# Information and Communication Technologies Readiness and Acceptance among Teachers in Vocational Enterprises Institutions in Abuja, Nigeria

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**Abstract**

The study determined the level of Information and Communication Technologies (ICT) readiness and acceptance among teachers in Vocational Enterprise Institutions (VEIs) in Abuja, Nigeria. Two research questions were raised and answered and two null hypotheses were formulated and tested at .05 level of significance. The research design used for the study was descriptive survey research design, specifically, using cross-sectional study. The population of the study was 154 respondents consisting of all the 91 male and 63 female teachers from the six VEIs, one each from the six area councils in Abuja. Total population sampling technique was used to select the whole population of the study. The instruments used for data collection include: Technology Readiness Index (TRI) and Educational Technologies Acceptance Index (ETAI). Cronbach's Alpha statistical technique was used to determine the reliability index of the instruments and found to be .89 and .90 respectively. The study employed the use of mean to answer the research questions and independent sample t-test to test the null hypotheses using Statistical Package for Social Sciences (SPSS) version 25. The study found low level of ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria with grand mean of 2.40 and 2.37 respectively. The study also found no substantial dissimilarity between the level of ICT readiness and acceptance of male and female teachers (Substantial value >.05). Based on the findings, the study recommended among others that the Federal Capital Territory Administration should develop a framework for enhancing the ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria.

**Key Words:** Information and Communication Technologies, Readiness and Acceptance

## 1. Introduction

In Nigeria education system, Vocational Enterprises Institutions (VEIs) are establishments permitted by the Nigerian Federal Government to deliver a proper substitute path to education. National Board for Technical Education (NBTE, 2012) stated that the VEIs are aimed to broaden patronage to Technical and Vocational Education and Training (TVET), help to address industrial needs and make citizens self-empowered. The aim of VEIs seems unachievable due to the low academic achievement of students in trade subjects that might be associated with the failure of teachers in using technology to teach. Summak *et al.* (2020) noted that the low achievement of students is associated to many factors that includes teachers' negative attitudes and unwillingness to utilize Information and Communication Technologies.

Utilization of Information and Communication Technologies (ICT) in teaching encompasses using software or applications for delivering contents of learning physically or virtually. The use of ICT plays important role in enhancing students' academic achievement by giving them the likelihoods to actively participate in teaching and learning process (Dieck & Jung, 2018). This entailed that, using ICT in teaching could aid

to addressing the students' low academic achievement. Considering the significance of ICT in teaching, ascertaining the factors for ensuring ICT integration into schools such as VEIs is a good step to enhance quality teaching and learning. Dindar *et al.* (2021) stated that teachers' willingness and attitudes is a key factor in ensuring the use ICT in classroom. This implies that teachers' willingness to adopt ICT in classroom directly indicate their level of technology readiness.

Technology readiness is teachers' tendency to embrace the use ICT in classroom for teaching. The readiness of teachers to use ICT is positively influence by optimism and innovativeness while negatively influence by discomfort and insecurity (Parasuraman, 2000). Ensuring the use of ICT into schools cannot be achieved without teachers' readiness. According to Christiensen (2012), the readiness of teachers to use ICT is important for making the right choice of schools educational technologies. Therefore, readiness of teachers to use ICT is regarded as a unique factor for ensuring the use of ICT in classroom. Nihat and Murat (2021) confirmed that, readiness of teachers to use ICT has direct effect on their acceptance of ICT.

The teachers' acceptance of ICT is associated with the degree to which ICT is accommodated into classroom in order to improve the academic achievement of students. According to Scherer *et al*. (2019), for the academic achievement of students to be improved, teachers' acceptance of ICT is considered as the chief factor (Cabero-Almenara *et al.*, 2021). Thus, ICT acceptance of teachers is regarded as determinants of enhancing the academic achievement of students. Kamal *et al*. (2020) also established that the use of ICT in classroom is basically challenging without acceptance of ICT by the teachers. Therefore this study is important as it sought to provide more insights on teachers' ICT readiness and acceptance in VEIs in Abuja, Nigeria.

