance only while this study is based on gender influence on both pen-on-paper and e-examination.

The findings of the study indicated that there was a significant difference between male and female students' attitude towards the modes of examination based on their academic performance in FUT, Minna. The findings of the study is in agreement with

that of Shokri (2008) which investigated gender difference in academic performance. The study found out that there was a significant difference in gender and performance. The study was based on gender on academic performance while this study was based on gender on PPT and e-examination. Also Jeong (2012) findings is in agreement with the findings of this study which compared the scores of students on CBT and PPT. The study found out that the female students had a statistical significant lower scores than that of the male counterpart. Both studies were on gender influence on CBT and PPT. Bahar and Asil (2018) findings were in agreement with this study which investigated attitude of students towards e-assessment: influence of gender, computer usage and level of education. The study found out that there was a significant difference in male and female attitude towards e-assessment. The study was on gender influence on e-examination only while this study is based on gender influence on both pen-on-paper and e-examination.

The finding of this study disagrees with the findings of Ebenuwa-Okoh (2010) which investigated the influence of age, financial status and gender on academic performance. The study revealed that gender is not a significant predictor for academic performance. The study was on gender influence on academic performance only while this study is based on gender influence on both pen-on-paper and e-examination. Also Falode *et al.* (2016) findings is in disagreement with the findings of this study which investigated the attitude of students towards e-examination in FUT, Minna. The study found out that there was no significant difference in the attitude of male and female students towards e-examination across the seven undergraduate schools (x^2 (1) = 0.00, P=0.98). The study was on gender influence on e-examination only while this study is based on gender influence on both pen-on-paper and e-examination.

The findings of the study depicted that there was no significant difference between male and female students' preference for the examination modes based on their academic performance in FUT, Minna. The findings of the study is in agreement with the findings of Adigun *et al.* (2015) which investigated the effect of gender on students' academic performance in computer studies. The study indicated that though the male students had slightly better performance than the female students, it was no significant. The study was on gender influence on academic performance only while this study is based on gender influence on both pen-on-paper and e-examination. Also the findings of Hardcastle *et al.* (2017) agrees with the findings of this study which compared students' performance on pen-on-paper and computer-based test. The study indicated that there was no significant difference in the performance of male and female students in the different test modality. Both studies were on gender influence on both pen-on-paper and e-examination. McClelland and Cuevas (2020) findings is in agreement with this study which compared CBT and PPT in mathematics. The study found out that gender has no influence on the performance of students. Both studies were on gender influence on both pen-on-paper and e-examination.

The finding of this study disagrees with the findings of Jeong (2015) which compared the score of students on CBT and PPT. The study found out that the female students had a statistical significant lower scores than that of the male counterpart. Both studies were on gender influence on both pen-on-paper and e-examination. Also Sanni and Mohammad (2015) finding disagrees with the findings of this study which investigated the perception of students on the use CBT. The study revealed that there was a significant difference in the gender performance of students. The study was on gender influence on e-examination only while this study is based on gender influence on both pen-on-paper and e-examination. The findings of the study is also in disagreement with

the findings of Punter *et al.* (2017) which investigated the gender difference in computer and information literacy: An exploration of the performance of girls and boys in ICILS 2013. The study revealed that there was a significant difference in the male and female students' performance in ICILS 2013. The study was on gender influence on performance while this study is based on gender influence on both pen-on-paper and e-examination.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In this study, effort has been made to investigate students' perception, attitude and preference for the examination modes at FUT, Minna, Niger State. The conclusion derived from the findings of this study established that: students have a positive perception towards e-examination and a negative perception to pen-on-paper examination based on their academic performance in FUT, Minna, students have a positive attitude towards e-examination and a negative attitude to pen-on-paper examination based on their academic performance in FUT, Minna, students preferred e-examination to pen-on-paper examination based on some factors influencing their academic performance such as result accuracy, financial implications, safety of examination script, flexibility and addition of multimedia items. But pen-on-paper examination was preferred based on time economy, power supply and ease of undergoing the examination in FUT, Minna.

It revealed that gender of students had an influence their perception towards the modes of examination based on their academic performance in FUT, Minna and the difference was significant. It also indicated that gender of students had an influence their attitude towards the modes of examination based on their academic performance in FUT, Minna and the difference was significant. It also indicated that gender of students had an influence their preference for the examination modes based on their academic performance in FUT, Minna but the difference was not significant.

5.2 Recommendations

Based on the findings of this study, the following recommendations were made:

1. Undergraduate students in SSTE, FUT, Minna should be encouraged to have positive perception of e-examinations and full adoption of e-examination in the university as it could improve their performance.
2. Undergraduate students in SSTE, FUT, Minna should be encouraged to have positive attitude of e-examinations and full adoption of e-examination in the university as it could improve their performance.
3. Undergraduate students in SSTE, FUT, Minna should be encouraged to have positive preference of e-examinations and full adoption of e-examination in the university as it could improve their performance.
4. Both male and female undergraduate students in SSTE FUT, Minna, should be encouraged on the positive values of e-examination to be able to develop positive perception, attitude and preference of examination as it could have influence their performance.
5. The Head of Department of Educational technology should create workshops on the use of e-examinations for the students.
6. Federal government should provide adequate funding and provision for the development and improvement of e-examination in the educational institutions in Nigeria. And the development and improvement should be strictly monitored in order to produce a good result.

