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# Facilitators' Perceived Acceptance and Ease of Use of Virtual Examination Platforms in Open and Distance Learning Institutions in Nigeria

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## Abstract

*The educational order was changed because of the COVID-19 pandemic which had a lot of consequences for global activities, especially education. Mode of instructional delivery and administration of the examination in most schools were sought given curriculum change to meet the challenges that were visible for post-COVIDeducational delivery. This necessitated this study to look at the level of acceptance and perceived ease of use of virtual examination platforms among open and distance learning institutions in Nigeria. Using a cross-sectional survey research design on the population ofall facilitators in these institutions, a total of202 samples using a simple random technique were utilized in the study. Two research questions and four hypotheses were tested. One instrument, the Open and Distance Learning Facilitators' Acceptance and Perceived Use of Virtual Examination Questionnaire(ODLFAEVEQ, r = 0.81), was developed and validated by the researchers to collect data. Descriptive and analysis of variance (ANOVA) statistics were used to analyze the data collected. Results showed that the level of acceptance of virtual examination among the facilitators from the 3 universities was above average and showed a moderately high level of perceived ease of use of virtual examination as an assessment medium within the ODL system. Facilitators' cadres do not influence the acceptance of virtual examination within the ODL system but there was a significant difference in the level of perceived ease of use of virtual examination as an assessment mode across facilitators' cadres. It is therefore recommended that Nigerian university management should consider the academic cadre and discipline of facilitators for them to become active participants in the implementation of a virtual examination.*

**Keywords:** *Virtual Examination, Perceived Acceptance, Perceived Ease of use, Open and Distance Learning Institutions, Academic cadre, Discipline*

## Introduction

Open and Distance Learning (ODL) is an approach that aims at making education accessible to many people with interest, readiness, and willingness to gain

maximally from quality education that is provided through flexible and affordable distance learning. Open and Distance Learning has a become globally accepted form of education and is an integral part of higher education. It is a cost-effective instruction that is independent of time, location, pace, and space. It can be used for a variety of learning situations, including primary, secondary, tertiary, vocational, and non-formal education. It focuses very much on quality assurance, well designed instructional packages, and thrives on exceedingly well structured and resourced student support (Jegede, 2016).

Open and distance learning came into existence as a result of the universal demand for education, the thirst for knowledge, and the failure of the conventional education system to cater to the demand for higher education. Open and distance learning in recent times has emerged as an alternative to the conventional system, as it has not only proved to be cost-effectiveness but also has the potential to reach out to a large segment of the unreached, the marginalized, and the needy (Oni, 2019).

Open and distance learning (ODL) is practically characterized by the physical separation between tutors and students. This separation reduces the expected level of interaction within the learning space (Bello, 2021). The strategic importance of interaction among students, teachers, and learning content has been well established and referenced in many theories of education, especially constructivism learning theory (Picciano, 2017). The need to bridge the instructional gap that exists between teachers and their learners in open and distance learning (ODL) has been widely acknowledged in the literature. Scholars have advocated for instructional delivery channels that will facilitate interaction and engagement in the system, particularly during this COVID-19 era. Online facilitation remains a crucial component of ODL as it allows seamless interaction between lecturers and students anytime, anywhere.

Examinations are of different forms such as high, medium, and low stakes. High-stake examinations are types of examinations that have a very high impact on one's life or are high stakes. Examples of such examinations in our country are the Joint Admission and Matriculation Board (JAMB) examinations, the West African Examination Council (WAEC), and university-based examinations, like semester or annual examinations. Medium stake examinations are examinations that have a medium impact on the lives of people our lives. Examples of such examinations are the Gifted Entrance Examination, the National Talent Search, or Scholarship Examinations. Low-stakes examinations undermine low impact on our lives or are of low stakes. Examples of such examinations is practices, mock and class tests, etc. Writing examinations at the institutional level involves many modes such as physical or online (virtual). Physical examinations made examinees sit physically before their supervisors and invigilators who

A virtual examination or remote examination is an examination that a student takes from a location other than the physical classroom or any physical examination center. In a virtual examination, the students are not supervised at a physical location

but through software and a webcam. In this way, students should note that once a course is selected for a virtual examination, it cannot be made available for a physical examination again. A unique question paper with a defined number of items is generated randomly by the computer (on the day of the examination) out of the already-developedquestion bank based on the question paper design and the blueprint of the subject. The question paper is unique for each student. In recent times, the National Open University of Nigeria has been engaging in virtual examinations for their students based on set criteria.

The majority of the virtual examinations are now conducted in proctored mode; meaning that a remote invigilator can monitor the students while they attempt the virtual examination. Various advantages of virtual examinations include convenience to the exam administrator and the students, no geographical restrictions and no need to travel to a distant city, flexibility to choose a convenient exam time, no restriction on question types, bulk result processing with a single click and remote evaluation of descriptive answers by the evaluator

Aditya and Aditya (2019) researched students from three different classes to capture their perceptions regarding their current virtual classroom systems and found that they all have high perceptions of the virtual system of teaching and assessment. The assessment framework is based on four dimensions: performance expectancy, effort expectancy, social influence, and facilitating condition, which consists of 14 variables. The study concludes that the use of the virtual classroom assessment had been accepted for learning activities, but with different levels of acceptance. Adanir (2022) presented the results of the study and demonstrated that relative advantage, compatibility, and observability factors have a significant effect on students' acceptance of online proctored exams. On the other hand, ease of use and trialability factors were found to not affect students' acceptance of online proctored exams.

