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Science and Mathematics Teachers' Intention Towards Adopting CL4STEM Technology-based Instructional Initiative to Enhance Higher Order Teaching with Equity and Inclusion in Nigeria

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ABSTRACT The study examined Nigeria Science and Mathematics Teachers' intention towards adopting the CL4STEM technology-based instructional (OER) modules to enhance higher-order thinking with Inclusion and Equity (HOTIE). The study adopted a descriptive correlational design. The population of the study was all mathematics and science teachers in some selected Northern States (Niger, Kaduna, and Kano) in Nigeria. The sample size was 100 science and mathematics teachers. The instrument for data collection was structured questionnaires on teachers' Performance Expectancy, Effort Expectancy, Social Influence, and Behavioural Intention toward adopting the CL4STEM technology-based instructional (OER) modules. Smart PLS version 3, was utilized to test the measurement model, and structural model, and verify the convergent and discriminant validity. The findings show a positive and significant relationship between science and mathematics teachers' Performance Expectancy, Effort Expectancy, Social Influence, and Behavioural Intention toward adopting the CL4STEM technology-based instructional (OER) modules. It was concluded that teachers' intention to adopt them in their classroom practices was influenced by their perceived usefulness, ease of use, and social influence. The finding suggests that science and mathematics teachers would most likely sustain the use of CL4STEM technology-based instructional (OER) modules to enhance HOTIE in Nigeria.

Keywords Performance expectancy, Effort expectancy, Social influence, Behavioural intention

1. INTRODUCTION

The world has become a global village due to globalization and technological advances, consequently, integrating technology into classroom teaching and learning is very critical to prepare and equip students with relevant skills to live meaningfully in a digitalized society. Digital-based instruction enhances interaction among learners and between learners and their teachers, promotes meaningful learning, and the acquisition of higher-order thinking skills by students Vasconcelos, Furtado, Pinheiro & Furtado (2020). The adoption of ICT in teaching has also been established to enhance inclusion and equitable quality learning. In the present 21st-century digital world being propelled by the knowledge economy and the evolving fourth industrial revolution, low-level thinking skills are no longer sufficient for students to thrive. Therefore, one of the core elements of the revolution and advancement in 21st-century education is the implementation of higher-order thinking skills, which incorporates logical, critical, reflective, metacognitive, and creative thinking (Gopalan & Hashim, 2021).There is also global advocacy for inclusion and equitable educational opportunities for all.

Despite the potential of technology integration for teaching, it is reported that teachers seldom integrate technology specifically Open Educational Resources (OERs) into their classroom instruction (Fraillon, Ainley, Schulz, Friedman & Duckworth, 2019). In Nigeria, studies have revealed that science teachers have positive attitudes toward the use of ICT in education but seldom integrate ICT in teaching and learning (Yaki, Koroka & Shuaibu, 2021). This has been attributed to teachers' lack of digital

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skills in applying technology to teaching (FMOE, 2013; Shittu, Kareem & Tukura, 2019). Quality learning outcomes that promote higher-order thinking with equity and inclusion (HOTIE) cannot be achieved in the traditional instructional setting and practices that characterize Nigerian classrooms. Hence, the need for educational programmes and curriculum provisions that will enable teachers to acquire competencies to inculcate higher-level thinking skills in students and to develop instructional skills to enhance equity and inclusion in their classrooms. There is advocacy on the need for teacher professional training in Technology Pedagogical Content Knowledge (TPACK) and the use of Open Educational Resources (OERs) to support their teaching and students' learning in Nigeria. CL4STEM project brings innovative technology-based instruction to teaching and learning of science and mathematics in Nigeria.

The CL4STEM instructional innovation has been piloted in Nigeria and its effectiveness has been researched. The CL4STEM project engages newly qualified science and mathematics teachers in capacity training through curated OERs subject-specific and pedagogy-based modules in science and mathematics, and in online communities of practice. The training is to enhance the teachers' subject matter knowledge, techno-pedagogical knowledge (TPACK), attitude and subject-specific pedagogy, and general pedagogy involving active learning and the teachers' capacity to adopt technology-based instructional strategies to promote HOTIE in their classroom practices. Rizky, Muslim, Taufik & Nanang, (2024) highlighted the necessity of multidisciplinary approach-focused teacher preparation and a curriculum that fully incorporates STEM and sustainability ideas. This kind of reform is necessary for teachers to provide engaging lessons that prepare students for the complexity of sustainability issues.

