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# SCALE DEVELOPMENT AND VALIDATION OF LEARNERS'SATISFACTION IN OPEN AND DISTANCE LEARNING (ODL) IN THE UNIVERSITY OF LAGOS

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***Abstract***
The need for Nigeria to start to embrace the social inclusion offered by Open and Distance Learning (ODL) in the country's ailing tertiary educational sector cannot be overemphasized. However, to properly position ODL as a valid alternative, there is need to assess the quality of the current offerings in the country. Measuring satisfaction of the users is a veritable assessment of quality and as such forms the purpose of this study whose objectives were to Design a scale for Learners' satisfaction in ODL in Nigeria, to assess the reliability of the scale for Learners' satisfaction in ODL in Nigeria and to determine the validity of the scale for Learners' satisfaction in ODL in Nigeria. Using a multistage scale development method, three scales to measure the three identified stages of ODL in Nigeria were developed and tested for validity and reliability using Factor Loadings and Cronbach's Alpha respectively. Results showed that the scales were reliable, and the items all had factor loadings within acceptable limits as found in literature. It was thus, recommended that ODL institutions in the country should consider using the scale as a basis for their own self-examination to improve quality of learner experience.

## Introduction

The world is constantly changing. It has transited from earlier ages of learning from the traditional classroom to distance learning and now to online learning to meet the increasing needs of the historically underserved and diverse race and gender learner population. With the explosion of information technologies and emerging internet commercialization, online or electronic learning

(e-learning) environments offer the possibilities for communication, interaction and multimedia material delivery that enhance learner-directed learning (Wu, Tennyson, Hsia, & Liao, 2008).

All over the world, the option of the opportunities of the Open and Distance Learning (ODL) have been explored as a veritable tool for solving many of the endemic problems in education and training and lead to sustainable education for all. ODL surmounts the conventional constraints of time and place that is usually associated with face-to-face mode of instructional delivery, and it also provides flexible learning opportunities to learners (COL, 2000; Open Society, 2007; Daniel, 2012; Ghosh, Nath, Agarwal, & Nath, 2012; Bozkurt, 2019). ODL has emerged as a veritable alternative for a broader access to higher education all over the world (Okebukola, 2014).

The mode of delivery of instruction in ODL is by e-learning. The term e-learning denotes web-based products and services that are designed to support individual and organizational learning (Adams, 2006). On the other hand, Merriam et al. (2007) defined e-learning as all forms of electronic supported learning and teaching, which are procedural in character and aim to effect the construction of knowledge with reference to individual experience, practice and knowledge of the learner. In a broader sense, the United States Distance Learning Association (2008) defined e-learning as the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance. It has been difficult to identify a common definition for e-learning. Algahtani (2011) summarized the definitions of e-learning from three different perceptions: the distance learning perception, the technological perception and the pedagogical perception.

ODL universities all over the world usually have huge learners' enrollments every year. For instance, Indira Gandhi National Open University has enrollment of 3,499,999 learners. Anadolu University of Turkey has enrollment of 1,974,343 learners, while Islamic Azad University of Iran ranks has enrollment of 1,613,000 learners (India Today, 2015).

In Nigeria, the carrying capacities of universities with face-to-face mode of instructional deliveryare overstretched year in, year out. To meet the needs of Nigerian prospective learners, thirteen dual-modes of instructional delivery universities was approved by National Universities Commission (NUC) to offer ODL courses. Another two institutions operate a single mode of instructional delivery. These two institutions are the National Teachers' Institute, Kaduna, dedicated to teachers' training (established in 1976) and National Open University (NOUN)

(established in 2003). NOUN has enrollment of about 254,000 learners. In addition, the Distance Learning Institute (DLI) of the University of Lagos established as open distance correspondence institute in 1973 now operates on dual modes of instructional delivery, with current enrollment of 25,000.

Despite the lofty benefits of ODL, it is faced with some challenges, among which include; lack of peer contact and social interactions, the time-consuming nature of developing video/content materials, as well as the need for flexible tutorial support (Alraimi, Zo, and Ciganek, 2015). In ODL platforms, learners' withdrawals from programmes due to financial constraints; workplace pressure and general lack of satisfaction have taken far-reaching implications on the sustainability of ODL institutions. Furthermore, dissatisfaction occasioned by the above frustrations and subsequent loss of interest in learners' courses of study leads to mass withdrawals from programmes (Adams, Liyanagunawardena, Rassool, and Williams, 2013), causing high attrition rates in ODL institutions.