It is easy to accept why their perceived ease of use (PEoU) did not have a significant influence on their attitude towards virtual reality (VR) in the classroom. VR could be a familiar online platform to the respondents. However, it must be emphasized that the perceived usefulness (PU) of VR in the classroom has a significant influence on their attitude and intention to use (VR)in the classroom. The attitude (ATT) of the respondents has a stronger influence on their intention (INT) to use VR in the classroom than their perceived usefulness (PU). Interestingly though, their perceived usefulness (PU) could influence their attitude (Majid & Shamsudin, 2019). Previous studies on the adoption of an LMS have also been based on the technology acceptance model (TAM) and later versions (TAM2 and TAM3) (Davis, 1985; Venkatesh & Bala, 2008). Virtual exams, also known as Online exams or remote exams, are tests that are taken online, rather than in a physical testing centre. These exams can be administered and attempted from any geographical location.It is therefore necessary to investigate the levels of perceived acceptance and ease of use of virtual examination activities among the open and distance learning institutions in Nigeria.

**Technology Acceptance Model Framework**

Davis(1989) developed the Technology Acceptance Model (TAM) as the main research models that focused on the use and acceptance of information systems and technology by individual users. The Technology Acceptance Model (TAM) has been widely investigated and verified by different studies that examine individual technology acceptance behavior in different information systems constructs. According to the TAM model, perceived usefulness and perceived ease of use are two factors identified in the technology acceptance model and are related to computer use behaviors. Davis saw perceived usefulness as the prospective user's subjective probability that using a specific application system will enhance job or life performance. Perceive ease of use (EOU) was clarified as the extent to which the prospective user expects the target system to be free of effort. According to TAM, ease of use and perceived usefulness are the most important factors of actual system use. These two factors are influenced by external variables. The main external parameters that are usually manifested are social factors, cultural factors, and political factors. Social factors include language, skills, and facilitating conditions. Political factors are mainly the impact of using technology in politics and political crises. The attitude to use is concerned with the user's evaluation of the desirability of employing a particular information system application. Behavioral intention is the measure of the likelihood of a person employing the application.

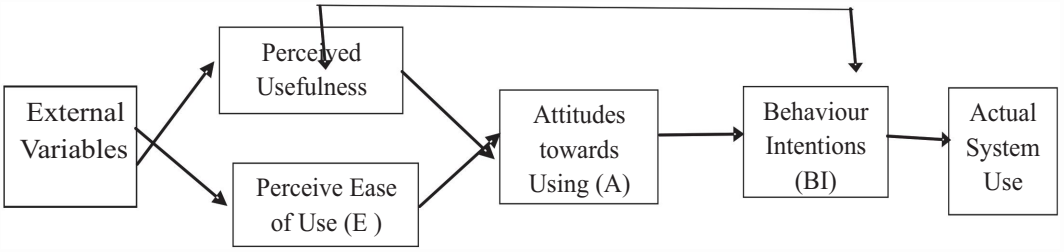


**Figure 1: Technology Acceptance Model(TAM) Davis(1989)**

TAM has been used by researchers worldwide to understand the acceptance of different types of information systems. Shafeekv (2011) in a study evaluated the acceptance of eLearning systems by teachers using TAM. Zhou et al. have advanced a new model based on TAM called the online shopping acceptance model (OSAM) to study online shopping behavior.A model to forecast the acceptance of e-commerce by adding new variables trust and perceived risk was developed (Pavlou, 2003). According to the model developed by Pikkarainen, Pikkarainen, Karjaluoto, and Pahnila (2004) to understand the acceptance of online banking in Finland, perceived usefulness and information in online banking play a very important role. Hsu and Chiu believed that a model that specifies the acceptance pattern and role of internet self-efficacy plays an important role in e-service adoption. Ervasti and Helaakoski (2010) have developed a model based on TAM to understand mobile service

adoption which states that perceived usefulness is the strongest factor in adoption. Muller-Seitz et al. (2009) used the Technology Acceptance Model with security concerns to understand acceptance of Radio Frequency Identification (RFID). This model applies to this study since virtual examination is technology-based and its usefulness of ease determines the level of behavioral changes and attitudes that propel facilitators to use it.

**Statement of the Problem**

COVID-19 has changed the world order with its effect being felt more on the educational system and its delivery. Coupled with technology changes and the need to address the educational issues brought up by the COVID-19 pandemic, every aspect of education is undergoing a lot of changes to adapt to the use of technology, not only to deliver content but also to carry out assessments of the learners. Virtual examination has become one of the solutions to address this problem, especially in open and distance learning (ODL) systems. The facilitators in an attempt to adapt to the use of virtual examination have a negative attitude towards its engagement to ascertain the level of academic attainment and abilities of learners. Some of them considered virtual examination as an inferior mode of administration of examinations while given their low dexterity in the use of computer technology, did not see any reason to employ virtual examinations. It is, therefore, necessary to ascertain the perceived acceptance and ease of use of the virtual examinations to test the knowledge of open and distance learners. Consequently, this study investigated the acceptance and perceived ease of use of virtual examination platforms in open and distance learning institutions in Nigeria considering the academic cadre and discipline of ODL facilitators.