## 2. Statement of the Research Problem
To promote the accessibility to TVET, the Nigerian government established the VEIs. Unfortunately, achieving the goal of VEIs is questionable with the low academic achievement of students. Edusys (2022) confirmed that non-integration of ICT in teaching leave teachers with no option than to employ the use of words to express teaching. Consequently, this have contributed to the low academic achievement of students in VEIs simply because the use of words to express teaching is found to make learning passive. However, overcoming this challenge necessitates educational establishments such as the VEIs to fully integrate ICT into classrooms. According to Dindar *et al.* (2021), the attainment of integrating ICT in classroom depends largely on the readiness and acceptance of teachers. Hence, empirical evidence on the ICT readiness and acceptance among teacher is important in the integration of ICT in classroom. It is against this backdrop that the study sought to determine the level of ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria.

## 3. Aim and Objectives of the Study
The study aimed at determining the level of ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria. Specifically, the objectives of the study sought to determine:
- The teachers' level of ICT readiness in VEIs in Abuja, Nigeria.
- The teachers' level of ICT acceptance in VEIs in Abuja, Nigeria.

## 4. Research Questions
The following research questions were raised and answered to guide the study:
- What is the teachers' level of ICT readiness in VEIs in Abuja, Nigeria?
- What is the teachers' level of ICT acceptance in VEIs in Abuja, Nigeria?

**5. Hypotheses**

The following null hypotheses were formulated and tested at .05 level of significance to guide the study:

- There is no substantial dissimilarity between the level of ICT readiness of male and female teachers in VEIs in Abuja, Nigeria.
- There is no substantial dissimilarity between the level of ICT acceptance of male and female teachers in VEIs in Abuja, Nigeria

**6. Methodology**

The study used descriptive survey research design, specifically, using cross-sectional study. The cross-sectional study involves the collection of data from a population at one specific point in time (Maninder, 2016). This design enables the researchers to ascertain teachers' level of ICT readiness and acceptance at a time. 154 respondents comprising 91 male and 63 female teachers from all the six VEIs in the study area constituted the population of the study. The whole population of the study were selected using Total population sampling technique. The instruments used for data collection include Technology Readiness Index (TRI) by Parasuraman (2000) and Educational Technologies Acceptance Index (ETAI) by Martínez-Abad *et al*. (2019). The TRI consists of 45 items to determine teachers' technology readiness and the ETAI consists of 35 items to determine teachers' technology acceptance. The reliability index of the instruments were recorded as .89 and .90 using Cronbach's Alpha statistics. Mean was used to answer the research questions while the null hypotheses were tested using independent sample t-test. All data analysis were carried out using Statistical Package for Social Sciences (SPSS) version 25. The real limit of numbers was used to make decision on the research questions decision regarding the null hypotheses was based on comparing the generated p-value and the stated level of significance (.05).

**7. Results:**

**7.1 Research Question One**

What is the teachers' level of ICT readiness in VEIs in Abuja, Nigeria?

Table 1 contained data for answering research question one.