Several elements influence technological acceptability, which is presented in several paradigms. According to Venkatesh, Morris, Davis & Davis (2003), a person's beliefs and attitudes have a significant impact on the adoption of technology in daily practices. To predict the adoption of innovative technology like the CL4STEM, certain models, such as the Technology Acceptance Model (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT) can indicate the level of technology acceptance. The Technology Acceptance Model (TAM), is well-known for predicting factors that influence technology acceptance, the major elements of TAM include; Perceive Usefulness, Ease of Use, and Attitudes. This model has been referenced and used in several educational studies. TAM has been modified to the Unified Theory of Acceptance and Technology Use (UTAUT). The UTAUT model, according to Venkatesh, Morris, Davis & Davis (2003), consists of four key components that are determinants of human behaviour toward using and accepting a new technology: Performance Expectancy; Effort Expectancy; Social Influence, and Facilitating Conditions. UTAUT provides the theoretical basis for this study. CL4STEM Technology-Based Instructional Initiative is one of the novel approaches to STEM education that leverages technology to enhance teaching and learning to foster Higher-order thinking skills such as critical thinking, problem-solving, and creativity in STEM education. The innovative approach of using technology to transform STEM education in Nigeria, making it more inclusive, equitable, and effective.

1.1 Statement of the Research Problem

Twenty-first-century education is beyond just memorisation and remembrance of knowledge, facts, and information based on conventional teaching methods, but rather requires modern teaching strategies that promote the transfer of learned knowledge in real life to solve real-life problems. 21st-century education is to develop higher-order thinking skills (HOTs). HOTs are core skills that include logical, critical, reflective, meta-cognitive, and creative thinking (Gopalan & Hashim, 2021). Technology-based instruction and inclusive classroom practices are identified as the strategic means to achieving HOTs, educational equity, and access, hence the Clix, TISS, India, and the CL4STEM, Nigeria, projects. These projects involved the adoption of innovative technology-based instructional strategies that both have been researched to have proven effects at achieving HOTs in students, and also the use of UDL principles to enhance teachers' competence to teach for equity and inclusion in science and mathematics learning (Clix, 2020; CL4STEM, 2023).

It is important to highlight that the teacher is the most critical element in classroom instruction. The science and mathematics teachers involved in the CL4STEM project training and the pilot implementation, adopt innovative technology-influenced instructional practices in their daily classroom practices. Science and Mathematics teachers need professional training to improve their knowledge, understanding, and teaching practices, which affect the development of their students' meaningful learning (Mohamad, Rosli, Halim, Capraro & Capraro, 2022).

This however will depend on their intention among other factors. Hence, this study uses the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand Science and Mathematics teachers' intention toward adopting CL4STEM technology-based OERS modules in their instructional practice to enhance HOTIE in selected Northern States in Nigeria.

1.2 Aims and Objectives of The Study

The study assessed the science and mathematics teachers' intention towards adopting CL4STEM instructional initiatives in their classroom practice in Nigeria. Specifically, the study seeks to:

1. Determine the influence of science and mathematics teachers' performance expectancy on their behavioural intention to use CL4STEM technology-based OERS

modules in their classroom practice to enhance HOTIE in selected northern States, in Nigeria.
2. Determine the influence of science and mathematics teachers' effort expectancy on their behavioural intention to use CL4STEM technology-based OERS modules in their classroom practice to enhance HOTIE in selected Northern States in Nigeria
3. Determine the influence of science and mathematics teachers' Social Influence on their behavioural intention to use CL4STEM technology-based OERS modules in their classroom practice to enhance HOTIE in selected Northern States in Nigeria

1.3 Null Hypotheses

The following null hypotheses were formulated and will be tested at a 0.05 significant level.

1. There is no significant influence of science and mathematics teachers' performance expectancy on their behavioural intention to use CL4STEM technology-based OERS modules in their classroom practice to enhance HOTIE in selected Northern States, in Nigeria.
2. There is no significant influence of science and mathematics teachers' effort expectancy on their behavioural intention to use CL4STEM technology-based OERS modules in their classroom practice to enhance HOTIE in selected Northern States, in Nigeria.
3. There is no significant influence of science and mathematics teachers' social influence on their behavioural intention to use CL4STEM technology-based OERS modules in their classroom practice to enhance HOTIE in selected Northern States, in Nigeria.

1.4 Theoretical Framework

This research is informed by the Unified Theory of Acceptance and Use of Technology (UTAUT) theory (Venkatesh, Morris, Davis & Davis, 2003) which is anchored on the following 4 dimensions or elements of the theory; Performance expectancy; Effort expectancy; Social Influence, and facilitating conditions. This study focused on the first three elements because the sample size was selected based on facilitating conditions such as digital competence, internet accessibility, and possession of digital devices.