5.3 Contributions to Knowledge

This study contributed to the pool of knowledge in the following ways:

1. The study brought to an understanding that students' preference of examination modes is based on some factors influencing performance.
2. The acceptance of a mode of examination partly depends on students' perception, attitude, preference and performance level.
3. The study brought to an understanding that e-examination could be a more effective, reliable and better mode of examination in terms of performance.
4. The study has contributed to the existing literature and information for further research on pen-on-paper examination and e-examination.
5. The diagram developed by the researcher from the conceptual framework can serve as a guide and or be adopted by future researchers.

5.4 Suggestions for Further Studies

For further researches in this area, the following suggestions should be put into consideration:

1. The study could be replicated in all institutions of learning in Niger Sate, to enable generalization of knowledge or information on the modes of examination.
2. Studies could be carried out on teachers/lecturers' perception, attitude and preference and acceptance level of e-examination in FUT Minna and other educational institutions in Niger State.
3. Studies could be carried out on other modes of examination apart from pen-on-paper examination and e-examination.

4. Further studies could be carried out on the influence students' familiarity, knowledge and technical know-how on the use of equipment associated with e-examination on their performance level.

REFERENCES

Abaidoo, A. (2018). Factors contributing to academic performance of students in a junior High school. A thesis submitted to the department of educational and school politics.

Abdelrahman, E. A. (2020). Using electronic test versus pen and paper tests: the experience of Delta State University. *Journal of the Faculty of Education-Mansoura University,* 110(2), 31-45.

Abdullahi, M. (2013). *An introduction to media and methods*. Second Edition. Asasons Limited P.O. Box 11005, Kano, Kano State, Nigeria. SBN978- 2149 – 551.

Abubakar, A. S. & Adebayo, F. O. (2014). Using computer based test method for the conduct of examination in Nigeria: Prospects, challenges and strategies. *Mediterranean Journal of Social Sciences, 5*(2), 47 – 54.

Adebayo, O. & Abdulhamid, S. M. (2014). E-Exam system for Nigerian Universities with emphasis on security and results integrity. *International Journal of the Computer, the Internet and Management (IJCM),* 18(2), 47.1-47.12.

Adigun, J., Onihunwa, J., Irunokhai, E., Sada, Y. & Adesina, O. (2015). Effect of gender on students' academic performance in computer studies in secondary schools in new Bussa, Borgu local government of Niger state. *Journal of Education and Practice,* 6(33), 1-7.

Alabi, A. T., Isaa, A. O. & Oyekunle, R. A. (2012). "The Use of Computer Based Testing Method for the Conduct of Examinations at the University of Ilorin", *International Journal of Learning & Development*, ISSN 2164-4063. 2(3).

Albanna, N. &Abu-safe, H. (2019). Investigating students' attitudes towards computer-based and traditional paper-pencil testing. *The proceedings of ICERI 2019 conference 11th-13th November 2019, Seville, Spain.* 9668-9678. ISBN: 978-84-09-14-75

Al-Momani, O. H. (2019). Attitude of undergraduate students towards using E-Examinations for assessment in Jordan. *British Journal of Education,* 7(9), 14-28.

Alruwais, N., Wills, G. & Waid, M. (2018). Advantages and challenges of using e-assessment. *International Journal of Information and Education Technology,* 8(1), 34-37.

Alzu'bi, M. A. (2015). The effect of using Electronic Exams on students' Achievement and Test takers' motivation in an English 101 course. *Conference of the International Journal of Arts and Sciences,* 8(3), 207-215.

American Educational Research Association (AERA) (2017). Comparing students' performance on paper-and-pencil and computer-based-tests. Science Daily. Retrieved on February 15, 2020 from www.sciencedaily.com/release/2017/06/170612115723.htm.

American Psychology Association, A.P.A. (2021). Teaching Tip Sheet: Attitude and Behavior change. Retrieved on January, 21, 2021 from https://www.apa.org/pi/aids/resources/education/attitude-change.aspx.

Anene, E. I. (2016). Assessment of students' perception of Joint Admission and Matriculation Board computer based examination in Nnamdi Azikiwe University Awka, Anambra State, Nigeria. Masters dissertation submitted to the Department of Educational Foundation and Curriculum, Ahmadu Bello University, Zaria, Nigeria.

Arwa, Q. & Viswanathappa, G. (2016). Teachers' perception towards ICT integration: professional development through Blended Learning.

Bahar, M. & Asil, M. (2018). Attitude towards e-assessment: influence of gender, computer usage and level of education. *Journal of Open, Distance and e-Learning,* 33(3), 221-237.

