

USER-FRIENDLINESS OF RAPIDTEST E-PLATFORM ON UTME CANDIDATES

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ABSTRACT

Nigerian students have raised an alarm over the stress in registering the new CBE system of UTME 2017 and some even described the exercise as very slow, and cumbersome. The aim of this research is to find out the user-friendliness of RapidTest E-Platform on UTME Candidates. Four (4) null hypothesis were identified and adopted from the literature; the usability of the system is not appropriate, the screen design is not user-friendly, accepted and standardized terminology were not used, and the system is not sustainable and reliable. The researchers selected questionnaire as the instrument used of data collection. The participants were classified into two groups, (1) the candidates who are writing the examination, and (2) the staffs who are there to ensure the successful conduct of the examinations, including supervisors, invigilators, proctors, and technical staff. The study adopted a regression analysis due to the facts that the findings have more than two predictor variables to assess the relationship between UTME candidates and their perceived user-friendliness of RapidTest E-Platform. The population of the study consisted of all 2017 UTME candidates and invigilators who participated in the UTME Computer-based examination in Taraba State centers. Simple random sampling was used to select a sample of 600 candidates, 75 candidates from each center, also 10 invigilators were randomly selected from 8 centers, totaling 80. The result indicates that, the usability of the system is good, the screen design is partially user friendly, the terminology used are partially correct, and the system is capable to some extent to handle errors and exceptions. The regression analysis method used for this research is not sufficient, since R-squared cannot determine whether the coefficient estimates and predictions are biased, and it does not indicate whether a regression model is adequate.

Keywords: RapidTest E-Platform, Computer Based Examinations (CBE), UTME, Candidates, User-friendly.

INTRODUCTION

"I have sympathy for candidates who are not computer literate and there are many of them" – Mallam Adamu Adamu, Nigerian Minister of Education. Cham City PLC were among the Nigerian first computer center that conducted the first UTME computer based test nationwide in the year 2013 (Chamspc, 2014). This is an IT company that is equipped with over 1000 computer systems and was certified by the Guinness world record as the largest digital cafe in the world since 2008.

Computer-based exams (CBE) have a number of advantages compared to traditional paper-based exams (PBE) such as efficiency, immediate scoring and feedback in the case of multiple-choice question exams (Anja et al, 2015). In order to ensure a smooth transition to computer-based examining in higher education, it is important that students perform equally well on computer-based and paper-based administered exams (Anja, et al, 2015).

The JAMB practice test has been available since 2013 in the former system, while this window formulated as UTME trial was adopted during 2017 examination. In another report, students have raised an alarm over the stress of registering for the 2017 UTME, some of the candidates have described 2017 year's UTME registration as very slow, cumbersome and very stressful (Ikeke, 2017).

The aim of this research is to find out user-friendliness of RapidTest E-Platform on UTME Candidates by (1) Identify if UTME candidates have skills set required for computer based test (2) Understand the overall reaction of applicability of computer based test base on usability of the system (3) To identify the human computer interactions of the screen design (4) To understand if right technology terminology were used for the development and in addition; (5) To find out if the software is capable based on speed and reliability.

LITERATURE REVIEW

There are various threats confronting secured examination of CBT in large-scale and high stakes examinations, but there are a lot of values derived from computer based test assessment as described by Wieger (2013) cited in (Ojerinde, 2014). These values as indicated by Wieger includes testing of other skills, alignment with further education, alignments with student world, more attractive examination, more flexibility, financial feasibility of the examination, and new skills for academic staff. Even with these advantages, the introduction of new system raise issues and challenges that may not be seen in the old system. One of the logistics issues in the implementation of CBT in 2013 were tied to its conception, JAMB constructed prototype offices in nine (9) states and one model center for e-testing. Ojerinde (2014) presented some recommendations in a research titled "Practical considerations in the implementation of computer-based test (CBT): experiences of JAMB in Nigeria". For purpose of this study, two (2) of the recommendation are the feasibility studies as well as pilot/demonstration studies are needed to fine-tune the technicalities for the introduction of CBT, and the implementation of CBT should be on a scalable form to make room for correction of lapses.