Performance Expectancy (PE) and Behavioural Intention (BI)

The Performance expectancy (PE) component of the UTAUT mainly originated from the perceived usefulness component of the Technology Acceptance Model (TAM). PE is the degree to which a person or an educator perceives that using technology innovation is beneficial in achieving stated learning objectives. For science and mathematics teachers to have intention towards adopting CL4STEM instructional innovation to enhance HOTIE, they must have perceived that CL4STEM is beneficial and effective to enable them to enhance HOTIE. Lwoga & Komba, (2015) added that PE enables an educator to believe that using the system can improve teaching activities. PE was found to have a favourable or substantial link with the BI's willingness to adopt a system or technology or both (Ayele & Sreenivasarao, 2013 & Lwoga & Komba, 2015).

Effort Expectancy (EE)

The degree to which people find technology easy to use is called Effort Expectancy (EE) (Chopra & Rajan, 2016). The Effort expectancy (EE) component of the UTAUT theory mainly originated from the perceived ease of use component of the Technology Acceptance Model. EE is the degree to which an educator perceives that using a technology is easy and stress-free. For newly qualified Science and Mathematics teachers to adopt CL4STEM innovation to enhance HOTIE, they must have perceived that the innovation is easy to adopt, stress-free, and requires less effort to adopt. It was reported that EE has a positive relationship with BI's ability to use a system or technology (Ju & Albertson, 2015).

Social Influence (SI)

Social Influence (SI) according to Venkatesh, Morris, Davis & Davis (2003) refers to how strongly an individual perceives that others in their social and work circles believe they should use a technology. SI is a component that reveals that the attitudes and behaviours of other individuals among which are other secondary subject teachers, family members, society, school officials and administrators, role models, and mentors influence the science and mathematics teachers' intention towards adopting CL4STEM innovation to enhance HOTIE. SI and BI were found to have a positive or significant relationship towards using a system or technology (Al-Gahtani, 2016). Al-Sultan (2015) also reported a significant positive relationship between perceived social influence and behavioural intention to adopt an innovative technology such as e-library.

Behavioural Intention

This is attitudes towards use. It is one's belief (positive or negative) about using a device, system, or technology. It is the predisposition of an individual towards a given object/ device that is influenced by an individual's perceived usefulness and ease of use (Alharbi & Drew, 2014). Therefore, teachers' perception of digital technologies could influence their utilisation or rejection of digital devices. This study involves science and mathematics teachers' probability to accept and use CL4STEM instructional innovation., The behavioural intention to accept and use the innovation is the endogenous or criterion variable, while the PI, EE, and SI are the exogenous or predictor variables for this study. The conceptual framework is represented in Figure 1.

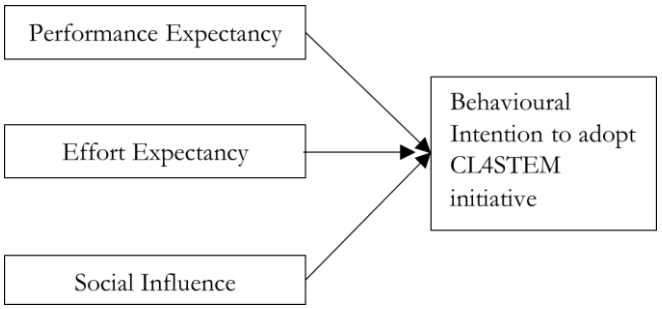

Figure 1 Conceptual framework diagram of the study adopted from the unified theory of acceptance and use of technology

Relevant literature was reviewed to provide a conceptual understanding of the independent and dependent variables. Literature has evidenced extensive work being carried out on the use of the Unified Theory of Acceptance and Use of Technology (UTAUT) to determine the association between constructs and the behavioural Intention to use new learning technologies, such as the CL4STEM OER Modules in this case. However, this is the first study that applies the UTAUT construct to CL4STEM modules in the Nigerian context. Several previous studies have focused on examining the application of UATUT to educational technologies such as the learning management system. Lwoga & Komba (2015). Published a study titled "Antecedents of Continued Usage Intentions of Web-based Learning Management System in Tanzania". In a different study, Echeng, Usoro & Majewski, (2013). Investigated factors that influence the acceptance of technologies in learning with a particular focus on Nigeria. The Technology Acceptance Model (TAM), Unified theory of the use and acceptance of technology (UTAUT), and Theory and Theory of reasoned action (TRA) with the addition of one new construct-prior knowledge were used to overcome deficiencies in the use of one single model.

