An Improvement of Student Examination Assessment through Online (e-Exam) by Considering Psychological Distress Factors

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***Abstract*— e-Exam is an electronic resource platform for students to take examinations through online. Since, the process of taking the exams are executed through internet, therefore security consideration become vital in e-Exam. Due to lack of trust, unsecured platform and cheating trial which are commonly happen in e-Exam assessments; hence it makes many e-Exam turns unsuccessful. By taking Nigeria universities as our case study, this research found that a numbers of e-Exam schemes in the country use a combination of fingerprint biometric authentication and cryptography dynamic approaches. These can guarantee that the e-Exam's candidate is the right person in a duration taking the exam without a need of any proctor. However, we believe that in taking e-Exam process, the psychological distress of student should also be taking into consideration in the assessment. By integrating those factors, we believe the e-Exam can be more successful and reliable. As the case study of this research, a total of 18 lecturers in Nigeria universities have been used as samples of our motivation.**

Keywords- Electronic-exam, Face recognition, Authentication, Psychological distress factor.

I. INTRODUCTION

Different countries implement their process of student taking exam online differently. In this research, e-Exam is meant the use of mainframes by applicants in a lofty chance managed assessment generally happening at the same time above a permanent duration of time. There are many other uses of computers in learning, and many other kinds of possible assessment. The Electronic examinations are complex fraction of e-learning security [1]. This paper explains a cryptographic method that have power over security requirements, such that authenticity, inscrutability, secrecy, forcefulness, correctness without the survival of a Trusted Third Party. The proposed protocol as well supplies students an acceptance, a proof of a successful capitulation, and it is based on survival of unidentified revisit canals. A further research work proposed a theoretical loom that integrates available fingerprint biometrics authentication technologies in conjunction with e-learning surroundings to control immoral behavior throughout e-learning examination period. [2]. The proposed loom recommends practical solution that can slot in a random fingerprint biometrics user authentication for the period of exams captivating in e-learning courses. By doing so is put forward to hold back exam dishonest in e-learning atmospheres. According to [3] web scheme e-Exam system; organization that transmit available exams and automatic ranking of scholars' oral exam. Psychologists have been researching on the stressors related to various distress and mental instability [4]. One of the research areas is the student distress related examination. Due to the rapid growth of technology, the students have to cope up with the e-Exam related stress. The present study will try to analyze the existing e-Exam system in Nigeria and their impact on students' psychological distress factors as a motivation to be included in the existing system model.

The sequence flow of this paper is arranged as follows. Section II discusses on the observation against previous researches and factors affecting student's happiness in e-Exam. Section III describes on the research design of this study. Then, Section IV presents the analysis of data. Finally, Section V concludes with conclusions and future works of this research.

II. RELATED WORKS

A. Psychological Distress

Psychological Distress can be defined as a universal term that is used to explain disagreeable manner or feelings which blow someone's stage of performance; E.g. Psychogenic pain, in-house clashed and outside strain that stop someone from self-actualization that is associated among important others. Hebb's Theory of Arousal.

According to Hebb's hypothesis that was helpful for the explanation of affiliation among exams nervousness with academy routine be a version of Yerkes's Dodson Law [5]. The law declared that human creature seeks of most favorable encouragement in a way of excitement convey concerning dullness while too high excitement convey amount to pressure. Various studies have been carried out on the relationship

between exams nervousness and academy performance. Regarding to the study of [6] seen that cognitive exams nervousness put forth a significant stable and negative impact to students academy performance. Another study by [7] scrutinized the consequences of exams nervousness on academy performance among the university students' and seen that exams nervousness to be negatively related to academy performance. [8] Studied the consequence of students' exams nervousness and teachers evaluation practice on students' achievement and motivation at the secondary level and seen that students with high exam level performed poorly be less motivated to study. [9] They furthermore study on the relationship on exam nervousness and academy performance seen that post-secondary school students' demonstrate higher exam level prior to the question paper in every subjects. [10] which discover the relationship of exam nervousness and academy performance make use of the graduate and undergraduates students' as candidates. They also have seen the negative relationship the exam nervousness and academic accomplishment. In additional current study, [11] explored the relationship between exam nervousness and academic accomplishment. They have also seen a negative relationship between exam nervousness and accomplishment. And they also further seen a cognitive factors (worry) donates more in exam nervousness affective (emotional). 5 factors that affects student psychological distress factors namely Catastrophizing, External Control Beliefs, Alexithymia, Restless Behavior, and Need for Support

B. Sadness and Educational Presentation

The sadness has bad temper of muddle that distress any one's capability to carry out existence behavioral which consist of academic performance [12] For frequent people who undergo beginning unhappy to fit into place in self-censure, experience confusion and a feeling of hopelessness. The major component of depression is loss of interest of activities which were before seen pleasurable and a depressed bad temper [13] it has been established that loss of concern aspect of depression is connected with lower grade point averages and students who undergo from both nervousness and depression had poor academic performance [14].