**Table 1: Mean responses on the teachers' level of ICT readiness in VEIs in Abuja, Nigeria**

N1=91, N2=63

| Items | $\overline{X}_1$ | $\overline{X}_2$ | $\overline{X}_A$ | Remark |
|---|---|---|---|---|
| 1 | 2.39 | 2.50 | 2.44 | Disagreed |
| 2 | 2.35 | 2.50 | 2.41 | Disagreed |
| 3 | 2.38 | 2.44 | 2.40 | Disagreed |
| 4 | 2.37 | 2.46 | 2.40 | Disagreed |
| 5 | 2.35 | 2.47 | 2.40 | Disagreed |
| 6 | 2.37 | 2.41 | 2.38 | Disagreed |
| 7 | 2.36 | 2.47 | 2.40 | Disagreed |
| 8 | 2.35 | 2.50 | 2.41 | Disagreed |
| 9 | 2.41 | 2.50 | 2.45 | Disagreed |
| 10 | 2.42 | 2.53 | 2.47 | Disagreed |
| 11 | 2.36 | 2.53 | 2.43 | Disagreed |
| 12 | 2.31 | 2.57 | 2.42 | Disagreed |
| 13 | 2.35 | 2.50 | 2.41 | Disagreed |
| 14 | 2.35 | 2.49 | 2.40 | Disagreed |
| 15 | 2.31 | 2.53 | 2.40 | Disagreed |
| 16 | 2.34 | 2.44 | 2.38 | Disagreed |
| 17 | 2.32 | 2.50 | 2.40 | Disagreed |
| 18 | 2.31 | 2.55 | 2.41 | Disagreed |
| 19 | 2.38 | 2.55 | 2.45 | Disagreed |
| 20 | 2.41 | 2.52 | 2.46 | Disagreed |
| 21 | 2.39 | 2.47 | 2.42 | Disagreed |
| 22 | 2.35 | 2.47 | 2.40 | Disagreed |
| 23 | 2.36 | 2.41 | 2.38 | Disagreed |
| 24 | 2.35 | 2.44 | 2.38 | Disagreed |
| 25 | 2.32 | 2.44 | 2.37 | Disagreed |
| 26 | 2.35 | 2.41 | 2.37 | Disagreed |
| 27 | 2.34 | 2.44 | 2.38 | Disagreed |
| 28 | 2.32 | 2.47 | 2.38 | Disagreed |
| 29 | 2.39 | 2.47 | 2.42 | Disagreed |
| 30 | 2.41 | 2.53 | 2.46 | Disagreed |
| 31 | 2.34 | 2.50 | 2.40 | Disagreed |
| 32 | 2.29 | 2.53 | 2.39 | Disagreed |
| 33 | 2.32 | 2.50 | 2.40 | Disagreed |
| 34 | 2.32 | 2.47 | 2.38 | Disagreed |
| 35 | 2.31 | 2.50 | 2.39 | Disagreed |
| 36 | 2.32 | 2.41 | 2.36 | Disagreed |
| 37 | 2.31 | 2.47 | 2.38 | Disagreed |
| 38 | 2.30 | 2.52 | 2.39 | Disagreed |
| 39 | 2.37 | 2.52 | 2.43 | Disagreed |
| 40 | 2.40 | 2.52 | 2.45 | Disagreed |
| 41 | 2.39 | 2.50 | 2.44 | Disagreed |
| 42 | 2.35 | 2.50 | 2.41 | Disagreed |
| 43 | 2.38 | 2.44 | 2.40 | Disagreed |
| 44 | 2.37 | 2.46 | 2.40 | Disagreed |
| 45 | 2.35 | 2.47 | 2.40 | Disagreed |
| **Grand Mean** | **2.35** | **2.48** | **2.40** | **Disagreed** |

**Keys:** $N_1$ = Number of male teachers, $N_2$ = Number of female teachers, $\overline{X}_1$ = Mean response of male teachers, $\overline{X}_2$ = Mean response of female teachers, $\overline{X}_A$ =Average mean response of male and female teachers.

Table 1 revealed that male teachers had grand mean value 2.35 and female teachers had grand mean value of 2.48 with average grand mean value of 2.40. This indicated low teachers' level of ICT readiness in VEIs in Abuja, Nigeria.

**7.2 Research Question Two**

What is the teachers' level of ICT acceptance in VEIs in Abuja, Nigeria?

Table 2 contained data for answering research question two.