**Research Questions**

The following research questions guided the study

1. What is the level of acceptance of virtual examination as a medium of assessment by lecturers at the ODL institutions in Nigeria?
2. What is the level of perceived ease of use of virtual examination as a medium of assessment by lecturers at the ODL institutions in Nigeria?

**Hypotheses**

Ho1. There is no significant difference in the level of acceptance of virtual examination as an assessment mode across facilitators' cadres

**Ho2. There is no significant difference in the level of acceptance of virtual examination as a mode of assessment across facilitators' disciplines**

Ho3. There is no significant difference in the perceived ease of use of virtual examination as an assessment medium based on facilitators' cadres

Ho4. There is no significant difference in the perceived ease of use of virtual examination as a medium of assessment based on facilitators' discipline

## Methodology

The mixed method approach (quantitative and qualitative) and the cross-sectional descriptive survey research design were used to give the study a framework. The population of the study consisted of all ODL facilitators in the open and distance learning (ODL) institutions (single and dual modes) in Nigeria. The study sample was selected using multi-staged sampling followed by simple random sampling techniques. The study focused on both the single-mode and dual modes ODL institutions in Nigeria. Since there are two single-mode institutions in Nigeria, i.e. National Open University of Nigeria (NOUN) and Nigerian Teachers' Institute (NTI), Kaduna, NOUN was purposively selected due to being the only single-mode public university. Three geopolitical zones were randomly selected from the six geopolitical zones in Nigeria. They were North Central, Southwest, and Southeast. One dual-mode university was selected using simple random sampling from each of the three selected geopolitical zones. The total number of ODL-based Universities used for the study was three, the is the National Open University of Nigeria, the University of Nigeria Distance Learning Centre (UNN-DLC), Nsukka and University of Lagos, Distance Learning Institute (UNILAG-DLI), Lagos.

Questionnaires were deployed through Google Forms to the facilitators of the three selected ODL institutions. Two hundred and two (202) facilitators constituted the sample for the study. One instrument, the Open and Distance Learning Facilitators' Acceptance and Ease of Virtual Examination Questionnaire (ODLFAEVEQ) was developed by the researchers and was used to collect data for the study. This instrument was divided into Three (3) sections namely: Section A consisted of facilitators, gender, cadre, institution, faculty, and age range. Section B contained facilitators' acceptance of virtual examination with 7 items and Section C on facilitators' perceived use of virtual examination scale had 6 items. The general response format of the instrument was modified Likert Scale of four levels Strongly Agree(4), Agree(3), Disagree(2), and Strongly Disagree(1).

The draft instrument was subjected to a validation process by giving it to Open and Distance Learning experts (educational evaluation experts) practitioners from the National Open University of Nigeria and experts in measurement and evaluation at the Faculty of Education. These processes ascertained the face and content validity of the instruments taking cognizance of the suggestions and comments of the experts to modify and remove any items that failed to measure what it is supposed to measure. The instrument was subjected to pilot testing on 20 respondents who did not participate in the actual study to ascertain the psychometric properties (reliability coefficients) of each of them using Cronbachs Alpha. The reliability coefficients of the instrument and scale-wise were also obtained as shown in Table 3 below:

**Table 1: Reliability Indices of the Instrument**

| | | |
|---|---|---|
| Open and Distance Learning Facilitators' Acceptance and Ease of Virtual Examination Questionnaire | 0.8 | 1 |
| Fac ilitators' Acceptance of Virtual Examination Scale (FAVES ) | 0.7 | 7 |
| Facilitators' Perceived Use of Virtual Examination Scale (FPUVES) | 0.7 | 2 |

Contacts were made through phone calls and the personal connections of the research assistant. The questionnaires were deployed through physical and virtual means. The data were collected by administering the instruments to the respondents by the researchers using a blended approach (physical and online administration of the questionnaire). Research assistants were recruited for the University of Lagos and the University of Nigeria who linked up with the ODL administrators, facilitators, and students in those universities. The softcopies of the questionnaires were sent to the research assistants who were trained on how to administer the instruments. Research questions 1 to 2were answered using descriptive statistics (frequencies, percentages, and mean).To test the hypotheses, hypotheses 1, 2, 3, and 4 were tested using Analysis of Variance (ANOVA). Scheffe post hoc multiple comparison analysis was applied to ascertain the pair significance of the mean differences among the categories of variables. All hypotheses were tested at a 0.05 level of significance.