Bandele, S. O., & Olatunji, O. A. (2019). The attitude of students to general studies computer based tests in Universities in South West Nigeria. *International Journal of Interdisciplinary Research Methods,* 6(2), 23-34.

Bayazit, A. & Askar, P. (2012). Performance and duration difference between online and paper-pencil tests. *Asia Pacific Education Review,* 13(2), 219-226.

Bayerkin, L. (2014). Students' feedback preferences: How do student react to timely and automatically generated assessment feedback? *Assessment e-Education in Higher Education*, 39(8), 916-931.

Bence, N. (2016). *"Philosophy of perception: a road map with lots of bypass roads,"* in *current controversies in philosophy of perception*, edited by Bence Nanay, Routledge.

Berger, J. & Bence N. (2016). "Relationalism and unconscious perception," *Analysis*, 76(1), 426-33.

Bodmann, S. M & Robinson, D. H (2004). Speed and performance differences among computer-based and paper-pencil tests. *Journal of Educational Computing Research, 31*(1), 51 – 60.

Bossaert, G. S., Doumen, E., Buyse, K. & Verschueren (2011). "Predicting students' academic achievement after the transition to first Grade: a two year longitudinal study". *Journal of Applied Developmental Psychology*, 3(2), 47-57.

Bruce, B. F. (2018). Paper-and-Pencil assessment. *The SAGE Encyclopedia of Educational Research, Measurement and Evaluation*. Retrieved on January 21, 2021 from https://dx.doi.org/10.4135/9781506326139.n496.

Chua, H. F., Wong, C. Y., Chow, F. K. & Fung, C. F. (2014). Social judgment Theory based Model on opinion formation, polarization and evolution. *Computers in Human Behavior*, 30(5), 1559-1565

Chua, Y. & Don, Z. (2013). Effects of Computer-based educational achievement test on test performance and test takers' motivation. *Computers in Human Behavior*, 29(5), 1889-1895.

Chua Y. P (2012). Effects of computer-based testing on testing performance and testing motivation. *Computer in Human Behaviour*, 28(5), 1580 -1586. Doi: >120.1016/j.Chb.2012.03.020

Cuadiado-Gracia, M., Ruiz-Molina, M. E. & Montoro-Pons, J. D. (2010). Are gender differences in e-learning use and assessment? Evidence from an interuniversity online project in Europe. *Procedia Social and Behavioural Sciences,* 2(1), 367-371.

Daly, C., & Waldron, J. (2002). Introductory programming, problem solving and computer based assessment. In Myles, D. (Eds.), CAA 2002 *International Conference, University of Loughborough,* Retrieved on April 19, 2020 from https://caaconference.com.

Dammas, A. H. (2016). Investigate students‟ attitudes towards computer based test (CBT) at Chemistry course. *Archives of Business Research, 4(*6), 58-71. DOI: 10.14738/abr.46.2325

Daramola, F. (2017). Impact of computer based test in Nigeria tertiary institutions: A theoretical view. *International Journal for Innovative Technology Integration in Education,* 1(1), 109-116.

Dembitzer, I., Zelikovitz, S. & Kettler, R. J. (2018). Designing computer-based assessment: multidisciplinary findings and student perspectives. *International Journal of Educational Technology*, 4(3), 20-31.

Dyer, J. S. & Jia, J. (2013). Preference theory. In: Gass S. I., Fu, M. C.(Eds) Encyclopedia of Operation Research and Management Science. Springer, Boston, MA. Retrieved on April 19, 2020 from http://www.researchgates.net/publication/304156019. DOI: 101007/1-4020-061/_x_787.

Ebenuwa-Okoh, E. E. (2010). Influence of age, financial status and gender on academic performance among undergraduate. *Journal of Psychology,* 1(2), 99-103.

Escudier, M. P., Newton, T. J., Cox, M. J, Reynolds, P. A. & Odell, E. N. (2011). University students' attainment and perceptions of computer delivered assessment: A comparison between computer-based and traditional tests in a high-stakes' examination. *Journal of Computer Assisted Learning, 27*(5). Doi: 10.1111/j. 1365 – 2729.2011.00409.

Falode, O. C., Sobowale, F. M., Falode, M. E., Saliu, M. R. & Adalikwu, T. M. (2016). Student attitude towards e-examination in Federal University of Technology, Minna, Nigeria. *Energy, Education, Science and Technology*. Retrieved on August 8, 2021 from https:www.reseachgate.net/publication/28154851

Genone, J. (2016). "Recent work on naïve realism," *American Philosophical Quarterly*, 53(1), 1-25.

Goni, U., Yaganawali, S. B., Ali, H. K. & Bulrafa, M. W. (2015). Gender differences in students' academic performance of Borno state, Nigeria: Implications for counseling. *Journal of Education and Practice,* 6(32), 107-114.