However, during the COVID-19 pandemic era, Abbad (2021). Carry out a study "Using the UTAUT model to understand students' usage of e-learning systems in developing countries, where the researcher used the UTAUT construct to promote further understanding of technology acceptance amongst students to further prepare for emergency use of e-learning systems, as happened during the Covid pandemic. In addition, Wijaya, Cao, Weinhandl, Yusron & Lavicza (2022) in a study titled" Applying the UTAUT Model to Understand Factors Affecting Micro-Lecture Usage by Mathematics Teachers in China" analyzed the behavioral intention (BI) of mathematics teachers in using micro-lectures in mathematics in China, and identified the most influential factors involved, using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The researcher's findings were meant to provide insights into future strategies for successful technology integration in mathematics teaching.

2. METHOD

This research is based on descriptive research design focusing on teachers' perception of the elements of UTAUT as they correlate to teachers' adoption of CL4STEM instructional initiative. Specifically, the study adopted a correlational design to determine the influence of predictor variables; PE, EE, and SI on the criterion BI for teachers to adopt CL4STEM initiative. involving. In this study, The UTAUT model was adopted due to its power to determine the factors that effectively predict the actual use of technology tools for educational purposes.

All Science and mathematics teachers in science and mathematics teachers in 3 GPE States in Northern Nigeria formed the population for this study. A multi-stage sampling technique was employed to select the respondents for this study. The sample size for the study is 100 newly qualified biology, chemistry, physics, and mathematics teachers, 25 per subject (biology, chemistry, physics, and mathematics) across the 3 states. The newly qualified teachers are Science and Mathematics teachers who have 1 – 5 years of teaching experience.

2.1 Instrument

The data collection instrument was the researchers developed structured questionnaire adapted and adopted from the literature. The questionnaire is designed based on a 5-point Likert- scale of Strongly Agree (SA) Agreed (A) Undecided (U) Disagree (D) and Strongly Disagree (SD) which is graded from 5-1. The questionnaire has 4 sections; A, B, C, D, and E. Section A was on respondent demographic data, and Section B was on Performance expectancy and is made up of 12 items. Section C focused on Effort Expectancy made up of 10 items and Section D focused on Social Influence which also has 10 items. Section E has 13 items that sought to determine respondents' behavioural intention towards CL4STEM. The structured questionnaire was subjected to face and content validity by two educational psychologists and an English language expert and, the reliability was determined using Cronbach Alpha to obtain a reliability coefficient of 0.72, 0.76, 0.70, and 0.74 for PE, EE, SI, and BI respectively.

2.2 Data Collection

Firstly, the consent of the respondents (science and mathematics teachers) was sought for voluntary participation having gone through the aim and objectives of the study. The respondents were assured of adherence to ethical principles, confidentiality, and privacy in handling their responses. 100 questionnaires were administered for the primary data for the predictor and criterion variables were collected through an online and face-to-face survey.

All the teachers responded to the questionnaire representing 100 % completion.

The data collected was analysed using Structural Equation Modelling (SEM), this is a multivariate statistical analysis technique that clusters the concept of factor analysis and multi-regression analysis (Ghulami, Rashid, Hamid & Zakaria, 2014). Firstly, Exploratory Factor Analysis was used to evaluate the related factors for each construct. The data violated the assumptions of normality and the sample size for the study was relatively small, consequently, SmartPLS was adopted for this analysis because it is more appropriate for data that is not normally distributed data. The Statistical Package for Social Sciences (SPSS) was used for factor analysis, and Smart PLS version 3 was employed to evaluate the measurement model and confirm the convergent and discriminating validity.

3. RESULT AND DISCUSSION

In particular, determining the dimensions of the constructs is important for the uni-dimensionality of the scale before the Structural Equation Modelling phase, to decide whether the objects fall together to form distinct constructs (Churchill, 1979). From the Exploratory Factor Analysis (EFA) the outcomes of the factors for this study were extracted and utilised: The independent or exogenous variables are Performance Expectancy; Efforts Expectancy; and Social Influence, while the dependent variable is Behavioural Intention. Exploratory variable analysis (using the normalized rotation of varimax) was applied to the 45 items of the study but only 40 items had a factor loading value above 0.5, which is considered statistically relevant and acceptable (Hair, Gabriel & Patel, 2014). The Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were employed to check the study's sampling accuracy. The KMO value was 0.81, meeting the necessary KMO value of > 0.5 and the Bartlett test (Chi=6080.61, p<0.05). These results fulfill the assumption for the factor analysis (Chan & Idris, 2017).