## Results

**Research Question One: What is the level of facilitators' acceptance of virtual examination as a medium of assessment facilitators at the ODL institutions in Nigeria?**

**Table 2: Descriptive of Acceptance of Virtual Examination by Facilitators**

| | Valid Percentage | | | | Mean | | Std. Deviation | | |
|---|---|---|---|---|---|---|---|---|---|
| No of Item | s S | A | A | D | S | D | Statistic | Std. Erro | Statistic |
| Virtual examination should be made an integral part of the assessment process in open and distance learning | 13. | 9 | 38.1 | 29.7 | 18.3 | 2.4 | 8 .06 | 7 .94 | 7 |
| I would prefer to assess my learners through virtual examination than any other means | 11. | 9 | 35.1 | 39.1 | 13.9 | 2.4 | 5 .06 | 2 .87 | 5 |
| I am ready to support any decision concerning virtual examination in my ODL institution | 12. | 4 | 46.0 | 28.2 | 13.4 | 2.5 | 7 .06 | 1 .87 | 4 |
| It is worthwhile for learners to use their internet data for virtual examination | 18.3 | | 37.1 | 32.7 | 11. 9 | 2.4 | 3 .06 | 5 .92 | 3 |
| I don't think virtual examination is an appropriate medium to assess learners in ODL. | 8. | 4 | 37.6 | 42.6 | 11.4 | 2.4 | 3 .05 | 6 .80 | 3 |
| I can only participate in virtual examination to assess my learners if it becomes necessary to do so | 12. | 9 | 40.1 | 36.1 | 10.9 | 2.5 | 5 .06 | 0 .85 | 2 |
| Virtual examination holds the key to the future of flexible assessment in the 21st century ODL. | 18. | 8 | 40.1 | 23.8 | 17.3 | 2.6 | 0 .06 | 9 .98 | 3 |

**Weighted Mean = 2.50**

Table 2 shows that 13.9% of the facilitators strongly agreed that virtual examination should be made as an integral part of the assessment process in open and distance learning as 38.1%, 29.7%, and 18.3% agreed, disagreed, and strongly disagreed respectively, and had a mean of 2.48. In the same vein, 11.9% strongly preferred to assess learners through virtual examination than any other means while 35.1% agreed, 39.1% disagreed and 13.9% strongly disagreed with a mean of 2.45. To the statement of 'I don't think virtual examination is an appropriate medium to assess learners in ODL,' 8.4% of the facilitators strongly agreed, 37.6% agreed, 42.6% disagreed and 11.4% strongly disagreed with a mean of 2.43. 12.9% of the facilitators strongly agreed to participate in a virtual examination to assess my learners, if it becomes necessary to do so, 40.1% agreed, 36.1% disagreed and 10.9% strongly disagreed with a mean of 2.60. The level of acceptance of virtual examination among ODL institutions in Nigeria. With a benchmark of 2.50 on a modified Likert scale of 4, the result indicates that the level of acceptance of virtual examinations among the facilitators from the 3 universities was above average. The implication is that facilitators exhibited moderate acceptance of virtual examinations as a means of assessment within the ODL system.

**Research Question Two: What is the level of facilitators' perceived ease of use of virtual examination as a medium of assessment at the ODL institutions in Nigeria?**

**Table 3: Descriptive of Facilitators' Perceived Ease of Use of Virtual Examination**

| No of Items | Valid Percentage | | | | | Mean | Std. Deviation | |
|---|---|---|---|---|---|---|---|---|
| | S A | A | D | S D | | Statistic | Std. Erro | Statistic |
| I believe virtual examination is an easy medium of assessment in ODL | 14. 4 | 37.6 | 29.2 | 18. 8 | | 2.4 8 | .06 7 | .95 8 |
| The Artificial intelligence powered proctoring software makes it easy to monitor learners during virtual examinations | 14. 9 | 39.6 | 27.7 | 17.8 | | 2.5 1 | .06 7 | .95 3 |
| I believe that the platform is easy for learners to navigate | 15.3 | 39.6 | 33.2 | 11. 9 | | 2.4 8 | .06 3 | .89 3 |
| The virtual examination makes assessment cumbersome in ODL | 9. 9 | 30.2 | 47.0 | 12.9 | | 2.3 7 | .05 9 | .83 2 |
| I believe learners are more relaxed in a virtual examination setting | 10. 4 | 36.1 | 36.6 | 16.8 | | 2.4 0 | .06 2 | .88 8 |
| Examiners require adequate training to access the platform for learners' assessment | 26. 7 | 30.2 | 21.8 | 21.3 | | 2.6 2 | .07 7 | 1.09 6 |

**The weighted average is 2.50**

The result from Table 3 reveals the level of perceived ease of use of virtual examination in ODL institutions in Nigeria. It was discovered that 14.4% of the facilitators strongly agreed to believe that virtual examination is an easy medium of assessment for ODL learners, 37.6% agreed, 29.2% disagreed and 18.8% strongly disagreed ( = 2.48). Also, 14.9% of the facilitators strongly agreed that artificial intelligence picturing software makes it easy to monitor learners during virtual examinations, 39.6% agreed, 27.7% disagreed and 117.8% strongly disagreed ( = 2.51). 10.4% of the facilitators strongly believed that learners are more relaxed in a virtual examination setting,36.1% agreed, 36.6% disagreed and 16.8% strongly disagreed ( = 2.40). To a statement, examiners require adequate training to access the platform for learners' assessment,26.7% strongly agreed, 30.2% agreed, 21.8% disagreed, and 21.3% strongly disagreed with a mean of 2,62.

The weighted average of 2.50 on a modified Likert scale of 4, indicates that the level of perceived ease of use of virtual examination among the facilitators was above average. This implies that facilitators showed a moderately high level of perceived ease of use of virtual examination as an assessment medium within the ODL system.

