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Determinants of Knowledge Sharing Behaviour of Information and Communication Technology Personnel in Selected Nigerian Tertiary Institutions

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Abstract: Knowledge sharing is known to be an integral component of knowledge management. Several studies have shown the acquisition of knowledge to be an important source of success in any field of human endeavour. This study examined some of the factors that influence knowledge sharing among ICT personnel of tertiary institutions in Nigeria. Two tertiary institutions were purposively selected for the study. Survey research design was adopted using complete enumeration survey. Questionnaire consisting both closed and open ended questions was used to collect data from 85 ICT personnel. Data analysis was performed using SPSS for descriptive statistics, independent sample test, Spearman rank and regression analyses. Findings showed that attitude ($\beta = 0.284$, $p = 0.007$), subjective norm ($\beta = 0.148$, $p = 0.029$) and self-efficacy ($\beta = 0.409$, $p = 0.000$) significantly influenced ICT personnel's intention to engage in knowledge sharing, while ICT usage ($\beta = 0.251$, $p = 0.004$) significantly influenced knowledge sharing behaviour. These personnel's intention to share knowledge ($\beta = 0.329$, $p = 0.001$) significantly influenced their knowledge sharing behaviour. Trust and controllability were not significant predictors. Also, while there was no significant relationship between age and knowledge sharing behaviour, there was also no significant difference in knowledge sharing based on gender. The study recommends that management and heads of department in these institutions should create an environment that encourages knowledge sharing so that it will further enhance ICT personnel's efficiency in discharging their duties.

Keywords: Knowledge Sharing, ICT Personnel, Tertiary Institutions, Attitude, Self-Efficacy, Nigeria

1. Introduction

Knowledge is described as facts, information and individual skills acquired through experience or education, and it represents one of the most significant resources in any organization today. Hence, the success of any organization is dependent on how well the knowledge of personnel is managed [1]. However, a primary objective of knowledge management is to encourage knowledge sharing among personnel in the organization, as knowledge is valuable only when it is shared and used to create new values [2-4]. Knowledge sharing between individuals is considered to be a process by which knowledge possessed by an individual is converted into a form that can be understood and used by others [5]. Such sharing of knowledge can be carried out at various levels within the organization, usually between individuals or between organizations. However, when employees do not engage in knowledge sharing, then the benefits of knowledge will not be actualized and ultimately knowledge management efforts become a failure [6].

It should however be noted that approaches and strategies for knowledge sharing may differ according to who shares his or her knowledge and with whom. Moreover, studies have shown that the flow of knowledge within an organization largely depends on the knowledge sharing behaviours of employees as knowledge sharing is not a natural human tendency [7-9].

The concept of knowledge sharing in organizations has received a significant focus in knowledge management literature with many of such studies carried out among

employees in private and public sectors. An important segment where knowledge sharing among employees has been well-researched is in the tertiary institutions. Tertiary institutions are actively involved in managing knowledge for sustainable competitive advantage. They actively engage in activities which include curriculum development, planning and administration, research and teaching. Hence, they are drivers of growth and innovation, thereby contributing to the development of the learning society [10, 11]. However, it is pertinent to note that most studies on knowledge sharing in tertiary institutions have been focused on academic staff [4, 12-15] with little attention to non-academic staff [16]. According to Fullwood *et al.* [13], the higher institutions of learning already have embedded knowledge sharing culture and staff perceptions towards knowledge sharing are different from those of other organization types, higher institutions of learning are knowledge based and its academic staff are totally aware of how knowledge sharing is important and how it can benefit them and their institutions.

Hence, this study investigates factors influencing knowledge sharing among non-academic staff of tertiary institutions in Nigeria with specific focus on Information and Communication Technology (ICT) personnel. ICT is a technology that facilitates the creation, recording, manipulation and transmission of information [17]. Ryhan and Mohammed [18] state that the use of ICT improves the quality, efficiency, and effectiveness of higher learning process; and draws solutions from and contributes to multiple disciplines which include management, information retrieval, artificial intelligence, and organisational behaviour. The application of ICT in education has gained popularity over the past few decades and this has positively affected activities of tertiary institutions in teaching, learning, monitoring of students' progress, as well as educational administrative activities [19]. ICT deployment and use among employees in higher institutions of learning can have positive impact in maximizing staff performance.

This explains why many universities have dedicated units with personnel engaged in all ICT activities of their institutions. These staff actively contribute to efficient management and administration in higher institutions of learning. ICT personnel are needed to support and manage knowledge effectively, to encourage the sharing of knowledge for teaching and learning processes and its application in higher learning administration. The roles of ICT personnel in higher institutions of learning is growing, thus, there is need to include them in studies relating to knowledge sharing. Aliyu [20] noted that among the staff of higher institutions of learning, ICT personnel play crucial role in the day-to-day running of the institution and stressed the need for their relevance in the education system in this 21st century. This study thus investigates the factors influencing knowledge sharing of ICT personnel in Nigerian tertiary institutions, with focus on 2 institutions namely - Federal University of Agriculture, Abeokuta and Federal College of Education, Osiele, Abeokuta.