**Table 2: Mean responses on the teachers' level of ICT acceptance in VEIs in Abuja, Nigeria**

| Items | $\overline{X}_1$ | $\overline{X}_2$ | $\overline{X}_A$ | Remark |
|---|---|---|---|---|
| 1 | 2.39 | 2.50 | 2.44 | Disagreed |
| 2 | 2.35 | 2.50 | 2.41 | Disagreed |
| 3 | 2.38 | 2.44 | 2.40 | Disagreed |
| 4 | 2.37 | 2.46 | 2.40 | Disagreed |
| 5 | 2.35 | 2.47 | 2.40 | Disagreed |
| 6 | 2.32 | 2.41 | 2.36 | Disagreed |
| 7 | 2.31 | 2.47 | 2.38 | Disagreed |
| 8 | 2.30 | 2.52 | 2.39 | Disagreed |
| 9 | 2.37 | 2.52 | 2.43 | Disagreed |
| 10 | 2.40 | 2.52 | 2.45 | Disagreed |
| 11 | 2.34 | 2.50 | 2.40 | Disagreed |
| 12 | 2.29 | 2.53 | 2.39 | Disagreed |
| 13 | 2.32 | 2.50 | 2.40 | Disagreed |
| 14 | 2.32 | 2.47 | 2.38 | Disagreed |
| 15 | 2.31 | 2.50 | 2.39 | Disagreed |
| 16 | 2.38 | 2.36 | 2.37 | Disagreed |
| 17 | 2.37 | 2.39 | 2.38 | Disagreed |
| 18 | 2.36 | 2.42 | 2.38 | Disagreed |
| 19 | 2.42 | 2.42 | 2.42 | Disagreed |
| 20 | 2.42 | 2.52 | 2.46 | Disagreed |
| 21 | 2.39 | 2.47 | 2.42 | Disagreed |
| 22 | 2.35 | 2.47 | 2.40 | Disagreed |
| 23 | 2.36 | 2.41 | 2.38 | Disagreed |
| 24 | 2.35 | 2.44 | 2.38 | Disagreed |
| 25 | 2.32 | 2.44 | 2.37 | Disagreed |
| 26 | 2.36 | 2.53 | 2.43 | Disagreed |
| 27 | 2.31 | 2.57 | 2.42 | Disagreed |
| 28 | 2.35 | 2.50 | 2.41 | Disagreed |
| 29 | 2.35 | 2.49 | 2.40 | Disagreed |
| 30 | 2.31 | 2.53 | 2.40 | Disagreed |
| 31 | 2.34 | 2.44 | 2.38 | Disagreed |
| 32 | 2.32 | 2.50 | 2.40 | Disagreed |
| 33 | 2.31 | 2.55 | 2.41 | Disagreed |
| 34 | 1.38 | 1.55 | 1.45 | Disagreed |
| 35 | 2.41 | 2.52 | 2.46 | Disagreed |
| **Grand Mean** | **2.32** | **2.45** | **2.37** | **Disagreed** |

Table 2 revealed that male teachers had grand mean value of 2.32 and female teachers had grand mean value of 2.45 with average grand mean value of 2.37. This indicated low teachers' level of ICT acceptance in VEIs in Abuja, Nigeria.

- **Hypothesis One**

There is no substantial dissimilarity between the level of ICT readiness of male and female teachers in VEIs in Abuja, Nigeria.

Data for testing hypothesis one is presented in Table 3.

**Table 3: T-test analysis for the testing substantial dissimilarity between the level of ICT readiness of male and female teachers in VEIs in Abuja, Nigeria**

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Dissimilarity | Std. Error Dissimilarity | 95% Confidence Interval of the Dissimilarity | |
| | | | | | | | | Lower | Upper |
| Equal variances assumed | 5.420 | .021 | -1.312 | 152 | .192 | -.11233 | .08564 | -.28154 | .05687 |
| Equal variances not assumed | | | -1.279 | 121.224 | .203* | -.11233 | .08782 | -.28619 | .06152 |

Table 3 revealed that the substantial (two tailed) value for the test of equality of mean with variance not assumed was .203 which is greater than the state level of substantial (.05). This implied that, there was no substantial dissimilarity between the level of ICT readiness of male and female teachers in VEIs in Abuja, Nigeria. Hence, hypothesis one was retained.

- **Hypothesis Two**

There is no substantial dissimilarity between the level of ICT acceptance of male and female teachers in VEIs in Abuja, Nigeria.

Data for testing hypothesis two is presented in Table 4.