**Hypothesis 1: There is no significant difference in the level of acceptance of virtual examination as an assessment mode across facilitators' cadres.**

**Table 4: ANOVA of Level of Acceptance of Virtual Examination across Facilitators' Academic Cadre**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 128.42 | 6 | 21.40 | 1.956 | .074 |
| Within Groups | 2134.05 | 195 | 10.944 | | |
| Total | 2262.48 | 201 | | | |

The result from Table 4 indicates that there was no significant difference in the level of acceptance of virtual examination as a platform for assessment across facilitators' cadres. The level of significance (0.074) implies that the facilitators' cadre does not influence the acceptance of virtual examinations within the ODL system. The null hypothesis 1ai was therefore accepted.

**Hypothesis 2: There is no significant difference in the level of acceptance of virtual examination as a mode of assessment across facilitators' disciplines**

**Table 5: ANOVA of Facilitators' Acceptance of Virtual Examination by Discipline**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 734.730 | 8 | 91.841 | 5.001 | .000 |
| Within Groups | 3544.379 | 193 | 18.365 | | |
| Total | 4279.109 | 201 | | | |

Table 5 shows that there was a significant difference in the level of acceptance of virtual examination as an assessment mode across facilitators' disciplines. The level of significance (0.000) implies that the disciplines of facilitators can influence the acceptance of virtual examination within the ODL system. The null hypothesis 1aiii was therefore not accepted.

**Table 6: Post Hoc Tests Multiple Comparison of Virtual Examination Acceptance by Facilitators' Discipline**

| | | Mean Difference | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | (J) Faculty | (I-J) | Std. Error | Sig. | Lower Bound | Upper Bound |
| Sciences | Social Sciences | -2.957 | .965 | .317 | -6.80 | .89 |
| | Management Sciences | 4.654* | .971 | .005 | -8.52 | -.78 |
| | Arts | .686 | 1.250 | 1.000 | -4.30 | 5.67 |
| | Law | -.079 | 2.253 | 1.000 | -9.06 | 8.90 |
| | Educations | -1.554 | .971 | .958 | -5.42 | 2.31 |
| | Agricultural Sciences | .296 | 1.277 | 1.000 | -4.80 | 5.39 |
| | Health Sciences | 1.921 | 2.570 | 1.000 | -8.32 | 12.17 |
| Management Sciences | Sciences | 4.654* | .971 | .005 | .78 | 8.52 |
| | Social Sciences | 1.697 | .952 | .921 | -2.10 | 5.49 |
| | Arts | 5.340* | 1.241 | .022 | .39 | 10.29 |
| | Law | 4.575 | 2.247 | .841 | -4.38 | 13.53 |
| | Education | 3.100 | .958 | .241 | -.72 | 6.92 |
| | Agricultural Sciences | 4.950* | 1.268 | .041 | -.10 | 10.00 |
| | Health Sciences | 6.575 | 2.565 | .585 | -3.65 | 16.80 |
| | Others | 3.242 | 2.565 | .991 | -6.98 | 13.47 |
| Arts | Sciences | -.686 | 1.250 | 1.000 | -5.67 | 4.30 |
| | Social Sciences | -3.643 | 1.236 | .375 | -8.57 | 1.28 |
| | Management Sciences | 5.340* | 1.241 | .022 | -10.29 | -.39 |
| | Law | -.762 | 2.381 | 1.000 | -10.26 | 8.74 |
| | Education | -2.241 | 1.241 | .915 | -7.19 | 2.71 |
| | Agricultural Sciences | -.390 | 1.493 | 1.000 | -6.34 | 5.56 |
| | Health Sciences | 1.235 | 2.684 | 1.000 | -9.46 | 11.93 |
| Agricultural Sciences | Sciences | -.296 | 1.277 | 1.000 | -5.39 | 4.80 |
| | Social Sciences | -3.253 | 1.263 | .578 | -8.29 | 1.78 |
| | Management Sciences | 4.950* | 1.268 | .041 | -10.00 | -.10 |
| | Arts | .390 | 1.493 | 1.000 | -5.56 | 6.34 |
| | Law | -.372 | 2.396 | 1.000 | -9.93 | 9.18 |
| | Education | -1.851 | 1.268 | .976 | -6.90 | 3.20 |
| | Health Sciences | 1.625 | 2.696 | 1.000 | -9.12 | 12.37 |

*. The mean difference is significant at the 0.05 level

The post hoc test above shows the direction of significance. From the post hoc Table 6, it could be observed that the level of acceptance of online facilitation by facilitators from the faculty of Management Sciences was significantly different from their counterparts in other faculties.