III. STUDENT MOTIVATION FACTORS

Student motivation is defined as an uncontrolled individual: which are complex to discipline, control, resistant to control and fail to follow rules; or rebel against authorities. Participation defined that student has that motivation to make use of a new procedure. Alleged love to use has be a factor affecting information system practice and accomplishment. The trust issues are in relation to student awareness. The schools vigorously work to construct practice and learning situation for the aims of cheering students' activity and by making participation achievable [15]. With the information perfectly and utility worth are solution to the success of (Information System) [16, 17]. Motivation is an erratic for measuring of information system superiority and investigative it relationship with professed trustworthiness [18, 19]. Innovated and dependence function influence user's participation intention. The wiliness to use is the key variable in explaining of online students' successful; since it is the dangerous peculiarity in the effectiveness of web based senior education. The authentication procedure is an innovated factor that might influence the reason of participation [20].

A. Lecturers Strategies

Enhancing the e-Exam and e-Learning is one of the value solutions to declining students' knowledge segregate [19]. In a typical exam situation, classroom mainly focused on students' mode whereby student might not converse to give help to each other in exam [21]. The normal management level not just dynamic e-learning but also guarantee sufficient e-Exam. Lecturer's adoption of e-Exam policies is important factor for victorious e-learning. However, students have trust in their lecturers' based on lecturer's highly regarded point of view on the need for supports by social welfare in the university and clarification or fair discussion and supportive participation in making decision [15]. Lecturer's advised are illustrated to be vital academic path that oblige the e-Exam enhancement [22].

B. Online Accessibility Reliability

The issue of security in e-Exam scheme has been describing by various researchers [23].Online exams is a challenges for e-learning security [1]. Presently, online assessments are commonly carried out at specified exams centers that need supervision purposely the reason, once the administrative in unsupervised locations, students' might gain a supportive from others to enhanced their exams results or having another person to take the exams for them. As such container, lecturers becomes indecisive on who answer the exam questions. That disagreement the elasticity benefits of online education schemes; thus, on the sense that elaborating of the e-Exam locally and globally, an issue stays behind, mostly with the off-site exams. Stoppage to authenticate students' sitting for exams is a main dispute in an online learning surroundings. A less concern has been given to resolve students' unprincipled behavior. However, numerous researchers condemned recent e-Exam for not concentrating on the students' authentication, mostly those that involved on online quizzes and exams [24] Meanwhile, McGinity eminent that biometrics has substitute predictable password schemes [25]. However, other study point out the vital ways of detection apparatus above the early access to the e-Examination schemes [26]. Thus, schemes should be built to enable in a way that the individual sitting for the exams should be the right person who registered for the courses. Yang and Verbauwhede recommended that biometrics provide best security that password scheme [27]. Furthermore, Hugl painted out numerous technologies in connection to securities that haven't be used in online-learning [28]. There has not be an excellent biometrics schemes that suits every requirements as far be developed. Every scheme has their benefit and weaknesses. A little recent readings has concentrated on enhancing e-Exam security making use of biometric schemes, notwithstanding a partial numeral of them tackle the problem of nonstop user authentication. According to current revise, Flior and Kowalski talk about a technique given nonstop biometric user authentication in an online-exam through keystroke dynamics [29]. In regards of the formerly stated