ICT personnel of the Federal University of Agriculture and Federal College of Education, Osiele, Abeokuta are involved in rendering various services in their institutions. For the students, ICT personnel support activities which include admission processing and students' records, whereas for staff and other general activities of the institutions, ICT personnel support activities including personnel records maintenance, ID card production for both staff and students, maintenance of the campus internet network, management of virtual libraries, as well as provision of teaching and learning aids. Other activities supported by the ICT personnel include general administration, pay roll and financial accounting, inventory management; among many others.

This study adapted the Theory of Planned Behaviour (TPB) [21-23] and Social Capital Theory (SCT) [24, 25] to examine the factors influencing ICT personnel's behavioural intention and actual knowledge sharing behaviour. TPB extends the boundary condition of an individual's volitional control [26] given in the Theory of Reasoned Action [22] and it is one of the most influential and popular conceptual frameworks to study human behaviour. The constructs in the TPB theory are: *attitude* which refers to the degree to which an individual has favourable or unfavourable evaluation or appraisal of knowledge sharing behaviour; *subjective norm*, which refers to the individual's perceived social pressure to engage or not to engage in knowledge sharing; *self-efficacy* is an individual's estimate of how easy or difficult it is to share knowledge with others; *controllability* is an individual's beliefs, based on the available resources, about the extent to which engaging in knowledge sharing is up to him/her. The combination of attitude, subjective norms, self-efficacy and controllability lead to *behavioural intention*, which is an individual's willingness to engage in certain behaviour. According to Ajzen [27], the more favourable the attitude and subjective norm, and the greater the self-efficacy and controllability, the stronger should be the individual's intention to carry out the behaviour. Intention itself is assumed to be the immediate antecedent of behaviour.

Social Capital Theory [24, 25] refers to the levels of trust that groups or individuals may have, relations based on reciprocal systems, sets of norms, and networks between social communities. Trust which is one of the dimensions of social capital theory was included as one of the factors that influence knowledge sharing by the ICT personnel. Trust is focused on the integrity of another party. According to Omotayo and Babalola [28], it is the degree to which people have confidence in the honesty and reliability of others.

In addition to the TPB constructs and SCT, this study also included *ICT usage* as a factor influencing ICT personnel's knowledge sharing behaviour. ICT usage as used in this study is the degree to which the use of ICTs enhances rapid search, access, retrieval of information, support communication, collaboration and sharing of knowledge among ICT employees. In all, this study investigates factors influencing knowledge sharing of ICT personnel in tertiary institutions in Nigeria through the following research questions and tests of hypotheses which are diagrammatized in Figure 1.

1.1. Research Questions

i. Is there any significant difference in knowledge sharing behaviour based on gender of ICT personnel?
ii. Is there a significant relationship between age and knowledge sharing behaviour of ICT personnel?
iii. What factors inhibit knowledge sharing among ICT personnel of the Federal University of Agriculture, Abeokuta and Federal College of Education, Osiele, Abeokuta?

1.2. Test of Hypotheses

H_{01}: Attitude does not significantly influence ICT personnel's intention to share knowledge

H_{02}: Subjective norm does not significantly influence ICT personnel's intention to share knowledge

H_{03}: Self-efficacy does not significantly influence ICT personnel's intention to share knowledge

H_{04}: Controllability does not significantly influence ICT personnel's intention to share knowledge

H_{05}: Trust does not significantly influence ICT personnel's knowledge sharing behaviour

H_{06}: ICT usage does not significantly influence ICT personnel's knowledge sharing behaviour

H_{07}: ICT personnel's intention to share knowledge does not significantly influence their knowledge sharing behaviour

H_{08}: There is no significant joint influence of attitude, subjective norm, self-efficacy and controllability on ICT personnel's intention to share knowledge