UTME Candidates Computer Skills

It is important to understand student acceptance of computer-based testing because the test-taking experience is substantially different from paper-based exams (McDonald, 2002). Despite that facts that, Computer-based tests offer several benefits over traditional paper-and-pencil or paper-based tests (Joshua *et al*, 2017), but this perspective is different especially from student when their computer skills is put into consideration. Technological capacity of schools to support CBT is one of the contextual issues related to CBT (Thurlow *et al*, 2010). Popular opinions among the public and the press in Nigeria cried out over the students lack of the necessary skills to face CBT form of UTME by JAMB, and that there are inadequate facilities in the schools, particularly in the rural communities to adequately prepare the candidates for CBT. This concern is supported by the finding of a research titled "Comparison Between computer Based Test (CBT) and paper Pencil Test (PPT) in Joint Admission Matriculation Board (JAMB): Case of Yola North Senatorial Zone of Adamawa State, Nigeria". The result indicated that, there are no adequate facilities in teaching and learning of computer science in schools to enable students adequately prepare for CBT exams (James *et al*, 2016). Moreover, the current JAMB registrar, Professor Oloyede emphasize that, "we have noted the challenge of computer low level literacy of some candidates, especially with the phobia for the mouse" (Tauna, 2017). The premium times websites also reported that, the Minister of the Education, Mallam Adamu Adamu has also expressed concerns over plight of candidates for Computer-Based Test (CBT) who are not computer literate. In addition, the research by Joshua *et al* (2017) shows that, the Nigerian final year secondary school students preferred taking PPT to CBT (79% of the sample showed this preference).

Design and Development of CBE System

The literature of various researchers focused on various sections of the online examination system (Singh and Tiwari, 2016), but there are limited literature on the appropriate design of CBT applications. Thurlow *et al* (2010) mentioned universal design as one of the major issues in CBT.

Davey (2011) simply put it "every test would be short, reliable, secure, convenient to administer, cheap to develop, and easy to maintain, and would offer immediate and detailed summative and formative scores". It is unfortunate that most of these desirable qualities remain contrary to other test applications. It is rather difficult for a test to report reliable and detailed scores, also difficult for a test that includes a large enough item pool or enough alternate forms to be secure under repeated administration and to be cheaply developed and easily maintained, and it is very difficult for a test to provide both summative and formative information. Davey further stated that, the design of any test is therefore necessarily a compromise, ideally one that properly reflects the values of its developers, the preferences of examinees and administrators, and the needs of its score users (Davey, 2011). The development of the Computer Based Examination System is initiated by designing the E-R diagram, Data Flow diagram and the class diagram (Archana and Leelavathi, 2015).

Technology Terminology for CBE System

The complete components of the CBE have three divisions; the Admin module, the staff module and the student module (Archana and Leelavathi, 2015). The system will take several inputs that form part of the data. The inputs include answers to question options, registration number, customization preferences, etc. (Onyesolu and Chimaobi, 2017). Davey (2011) added that, the choice of the test administration model is the most important decision made by a CBT designer. This model controls the items with which a student is presented and the order in which they are presented. The administration model strongly impacts all of the test properties, largely determining the efficiency, item development needs, security, cost and complexity of the testing program.

The Impact Factors; Reliability and Usability
Different studies have highlighted how reliability and speed determine the success of systems and applications. Various scholars have questioned the effectiveness of CBT and call for systematic studies to carefully check its reliability and validity. Some of the findings were inconsistent especially from the year 2012 backward. Recent

studies show that others, CBT mode is more reliable in terms of internal and external validity (Chua, 2012).

The literature revealed that there are problems associated with the implementation of the CBT in UTME as experienced by candidates who took the CBT exams. Research also shows that CBT for UTME can hinder a brilliant candidate who is not computer literate to gain admission in Nigerian Colleges of Education, Polytechnics and Universities. Finally most of the study revealed that students in Rural Areas prefers Paper Pencil Test (PPT) and are at the opinion that JAMB should make UTME optional to candidates to choose Computer Based Test (CBT) or Paper Pencil Test (PPT) (James et al, 2016).