Table 1 Five (5) factors that affect student psychological distress factors

1. "Catastrophizing"	**F(1)**	**PF(2)**	**DK(3)**	**PT(4)**	**T(5)**	**Mean**
(a) I'll prefer Psychological Distress to be consider in every students life before sitting for their e-Exam system	1	4	5	4	4	2.67
(b) My illness prevents me from doing what I want to do!	2	4	6	4	2	3.00
(c) Sickness and suffering have taken away my pleasure in making decisions or having plans.	2	3	2	10	1	2.72
(d) I will recommend this to other instructors	N/A	N/A	N/A	11	7	100.0
(e) My illness will affect and reduces the performance of my result grades	0	3	6	4	5	2.39
2. "External Control Beliefs"						
(a) If I set a final goal for myself, when I reach a step partway, I am not satisfied	0	3	6	2	7	2.28
(b) I get discouraged if treatments are not effective quickly	2	3	6	4	3	2.83
(c) I get discouraged if I see that my progress isn't steady	1	4	7	5	1	2.94
(d) I can't be satisfied with minimal progress or improvement.	2	3	4	5	4	2.67
3. "Alexithymia"						
(a) When I become sad, I realize it right away.	2	2	2	6	6	2.33
(b) It is easy for me to talk about sad feelings	2	3	6	5	2	2.89
(c) Talking with others about my problems helps me to feel better.	1	3	6	4	4	2.61
(d) It is easy for me to express angry feelings.	0	3	2	9	4	2.22
(e) When I let myself go, my anxiety increases rather than decreases.	1	3	5	5	4	2.56
4. "Restless behavior"						
(a) In the past, it was always I who organized family affairs.	0	4	2	4	8	2.11
(b) Throughout my life, I have always been a very active person.	1		9	5	3	2.50
(c) I used to be able to do very important things even in brief periods of time.	3	5	5	3	2	3.32
(d) Others regarded me as a person who is never idle.	2	2	7	6	1	2.89
5. "Need for Support"						
(a) Sometimes others don't realize how much I am suffering.	0	1	1	11	5	1.89
(b) Sometimes others don't take my sickness seriously enough.	1	5	5	4	3	2.83
(c) If every time I was sick, someone would speak a kind word to me, it would make my suffering easier to accept.	2	4	6	5	1	3.06
(d) I think that people really don't understand my illness.	1	7	4	5	1	3.11

(Notes: False (F=1), Partially False (PF=2), Don't Know (DK=3), Partially True (PT=4), True (T=5))

thought, researches are currently searching for the best authentication technique which assist to validates the identification of students' taking the exams and to make sure he/she will be the same individual that register for the course with argument about him/ her confidentiality. The face recognition schemes is a human forthcoming since it does not need any contact and no furthermore hardware given that most PCs and laptops come along with an inbuilt cameras. Additional highly, face recognition could be used for the nonstop authentication of students' it time of all exams episode. Meanwhile, psychological distress factors has its weaknesses, in the sense that main dissimilarity might happen in time to come as a result of motivational behavior, tiredness, Catastrophizing", "External Control Beliefs", "Alexithymia", "Restless behaviour" , and "Need for Support".

IV. SURVEY METHOD AND RESULTS

A survey questionnaire was conducted and distributed to lecturers online to have their point of view regarding students motivation to be implemented to the e-Exam system by integrated face recognition as most high and inexpensive techniques to monitor candidate or students during their examination period to make sure it is the right persons who registered the course are the same individual who is sitting on the exam hall. The analysis conducted to check the impact of psychological distress aspect towards student E-Exam performance; the likert scale of measurement has been used and adopted the following factors were coded as the variables for the psychological distress with the scale of True = (5), partially true = (4), don't know = (3), partially false = (2), false = (1) According to the component of each factors respectively 5 factors that affects student psychological distress factors namely "Catastrophizing", "External Control Beliefs", "Alexithymia", "Restless behaviour" , and "Need for Support" in Table 1.

A. Overview Results and Discussion

This section discusses results of this study that is collected through questionnaire. The data analysis was conducted accordance to the research design. Statistical Package of Social Science (SPSS) IBM Version 20 was used in this study to analyze the data from questionnaire to answer the objectives in this study.

- **Responds Rate**

However, the sample size for this study 65, the researcher distributed questionnaires to the entire population (N= 75) to obtain a higher response rate. From this questionnaire, just 18 were received.

- **Demographic Analysis**

The first aspect investigated was general background of respondents, which consist of gender, age, faculty of lecturing, years of lecturing. Frequencies and percentage were used to summarize the results of respondents' background.

- **Gender**

Table 2 shows data related to respondents gender. Result revealed that most respondents are male with 10 respondent s which represent s 55.6% from the total respondents as compared to 8 female respondents which represents 44.4% from the total respondents.