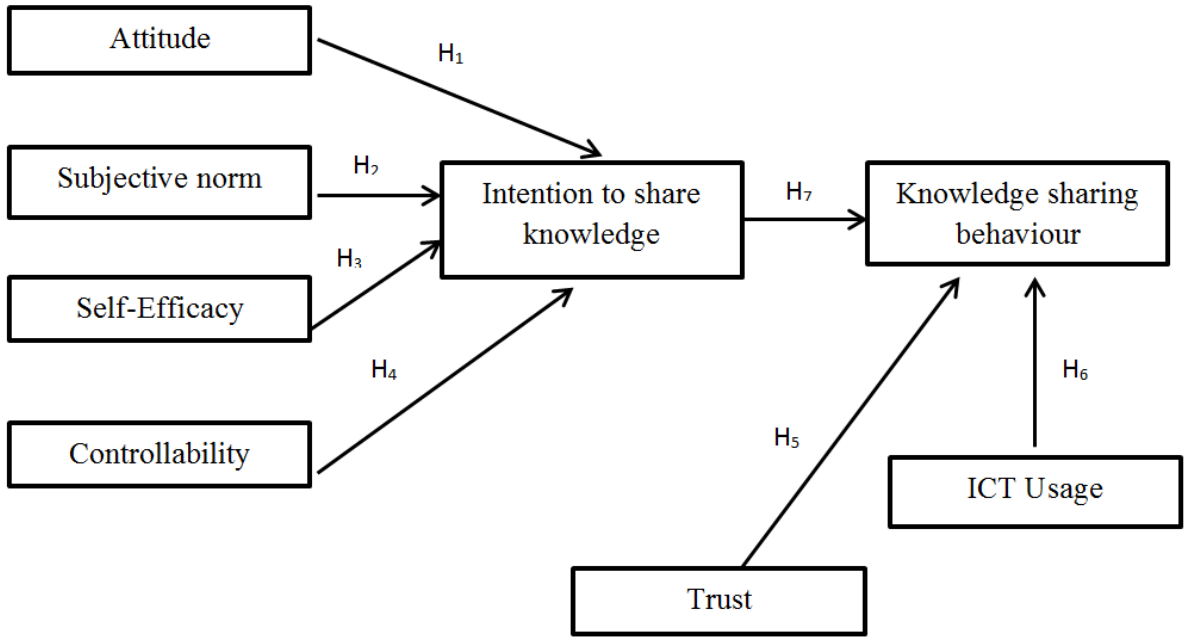

Figure 1. *Research Model.*

The remainder of this paper is organised as follows: The methodology for the research is presented in the next section, followed by the findings and discussion. The paper ends with conclusion and recommendations.

2. Research Methodology

2.1. Study Design and Population

Survey research design was adopted for the study and the study population covered all ICT personnel at the Federal University of Agriculture, Abeokuta and Federal College of Education, Osiele, Abeokuta. The choice of these two institutions is based on their year of establishment, being among the few oldest institutions in Abeokuta. Federal University of Agriculture, Abeokuta is one of the two Universities of Agriculture established by the Federal Government of Nigeria in the 80's and the first and the only University of Agriculture in Abeokuta, Ogun State. While the Federal College of Education, Osiele, Abeokuta is the first and the only federal college of education in Abeokuta, Ogun State.

2.2. Sampling Technique

This study adopted complete enumeration survey also known as population survey or census survey because information was required from each ICT personnel in every unit in the domain of the study. Complete enumeration survey is void of sampling error, though other types of errors may creep in at the stages of the survey design, collection of data and processing of data. These errors are termed 'non-sampling errors' and are common to both complete and sample surveys. Complete enumeration was considered the best for this study because the population under study contains only a few numbers, which is eighty five.

Table 1 shows the departments involved and the population targeted for this study.

Table 1. *Total Population of ICT Personnel at the Federal University of Agriculture, Abeokuta and Federal College of Education, Osiele, Abeokuta.*

Department	Population	Targeted Population
FUNAAB: ICT resource centre	40	40
Bursary	3	3
Library	3	3
Exams and records	1	1
CISLT	6	6
IFSERA	2	2
CADESE	3	3
ICPD	3	3
INHURD	2	2
Post graduate school	2	2
Computer science department	3	3
OSIELE:		
Directorate of Computer Centre and services	8	8
CESAPREP	1	1
Bursary	4	4
Library	3	3
Centre for degree programmes	1	1
TOTAL	85	85

2.3. Data Collection Method

Data for this study was collected using both quantitative and qualitative approaches. The instrument for data collection was questionnaire which contained both open and closed ended questions. Questionnaire is effective in gathering data from a large number of respondents within a short period of time while guaranteeing uniformity of responses from participants and facilitating data processes and analyses. The questionnaire was carefully structured into sections of open and closed ended questions based on the variables of interest in the study. Questions from previous studies on theory of planned behavior, social capital theory and ICT usage were adapted and modified. Appropriate and adequate instructions needed in filling the instrument were also given to the respondents. The sections are:

Section A: Demographic characteristics

Demographic characteristics on which data were collected include; gender, age, highest level of education, professional qualification acquired, department, working experience and staff's status.

Section B

This section contains questions on the constructs - attitude, subjective norms, self-efficacy, controllability, intention to share knowledge, trust, ICT usage and knowledge sharing behaviour. The seven constructs were measured using a 4-point Likert scale where "1" = Strongly Agree (SA), "2" = Agree (A), "3" = Disagree (D), "4" = Strongly Disagree (SD).