Furthermore, e-learning may increase access flexibility, eliminate geographical barriers, improve convenience and effectiveness for individualized and collaborative learning, but it suffers from some drawbacks such as lack of peer contact and social interaction, high initial costs for preparing multimedia content materials, substantial costs for system maintenance and updating, as well as the need for flexible tutorial support (Kinshuk & Yang, 2003; Wu et al., 2008; Yang & Liu, 2007). Also, learners in virtual e-learning environments may experience feelings of isolation, frustration and confusion (Hara & Kling, 2000) or reduced interest in the subject matter (Maki, Maki, Patterson, & Whittaker, 2000). In addition, learner satisfaction and effectiveness for e-learning has also been questioned (Piccoli, Ahmad, & Ives, 2001; Santhanam, Sasidharan, & Webster, 2008). Defining satisfaction in online learning is not an easy task. It is complex and multidimensional and includes many factors, such as workload, communication, learner participation in online discussions, flexibility, technology support, instructor pedagogical skills, and feedback mechanisms (Öztürk , Karamete & Çetin , 2020; Wei H-C, Chou C,2020).

To provide maximum satisfaction for learners, it is now becoming very necessary that leaners' viewpoints, tastes and desires are completely taken into consideration in the policy formulation by the managements of ODL institutions (Rajadurai, Alias, Jaaffar, Noordiana & Hanafi, 2018; Motefakker, 2016). Giving sense of belonging to learners improves their loyalty to their institutions

and creates in them, sense of satisfaction (Motefakker, 2016). This satisfaction is the key to the success of any ODLinstitution.

Scale Development Scale creation is a process of developing a reliable and valid measure of a construct to assess an attribute of interest. Salinda Weerasinghe, Lalitha and Fernando (2017) defined learners' satisfaction as an immediate perception because of evaluating facilities, available learners' services and educational experience. Jurkowitsch, Vignali, and Kaufmann, (2006) opined that learners' perceived service quality offered by the institution leading to learners' satisfaction or dissatisfaction is worth evaluating. Thus, many researchers have investigated learners' satisfaction which include Udo, Bagchi, & Kirs (2011) who has made use of modified SERVQUAL in assessing learners' perceived service quality of e-learning in distance education and they found that out of the five dimensions, four played significant roles except the fifth (Reliability).

Also, Mantovani (2012) also used the same five dimensions but found that Assurance, Reliability and Web site content were significant in perceived service quality in Distance Learning; though they have not used the modified SERVQUAL. In Indonesia, Sembiring (2014), examined the general service quality with satisfaction of ODL service quality by learners, using the SERVQUAL assessment scale and discovered that Reliability, Responsiveness and Empathy were significant with learner satisfaction. Other researchers who have also examined learner Satisfaction of Open and Distance Learning also include Beare (2009); McCleary & Egan (2009). Threlkeld and Brozka (2004) stated that "maturity", high motivation levels, and self-discipline have been shown to be necessary characteristics of successful, satisfied learners".

**Statement of the Problem**

ODL approach all over the world is facing some challenges, among which include; lack of peer contact and social interactions, the time-consuming nature of developing video/content materials, as well as the need for flexible tutorial support. In ODL platforms, learners' withdrawals from programmes due to financial constraints; workplace pressure and general lack of satisfaction have taken far-reaching implications on the sustainability of ODL institutions. Although, these challenges have been reported in literature as identified in the introduction, many seem not to have captured the peculiarities of the Nigerian experience. With many learners of ODL in Nigeria facing harsh economic realities as well as socio-cultural bias against distance learning, there is justification for a scale to measure learner satisfaction in ODL learning within the Nigerian context. In Nigeria,

for instance, a framework for measuring leaners' satisfaction on ODL services has not been explored. To this end, this study will develop and validate a scale for measuring learners' satisfaction of ODL services.

**Purpose of the Study**

The main purpose of the study is to develop and validate a scale for measuring learners' satisfaction of OD services. Specifically, the study will:

1. Design a scale for Learners' satisfaction in ODL in Nigeria.
2. Assess the reliability of the scale for Learners' satisfaction in ODL in Nigeria.
3. Determine the validity of the scale for Learners' satisfaction in ODL in Nigeria.