Hardcastle, J., Herrmann-Abell, C. F., DeBoer, G. E. (2017). Comparing Student Performance on Paper-and-Pencil and Computer-Based-Tests. *Paper presented at: American Educational Research Association; San Antonio, TX*.

Harman, G. (1990). "The intrinsic quality of experience," *Philosophical Perspectives,* 4(1), 31-52.

Hewson, C. (2012). Can online course-based assessment methods be fair and equitable? Relationships between students' preference and performance within online and offline assessments. *Journal of Computer Assisted Learning,* 28(5), 488-498.

Hillier, M. (2014). *"E-exam system overview".* University of Queensland, Australia.

Hillier, M. (2014). The very idea of e-exam: student (pre)conceptions. *ASCILITE.* Retrieved on April 12, 2020 from https://www.researchgate.net/publications/269/05087

Hosseini, M., Abidin, M. J. Z. & Baghdarnia, M. (2014). Comparability of Test Results of Computer Based Tests (CBT) and Paper and Pencil Tests (PPT) among English Language Learners in Iran. *Procedia - Social and Behavioral Sciences, 9(8), 659–667.*

Ibrahim, H. W. (2015). Compare and contrast between Paper-Pencil Test (PPT) and Computer Based Test (CBT). Retrieved on February 15, 2020 from https://www.scribd.com/document/270266723/Paper-and-Pencil-Test.

Imai, T. (2016). *Essay in reveled preference theory and behavior economics*. California Institute of Technology Pasadena, California.

Jamiludin, H., Darnawati, M. & Uke, W. (2017). Students' perception towards National examination 2017: Computer-Based Test or Paper-Based Test. *Mediterranean Journal of Social Sciences,* 8(4), 139-144.

Jeong, J. Y. (2015). A study of scores on computer-based vs paper-based tests. *Behavior and Information Technology,* 33(4), 410-422.

Jimoh, R. G, Abdul Jaleel, K. S & Kawu, Y. K. (2012). Students' perception of computer-based test (CBT) for examining undergraduate chemistry courses. *Journal of Emerging Trends in Computing and Information Science, 3*(2), *125 – 134.* Retrieved on April, 19 2020 from https://www.cisjournal.org.

Joshua, M. T., Ikiroma, B. & Joshua, A. M. (2015). *Computer based testing in Nigeria's university Entrance Matriculation Examination: readiness and acceptability of critical stake-holders*. Mangrove publisher, Lagos.

Lamas, H. (2015). School performance. *Propositos y Representaciones.* 3(1) 313-386. Retrieved on April 19, 2020 from Doi: https://dx.doi.org/10.20511/pyr2015.v3n1.74.

Lim, E. C., Ong, B. K., Wilder – smith, E. P. & Seet, R. C. (2006). Computer – based versus pen-and-paper testing: Students perception. *Ann Acad Med Singapore, 35*(9), 599 – 603.

Mallard, J. (2010). Engaging student in social judgment Theory. *Communication Teacher,* 21(4), 197-202. doi:10.1080/17404622.2017.512869.

McClelland, J. & Cuevas, J. (2020). A comparison of computer based testing and paper and pencil testing in mathematics assessment. *The Online Journal of New Horizons in Education*, 10(2), 78-89.

MeCune, V. & Entwistle, N. (2011). Learning and individual differences. *Elsevier,* 1(21), 303-310.

Nkwocha, P. C. (2015). *Basic educational measurement and evaluation:* Revised edition. Owerri: Mercy Divine Publishers.

Nworgu, B. G (2014). Continuous assessment in Nigeria: The case of a failed reform. *A Paper Presented at the Annual Conference of College of Education, Abia State University Uturu*

Oduntan, O. E., Ojuawo, O. O. & Oduntan, E. A. (2015). A comparative analysis of student performance in paper pencil test and computer based test. *Research Journal of Educational Studies and Review,* 1(1), 24-29.

Ogini, N. O. (2018). The ever increasing challenges of paper pencil based testing (PPT) in examination: Computer based Testing to the rescue. *International Journal of Information Research and Review (IJRR),* 5(2), 5204-5207.

Okocha, F., Eyiolorunshe, T. T. & Owolabi, S. (2017). Student perception and acceptance of computer based testing: A case study of Landmark University students. *Journal of Digital Innovations and Contemp Res. In Sc. Eng &Tech,* 5(1), 25-32.

Ozden, M. Y, Erturk, I & Sanli, R. (2014). Students' perception of online assessment: A case study. *Journal of Distance Education, 19*(2), 77 –92.

Pam, M. S. (2013). Paper-and-pencil test. *Psychology Dictionary.org*. Retrieved on April 19, 2020 from https://psychologydictionary.org/paper-and-pencil-test.

Parajuli, M. & Thapa, A. (2017). Gender difference in the academic performances of students. *Journal of Development and Social Engineering*, 3(1), 39-47.