Table 2 Genders

	Frequency	Percent
Female	*8*	*44.4*
Male	*10*	*55.6*
Total	*18*	*100.0*

- **Age**

Results in Table 3 demonstrate the age of respondents. Age was divided into 5 categories that are 25 – 30, 31 – 40, 41 – 50, 51 – 60, and More than 60. Results showed that the majority of respondents (N = 6) were in the rage from More than 60 years old which represent 33.3% of the total respondents, followed by 4 respondent (22.2%) in age of 51 – 60 years old, 5 respondent (27.8%) who are 41 – 50 years old, 2 respondent (11.1%) age of 31 – 40 years old and lastly is only 1 respondent (5.6%) from age 25 – 30 years old. These results indicate the majority of lecturer in that University is more than 60 years old is high age lecturers.

Table 3 Ages

Age	Frequency	Percent
25-30	*1*	*5.6*
31 -40	*2*	*11.1*
41 – 50	*5*	*27.8*
51 – 60	*4*	*22.2*
More than 60	*6*	*33.3*
Total	*18*	*100.0*

- **Faculty of Lecturing**

Results in Table 4 demonstrate the faculties of respondents. Faculties were separated into 4 categories that are Faculty of Management (FM), Faculty of Social Science (SS), Faculty of Science (FS), and Faculty of Education (FP). Results showed that the majority of respondents (N = 8) were faculty of social science which represent 44.4% of the total respondents, followed by 4 respondent (22.2%) faculty of science and 4 respondent (22.2%) faculty of education respectively. While 2 respondent (11.1%) faculty of management which is the last from the respondents. These results show the majority of lecturer in that University is that of faculty of social science.

Table 4 Faculty of Lecturing

Faculty	Frequency	Percent
Faculty of Management (FM)	*2*	*11.1*
Faculty of Social Science (SS)	*8*	*44.4*
Faculty of Science (FS)	*4*	*22.2*
Faculty of Education (FP)	*4*	*22.2*
Total	*18*	*100.0*

- **Years of Lecturing**

Results in Table 5 demonstrate the year lecturing of respondents. Years were shared into 5 groupings that are less than 1 year, 1 – 5, 6 – 10, 11 – 15, and More than 15. Results showed that the majority of respondents (N = 8) were in the rage from 6 - 10 years of lecturing which represent 44.4% of the total respondents, followed by 4 respondent (22.2%) in 11 – 15 years of lecturing, 3 respondent (16.7%) who are 1 – 5 years of lecturing, 2 respondent (11.1%) more than 15 years of lecturing and lastly is only 1 respondent (5.6%) which is less than 1 year of lecturing. These results specify the majority of years of being lecturer in that University is 6 – 10 years of lecturing is higher.

Table 5 Years of Lecturing

Service of lecturing	Frequency	Percent
Less than 1 Year	*1*	*5.6*
1 - 5 Years	*3*	*16.7*
6 - 10 Years	*8*	*44.4*
11 - 15 Years	*4*	*22.2*
More than 15 Years	*2*	*11.1*
Total	*18*	*100.0*

- **Catastrophizing**

The results obtain from the descriptive statistical analysis on different factor namely Catastrophizing is shown in the above Table 1. There are four items under Catastrophizing. The results from this analysis shows that illness affect the student performance in e-Exam is high (Mean = 2.70). Based on the mean value, students' in Federal University of

Technology Minna; is classified having strong illness within themselves during the e-Exam period. The Table indicates that the lowest mean value for catastrophizing is 2.39. It indicates that most of the respondents that illness will affect and reduce the performance of their result grades. In regards to [30], he stressed out that the terms catastrophizing applied to people who have experienced sudden disaster or misfortune in their lives. Those people become speechless by the uncontrollability of their situations and by a wide variety of intense emotions like as shock, grief, despair, fear, and many more. The onset and continuing experience of chronic pain are often perceived as a high emotional and catastrophic experienced by those who suffer from it. Meanwhile, researcher with chronic pain patients as happens to define it as a cognitive coping strategy, a set of maladaptive belief regarding someone's pain, or symptoms of depression. Alongside, the highest value for castastrophizing is 3.00 which indicate that illness prevents them from doing what they wanted to do. People having any chronic illness can be a very strong impact for them to do well during their exam period [31]. Thus, poor performance can affect the expected results of students' and lead to impact to the university. It can be concluded that most of the students in the university have a chronic illness due to high total mean value which is 2.70.