**Research Questions**

The following research question guided the study:

1. What scale can be used for Learners' satisfaction in ODL in Nigeria?
2. What is the reliability of the scale for Learners' satisfaction in ODL in Nigeria?
3. How valid is the scale for Learners' satisfaction in ODL in Nigeria?

**Theoretical Framework**

This study hinges on the Transactional Distance Theory (TDT) (Moore, 1997). This theory articulates the idea that Distance Education is not just a geographical separation of learners and teachers but rather a pedagogical concept. Moore (1997) pointed out that the teaching environment, where the separation between teacher and learner should be significant enough that special teaching–learning strategies and techniques must be used. Therefore, what is generally attributed as the major problem of ODL, e.g., geographical constraint for the learners goes other pedagogical constraints as well. Besides, Giossos, Koutsouba& Lionarakis (2009) in their review of the contemporary relevance of Moore's theory refined his notion. They stated that the particularities of space and time pertaining to teacher and learner which characterize distance learning creates behavioural models for the teacher and the learner, psychological and communication distance between them, and insufficient understanding of each other. (Giossos, et al., 2009, p. 2). According to Moore (1997), there are three factors that must be taken into consideration for the nature of transaction developed between teachers and learners in ODL; these are: dialogue, structure, and learner autonomy.

**Dialogue**

This is an important factor of TDT theory which involves interaction between learners and teachers. Dialogue considers all forms of interaction, more than simply two-way communication, "within the context of clearly defined educational targets, cooperation and understanding on the part of the teacher, and eventually culminates in solving the learners' problems" (Giossos et al., 2009, p. 2). Martindale (2002) however, argued that it is the interaction between the instructor and the learner that determines the effect of an instruction and not the location. It is the course designers, the personalities of teachers; the subjectmatter of the course, and the environmental factors that determines the interactions (Martindale, 2002). This implies that improper structure of the course, insufficient media of communication, and ineffective feedback mechanism can adversely affect the efficiency of interaction process in ODL which can affect the teaching/learning experiences.

**Structure**

The second factor identified by Moore (1997) is the nature of the course structure. This entails the level of the course's rigidity or flexibility as well as the extent to which coursegoals and objectives are pre-prescribed; the pedagogical model used in teaching the course (e.g., teacher- versus learner-centred), the nature of course assessment, and the ability of the course to accommodate individual learner's needs (Zhang, 2003). Thus, it is important that designers of ODL courses, know the learner may not have an opportunity to meet facilitators, therefore the course should be interactive enough to prevent learners' from having difficulties while learning.

Autonomy

The third factor is autonomy, it refers to "the extent to which in the teaching/learning relationship, the learner rather than the teacher determines the goals, the learning experiences, and the evaluation decisions of the learning programme" (Moore, 1997). Autonomy is very important in the ODL context because the learners to a large extentdepend on their own sense of personal responsibility and self-directness and are responsiblefor their learning. Autonomy is dependent upon dialogue and structure. Moore's theory avers that an inverse relationship exists between these three factors, in that increases in one can lead to corresponding decreases in others (McIsaac & Gunawardena, 1996). For example, a course with an inflexible structure can lead to a decrease in the quality of dialogue and sense of learner autonomy, thereby increasing the learners'

perception of transactional distance. However, Moore (1997) also notes that when course structure drops below a particular threshold, the sense of transactional distance can actually increase, due essentially to the potential for learner confusion or dissatisfaction.

This study considers TDT as the most suitable theory because it has been successfully explored and used in similar studies (Bitegeko, 2010; Mbatha & Naidoo, 2010; Falloon 2011; Goel, Zhang, & Templeton, 2012; Chawinga & Zozie, 2016) with verifiable results. Specifically, for this study, the theory explains three fundamental factors which are necessary for bridging the transactional gap in ODL environment. It is expedient therefore, to examine how flexible the courses or programmes are structured, how the opportunity for dialogue is made in DLI.

2. Classical Test Theory

Charles Spearman in 1904 figured out how to correct a correlation coefficient for attenuation due to measurement error and how to obtain the index of reliability needed in making correction. Spearman finding is thought by some authors to be the beginning of Classical Test Theory (CTT) (Traub, 1997). CTT is the foundational theory of measurement and mental abilities and is premised on the central assumption that the observed score is a combination of the true score and an error score. These three features (true score, observed score and error score) composed the CTT. The true score refers to the hypothetical score a student would obtain based on his competency only. This is mathematically represented as

(O = T +E).