Prisacari, A. A., Holme, T. A. & Danielson, J. (2017). Comparing students' performance using computer and paper-based tests: results from two studies in general chemistry. *The American Chemical Society and Division of Chemical Education, Inc*, 94(12), 1822-1830.

Punter, P. A., Meelissen, M. R. M. & Glas, C. A. W. (2017). Gender difference in computer and information literacy: An exploration of the performances of girls and boys in ICILS 2013. *European Educational Research Journal*, 16(6), 762-780.

Rastaminezhard, M. A. (2019). Students' perceptions of the strengths and limitations of electronic tests focusing on instant feedback. *Journal of Information Technology Education*, 18(1), 59-71.

Salazar, L. R. (2017). Changing resistant audience attitudes using social judgment theory's "anchor" point perspectives. *Communication Teacher*. Retrieved on April 19, 2020 from http://dx.doi.org/10.1080/17404622.2017.1285412.

Sanni, A. A., & Mohammad, M. F (2015) Computer Based Testing (CBT): An assessment of student perception of JAMB UTME in Nigeria. *Computing, Information Systems, Development Informatics & Allied Research Journal, 6(2).* Retrieved on April 19, 2020 from *www.cisdijournal.net*.

Sherif, C. W., Sherif, M. & Nebergasll. R. E. (1965). *Attitude and attitude change: The social judgment-involvement approach Westport, CT*. Green wood press. Retrieved on April 19, 2020 from http://dx.doi.org/10.2307/2090931.

Shokri, O. (2008). Gender differences in academic performance: the role of personality traits. *International Journal of Behavioral Sciences*, 2(2), 127-141.

Shute, V. J. & Rahimi, S. (2017). Review of computer-based assessment for learning in elementary and secondary education. *Journal of Computer Assisted Learning,* 33(1), 1-19.

Tella, A. & Bashorun, M. T. (2012). Attitude of undergraduate students towards computer based test: A case study of the University of Ilorin, Nigeria. *International Journal of Information and communication Technology Education,* 8(2), 33-45.

Tye, M. (1992). *"Visual qualia and visual content", in the contents of experience*. Tim Cran Cambridge University press.

Tye, M. (1995). *Ten problems of consciousness*, MIT Press

Urama, V. S. (2015). Stakeholders' perception of the use of computer based test (CBT) in Unified Tertiary Matriculation Examination (UTME). A thesis submitted to the Department of science education, University of Nigeria, Nsukka.

Washburn, S., Herman, J. & Stewart, R. (2017). Evaluation of performance and perceptions of electronic versus paper multi-choice exams. *Adv. Physical Educ*, 41(1), 548-555.

Yusuf, I. U. & Umar, M. A. (2018). Youths and fashion: Is ICT a yardstick? A case study of University of Maiduguri. *Journal of Mass Communication and Journalism*, 8(4), 379

Zubairu, H. A., Oyefolahan, I. O., Etuk, S. O. & Babakano, F. J. (2018). A framework for semantic driven electronic examination system for subjective questions. *Nigeria Journal of Technology, 37(1), 200-208.*

APPENDIX A:

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
DEPARTMENT OF EDUCATIONAL TECHNOLOGY
QUESTIONNAIRE ON STUDENTS' PERCEPTION, ATTITUDE AND PREFERENCE TOWARDS MODES OF EXAMINATION" (QSPAPME)

Dear Respondents,

I'm Ogunkunle Deborah, a researcher from the Department of Educational Technology, Federal University of Technology Minna, Niger State. Currently conducting a study on students' perception, attitude and preference for the examination modes at Federal University of Technology, Minna, Niger State. You are requested to respond to the research instrument as you deemed appropriate. Be assured that your response would be treated in confidence as this is for research purpose only.

INSTRUCTION: Please kindly assist me in ticking or indicating your opinion on students' perception, attitude and preference for the examination modes at Federal University of Technology, Minna, Niger State.

SECTION A: DEMOGRAPHIC DATA

Please, tick (√) and write where necessary.

Gender: Male ( ) Female ( )

Department: _____

Level: _____

SECTION B:

ITEMS ON PERCEPTION OF STUDENTS TOWARDS E-EXAMINATION AND PEN-ON-PAPER EXAMINATION

Please take note of the following keys to guide your response: Strongly Agree – SA, Agree – A, Disagree – D, Strongly Disagree – SD

NO	ITEMS	SA	A	D	SD
1	Looking at pen-on-paper examination, it seems easier to undergo and also pass.				
2	I get nervous using any technology, I will perform better in pen-on-paper examination.				
3	Both e-examination and pen-on-paper examination have the same question, I see no reason why I can't do well in either mode of examination.				
4	Judging by my performance, pen-on-paper examination seems to have better result than e-examination.				
5	Due to the technical issues associated with e-examination, it is better to undergo pen-on-paper examination as it could influence performance.				
6	Gender is not the factor, pen-on-paper examination is observed to have better result.				
7	In e-examination when the time is up, it submits examination answers immediately but in pen-on-paper examination time is not constant, therefore in pen-on-paper examination there is a chance to do better.				
8	With e-examination, results are almost instant reducing the stress of waiting for results. Therefore e-examination is better compared to pen-on-paper examination.				
9	With pen-on-paper examination, I can express my thought more therefore giving me the opportunity to do better than in e-examination.				
10	From observation both mode of examination could have a better result, if more study is done.				