3.1 Assessment of Measurement Model

The researchers used the PLS algorithm approach to examine the measurement models' reliability and validity (convergent and discriminating validity). This is done by determining the factor loading of all variables through their respective constructs. Firstly, the correlations between Performance expectancy, Effort expectancy, Social Influence, and behavioral intention constructs. The independent or exogenous variables are Performance Expectancy; Efforts Expectancy; and Social Influence, while the dependent variable is Behavioural Intention. Next, the PLS algorithm was applied and the resulting loading relationships, parameters, and values can be obtained in Figure 2.

Forty items were used to assess the variables or factors. Assessment of the reliability of each measured component was carried out by analyzing their cross-loadings and it was noticed that the factor loading of some items is below the satisfactory value of 0.50 (Akdeniz, 2012). In the course of authenticating the model, item PE1, PE4, and PE9 with a factor loading of 0.145, 0.408, and 0.463 were dropped from the construct Performance Expectancy. Subsequently, items EE1, EE5, EE6, and EE8 with a factor loading of 0.220, 0.243, 0.115, and 0.244, respectively were removed from the construct Effort Expectancy. Similarly, SI3, SI5, SI8, SI9, and SI1O with a factor loading of 0.478, 9.193, 0.422, 0.401, and 0.373, respectively. In the same vein, item TI4 with a factor loading of 0.319 was removed from the construct behavioural intention.

The results of the second validation, the factor loading for each item was raised to be greater than 0.60 which is above the cut-off value of 0.50 (Figure 3). This implies that the reliability of each construct was high, and there was a shared variance for strong convergent validity between the constructs and the items as presented in Figure 3.

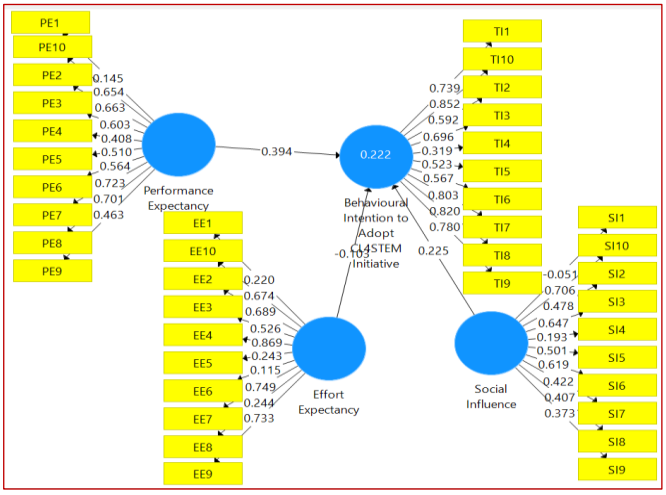

Figure 2 Initial path model of the effect of independent variables on the dependent variable of the study

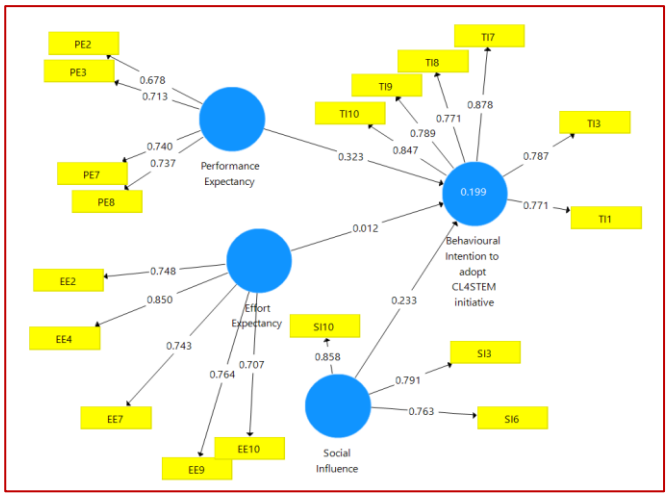

Figure 2 Modified path model of the effect of independent variables on the dependent variable of the study

Table 1 Discriminant validity

	Behavioural Intention	Effort Expectancy	Performance Expectancy	Social Influence
Behavioural Intention	0.808			
Effort Expectancy	0.265	0.764		
Performance Expectancy	0.384	0.639	0.717	
Social Influence	0.309	0.199	0.227	0.805