Thus, CTT is anchored on two definitions:

1. The true score ($T_{gp}$) of a person (P) on measurement (g) is the expected value of the observed score ($X_{gp}$); and
2. The error score ($E_{gp}$) which is the difference between the two elements (Observed score and the true score). Under CTT, ($T_{gp}$) is a constant but the unobserved value , and ($X_{gp}$) is a random variable that fluctuates over repeated sampling of measurent (g)

The mathematical model for CTT is deduced and consists of two equations:

$T_{gp} = E(X_{gp})$……..1

$E_{gp} = X_{gp\_-\_} T_{gp}$.....2

CTT as a theory requires very weak assumptions. These assumptions include:

a. the measurement is an interval scale

b. the variance of observed scores 2

*X s* is finite; and

c. the repeated sampling of measurements is linearly, experimentally independent. Under those assumptions, the following properties have been derived (Lord & Novick, 1968):

1. The expected error score is zero;

2. The correlation between true and error scores is zero

The classical test theory provides the theoretical underpinning that lends credence to the methods utilized in this study by recognizing the importance of a high reliability ratio to the measurement of a construct. Consequently, the theory has been suggested by other researchers (Rubio, 2005; Carmines & Woods, 2005) as being relevant in validating rating instruments using the correlation coefficient. Furthermore, other authors (Cappelleri, Lundy & Hays, 2014; Vincent & Shanmugam, 2020) have utilized the theory in their strengthening of their construct using reliability tests and dimension reduction using factor analyses.

## Methodology

### *Research Setting*

This study attempts to develop an instrument for the measurement of learner satisfaction in ODL services in Nigeria. It employed a quantitative research design using a descriptive survey as a method. The population of the study was learners of UNILAG Distance Learning Institute who registered for the 2019/2020 session. Respondents were sampled using Non-Probabilistic Volunteer Sampling and a total of 30 respondents were sampled.

### *Free Item Generation*

The review of extant literature unearthed the determinants of learner satisfaction which were used to develop the QAPLCG model that consisted of three stages, the Pre-Enrolment stage, Process stage and Product stage. The researchers employed free item generation by outlining the learner journey for each stage and developing questionnaire items for learner satisfaction along each

identified milestone in the journey. Table 1 presents the number of questions developed for each stage at the initial stage of item generation.

Table 1 presents the initial items generated at each stage

| Learner's Academic Stage | Pre-Enrolment | Process | Product |
|---|---|---|---|
| No. of Items Per Stage | 54 | 121 | 50 |

***Item Purification***

The questionnaires which were developed during the free item generation process were purified using three processes.

1. Duplicates and Redundant Questionnaire Items: Seven researchers with a minimum qualification of PhD and who spoke English as their first language screened all the questionnaire items and removed any items which were considered as duplicates or whose meaning were redundant or obtuse. This was done to reduce the length of the questionnaire arising from repetitions or hard to understand questionnaire items. It resulted in a deduction of 68 items. Table 2 presents the updated number of questionnaire items per stage for this process after purification.

Table 2 presents items after purification at each stage

| Learner's Academic Stage | Pre-Enrolment | Process | Product |
|---|---|---|---|
| No. of Items Per Stage | 26 | 89 | 42 |

2.Face Validity: Three experts with PhD in Education, one with PhD in Marketing and one with PhD in Management further screened the items presented in Table 2 to see if they appeared to be valid at face value. The justification for the use of Educational exerts is that there is a need to properly contextualize the questionnaire as measuring steps within the learning process. The justification for the use of a Marketing expert is to align the questions with measurement of satisfaction from a consumer perspective while the use of the expert in Management is to ensure that the resulting data would be useful to the intended users which are managers of ODL institutions. Table 3 presents the number of items that were adjudged to be valid at face value by the experts.

Table 3 presents validated items at each stage.

| Learner's Academic Stage | Pre-Enrolment | Process | Product |
|---|---|---|---|
| No. of Items Per Stage | 21 | 70 | 38 |

3. Field Test: The remaining items as contained in Table 3 were subjected to field testing. A data collection website containing links to online surveys was developed to assist with seamless dissemination of the questionnaire. This is in line with Rayhan, Zheng, Uddin, Timbol, Adewuyi, and Baraniuk's (2013) assurance of quality of online collection of data. Respondents were asked to volunteer to fill the online surveys. The findings of the field test are presented in the next section and discussed further.