SECTION C:

ITEMS ON ATTITUDE OF STUDENT TOWARDS E-EXAMINATION AND PEN-ON-PAPER EXAMINATION

Please take note of the following keys to guide your response: Strongly Agree – SA, Agree – A, Disagree – D, Strongly Disagree – SD

NO	ITEMS	SA	A	D	SD
1	I feel that pen-on-paper examination is much easier to write than e-examination.				
2	The modes of examination do not matter, I think I will do well in either.				
3	E-examination are not easy to undergo, therefore I think I will do better in pen-on-paper examination.				
4	It is a general belief that students' performance in e-examination are usually low.				
5	I think I will perform better in an examination that involves paper and pen only.				
6	E-examination involves technical-know-how, so I think I will do better in pen-on-paper examination that does not need a technical-know-how.				
7	E-examination marking is more accurate compared to pen-on-paper examination.				
8	I did well in an e-examination before therefore I think I will do better in any e-examination.				
9	Many students choose e-examination over pen-on-paper based examination in terms of performance.				
10	Federal University of Technology examinations are generally difficult to pass, it does not matter the mode of examination.				

SECTION D:

ITEMS ON STUDENTS' EXAMINATION PREFERENCE

Please take note of the following keys to guide your response: Strongly Agree – SA, Agree – A, Disagree – D, Strongly Disagree – SD

NO	ITEMS	SA	A	D	SD
1	I prefer pen-on-paper examination to e-examination when it comes to performance.				
2	I prefer e-examination to pen-on-paper examination when it comes to result accuracy.				
3	Either of the two is ok, I will do well in both.				
4	I prefer pen-on-paper examination to e-examination because it is financially economical to undergo. It does not involve the use of technology instrument.				
5	I prefer e-examination to pen-on-paper examination because it seems better to undergo.				
6	I prefer e-examination to pen-on-paper examination because of time economy as it could influence performance.				
7	I prefer e-examination to pen-on-paper examination when it comes to safety of examination script.				
8	I prefer pen-on-paper examination to e-examination when it comes to power supply as it could influence performance.				
9	I prefer pen-on-paper examination to e-examination when it comes to flexibility of examination. E-examination seems rigid.				
10	I prefer e-examination to pen-on-paper examination when it comes to addition of multimedia items. As addition of multimedia items could help in understanding the questions better, thereby increasing the chance to perform better.				

Thank you for your time and input.

APPENDIX B:

Total Population of Undergraduate Students in FUT, Minna, Niger State.

NO	SCHOOL/FACULTIES	TOTAL POPULATION
1	**School of Agriculture and Agriculture Technology.**	2975
2	**School of Electrical Engineering and Technology.**	1810
3	**School of Innovative Technology.**	499
4	**School of Environmental Technology.**	3804
5	**School of Information Communication Technology.**	1096
6	**School of Infrastructure, Process Engineering and Technology.**	3036
7	**School of Life Science.**	2205
8	**School of Physical Science.**	4293
9	**School of Science and Technology Education**	1791
	TOTAL POPULATION	21509

Source: Information Technology Service (ITS) FUT, Minna (2021)

APPENDIX C:

Total Population of Targeted Students in School of Science and Technology Education.

NO		100 Level	200 Level	300 Level	400 Level	500 Level	Total Population
1.	**Educational Technology Department**	102	71	123	148	98	542
2.	**Science Education Department**	52	121	153	57	90	473
3.	**Industrial Technology Education Department**	122	164	203	187	100	776
	Total Population	276	356	479	392	288	1791

Source: Exam Office 2021

APPENDIX D:

Gender Dispersion of 200 Level and 300 Level Students in Educational Technology Department.

NO	LEVEL	MALE	FEMALE	TOTAL
1	**200 LEVEL**	48	23	71
2	**300 LEVEL**	102	21	123
	TOTAL	150	44	194

Source: Exam Office (Educational Technology) 2021

APPENDIX E:

Result of Reliability of Instrument

Reliability result of the variable perception

Scale: PERCEPTION

Case Processing Summary

		N	%
Cases	Valid	45	100.0
	Excluded[a]	0	.0
	Total	45	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.768	.772	10

Reliability result of the variable attitude

Scale: ATTITUDE

Case Processing Summary

		N	%
Cases	Valid	45	100.0
	Excluded[a]	0	.0
	Total	45	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.777	.784	10

Reliability result of the variable examination preference

Scale: PREFERENCE

Case Processing Summary

		N	%
Cases	Valid	45	100.0
	Excluded[a]	0	.0
	Total	45	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.759	.766	10

APPENDIX F:

Report of Data Collected from Departments

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF SCIENCE EDUCATION.
EXAMINATION OFFICE

TOTAL NUMBER OF STUDENTS IN THE DEPARTMENT

LEVEL/OPTION	BIOLOGY	CHEMISTRY	MATHEMATICS	TOTAL
100	39	7	6	52
200	48	43	30	121
300	46	59	48	153
400	19	24	14	57
500	35	20	35	90
TOTAL	187	153	133	473

EXAMINATION OFFICER'S SIGNATURE & DATE

No 6 Loveday Avenue,
Patrick Yakowa Estate,
Narayi Highcost, Kaduna
Kaduna State.