**Hypothesis Three:** There is no significant difference in the perceived ease of use of virtual examination as an assessment medium based on facilitators' cadres

**Table 7: ANOVA of Facilitators' Perceived Ease of Use of Virtual Examination by Academic Cadr**

| | Sum of Square | D | f | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Between Groups | 1044.79 | 6 | 6 | 174.13 | 3 13.78 | 6 .00 0 |
| Within Groups | 2463.10 | 5 | 19 | 5 12.63 | 1 | |
| Total | 3507.90 | 1 | 20 | 1 | | |

**Table 7 shows that there was a significant difference in the level of perceived ease of use of virtual examination as an assessment mode across facilitators' cadres. The level of significance (0.000) implies that the facilitators' cadre has a significant influence on the perceived ease of use of virtual examination within the ODL system. The null hypothesis 1aiii was therefore not accepted.**

**Table 8: Scheffe Post Hoc Multiple Comparison of Perceived Ease of Use of Virtual Examination by Facilitators' Academic Cadre**

| | | | | 95% Confidence Interval | | |
|---|---|---|---|---|---|---|
| (I) Academic Rank | (J) Academic Rank | Mean Diff | Std. Err | Sig. | Lower Bound | Upper Bound |
| Professor | Assoc. Prof/Reade r | .87 5 | 1.08 8 | .99 5 | - 3.0 3 | 4.7 8 |
| | Senior Lecturer | .40 9 | 1.03 8 | 1.00 0 | - 3.3 1 | 4.1 3 |
| | Lecturer I | - 1.05 6 | .98 2 | .97 9 | - 4.5 8 | 2.4 7 |
| | Lecturer 2 | 10.083 * | 1.70 1 | .00 0 | 3.9 8 | 16.1 9 |
| | Assistant Lecturer | - .92 9 | 1.11 4 | .99 4 | - 4.9 2 | 3.0 7 |
| | Graduate Assistant | 8.750 * | 1.98 7 | .00 5 | 1.6 2 | 15.8 8 |
| Assoc. Prof/Reader | Professor | - .87 5 | 1.08 8 | .99 5 | - 4.7 8 | 3.0 3 |
| | Senior Lecturer | - .46 6 | .82 6 | .99 9 | - 3.4 3 | 2.5 0 |
| | Lecturer I | - 1.93 1 | .75 5 | .37 0 | - 4.6 4 | .7 8 |
| | Lecturer 2 | 9.208 * | 1.58 1 | .00 0 | 3.5 4 | 14.8 8 |
| | Assistant Lecturer | - 1.80 4 | .92 0 | .69 7 | - 5.1 0 | 1.5 0 |
| | Graduate Assistant | 7 .875 * | 1.88 5 | .01 0 | 1.1 1 | 14.6 4 |
| Lecturer I | Professor | 1.05 6 | .98 2 | .97 9 | - 2.4 7 | 4.5 8 |
| | Assoc. Prof/Reader | 1.93 1 | .75 5 | .37 0 | - .7 8 | 4.6 4 |
| | Senior Lecturer | 1.46 5 | .68 0 | .59 2 | - .9 8 | 3.9 0 |
| | Lecturer 2 | 11.139 * | 1.51 0 | .00 0 | 5.7 2 | 16.5 6 |
| | Assistant Lecturer | .12 7 | .79 2 | 1.00 0 | - 2.7 1 | 2. 9 7 |
| | Graduate Assistant | 9.806 * | 1.82 6 | .00 0 | 3.2 6 | 16.3 6 |
| Lecturer II | Professor | - 10.083 * | 1.70 1 | .00 0 | - 16.1 9 | - 3.9 8 |
| | Assoc. Prof/Reader | - 9.208 * | 1.58 1 | .00 0 | - 14.8 8 | - 3.5 4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Senior Lecturer | 9.674 | * | 1.54 7 | .00 0 | -15.2 2 | -4.1 3 |
| | Lecturer I | -11.139 | * | 1.51 0 | .00 0 | -16.5 6 | -5.7 2 |
| | Assistant Lecturer | -11.012 | * | 1.59 9 | .00 0 | -16.7 5 | -5.2 8 |
| | Graduate Assistant | - 1.33 | 3 | 2.29 4 | .99 9 | - 9.5 6 | 6.9 0 |
| Graduate Assistant | Professor | - 8.750 | * | 1.98 7 | .00 5 | -15.8 8 | -1.6 2 |
| | Assoc. Prof/Reader | - 7.875 | * | 1.88 5 | .01 0 | -14.6 4 | -1.1 1 |
| | Senior Lecturer | - 8.341 | * | 1.85 6 | .00 4 | -15.0 0 | -1.6 8 |
| | Lecturer I | - 9.806 | * | 1.82 6 | .00 0 | -16.3 6 | -3.2 6 |
| | Lecturer 2 | 1.33 | 3 | 2.29 4 | .99 9 | - 6.9 0 | 9.5 6 |
| | Assistant Lecturer | - 9.679 | * | 1.90 0 | .00 0 | -16.4 9 | -2.8 6 |

*= The mean difference is significant at the 0.05 level.

The Post Hoc Test above shows the direction of significance. From the Post Hoc Table8, it could be observed that the perceived ease of use of online facilitation of Graduate Assistant and Lecturer II was significantly different from their counterparts in other cadres.