Attitude - Items under this construct measured the degree to which an ICT personnel has favourable or unfavourable evaluation or appraisal of knowledge sharing. The items were adapted from Tohidinia and Mosakhani [29].

Subjective norms- Subjective norms measured an ICT personnel's perceived social pressure to engage or not to engage in knowledge sharing. The items for this construct were adapted from Tohidinia and Mosakhani [29] and Chen, Chen and Kinshuk [30].

Self-efficacy - Self-efficacy is an ICT personnel's estimate of how easy or difficult it is to share knowledge with others. Items used in this construct were adapted from Chen *et al*. [30].

Controllability - This is an ICT personnel's beliefs, based on the available resources, about the extent to which engaging in knowledge sharing is up to him/her. Measures on controllability were adapted from Skaik and Othman [31].

Intention to share knowledge - Intention is an ICT personnel's willingness to engage in knowledge sharing. Measures on intention to share knowledge were adapted from Tohidinia and Mosakhani [29] and Chen *et al*. [30].

Trust and ICT usage- Items for these two constructs were adapted from Omotayo and Babalola [28] and Tohidinia and Mosakhani [29] respectively.

Knowledge Sharing Behaviour – Items for this construct were adapted from Chen *et al*. (2009). A 4-point Likert scale was used to measure from "1" = Frequently (F), "2" = Occasionally (O), "3" = Never (N)

The internal consistency and reliability of the questionnaire were established using the Cronbach Alpha reliability test. All the constructs demonstrated high reliability since alpha values for the scale were higher than 0.7. Nunnally [32] suggested that the acceptable value for Cronbach alpha was above 0.7. The reliability analysis is summarized in Table 2.

Table 2. *Summary of Cronbach Alpha levels for the constructs.*

Variable name	Cronbach alpha	Number of items	Decision
Knowledge sharing behaviour	.709	8	Fit for use
Intention to share	.828	6	Fit for use
Attitude to share	.751	8	Fit for use
Subjective norm	.722	8	Fit for use
Self-efficacy	.863	8	Fit for use
Controllability	.720	4	Fit for use

Variable name	Cronbach alpha	Number of items	Decision
ICT usage	.743	7	Fit for use
Trust	.794	8	Fit for use

2.4. Questionnaire Administration

Copies of the questionnaire were self-administered with the assistance of some ICT personnel in each department of both institutions. All the ICT personnel were informed that participation in the study was voluntary and participants were assured of their confidentiality. All the eighty five copies of the questionnaire were filled and returned in both institutions. This translates to a 100% return rate.

2.5. Data Analysis

Data collected were analysed using both descriptive and inferential statistics with the aid of the Statistical Package for Social Sciences (SPSS). While descriptive statistics was used to describe the socio-demographic characteristics of the respondents, independent t-test, Spearman Rank Correlation and Regression analyses were used for further analysis. All the hypotheses were tested at 0.05 level of significance.

3. Results

3.1. Socio-Demographic Information of Respondents

This section presents information about the age, sex, occupation, educational qualification, and years of experience of the respondents (Table 3). The information provided here were analysed using frequency count and percentage.

Table 3. *Socio-demographic characteristics of respondents.*

All	Demography characteristics	Frequency	Percent (%)
Name of institution	Funaab	68	80.0
	F. C. E. Osiele	17	20.0
Age of the respondents	21-25	4	4.7
	26-30	8	9.4
	31-35	19	22.4
	36-40	19	22.4
	41-45	26	30.6
	46-50	6	7.0
	50+	3	3.5
Sex	Male	72	84.7
	Female	13	15.3
Marital status	Single	14	16.5
	Married	70	82.3
	Separated	1	1.2
Educational Level	OND	8	9.4
	HND	10	11.7
	Bachelors' degree	38	44.7
	Masters' degree	26	30.6
	Ph.d	1	1.2
	Others	2	2.4
Years of experience	1-5 years	12	14.1
	6-10 years	39	45.9
	11-15 years	22	25.9
	16-20 years	7	8.2
	21-25 years	4	4.7
	26 years and above	1	1.2

Table 3 reveals that most of the ICT personnel in these two institutions were males (84.7%), while 82.3% were married. The modal age group was 41 – 45 years (30.6%) followed by 31 – 35 (22.4%) and 36 – 40 years (22.4%). An evaluation of the educational level of the ICT personnel also shows that a large percentage had Bachelor's (44.7%) and Masters' degrees (30.6%). Also, more than 70% of the ICT personnel had between 6 – 15years working experience.

3.2. Difference in Knowledge Sharing Behaviour Based on Gender of ICT Personnel

The independent sample t-test was used to investigate if there is a significant difference in the way male and female ICT personnel share knowledge. Table 4 presents the group statistics on the knowledge sharing behaviour for male and female personnel.