The Examination Officer,
Department of Industrial and Technology Education,
Federal University of Technology, Minna.

Dear Sir,

APPLICATION FOR THE TOTAL POPULATION OF IN 200, 300, 400 AND 500 LEVEL STUDENTS IN THE DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

I **Ogunkunle Deborah Titilope** a postgraduate student in the Federal University of Technology (FUT) Minna with the matriculation number M.Tech/SSTE/FT/2018/8201 hereby apply to request of the total population of 200,300, 400 and 500 level students in the department of Industrial and Technology Education to enable me carryout my research work. I am presently caring out a research on "students' attitude, perception and examination preference in the modes of examination in Federal University of Technology, Minna Niger State". On this note, I will need the total population students in 200,300, 400 and 500 level in the department of Industrial and Technology Education. I thereby write to apply for the total population of 200,300, 400 and 500 level students in the department of department of Industrial and Technology Education.

Thanks in anticipation.

Ogunkunle Deborah Titilope
M.Tech/SSTE/FT/2018/8201
15/06/21

Re- population of ITE Students 2019/2020 Session

1. 100 Level = 122
2. 200 Level = 164
3. 300 Level = 203
4. 400 Level = 187
5. 500 Level = 106

Total population - 776

Thanks
Dr. Ibrahim Dauda

EXAMINATION OFFICER, Industrial & Tech. Education, ...

No 6 Loveday Avenue,
Patrick Yakowa Estate,
Narayi Highcost, Kaduna
Kaduna State.

The HOD
Department of Educational Technology.
Federal university of Technology,
Minna.

100L – 102
200L – 71
300L – 123
400L – 148
500L – 98

Through:

The Examination Officer,
Department of Educational Technology.
Federal University of Technology, Minna

Dr. I. I. Kuta
E.O Ahmaila 15/6/2021

Dear Sir,

APPLICATION FOR THE TOTAL POPULATION OF IN 200, 300, 400 AND 500 LEVEL STUDENTS IN THE DEPARTMENT OF EDUCATIONAL TECHNOLOGY

I **Ogunkunle Deborah Titilope** a postgraduate student in the Federal University of Technology (FUT) Minna with the matriculation number M.Tech/SSTE/FT/2018/8201 hereby apply to request of the total population of 200,300, 400 and 500 level students in the department of Educational Technology to enable me carryout my research work. I am presently caring out a research on "students' attitude, perception and examination preference in the modes of examination in Federal University of Technology, Minna Niger State". On this note, I will need the total population students in 200,300, 400 and 500 level in the department of Educational Technology. I thereby write to apply for the total population of 200.300, 400 and 500 level students in the Department of Educational Technology.

Thanks in anticipation.

Ogunkunle Deborah Titilope

M.Tech/SSTE/FT/2018/8201

E.O. Kindly assist the researcher with all the necessary information needed

15/06/2021

APPENDIX G:

Report of Validation Forms

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. She/he is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. We therefore crave for your assistance in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument

Thanks for your anticipated assistance.

GENERAL Educational Technology Fed. University of Technology 09 JUN 2021 P.M.B. 65 Minna, Niger State

Dr. C.S. Tukura

Head of Department (Signature, Date & Official Stamp)

Student's Surname: OGUNKUNLE

Registration Number: M.Tech/SSTE/ITT/2018/8201 Other Names: DEBORAH TITILOPE Programme: MASTERS

Title of the Instrument: QUESTIONNAIRE ON STUDENTS' ATTITUDE, PERCEPTION AND EXAMINATION PREFERENCE TOWARDS MODES OF EXAMINATION IN FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE.

ATTESTATION SECTION

Summary of the Remark on the Instrument: The instrument is summarily good enough.

I hereby attest that the above named student brought his instrument for validation

Name of Attester: DR. ALABI, Thomas Omotayo

Designation: LECTURER

Name and Address of Institution: Federal University of Tech. Minna

Phone Number: 08038577000 E-Mail: omotayo.alabi@futminna.edu.ng

Please comment on the following

1. Appropriateness of the instrument for the purpose it's design for...The instrument is appropriate.
2. Clarity and simplicity for the level of the language used...The items are clear and simple.
3. Suability for the level of the targeted audience ...The items are suitable for the targeted level
4. The extent in which the items cover the topic it meant to cover...The item covers the topic meant to cover.
5. The structuring of the Questionnaire...The structuring of the questionnaire is good.
6. Others (grammatical errors, spelling errors and others...All errors discovered are highlighted.
7. General overview of the Instrument...Good for the level targeted for.