**Hypothesis 4: There is no significant difference in the perceived ease of use of virtual examination as a medium of assessment based on facilitators' discipline**

**Table 9: ANOVA of Facilitators' perceived ease of use of virtual examination by discipline**

| | Sum of Squares | D f | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 586.60 | 3 8 | 73.32 5 | 4.84 4 | .00 0 |
| Within Groups | 2921.29 | 8 19 3 | 15.13 6 | | |
| Total | 3507.90 | 1 20 1 | | | |

**Table 9 shows that there was a significant difference in the perceived ease of use of virtual examination as an assessment medium based on facilitators' discipline F(8,193) = 4.844, P<0.05). The level of significance (0.000) shows that facilitators' discipline has a significant effect on the perceived ease of virtual examination within the ODL system. The null hypothesis was therefore rejected.**

**Table 10: Scheffe Post Hoc Multiple Comparison of Perceived Ease of Use of Virtual Examination by Facilitators' Discipline**

| | | | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| (I) Faculty | (J) Faculty | Mean Difference (I-J) | Std. Error | Sig. | Lower Bound | Upper Bound |
| | Sciences | 1.85 0 | .88 1 | .81 7 | -1.6 6 | 5.3 6 |
| | Social Sciences | 1.21 6 | .86 5 | .98 1 | -2.2 3 | 4.6 6 |
| | Arts | 3.96 8 | 1.12 6 | .14 2 | - .5 2 | 8.4 6 |
| | Law | .60 0 | 2.04 0 | 1.00 0 | -7.5 3 | 8.7 3 |
| | Education | - .60 0 | .87 0 | 1.00 0 | -4.0 7 | 2.8 7 |
| | Agricultural Sciences | 4.788 * | 1.15 1 | .03 2 | .2 0 | 9.3 8 |
| | Health Sciences | 1.18 3 | 2.32 9 | 1.00 0 | -8.1 0 | 10.4 7 |
| | Others | 5.18 3 | 2.32 9 | .76 1 | -4.1 0 | 14.4 7 |
| | Sciences | - 2.11 8 | 1.13 5 | .89 9 | -6.6 4 | 2.4 1 |
| | Social Sciences | - 2.75 2 | 1.12 2 | .64 6 | -7.2 3 | 1.7 2 |
| | Management Sciences | - 3.96 8 | 1.12 6 | .14 2 | -8.4 6 | .5 2 |
| | Law | - 3.36 8 | 2.16 2 | .96 4 | -11.9 9 | 5.2 5 |
| | Education | - 4.568 * | 1.12 6 | .04 2 | -9.0 6 | -.0 8 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Management Sciences | .82 | 0 | 1.355 | 1.000 | - 4.5 | 8 | 6.2 | 2 |
| | - 2.78 | 4 | 2.436 | .99 | 5 - 12.5 | 0 | 6.9 | 3 |
| Education | 2.45 | 0 | .88 | 1 | .46 | 4 - 1. | 0 | 5.9 | 6 |
| | 1.81 | 6 | .86 | 5 | .81 | 7 - 1.6 | 3 | 5.2 | 6 |
| | .60 | 0 | .8 | 70 | 1.000 | - 2.8 | 7 | 4.0 | 7 |
| | 4.568 | * | 1.126 | .04 | 2 .0 | 8 | 9.0 | 6 |
| | 1.20 | 0 | 2.040 | 1.000 | - 6.9 | 3 | 9.3 | 3 |
| | 5.387 | * | 1.151 | .00 | 7 .8 | 0 | 9.9 | 8 |
| Arts | 1.78 | 3 | 2.329 | 1.000 | - 7.5 | 0 | 11.0 | 7 |
| Agricultural Sciences | - 2.93 | 8 | 1.159 | .60 | 1 - 7.5 | 6 | 1.6 | 8 |
| | - 3.57 | 2 | 1.147 | .29 | 4 - 8.1 | 4 | 1.0 | 0 |
| | - 4.788 | * | 1.151 | .03 | 2 - 9.3 | 8 | - .2 | 0 |
| | - .82 | 0 | 1.355 | 1.000 | - 6.2 | 2 | 4.5 | 8 |
| | - 4.18 | 8 | 2.175 | .88 | 1 - 12.8 | 6 | 4.4 | 8 |
| | - 5.387 | * | 1.151 | .00 | 7 - 9.9 | 8 | - .8 | 0 |
| Health Sciences | - 3.60 | 4 | 2.448 | .97 | 5 - 13.3 | 6 | 6.1 | 5 |

* . The mean difference is significant at the 0.05 level

The post hoc test above shows the direction of significance. From the post hoc Table 10, it could be observed that the perceived ease of use of virtual examination of facilitators in the Faculties of Education, Agricultural Sciences, and Arts was significantly different from their counterparts in other faculties.

**Discussion of Findings**

It was deduced that facilitators exhibited moderately high acceptance of virtual examination as a means of assessment within the ODL system. This means that the average facilitator did not accept virtual examinations to assess learners. The finding is at variance from Semlambo, Almasi &and Liechuka (2022) who found that facilitators prefer online examinations due to factors such as immediate feedback, support for more adaptive teaching, and fairness compared with paper-based examination This might be because facilitators thought that this mode of examinations seemed to be more demanding and task-oriented before one could successfully administer it.

Facilitators showed a moderate level of perceived ease of use of virtual examination as an assessment medium within the ODL system. The Ease of use of virtual examination was moderately considered for learners' assessment in open and distance learning platforms. This finding corroborated Topal (2016) discovered that learners feel more comfortable taking an online exam than a paper-based exam. This implies that such learners consider virtual examination easier to undertake than the face-to-face examination. The ease manifests in the form of the objective nature of the test items, freedom in choosing individuals' convenient place of examination undertaking, exam candidates are used to digital, increased security, and quicker marking and issue of immediate results.