Hypothesis

The following hypotheses are set at the number of participants and the highest or most accepted response expected from the participants.

H₀: Null Hypothesis

1. The usability of the system is NOT appropriate.
2. The screen design is NOT user-friendly.
3. Accepted and standardized terminologies were NOT used.
4. The system is NOT sustainable and reliable.

H₁: Alternative Hypothesis

1. The usability of the system is appropriate.
2. The screen design is user-friendly.
3. Accepted and standardized terminologies were used.
4. The system is sustainable and reliable.

RESEARCH METHODS

In view of the fact that, the ethical implications of specific research designs is a central aspect of the ways in which the final methods of data collections are decided (Gibson, 2014). The research selected questionnaire as an instruments for in data collection. Survey tools are particularly useful for non experimental descriptive designs that seek to describe reality (Mathers et al, 2009), and this research is considered one; the questionnaire was therefore chosen because it is a tool that gathered responses in a unified way, relatively quick to collect information even from large portion of a group (Milne, 2003). Since questions from questionnaire are more objectives,

the questionnaire come in many different form, from tick boxes to free text responses, and from factual to opinion based. Considering the fact that, the research aim is to get useful responses, in a cost effective way, and to use the so many advantages questionnaire offers as the a data collection tool, therefore, the participants are classify into two groups, (1) the candidates who are writing the examination, and (2) the staff who are there to ensure the successful implementation of the examinations, including supervisors, invigilators, proctors, and technical staff. In view of the above, the questionnaire was also classified into two types. The first type intends to collect information on the candidate's skills, the candidates' reaction to the new application, the screen design, terminology use and the capability of the software in terms of speed and reliability, while the second type intends to find information in respect to the usability of the system.

The study adopted a regression analysis technique because the research findings have more than two predictor variables to assess the relationship between UTME candidates and their perceived user-friendliness of RapidTest E-Platform. The population of the study consisted of all 2017 UTME candidates and invigilators who participated in UTME Computer based examination in Taraba State centers. Simple random sampling was used to select a sample of 600 candidates, 75 candidates from 8 centers each, in Jalingo, Zing, Bali and Wukari. On the other hand, 10 invigilators from each center, 80 questionnaires were distributed, but only 65 were recorded and 15 were considered invalid.

The questionnaire was distributed at 2017 UTME Examination centers at Jalingo, Zing, Wukari and Bali, Taraba State. These centers includes; Taraba State University Jalingo, Federal University Wukari, Peacock College of Education Jalingo, Winners Comprehensive High School Jalingo, College of Education Zing, College of Education Jalingo, College of Agriculture Jalingo, and Federal Polytechnics Bali. The participants comprises of candidates partake in the 2017 UTME examination, and staffs that invigilates or supervises the examination.

As indicated above, the participants are classified into candidates and supervisors. The supervisors

are considered as expert whose have an adequate knowledge of computer and information system.

RESULTS AND DISCUSSION

Data were analyzed and results presented according to research questions and hypotheses.

Results

The result of our findings can be seen from the Table 1 to Table 6. On the part of experts' responses, the questionnaire was design with 21 questions, 3 of the questions find out the respondent work experiences and computer skills, and most of them indicated an adequate knowledge of computer technology, while the remaining 18 questions concentrated on how simple, efficient, informative and summative the system can be. The questions were presented on a scale of 1 to 7, where 1 is the lowest strongly disagree and 7 is highest strongly agree of which participant can respond as shown in Table 1 and Table 2;

Hypothesis Testing

Hypothesis 1: The usability of the system is NOT appropriate

Table 1: Analysis Summary of the Usability of the System

Multiple R	0.563423709
R Square	0.317446276
Adjusted R Square	0.271942695
Standard Error	1.815949152
Observations	17

In Table 1, the relationship between the RapidTest E-platform and expert perceived usability of the system shows that the coefficient of multiple correlation takes values between 0 and 1; a higher value indicates a better predictability of the dependent variable from the independent variables, while a value of 1 indicates that the predictions are exactly correct and a value of 0 suggest that no linear combination of the independent variables is a better predictor than is the fixed mean of the dependent variable.