Suggestions for improving the quality of the Instrument

1. .....
2. .....
3. .....
4. .....
5. .....

Name of Validator...DR ACABI Thomas Omotayo.....

Area of Specialization...Educational Technology.....

Name of Institution...F. U. T. Minna...Designation...Ass. Prof

Signature.....Date...15/6/2024

Thank You

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. She/he is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. We therefore crave for your assistance in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument

Thanks for your anticipated assistance

Dr. C.S. Tukur 09 JUN 2021

GENERAL
Educational Technology
Fed. University of Technology
P.M.B. 65 Minna Niger State

Head of Department (Signature, Date & Official Stamp)

Student's Surname: OGUNKUNLE Other Names: DEBORAH TITILOPE

Registration Number: M.TECH/SSE/FT/2018/8201 Programme: MASTERS

Title of the Instrument: STUDENTS ATTITUDE, PERCEPTION AND EXAMINATION PREFERENCE QUESTIONNAIRE TOWARDS MODES OF EXAMINATION IN FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE.

ATTESTATION SECTION

Summary of the Remark on the Instrument: The Instrument has on the variables is good enough

I hereby attest that the above named student brought his instrument for validation

Name of Attester: Ajesomo L.M

Designation: G/E

Name and Address of Institution: F.U.T. Minna

Phone Number: 08036026150 E.- Mail:

Please comment on the following

1. Appropriateness of the instrument for the purpose it's design for.....
   ..... Good.
2. Clarity and simplicity for the level of the language used.....
   ..... Okay.
3. Suability for the level of the targeted audience ..... Suitable.....
   .....
4. The extent in which the items cover the topic it meant to cover.....
   ..... Adequate.....
5. The structuring of the Questionnaire..... The Structuring.....
   ..... is good.....
6. Others (grammatical errors, spelling errors and others.....
   ..... Nil.....
7. General overview of the Instrument.....
   ..... Satisfactory.....

Suggestions for improving the quality of the Instrument

1. .....
2. .....
3. .....
4. .....
5. .....

Name of Validator..... Afisoma U.M.....

Area of Specialization..... Counselling.....

Name of Institution..... F.U.T. .....Designation..... G/C.....

Signature..... .....Date..... 22/6/21

Thank You

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF EDUCATIONAL TECHNOLOGY

Dear Sir/Madam,

Instrument Validation Form

The bearer is a student of the above named University and Department. She/he is conducting a research and you have been selected as one of those with requisite expertise to validate his/her instrument. Kindly grant him/her all necessary assistance to make the exercise a success.

Your competency and expertise was considered as factors that will serve to improve the quality of his/her research instrument. We therefore crave for your assistance in validating the instrument. The completion of the form serves as evidence that the student actually validated the instrument

Thanks for your anticipated assistance

Dr. C.S. Tukur 09 JUN 2021

GENERAL
Educational Technology
Fed. University of Technology
P.M.B. 65 Minna, Niger State

Head of Department (Signature, Date & Official Stamp)

Student's Surname. OGUNIKUNLE Other Names. DEBORAH TITILOPE

Registration Number. M.TECH/SSTE/FT/2016/8201 Programme. MASTERS

Title of the Instrument. QUESTIONNAIRE ON STUDENTS' ATTITUDE, PERCEPTION AND EXAMINATION PREFERENCE TOWARDS MODE OF EXAMINATION IN TERTIARY INSTITUTION IN FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE

ATTESTATION SECTION

Summary of the Remark on the Instrument

The instrument have been designed based on the major variables of the study

I hereby attest that the above named student brought his instrument for validation

Name of Attester. DR. IBRAHIM, I. KATA

Designation. S/L

Name and Address of Institution. FUT, Minna

Phone Number. 08035837865 E.- Mail. —

Please comment on the following

1. Appropriateness of the instrument for the purpose it's design for.....
   ..... Okay .....
2. Clarity and simplicity for the level of the language used.....
   ..... Good .....
3. Suability for the level of the targeted audience .....
   ..... Satisfactory .....
4. The extent in which the items cover the topic it meant to cover.....
   ..... Adequate .....
5. The structuring of the Questionnaire.....
   ..... Good .....
6. Others (grammatical errors, spelling errors and others.....
   ..... Very minimal .....
7. General overview of the Instrument.....
   Ensure it balance up the positive and negative responses

Suggestions for improving the quality of the Instrument

1. Check out for the positive and negative responses
2. to ensure equilibrium of the statements regarding
3. all the constructs and variables.
4. .....
5. .....

Name of Validator... DR. I. I. Kuta

Area of Specialization... Educational Technology

Name of Institution... FUT, Minna ..... Designation... SL

Signature... ..... Date... 15/06/2021

Thank You