3.2 Discriminant Validity

Discriminant validity is a valuable factor in any measurement model. It's the extent to which items are measured as distinct constructs in a model. Discriminant validity was performed to establish that both structures were distinct from each other, the degree to which the test is unique, and is not only a repetition of certain variables. This occurs by and wide when two metric scales explicitly quantify separate structures that share a low relationship. The discriminating validity assessment is carried out to ensure that a reflective construct has an optimal relationship with its items, for example, as compared to every other structure in the PLS path model (Hair, Gabriel & Patel, 2014). It is carried out by measuring the cross-factor loadings and the square root of Average Variance Derived (AVE), along with the inter-relationship of the whole constructs of the study. The discriminating validity of measurement models in this study was done following the standard by Fornell & Larcker (2016), that for discriminant validity to be achieved, the AVE values in the diagonal axis should be greater than all of the correlation values of constructs. The discriminant validity of these constructs has, therefore, been achieved as presented in Table 1.

3.3 Construct Validity

Convergent and discriminant validity are the two most commonly appropriate forms of construct validity assessed to determine the model's construct validity. Convergent validity is the evaluation to determine the degree of association between various indicators of a construct that agree. Converging validity is determined when two theoretical measures of the same form are positively associated (Agarwal, 2016). Similarly, the convergent validity of the indicators for this analysis was determined using the Average Variance Extracted (AVE) and Composite Reliability (Figure 4 and 5).

Convergent validity has been obtained for a construct that has an Average Variance Extracted value greater than or equal to 0.5 (Hair, Gabriel & Patel, 2016). The result of this study shows that each construct has an Average Variance Extracted above 0.6. Going by these criteria, the existence of a latent variable must, therefore, explain the variance of at least 50% in each indicator (Henseler, Ringle, & Sarstedt, 2014). Hair, Gabriel & Patel (2016) that for a construct to be sustained, it must have composite reliability above 0.07. Therefore, convergent validity for this study has been achieved as presented in Figure 4.

3.4 Construct Reliability

Construct reliability describes the comparative reliability (internal consistency) of Science and Mathematics Teachers' Intention Towards Adopting CL4STEM Technology-based Instructional Initiative to Enhance higher-order teaching with Equity and Inclusion. The appropriate range for such statistics is usually from 0 to 1, but in exploratory experiments, a value greater than 0.6 is deemed suitable (Hair, Gabriel & Patel, 2014). The model contained eighteen (18) items consisting of three (3) factors: performance expectancy, effort expectancy and social influence as independent variables; behavioural intention to adopt CL4STEM initiatives as the dependent variable (Figure 6).