Table 4. *Group statistics on Knowledge sharing behaviour (KSB) of ICT personnel based on Gender.*

	gender	N	Mean	Std. Deviation	Std. Error Mean
KSB	male	72	20.6528	2.18290	.25726
	female	13	20.2308	2.58695	.71749

The table shows that 72 males and 13 females participated in the study. The mean KSB value of female ICT personnel is 20.23 which is less than 20.65 for males. However, Table 5 shows that at p=0.535, this difference is not statistically significant.

Table 5. *Independent Sample Test on Knowledge sharing behaviour of ICT personnel based on Gender.*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
KSB	Equal variances assumed	.811	.370	.624	83	.535	.42201	.67678	-.92408	1.76809
	Equal variances not assumed			.554	15.241	.588	.42201	.76222	-1.20038	2.04440

3.3. Relationship Between Age and Knowledge Sharing Behaviour of ICT Personnel

Spearman rank correlation was used to examine the relationship between age and knowledge sharing behaviour of ICT personnel. Findings are presented in Table 6.

Table 6. *Relationship between age and knowledge sharing behaviour of ICT personnel.*

KSB			
Spearman's rho	age	Correlation Coefficient	.105
		Sig. (2-tailed)	.340
		N	85

At a spearman's rho value of 0.105, there exist a positive but very weak relationship between age and KSB. However, at p= 0.340 this relationship is considered not statistically significant.

3.4. Factors inhibiting Knowledge Sharing Among ICT Personnel

Findings from data collected through open ended questions in the questionnaire show that factors inhibiting knowledge sharing can be grouped as ego and pride, competition, fear, secrecy and unwillingness to learn. These are explained below with representative responses from the ICT personnel included.

a. Ego and Pride: An inflated feeling of pride and ego by some ICT personnel was revealed by some respondents as one of the factors inhibiting knowledge sharing among ICT personnel.

"Ego, domineering spirit and self-centeredness shown in some colleagues' attitude makes me not to share knowledge with them (Male, 46 - 50 years)".

"Ego, selfishness and pride are the main factors affecting personnel in sharing knowledge with colleagues. Moreover, if a staff wants to be too relevant, this may also hinder knowledge sharing (Male, 41 - 45 years)".

"Due to pride, a personnel may want his or her colleagues to know that he or she is above them and will not want them to know what he considers as making him or her be above his colleagues (Female, 31 - 35 years)".

"Some think it makes them very important when others solely depend on them for solution (Male 46 - 50 years)".

"The desire to be seen as the best and all-in-all always makes them not to share knowledge with others (Male 36 - 40 years)".

b. Competition: Competition was also revealed as another factor that inhibits knowledge sharing.

"Competition, whereby people are striving for post or power prevents a personnel from sharing what he knows with his or her colleagues (Female, 36 - 40 years)".

"Unhealthy rivalry and competition hinders knowledge sharing (Male, 46 - 50 years)".

"Competitive attitude at work is also a factor that hinders knowledge sharing (Male 36 - 40 years)".

c. Fear: Some of the respondents were of the opinion that fear on the part of some ICT personnel can inhibit knowledge sharing.

"Fear of hijacking their roles by their colleagues prevents them from sharing their knowledge (Male, 36 - 40 years)".

"Fear of a personnel losing his or her job or being relegated prevents knowledge sharing (Female, 31 - 35 years)".

"Fear of expression also hinders knowledge sharing (Male, 41 - 45 years)".

"I think the factor preventing personnel from sharing knowledge in my institution is fear of the unknown (Male 36 - 40 years)".

d. Secrecy: Some ICT personnel expressed the need to maintain secrecy as another factor that inhibits knowledge sharing.

"There are some technicalities on the job that requires secrecy which will prevent the knowledge from being shared (Male, 41 - 45 years)".

"Some people keep their knowledge to themselves so as to protect the sensitivity in their job (Male, 26 – 30 years)".

e. Unwillingness to Learn: Findings show that some personnel are unwilling to learn new things; hence this also hinders knowledge sharing.

"Lack of interest of some personnel to acquire new knowledge prevents knowledge sharing by a personnel who knows more than his or her colleagues (Female, 36 - 40 years)".

"Knowledge sharing becomes a difficult task if those expected to seek for it do not value it, it discourages the knowledge sharer (Male, 31 – 35 years)".

"The nonchalant attitude and lack of commitment of colleagues that will benefit from the knowledge sharing exercise (Male 41 - 45 years)".