**Data Analysis**

Two tests were carried out on the data collected from the field test: Reliability test using Cronbach's Alpha and Item Reduction Analysis using Exploratory Factor Analysis. This was sone to answer Research Questions 2 and 3. A decision criterion of a minimum of 0.70 Cronbach's Alpha as advised by Bowman and Bell (2009) and 0.50 factor loading in line with Hair, Anderson, Tatham and Black (2005) was adopted.

**Results**

The results from the reliability test and factor loading are presented in the tables below. The total reliability of the questionnaires for each stage is presented in Table 4.

Table 4: Reliability Test Results of All Instruments

| Instrument | Scale Statistics | | | | | Reliability Statistics | Validity Statistics | |
|---|---|---|---|---|---|---|---|---|
| Source | No. of Items | N of Samples | Mean | SD | CV | Cronbach's Alpha | F-value | P-value |
| Pre-Enrolment Stage | 21 | 50 | 114.18 | 51.888 | 0.45 | 0.946 | 7.733 | .000 |
| Process Stage | 70 | 50 | 379.26 | 127.127 | 0.34 | 0.982 | 9.675 | .000 |
| Graduates | 38 | 50 | 270.85 | 65.734 | 0.24 | 0.957 | 9.869 | .000 |

The results indicate that the instruments are reliable, since the Cronbach's Alpha Statistics (0.946, 0.982 and 0.957) respectively obtained for each of the composite instrument is > 70% threshold value. The validation of the reliability result of the instruments is carried out using analysis of

variance (ANOVA) to test if there is significance variation on how the respondents rated the items in the instruments. The results suggest that there is no variation on the rating of the items by the respondents at F-values = 7.733, 9.675 and 9.869, since P-values < 0.05 significance level respectively. These results are supported by the coefficient of variation (CV) values; which are respectively less than 0.50 threshold value, indicating homogeneity on how the respondents rated the items. Hence, there is an internal consistency of the answers from the respondents and therefore the data do not violate the assumption of reliability.

Furthermore, both the pooled mean for identified milestones and the individual item reliability and factor loading were considered to eliminate items which were not contributing optimally to the instruments. These considerations are presented in multiple tables below.

Table 5 presents the reliability and factor loading of questionnaire items on learners' information search for ODL programmes and admission guidelines.

| Variable | Factor Loading | Reliability |
|---|---|---|
| Form Purchase/Application | 0.884 | 0.825 |
| Registration & Screening Exercise | 0.901 | 0.911 |
| Information Unit | 0.913 | 0.846 |
| Help Desk | 0.809 | 0.889 |
| Visibility of DLI programmes | 0.723 | 0.781 |
| Pooled Mean | 1.000 | 0.946 |

Table 6 presents the reliability and factor loading of questionnaire items on screening and registration.

| Variable | Factor Loading | Reliability |
|---|---|---|
| Registration procedures are efficient and effective. | 0.901 | |
| Screening/ registration of prospective learners are done by trained DLI officers. | 0.759 | |
| DLI provides online information on procedures for screening and registration. | 0.872 | |
| There is enough information on ODE method of learning and the nature of each programme. | 0.904 | |
| DLI notice boards are also used to disseminate information on screening and registration for prospective learners. | 0.857 | |
| Pooled Mean | 0.901 | 0.911 |

Table 7 presents the reliability and factor loading of questionnaire items on the process stage

| Variable | Factor Loading | Reliability |
|---|---|---|
| Course Advisers /Lecturers | 0.728 | 0.913 |
| Docket | 0.718 | 0.878 |
| Photo card | 0.557 | 0.900 |
| Invigilation | 0.549 | 0.900 |
| Exam Registration and Examination procedures | 0.769 | 0.917 |
| Timetable | 0.859 | 0.880 |
| Study Centre Facilitation | 0.771 | 0.787 |
| General Assessment | 0.911 | 0.946 |
| Quality Assurance | 0.670 | 0.753 |
| Physical Library | 0.810 | 0.878 |
| Residential Programme and Accommodation | 0.726 | 0.891 |
| On-line Interactions/Learning Management System (LMS) and Continuous Assessment | 0.833 | 0.888 |
| E-Library | 0.833 | 0.812 |
| Exam materials | 0.734 | 0.704 |
| EXAM Results | 0.734 | 0.825 |
| Deferment, Reabsorption Process and Reabsorption fees | 0.772 | 0.869 |
| Medical Centre Registration and Services received | 0.808 | 0.959 |
| Counselling | 0.833 | 0.756 |
| Working Conditions and Schooling | 0.834 | 0.851 |
| Store Services | 0.666 | 0.890 |
| Affordability of Tuition fees/Prices of Course materials | 0.812 | 0.722 |
| Adequacy of Course materials/ resources | 0.527 | 0.768 |
| Radio Lectures and Video lectures | 0.676 | 0.964 |
| Pooled Mean | 0.996 | 0.982 |