The finding revealed that there was no significant difference in the level of acceptance of virtual examination as a platform for assessment across facilitators' cadres asserts that the academic rank of the facilitators did not influence their acceptance of virtual examinations. Virtual examination is been embraced by various categories of facilitators due to the invasion of the COVID-19 pandemic that restricted physical contact that face-to-face examination can cause. Professors and junior academics adjudged virtual examination as the only way to assess learners in any threatening situation they may find themselves in.They now administer online tests, assignments, practicals through a virtual laboratory, and semester examinations to their students.

Contrary to earlier findings, facilitators differ significantly in the level of perceived ease of use of virtual examination as an assessment mode across facilitators' cadres. This is a result of different levels of academic experience and digital compliance of the facilitators. Academically younger facilitators are more convenient to use of virtual-based platforms because they are digital natives compared to older ones that are referred to as digital migrants. In this effect, facilitators with lower academic cadres' facilitators are prone to effective use of technology to perform academic activities, including the administration of virtual examinations.

There was a significant difference in the perceived ease of use of virtual examination as an assessment medium based on the facilitators' discipline. This is contrary to Majid & Shasudin (2019) who discovered that easy to accept why ease of use (PEoU) did not have a significant influence on their attitude towards virtual response in varied academic discipline classrooms. Facilitators at the Faculties of Education, management, and Agricultural Sciences differed significantly in the perceived ease of use of virtual examination platforms. The contents of courses in these Faculties are mainly qualitative in which the generation of items, preparation of marking guides, and transcribing of the items to digital medium become very difficult compared to science-based courses whose contents are quantitative and principles are not easily changed.

## Conclusion

This paper investigated facilitators' acceptance and perceived ease of use of virtual examination platforms in open and distance learning institutions in Nigeria concerning the academic cadre and discipline. In the study using a cross-sectional survey, facilitators had a moderately high level of acceptance and perceived use of virtual examination but differed significantly in perceived ease of use of virtual examination among the academic cadres and disciplines of the facilitators.

## Recommendations

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

- The management of ODL institutions in Nigeria should provide incentives for facilitators to engage them in the use of virtual examinations.
- University management should make available facilities like laptops and internet connection data to facilitators to improve their level of acceptance of virtual examinations.
- Facilitators from Faculties of Agricultural sciences, Education, and Management sciences should be more sensitized on the use of virtual examination to assess the learners
- Facilitators with a higher academic cadre should be encouraged to enhance their digital knowledge for they to accept and effectively use virtual examination

**References**

Adanir, A.A. (2022). *Student Acceptance of Online Proctored Exams*. **Turkey:** Ankara University Press.

Aditya, B. & Aditya P. (2019). Assessing Student Acceptance of virtual Classrooms in higher education using the UTAUT. *Journal of Physics Conference Series.*1254(1), 2345-2355.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-33

Ervasti, M. &Helaakoski, H. (2010). Case study of application-based mobile service acceptance and development in Finland. *International Journal of Information Technology and management,* 9 (3), 243-259

Hu, P.J., Chau, P.Y.K., Liu-Sheng, O.R., & Tam, K.Y. (1999). Examining the technology acceptance model using physician acceptance of telemedicine technology. *Journal of Management Information Systems,* 16(2), 91-112.

Jegede, O. (2016). *Open and distance learning practices in Nigerian higher institutions of learning.* Being an invited keynote address at the 3rd University of Ibadan annual distance learning centre. Distinguished lecture and stakeholders' forum held at the International Conference Centre, University of Ibadan, 14th &15th, July 2016.

Majid,F.A. & Shamsudin, N.M. (2019). Identifying factors affecting acceptance of virtual reality in classrooms based on the technology acceptance model (TAM). *Asian Journal of University Education (AJUE),* 15(2), 342 -367.

Muller-Seitz, G., Dautzenberg, K., Creusen, U. &Stromereder, C. (2009). Customer acceptance of RFIDtechnology: Evidence from the German electronic retail sector. *Journal of Retailed Consumer Services,* 16*(6)*,31-39.http://doi.org/10.1016/j.jretconser.2008.08.002

Oni, L. O(2019). Youth accessibility to university education through open and distance learning as an investment for the future. *NOUN Journal of Education (NJE,* 5, 297-305

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., &Pahnila, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. *Internet Research, 14*(3), 224-235

Picciano, A. G. (2017). *Theories and Frameworks for Online Education: Seeking an Integrated Model. International Journal of Scientific Research and Management,* 3(11),2321-3418.

Semlambo, A., Almasi, K. &Liechuka, Y. (2022). Perceived usefulness and ease of use of online examination system: A case of Institute of Accountancy Arusha. *International Journal of Scientific Research and Management (IJSRM*), 10,851-861. https://doi.org/10.18535/ijsrm/v10i4.ec08.

Shafeek, S. A. (2011). *E-learning technology acceptance model with cultural factors.* MSc. Thesis, LiverpoolJohn Moores University, School of computing and mathematical sciences.

Topal, A.D. (2016). Examination of university students' level of satisfaction and readiness for e-courses and the relationship between them.

Topal, A.D. &Gecer, A.K. (2015). Development of satisfaction scale for e-course: Reliability and validity study.*Journal of Theory and Practice in Education*, 11(4), 1272-1287.

Venkatech, V. & Bala, H. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences,* 39(2), 273-315.