3.5. Test of Hypotheses

This section presents the test of hypotheses formulated in this study. Linear regression analysis was used to analyse hypotheses 1 to 7 and multiple regression was used to analyse hypothesis 8. The Enter method was used for the linear regression analyses. The results of the test of hypotheses are stated as follows:

H_{01}: Attitude does not significantly influence ICT personnel's intention to share knowledge

The Anova table (Table 7) shows that at 0.05 level of significance, the model is significant for predicting the intention to share knowledge (F = 7.716; p = 0.007) among ICT personnel of Federal University of Agriculture, Abeokuta and Federal College of Education, Osiele. There exists a low correlation between the observed and predicted values of the variable, intention to share (R=0.292), whereas, only 7.4% (Adjusted R^2 = 0.074) of the variance for respondents' intention to share knowledge was accounted for by attitude (Table 8).

Table 7. *Anova table showing the goodness of fit for the model.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.301	1	41.301	7.716	.007[b]
	Residual	444.276	83	5.353		
	Total	485.576	84			

a. Dependent Variable: INTENTION TO SHARE
b. Predictors: (Constant), ATTITUDE

Table 8. *Predictive power of Attitude on intention to share knowledge.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.292[a]	.085	.074	2.31360

a. Predictors: (Constant), ATTITUDE

Notwithstanding, Table 9 indicates that attitude significantly influenced intention to share knowledge (p=0.007). For every unit increase in attitude of the respondents, their intention to share knowledge increases by 0.284. Hence, the null hypothesis is rejected.

Table 9. *Influence of Attitude on intention to share knowledge.*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.472	2.338		6.190	.000
	ATTITUDE	.284	.102	.292	2.778	.007

a. Dependent Variable: INTENTION TO SHARE

H_{02}: Subjective norm does not significantly influence ICT personnel's intention to share knowledge

Table 10 shows that the model is significant for predicting the ICT personnel's intention to share knowledge (F = 4.958; p = 0.029). However, Table 11 shows that the correlation between the observed and predicted values of the variable, intention to share is low (R=0.237). Moreover, only 4.5% (Adjusted R^2 = 0.045) of the variance for respondents intention to share knowledge was accounted for by subjective norm.

Table 10. *Anova table showing the goodness of fit for the model.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.372	1	27.372	4.958	.029[b]
	Residual	458.205	83	5.521		
	Total	485.576	84			

a. Dependent Variable: INTENTION TO SHARE
b. Predictors: (Constant), SUBJECTIVE NORM

Table 11. *Predictive power of Subjective norm on Intention to share knowledge.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.237[a]	.056	.045	2.34958

a. Predictors: (Constant), SUBJECTIVE NORM

Table 12 however indicates that intention to share is significantly influenced by subjective norm (p=0.029). ICT personnel's intention to share their knowledge increases by 0.148 for every unit increase in subjective norm. In this case, the null hypothesis is rejected.

Table 12. *Influence of Subjective norm on intention to share knowledge.*

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.503	1.560		11.221	.000
	SUBJECTIVE NORM	.148	.067	.237	2.227	.029

a. Dependent Variable: INTENTION TO SHARE

H_{03}: Self-efficacy does not significantly influence ICT personnel's intention to share knowledge

The linear regression model is statistically significant for predicting intention to share knowledge (F = 40.080; p = 0.000) among ICT personnel of the two institutions (Table 13). Moreover, the correlation between the observed and predicted values of the dependent variable (intention to share) is moderately high (R=0.571) (Table 14). Also, 31.8% of the variance for respondents' intention to share knowledge was accounted for by self-efficacy (Adjusted R^2.=0.318)

Table 13. *Anova table showing the goodness of fit for the model.*

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	158.125	1	158.125	40.080	.000[b]
	Residual	327.451	83	3.945		
	Total	485.576	84			

a. Dependent Variable: INTENTION TO SHARE
b. Predictors: (Constant), SELF EFFICACY

Table 14. *Predictive power of Self-efficacy on intention to share knowledge.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.571[a]	.326	.318	1.98625

a. Predictors: (Constant), SELFEFFICACY

Table 15 indicates that self-efficacy significantly influenced intention to share knowledge (p=0.000). For every unit increase in an ICT personnel's self-efficacy, there is a 0.409 increase in their intention to share knowledge. Thus, the null hypothesis is rejected.

Table 15. *Coefficients table showing the influence of Self-efficacy on intention to share knowledge.*

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.513	1.816		5.238	.000
	SELF EFFICACY	.409	.065	.571	6.331	.000

a. Dependent Variable: INTENTION TO SHARE

H_{04}: Controllability does not significantly influence ICT personnel's intention to share knowledge

The Anova table (Table 16) shows that the model is not significant for predicting intention to share knowledge (F = 0.908; p = 0.343) by the ICT personnel. Moreover, the correlation between the observed and expected values of the dependent variable is extremely low (R=0.104) and only 0.1% of the dependent variable (Adjusted R^2.=-0.001), intention to share, is accounted for by controllability (Table 17). The negative value of Adjusted R^2 shows that the independent variable, controllability, is contributing almost zero to the regression model.