Table 8 presents the reliability and factor loading of questionnaire items on programme completion activities.

| Variable | Factor Loading | Reliability |
|---|---|---|
| DLI Physical Environment | 0.784 | 0.812 |
| Management/Staff | 0.865 | 0.927 |
| Clearance for Certificate/ Certificate collection | 0.827 | 0.905 |
| Restrooms | 0.792 | 0.933 |
| Result Processing/Convocation | 0.720 | 0.728 |
| Technological Support | 0.899 | 0.978 |
| Tracer Study | 0.739 | 0.833 |
| DLI graduates and N.Y.S.C | 0.763 | 0.985 |
| Administrative Support | 0.779 | 0.724 |
| Reference Letter | 0.878 | 0.900 |
| Transcript | 0.890 | 0.961 |
| Pooled Mean | 0.999 | 0.957 |

While Table 9 presents the reliability and factor loading of questionnaire items on activities carried out by learners after they have graduated.

| Variable | Factor Loading | Reliability |
|---|---|---|
| Competency and skills career advancement | 0.859 | |
| Collection of Certificate of Exemption | 0.964 | |
| Desk officer for Certificate of Exemption | 0.976 | |
| My degree and my employer | 0.883 | |
| Registration for Certificate of Exemption | 0.979 | |
| Exemption of DLI graduates from N.Y.S.C. | 0.918 | |
| Feedback | 0.997 | 0.912 |

Findings show that the items all have strong factor loadings (> 0.70) and show high reliability in line with the decision rule.

**Discussion**

The results of the present study have highlighted three main findings. These findings relate to determining a scale for measuring leaners' satisfaction in ODL in Nigeria, investigating the reliability of the scale for Learners' satisfaction in ODL in Nigeria and establishing the validity of the scale for Learners' satisfaction in ODL in Nigeria. The results of the present study showed that learners' satisfaction in ODL can be measured or assessed using Learners' Satisfaction in ODL Scale (LSIODLS). The exploratory factor analysis using the principal components analysis showed a five-factor structure underlying the scale. The five interpretable factor structures are subsequently labeled: Learners' information search for ODL programmes and admission guidelines (5 items); Screening and registration (5 items); process stage (23 items); programme completion activities (11 items); and activities carried out by learners after they have graduated (6 items) and each subscale had adequate internal consistency reliability. The sub-construct of learners' information search for ODL programmes and admission guidelines has a reliability coefficient of 0.95 as measured using Cronbach alpha. The Cronbach alpha coefficient of screening and registration sub-construct was 0.91. The sub-construct of process stage has a Cronbach alpha coefficient of 0.98. The programme completion activities sub-construct has a Cronbach alpha coefficient of 0.96 while the sub-construct of activities carried out by learners after they have graduated showed a Cronbach alpha coefficient of 0.91. All these reliabilities were adequate and satisfactory. This finding agreed with previous findings (Babtain, 2021; Lim, Lim, & Lim, 2022; Abuhassna, 2020; Baek, Kim, Song, Kim, & Kim, 2019) which showed that learners' satisfaction

in ODL scale was a multidimensional construct of at least five distinct dimensions. Hence, this scale can be deployed in gauging learners' satisfaction in ODL in Nigeria.

Implications for ODL Institutions in Nigeria

The findings of these study show that the scale to measure learner satisfaction within the Nigerian ODL sector is valid and reliable. ODL institutions in the country should begin to assess the quality of their offerings via an investigation of learner satisfaction. This scale could be adopted or adapted as required to achieve this. Such an assessment will inform management direction in improving quality of service offered to reduce attrition rates and attract newcomers who have previously seen the ODL institutions as sub-standard. Additionally, improving the quality of services in our ODL institutions will increase the access to tertiary education in the country and reduce the pressure on face-to-face learning institutions.