The coefficient of multiple correlation, denoted as R , is a scalar that is defined as the Pearson correlation coefficient between the predicted and the actual values of the dependent variable in a linear regression model that includes an intercept.

Table 2: ANOVA Showing Regression and Residual of Usability Relationship

	Df	SS	MS	F	Significance F
Regression	1	23.00552	23.00552	6.976292	0.018511484
Residual	15	49.46507	3.297671		
Total	16	72.47059			

On the other hand, since R-squared is a statistical measure of how close the data are to the fitted into the regression line (Frost, 2013). It is also known

significance is less than 0.05, this means that the usability of the system is appropriate.

The second group of participant's is the UTME

Table 3: Showing Usability Relationship (t-stat and P-value)

	Coefficient	Standard Error	t Stat	P-value
Intercept	5.805389222	7.213843	0.804757	0.433531
63	0.31237525	0.118267	2.641267	0.018511

as the coefficient of determination, or the coefficient of multiple determinations for multiple regressions.

The definition of R-squared is fairly straightforward in this finding; it is the percentage of the response variable variation that is presented in Table 1, 2, and 3.

Table 1 shows that there is no significant difference in proving the usability of the system with t-calculated of 0.80, df=1, and a p-value of 0.433. Since the p-value is greater than alpha =0.05, we accept the ALTERNATIVE hypotheses, that to say, the usability of the system is proving appropriate. Moreover, since the

candidates who wrote the CBT using RapidTest application. First, the participant was to answer questions that allow the researchers to understand their computer skills and over 60% of the candidates believed that they have adequate knowledge of computer. Secondly, the participants were asked to express their overall reaction to the introduction of the new application, screen design, technology terminology used, and the capability of the system.

Overall Reaction to the System

The result of the overall reaction to the system is as indicated in the scale of 1 to 9, with negative and positive assumption respectively;

Relationship Between RapidTest Application and UTME Candidates Perceived Reaction to The System

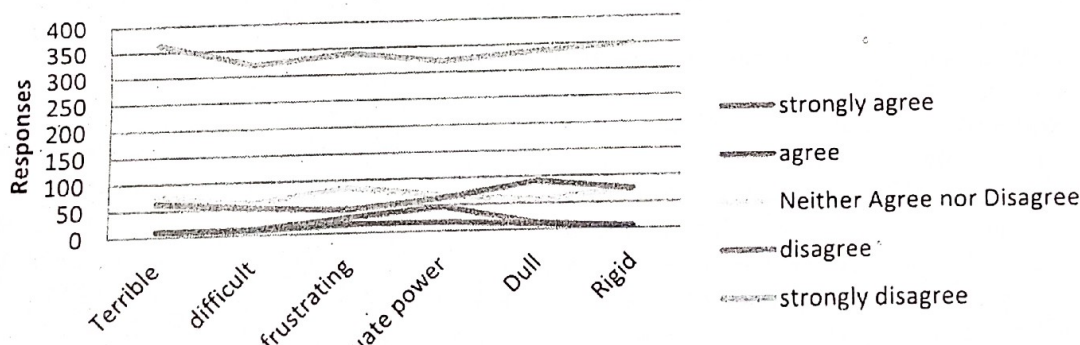


Figure 1: Showing Candidates Reaction to the New System

Hypothesis 2: The screen design is user-friendly
Table 4 shows that there is less significant difference in terms of screen design of the system, since the indicated p-value of 0.129. Therefore, the p-value is still greater than 0.05, we reject the null hypothesis, that is to say, the screen design of

Table 4: Perceived Screen Design of the System

	Coefficient	Standard Error	t Stat	P-value
Intercept	3495.13095	719.0059	4.86106	0.129161
446	-5.82142857	1.216559	-4.78516	0.131153

Table 5: Perceived Use of Terminology in the System

	Coefficient	Standard Error	t Stat	P-value
Intercept	389.7537	181.0489	2.152754	0.120395
472	-0.26593	0.316704	-0.83969	0.462726

Table 6: Perceived Capability of the System

	Coefficient	Standard Error	t Stat	P-value
Intercept	-851	2748.724	-0.3096	0.808862
590	1.83871	4.749172	0.387164	0.764838

the system is user friendly.