**Table 4: T-test analysis for testing substantial dissimilarity between the level of ICT acceptance of male and female teachers in VEIs in Abuja, Nigeria**

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Dissimilarity | Std. Error Dissimilarity | 95% Confidence Interval of the Dissimilarity | |
| | | | | | | | | Lower | Upper |
| Equal variances assumed | 2.440 | .120 | 1.405 | 152 | .162 | -.12454 | .08864 | -.29967 | .05059 |
| Equal variances not assumed | | | 1.386 | 127.081 | .168* | -.12454 | .08983 | -.30229 | .05321 |

Table 4 revealed that the substantial (two tailed) value for the test of equality of mean with variance not assumed was .168 which is greater than the state level of substantial (.05). This implied that, there is no substantial dissimilarity between the level of ICT acceptance of male and female teachers in VEIs in Abuja, Nigeria. Hence, hypothesis one was retained.

## 8. Findings

1. The teachers' level of ICT readiness in VEIs in Abuja, Nigeria was low
2. The teachers' level of ICT acceptance in VEIs in Abuja, Nigeria was low
3. There was no substantial dissimilarity between the level of ICT readiness of male and female teachers in VEIs in Abuja, Nigeria
4. There was no substantial dissimilarity between the level of ICT acceptance of male and female teachers in VEIs in Abuja, Nigeria

## 8.1 Discussion of Findings

Finding on the level of ICT readiness among teachers in VEIs in Abuja was low. This entailed that the tendency of teachers in VEIs in Abuja to embrace and use ICT to accomplish teaching goals is minimum. The finding is similar to the findings of Summak *et al.* (2020) on technology readiness of primary school

teachers in Turkey that revealed teachers' technology readiness level was low. However, the finding differs from the findings of Badri *et al* (2014) in their study titled technology readiness of school teachers: An empirical study of measurement and segmentation that revealed 64.9 percent of participants are technology ready while 35.1 percent are not. The educational implication of this finding is that the integration of ICT in schools cannot be guaranteed.

Furthermore, result on the test for substantial dissimilarity between the level of ICT readiness of male and female teachers in VEIs in Abuja, Nigeria shows not substantial. This suggests that both male and female teachers in VEIs in Abuja shared the same level of ICT readiness. The result is similar to the findings of Summak *et al.* (2020) that shows no substantial dissimilarity between the mean responses of male and female primary school teachers in Turkey on their technology readiness. However, Badri *et al* (2014) revealed that male teachers demonstrated a higher overall technology readiness score than female teachers which signified that substantial dissimilarity was found in gender.

Finding on the teachers' level of ICT acceptance in VEIs in Abuja, Nigeria was low. This simply indicated that the growing interest of in integrating ICT into classroom among teachers in VEIs in Abuja is insubstantial. The findings of Cobo-Rendon *et al*. (2021) presented similar finding in their study titled longitudinal analysis of teacher technology acceptance and its relationship to resource viewing and academic performance of college students during the COVID-19 pandemic that found low technology acceptance among teachers. In order words, Timothy (2009) found high level of technology acceptance in education among pre-service teachers. The finding implies that using ICT to enhance the academic achievement of students in VEIs in Abuja is challenged.

Furthermore, finding on the test for substantial dissimilarity between the level of ICT acceptance of male and female teachers in VEIs in Abuja, Nigeria shows not substantial. This indicates that both male and female teachers in VEIs in Abuja shared the same level of ICT acceptance. The result is similar to the findings Cobo-Rendon *et al*. (2021) found no statistically substantial dissimilaritys between male and female teachers' scores on technology acceptance. Though, the fining differs from the findings of Timothy (2009) that found substantial dissimilarity between the level of technology acceptance of male and female pre-service teachers.

## 9. Conclusion

Based on the findings from the study, insight into the level of ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria is provided. The study revealed that, both male and female teachers shared similar level of ICT readiness and acceptance. The findings of this study are particularly important for stakeholders in the development of framework for enhancing the ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria. However, it is concluded that if the identified low level of ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria is not properly managed, the integration of ICT in classroom can hardly be achieved.

## 10. Recommendations

Based on the findings from the study, the following recommendations were made:
- The Federal Capital Territory Administration should develop a framework for enhancing the ICT readiness and acceptance among teachers in VEIs in Abuja, Nigeria.

- The heads of VEIs in Abuja should encourage teachers by making the use of ICT compulsory in order to enhance their ICT readiness and acceptance.

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