**Conclusion**

It is commendable to note that the results that laid bare in this study may not be generalized to all Nigerian ODL learners as the sample was not necessarily representative of all ODL learners from all the geo-political zones in Nigeria. This is because the factors may be different regarding these zones. In general, a minimum sample size of (n=300) is needed when conducting dimension reduction via factor analysis. In our case, the sample size deployed was very small (n=50); because of lower enrollees in the ODL programme of the Distance Learning Institute accessed. One criticism of this study may be the adoption of self-report measure scale as seen in the learners' satisfaction in ODL scale normally critiqued for endorsing measurement error. Learners may over-estimate or underrate their level of satisfaction in ODL to fit into shared standard. Usually factor analytic findings are fundamentally biased, as the copious resolutions concerning interpretation, rotation and factor extraction may give rise to disparities in results.

**Recommendations**

In this study, it is endorsed, that prospective investigations in Nigeria should carry out the confirmatory factor analysis of the factors of learners' satisfaction in ODL obtained in this study. However, it is hoped that the present study is crucial in revealing the level of satisfaction in ODL held among ODL learners as the study outcomes could serve as a model for shepherding future investigations in ODL satisfaction in Nigeria.

**References**


Abuhassna, H. (2020). Examining learners' satisfaction and learning autonomy through web-based courses. *International Journal of Advance Trends Computing Science and Engineering, 9*, 356–370.

Babtain, A. A. (2021). An adaptation and validation of learners' satisfaction scale: The case of McGraw–Hill education connect. *Education Research International*, 2021, Article ID 1936076, 14 pages https://doi.org/10.1155/2021/1936076.

Baek, S-G., Kim, S., Song, Y., Kim, M-K., & Kim, Y-K. (2019). Development and validation of learner class satisfaction scale for secondary school learners. *The SNU Journal of Education Research*, *28*(2), 21-43.

Beare, H., & Slaughter, R. (1995). Education for the twenty First century. New York: Routledge.

Bontempo, J & Morgan, P (2001), 2001 TAFE Learner Survey validation — measuring learner perceptions of teaching, assessment and learning, (The Department of Education,Western Australia).

Cappelleri, J.C., Lundy, J.J, & Hays, R.D., (2014) Overview of classical test theory and item response theory for the quantitative assessment of items in developing patient-reported outcomes measures. *Clinical Therapeutics, 36* (5), 648 – 662

Carmines, E.G., & Woods, J.A., (2005) Reliability Assessment in *Encyclopaedia of Social Measurement* Edited by Kempf-Leonard, K., Elsevier B.V., Amsterdam

Jurkowitsch, S., Vignal**i**, C. & Kaufmann, H.R., **(**2006**).** A Learner Satisfaction Model of Austrian Higher Education. Innovative Marketing, 2(3), pp. 9-21

Lim, L., Lim, S.H., & Lim, R. W. Y. (2022). Measuring learner satisfaction of an adaptive learning system. *Behavioural Science, 12,* 264. https://doi.org/10.3390/bs12080264

Morgan, P & Bontempo, J (2003). 'Validating measures of learner satisfaction with learning, teaching, assessment in the Western Australian Learner Outcomes Survey', VET Policy and Corporate Communications, Department of Education and Training, Western Australia.

Öztürk G, Karamete A, Çetin G. (2020). The relationship between pre-service teachers' cognitive flexibility levels and techno-pedagogical education competencies. *International Journal of Contemporary Education Research. 7(*1):40–53.

Rayhan, R.U., Zheng, Y., Uddin, E., Timbol, C., Adewuyi, O., & Baraniuk, J.N. (2013). Administer and collect medical questionnaires with Google documents: a simple, safe, and free system. *Applied Medical Information*, *33*(3): 12–21.

Rubio, D.M. (2005). Alpha Reliability in *Encyclopaedia of Social Measurement* Edited by Kempf-Leonard, K., Elsevier B.V., Amsterdam

Salinda, IM, Weerasinghe, R. Lalitha, S. Fernando (2017) Learners' Satisfaction in Higher Education Literature Review. *American Journal of Educational Research*; 5(5):533-539. doi: 10.12691/education-5-5-9.

Vincent, W., & Shanmugam, S.S. (2020). The Role of Classical Test Theory to Determine the Quality of Classroom Teaching Test Items. *Pedagogia : Journal Pendidikan. 9*, 5-34.

Wei H-C, Chou C. (2020). Online learning performance and satisfaction: do perceptions and readiness matter? *Distance Education. 41*(1):48–69.