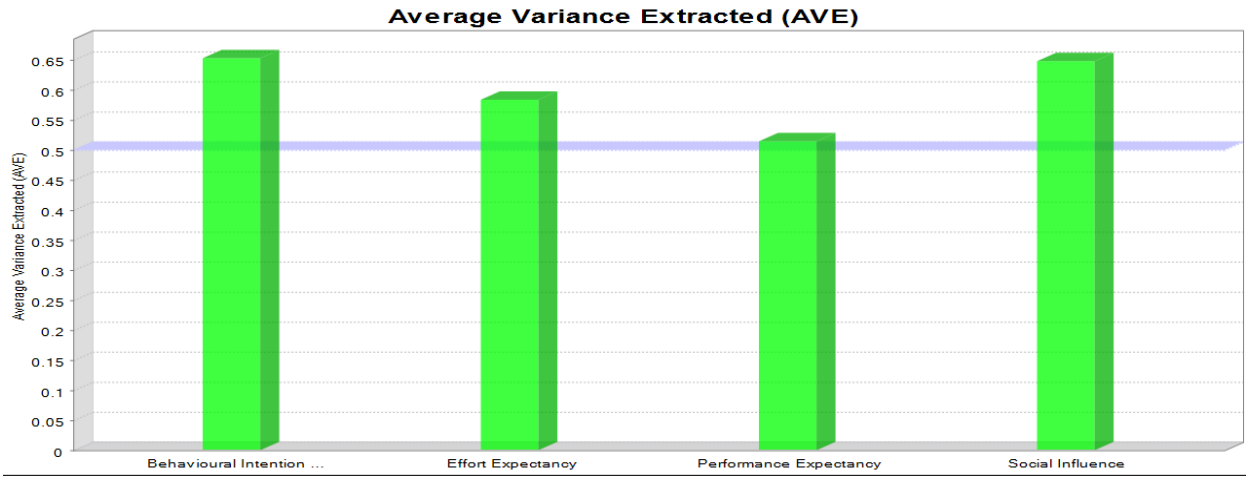

Figure 3 Average variance extracted

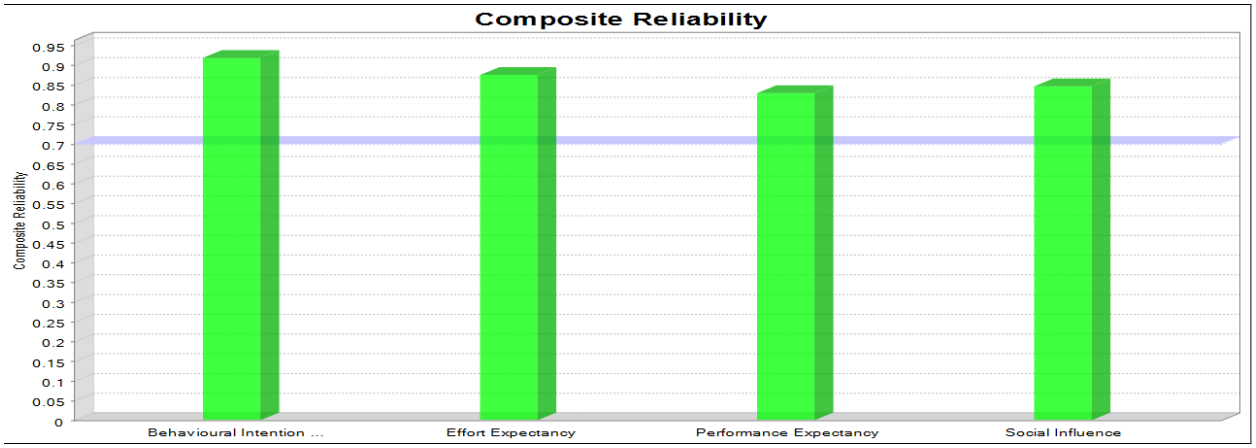

Figure 4 Composite reliability of the study

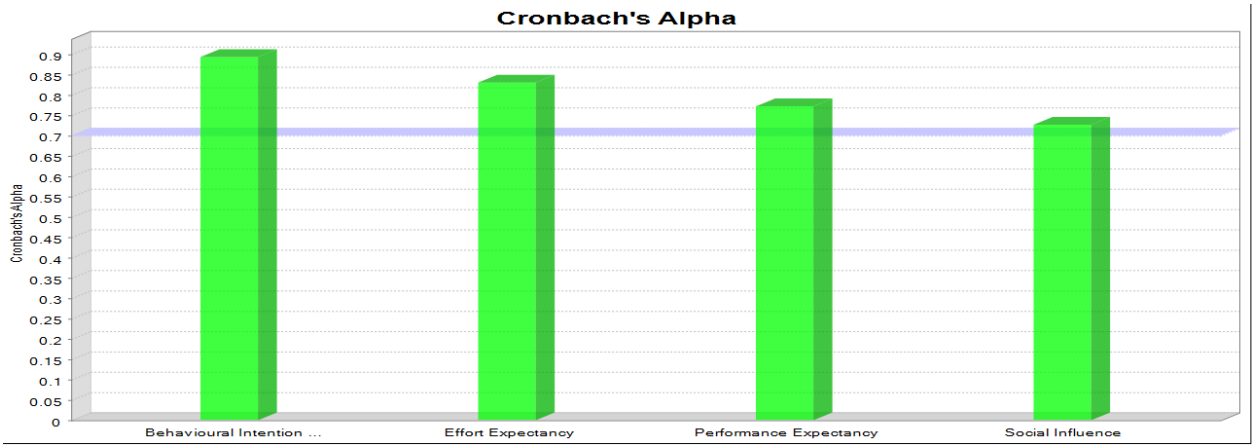

Figure 5 Reliability of the construct

Therefore, the measurement model has sufficient reliability and internal precision with values varying from 0.70 to 0.76, which crosses the 0.6 threshold. This calculation is preferred to Cronbach's alpha as it demonstrates the higher estimate of the variance represented by the measurements and therefore uses the loadings of items found inside the homological structure (Hair, Gabriel & Patel, 2014). Consequently, the constructed items have sufficient reliability for internal accuracy as revealed by the findings.

3.5 Structural Model Assessment (Inner Model)

Smart PLS aims to maximize the variance explained rather than goodness fit, prediction-oriented measurements such as R2 are employed to test PLS models. The coefficient of determination (R2) indicates the percentage of the dependent variable variance that can be explained by independent variables (Hair, Gabriel & Patel, 2014). In this study, the R2 value for Performance Expectancy toward the enhancement of behavioural intention to adopt CL4STEM is 0.323, Effort Expectancy is 0.012, and Social Influence is 0.233 as indicated in the model (Figure 3). This indicates the model's predictive accuracy was reasonable.