Table 16. *Anova table showing the goodness of fit for the model.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.257	1	5.257	.908	.343[b]
	Residual	480.319	83	5.787		
	Total	485.576	84			

a. Dependent Variable: INTENTION TO SHARE
b. Predictors: (Constant), CONTROLLABILITY

Table 17. *Predictive power of Controllability on intention to share knowledge.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.104[a]	.011	-.001	2.40561

a. Predictors: (Constant), CONTROLLABILITY

Hence, as shown in Table 18, at p=0.343, there is no significant predictive relationship between controllability and intention to share knowledge. The null hypothesis is thus accepted.

Table 18. *Coefficients table showing the influence of Controllability on intention to share knowledge.*

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.448	1.576		12.343	.000
	CONTROLLABILITY	.113	.119	.104	.953	.343

a. Dependent Variable: INTENTION TO SHARE

H_{05}: Trust does not significantly influence ICT personnel's knowledge sharing behaviour

For Hypothesis 5, the linear regression model is not significant for predicting the knowledge sharing behaviour (F = 0.633; p = 0.429) of the respondents (Table 19). In addition, Table 20 shows an extremely low correlation (R = 0.087) between the observed and expected values of the dependent variable, knowledge sharing behaviour. Besides, the negative Adjusted R^2 = -0.004 shows that trust did not account for any variance in respondent' knowledge sharing behaviour.

Table 19. *Anova table showing the goodness of fit for the model.*

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.181	1	3.181	.633	.429[b]
	Residual	417.407	83	5.029		
	Total	420.588	84			

a. Dependent Variable: KSB
b. Predictors: (Constant), TRUST

Table 20. *Predictive power of Trust on Knowledge Sharing Behaviour.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.087[a]	.008	-0.004	2.24254

a. Predictors: (Constant), TRUST

Hence, at p=0.429, trust did not significantly influence knowledge sharing behaviour (Table 21), leading to acceptance of the null hypothesis.

Table 21. *Coefficients table showing the influence of Trust on Knowledge Sharing Behaviour.*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.444	1.459		13.330	.000
	TRUST	.049	.062	.087	.795	.429

a. Dependent Variable: KSB

H_{06}: ICT usage does not significantly influence ICT personnel's knowledge sharing behaviour

The regression model is significant for predicting knowledge sharing behaviour (F = 8.730; p = 0.004) of the ICT personnel (Table 22). The correlation between the observed and expected values of the dependent variable is also moderate (R = 0.308), while only 8.4% of the variation in the dependent variable is accounted for by the independent variable, *ICT usage* (Table 23).

Table 22. *Anova table showing the goodness of fit for the model.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.027	1	40.027	8.730	.004[b]
	Residual	380.562	83	4.585		
	Total	420.588	84			

a. Dependent Variable: KSB
b. Predictors: (Constant), ICT USAGE

Table 23. *Predictive power of ICT Usage on Knowledge Sharing Behaviour.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.308[a]	.095	.084	2.14128

a. Predictors: (Constant), ICTUSAGE

Table 24 indicates that ICT usage significantly influenced knowledge sharing behaviour (p=0.004). This shows that for every unit increase in ICT usage, the knowledge sharing behaviour of the respondents increases by 0.251. Hence, the null hypothesis was rejected.

Table 24. *Coefficients table showing the influence of ICT Usage on Knowledge Sharing Behaviour.*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.484	2.079		6.967	.000
	ICT USAGE	.251	.085	.308	2.955	.004

a. Dependent Variable: KSB

H_{07}: ICT personnel's intention to share knowledge does not significantly influence their knowledge sharing behaviour

The enter method was used for the linear regression analysis. Table 25 shows that the model is significant for predicting knowledge sharing behaviour (F = 11.815; p = 0.001) among the ICT personnel. There also exists a positive and relatively moderate correlation between the observed and expected values of the dependent variable (R = 0.353). Also, 11.4% of the variance in the dependent variable is accounted for by the independent variable, intention to share (Adjusted R = 0.114) (Table 26)

Table 25. *Anova table showing the goodness of fit of the model.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.411	1	52.411	11.815	.001[b]
	Residual	368.177	83	4.436		
	Total	420.588	84			

a. Dependent Variable: KSB
b. Predictors: (Constant), INTENTION TO SHARE

Table 26. *Predictive power of Intention to Share on Knowledge Sharing Behaviour.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.353[a]	.125	.114	2.10615

a. Predictors: (Constant), INTENTION TO SHARE

Table 27 indicates that ICT personnel's intention to share knowledge has a positive and significant influence on their knowledge sharing behaviour (p = 0.001). A unit increase in intention to share knowledge yields 0.329 increase in knowledge sharing behaviour, leading to the null hypothesis being rejected.