Hypothesis 3: Standard and accepted terminology were used

In **Table 5**, there is also less significant difference in terms of screen design of the system, the indicated value of happens to 0.120, almost similar to the findings of the screen design of the system. We can therefore conclude that, the p-value is less than 0.5, we reject the null hypothesis, that is to say, the terminology of the system used are partially correct.

Hypothesis 4: The system is sustainable and reliable

Software capabilities

The **Table 6** result shows that, there is high significant difference in terms of the capability of the system. The p-value indicates 0.80., we accept the null hypothesis, that is to say, the system is capable to handle its specifications based on its reliability and speed.

Discussion

The study was designed to assess RapidTest E-Platform application and its perceived user friendliness. The argument of the findings is therefore;

Firstly, the study found that, the experts who are among the invigilators of the examinations think that the usability of the system is excellence. The result indicates that most of them are satisfied with how easy it is used the

system by the candidates. They are also with the opinion that, candidates can work with the system easily, effectively, quickly, efficiently, comfortably, comprehensively, and the system can handle exceptions. Moreover, the experts also agreed that the information provided in the system is clear, easy to understand; effective, pleasant, and they all agreed that the system has all the expected

functions and capabilities. The proof of usability of rapidtest e-platform is consistent with Davey (2011) who says; every test applications must be convenient to administer, easy to maintain, and would offer immediate and detailed summative and formative scores.

Secondly, On the other hand, over 65% of candidates participants strongly disagree if the system is terrible, difficult, frustrating, inadequate power, dull and rigid. However they are with the opinion that the system is wonderful, easy, satisfying, adequate power, stimulating and flexible. Note that, more than 13% of the candidates indicated to neither agreed nor disagreed.

Thirdly, on the issue of screen design, the issues were presented in a scale of 1 to 9, where 1 is the least accepted and 9 is the most accepted. The result related to reading characters on the screen shows that, 32.29% pick between 7, 8, or 9. The results highlighting simplifies task on the screen shows that, 22.25% selected between 7, 8, or 9. The outcome on organization of information revealed that, 20.68% rated between 7, 8, or 9.

While the outcome of sequence of screens indicated that, 14.29% chose between 7, 8, or 9. This result shows that, the screen design are partially accepted by the candidates.

In addition, on the subject of use of terminology in the design of the system, also, the issue was presented in a scale of 1 to 9, where 1 is the least accepted and 9 is the most accepted. The use of appropriate terms throughout the system indicated that 79.61% pick between 7, 8, or 9. The outcome of terminology related to task indicated that about 59.93% selected between 7, 8, or 9. The result of position of messages and error messages on the screen shows that, 58.88% indicated 7, 8, or 9. The results generally shows that, the terminology used meet the accepted standard.

Moreover, focusing on the capability of the system based on reliability and speed, still, the matter was presented in a scale of 1 to 9, and where 1 is the least accepted and 9 is the most accepted. The respond on the system speed shows about 44.41% pick between 7, 8, or 9, whereas the respond of system reliability indicates 52.58% of participants chose between 7,8, or 9. The system can also correct candidate mistakes as they are writing exams, the result shows that, about 46.61% of participants picked 7, 8, or 9. The result indicates that the system is capable to a degree to handle errors and exceptions.

CONCLUSION

R-squared *cannot* determine whether the coefficient estimates and predictions are biased, which is why we must assess the residual plots. However in this paper, the residual plot is not considered during the analysis, it indicated only the value of the residuals. Additionally, R-squared does not indicate whether a regression model is adequate, that is why, we recommend another model that can be adequate for this kind of research. Moreover, we can have a low R-squared value for a good model, or a high R-squared value for a model that does not fit the data!

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