The standard thumb rule for a relationship between structures to be relevant: (t-value ≥ 1.96 and p-value is ≤ 0.05) was applied in this study to determine the importance of the path coefficient between the research variables based on the data obtained (Byrne, Flood & Willis, 2004). The route study conclusion (Table 2) indicates that Effort Expectancy has no significant association with behavioural intention to adopt CL4STEM. The relationship is positive with path coefficients ($(\beta)^{r}$ = 0.012, t=0.123). Performance Expectancy has a positive significant relationship with the behavioural intention to adopt CL4STEM among science and mathematics teachers. The path coefficients are ^{r} = 0.339, t = 3.84 greater than 1.96), hence, the association is positive. Similarly, social influence has a significant positive relationship with the behavioural intention to adopt CL4STEM among science and mathematics teachers. The path coefficients are ^{r} = 0.217, t =2.79 greater than 1.96, hence, the relationship is positive.

Table 2 Structural estimates (hypothesis testing)

	Beta (β)	T statistics	p-value	Decision
Effort Expectancy -> Behavioural Intention	0.012	0.12	0.90	Not significant
Performance Expectancy -> Behavioural Intention	0.339	3.84	0.01	Significant
Social Influence -> Behavioural Intention	0.217	2.79	0.01	Significant

3.6 Discussion of Results

This study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand Science and Mathematics teachers' intention toward adopting CL4STEM technology-based OERS modules for capacity training to enhance higher-order thinking Equity and Inclusion (HOTIE) in some selected northern States, Nigeria. The finding shows that perceived performance expectancy of CL4STEM technology-based OERS modules significantly influences secondary school science and mathematics teachers' intention to use the innovation for capacity training. This result concurs with the findings of Ayele & Sreenivasarao (2013), Lwoga & Komba (2015) who reported separately that Performance Expectancy has a significant correlation or link with the BI's willingness to adopt a system or technology, or both. Similarly, the findings also agree with Echeng, Usoro & Majewski, (2013) who concluded that there is a positive relationship between an individual performance expectancy and intention to adopt a technology or innovation. This finding could be attributed to teachers' perception of the innovative nature of the CL4STEM technology-based OERS modules through the orientation they receive at the launch of the project and their engagement in the project pilot.

The finding also shows that science and mathematics teachers' effort expectancy has a positive association or relationship with their intention to adopt the CL4STEM OER modules, However, the positive relationship is not significant ($p>0.05$). Therefore, only 5.4%. the variance in teachers' intention to use the innovation is explained by effort expectancy. This finding is supported by Awwad & Al-Majali (2015); Ju & Albertson (2015) studies who reported that Effort Expectancy has a positive relationship with Behavioural Intention to use a system or technology. This result could be attributed to the fact that the teachers at the point of this data collection were faced with initial ICT access and technical challenges in using the curated Open Educational Resources (OERs) online.

The finding also shows that science and mathematics teachers' social influence significantly influences secondary school science and mathematics teachers' intention to use the CL4STEM OER modules. The result concurs with other researchers also reported a significant positive relationship between perceived social influence and behavioural intention to adopt an innovative technology (Al-Sultan, 2015). Teachers' collaboration in the Community of Practice (CoP) probably contributed to the positive association between social influence and teachers' intention to adopt the curated OERs for capacity building. This result could be attributed to the fact that the COP promotes collaborative learning by giving educators a forum to exchange best practices, expertise, and experiences using technology. Teachers who have effectively included technology into their lesson plans can offer assistance and advice to their peers.

4. CONCLUSION

This study revealed science and Mathematics teachers' intention toward adopting CL4STEM technology-based OERS modules to enhance higher-order thinking Equity and Inclusion (HOTIE). Based on the UTAUT technology adoption model, the PE, EE, and SI were found to have a positive association with science and mathematics teachers' intention to use the CL4STEM technology-based OERS modules. Indicating that their intention to adopt the initiative was influenced by their perceived usefulness, ease of use, and social influence. The implication of the finding of this study is the assurance for scaling of the CL4STEM project and using the OER subject modules to promote higher-order teaching with equity and inclusion in science and mathematics classrooms in Nigeria. It is recommended that the CL4STEM OERs should be adopted to enhance science and mathematics teachers' capacity building to foster HOTIE in Nigerian classrooms.

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