- **External Control Beliefs**

The results seen from the descriptive statistical analysis on the second factor namely External Control Beliefs is shown in the Table 1 above. There are four items under External Control Beliefs. The results from this analysis indicates that getting discouraged if seen that their progress isn't steady is high (Mean = 2.68). Based on the mean value, students' in Universities is classified having strong discouragement [32] superstitious belief control and behavior are tend to be based on belief systems which can't be empirical proven often people will hold up to strong belief on superstitious phenomena and describe what that phenomena exactly is, but can't logically support why that phenomena should be putting into consideration substantial [32]. The highest mean value is 2.94 which signify the assessment on the belief of students' towards themselves in sitting for their exams. It indicated that most of the students' can get discouraged if they see that their progress isn't steady. Hence, it can be concluded that most of the students' have high level of self-confident with total mean value of 2.68.

- **Alexithymia**

The results seen from the descriptive statistical analysis on the third factor namely Alexithymia is shown in the above Table 1. There are five items under Alexithymia. The results from this analysis signified that the lowest mean value is 2.22 on the assessment of students not easy for them to express their angry feelings [33]. According to [34] which talk about personality and individual differences and other researcher stressed out that Alexithymia is irrigational belief and disorder [35]. The high mean value is It is easy for them to talk about sad feelings is high (Mean = 2.89). Based on the mean value, students' in University is classified having strong sad feelings when talking to others. Hence, it can be concluded that students' the university have high level of alexithymia traits with the value of the total mean is 2.52.

- **Restless Behavior**

The results perceived from the descriptive statistical analysis on the forth factor namely Restless behavior is shown in the above Table 1. There are four items under Restless behavior. The results from this analysis indicate that they are able to do very important things even in brief periods of time is high (Mean = 2.71). Based on the mean value, students' in University is classified having strong wills of doing important things even in brief period of time. In regards to [36] indicated that more favorable health state and religions are negatively connected to spirituality and number of sexual partners. Risk factors contribute to the psychological well-being and distress of university students.

- **Need for Support**

The results grasped from the descriptive statistical analysis on the fifth factor namely Need for Support is shown in above Table 1. There are four items under Need for Support. The results from this analysis signifies that I think that people really don't understand my illness is high (Mean =3.11). Based on the mean value, students in University are categorized having strong thinking that people really don't understand their illness. According [37] social support from and welfares in the university can help students to be strong and have the ability to concentrates in their study without not thinking about financial situation during study years in the university. Thus, this poor performance will affect the students in the university due to the high total mean value which is 2.72.

B. Overall analysis for five factors that affect students' psychological distress in universities

Table 6 Descriptive analysis on overall of student's psychological distress factors level essential

Essential	Mean	Classification
Catastrophizing	*2.70*	*High*
External Control Belief	*2.68*	*High*
Alexithymia	*2.52*	*High*
Restless behaviour	*2.71*	*High*
Need for Support	*2.72*	*High*
Total average mean	***2.67***	***High***

In regards to Table below, total mean value for entire proportions could be classified as high value with need for support having the highest value on 2.72. The level of each student's that need support in the University is high.

V. CONCLUSION AND FUTURES WORKS

The use of lecturers as respondents in Nigeria and the population sample size drained from profession openness individuals. The new sample frame will reflect a wide range of population of e-Exam acceptance with the generalization problem to be defeat; and any of the gender problem seen in this study, will be settled. The high rate of Catastrophizing, External Control Beliefs, Alexithymia, Restless behaviour, and Need for Support amongst students have a core consequence, and not just psychological illness which have an effect on students health, enlargement, informative achievement and excellence of life as well as the failing inspiration on their relatives, foundations and that of other individuals lives. How long students should be suffering from these illnesses and which remain as abandoned public health problematic in an institution of upper education. Students psychological distress illness is a nationwide problem, and even if a developed, developing and underdeveloped countries around the world. An outdated or up-to-date country and no community are invulnerable against this disorder. The solution depends on being aware of it, by cross-examining at early stage and to provide support with sufficient and suitable facilities. And with this finding, other researcher can use it to improve the e-Exam scheme by including the psychological distress factors listed in the above finding that will be beneficial to the university students.

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