Table 27. *Influence of Intention to Share Knowledge on Knowledge Sharing Behaviour.*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.712	2.013		6.810	.000
	INTENTION TO SHARE	.329	.096	.353	3.437	.001

a. Dependent Variable: KSB

H_{08}: There is no significant joint influence of attitude, subjective norm, self-efficacy and controllability on ICT personnel's intention to share knowledge

Using the enter method, multiple regression analysis was used for the analysis. The Anova table (Table 28) shows that the model is significant for predicting the ICT personnel's intention to share knowledge (F = 11.438; p = 0.000).

Table 28. *Anova table showing the goodness of fit of the model.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	176.667	4	44.167	11.438	.000[b]
	Residual	308.909	80	3.861		
	Total	485.576	84			

a. Dependent Variable: INTENTION TO SHARE
b. Predictors: (Constant), CONTROLLABILITY, SELF-EFFICACY, ATTITUDE, SUBJECTIVE NORM

As shown in Table 29, there also exists a positive and relatively strong correlation between the observed and expected values of the dependent variable (R=0.603). Also, 36.4% of the variance in the dependent variable is jointly accounted for by the independent variables.

Table 29. *Predictive power of Attitude, Subjective norm, Self-efficacy and Controllability on intention to share knowledge.*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.603[a]	.364	.332	1.96504

a. Predictors: (Constant), CONTROLLABILITY, SELF-EFFICACY, ATTITUDE, SUBJECTIVE NORM

Table 30 shows that only attitude (p=0.044) and self-efficacy (p=0.000) significantly predict intention of ICT personnel to share knowledge. For every unit increase in attitude, the ICT personnel's intention to share knowledge increases by 0.198 while for every unit increase in self-efficacy, their intention to share knowledge increases by 0.387.

Table 30. *Coefficients table showing the influence of Attitude, Subjective norm, Self-efficacy and Controllability on intention to share knowledge.*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.936	2.571		2.309	.024
	ATTITUDE	.198	.097	.203	2.048	.044
	SUBJECTIVE NORM	-.004	.063	-.007	-.068	.946
	SELF-EFFICACY	.387	.067	.539	5.732	.000
	CONTROLLABILITY	-.014	.100	-.013	-.141	.888

a. Dependent Variable: INTENTION TO SHARE

4. Discussion of Findings

This study investigated factors influencing knowledge sharing among ICT personnel in Nigerian tertiary institutions. Using complete enumeration survey, a total of 85 ICT personnel of Federal University of Agriculture and Federal College of Education, Osiele, Abeokuta were respondents in the study. The study noted that more than 80% of the respondents were males; 82.3% were married and over 75% were between 31 to 45 years of age. The educational status of the respondents also shows that more than 75% had at least a Bachelor's degree. Findings showed that there is no significant difference in the knowledge sharing behaviour of ICT personnel based on their gender, whereas no relationship was also observed between their age and knowledge sharing behaviour. The study also noted that attitude, subjective norm, self-efficacy significantly influenced ICT personnel's intention to share knowledge while controllability did not. Also, while ICT usage significantly influenced knowledge sharing behaviour, trust was observed not to have any significant influence on knowledge sharing behaviour. ICT personnel's intention to share knowledge was also observed to have a significant influence on their knowledge sharing behaviour. The study however noted that only attitude and self-efficacy had a significant joint influence on ICT personnel's intention to share knowledge.

The study observed the dearth of literature on knowledge sharing among this population of non-academic workers in tertiary institutions. Hence, findings from this study are discussed with minimal comparison with existing literature on knowledge sharing. The result from this study on the role of demographic characteristics on knowledge sharing behaviour of ICT personnel is consistent with Ismail and Yusof [33] who investigated demographic factors and knowledge sharing among Malaysian government officers. The study revealed that there was no difference among government officers' knowledge sharing in terms of demographic factors. Nagani and Katyayani [34] also investigated the role of demographic variables in knowledge sharing practices among academic staff of private engineering colleges located in Rayalseema region of Andhra Pradesh, India. Findings from the study revealed that there was no significant influence of gender on knowledge sharing behaviour and no significant behavioural differences were observed towards knowledge sharing by different age groups. It is probably in order, to infer that ICT personnel in the current study are all conscious of the need to engage in knowledge sharing for effective and efficient performance irrespective of their gender and age.

A closely related study by Rahman *et al*. [16] which investigated knowledge sharing behaviours of non-academic staff in Malaysian higher institutions found out that attitude and subjective norms significantly influenced knowledge sharing behaviour. Knowledge sharing intentions was reported to have played a significant role as a mediating variable in the relationships between knowledge sharing behaviour and each of attitude and subjective norm. Although the current study observed that the contribution of each of attitude (7.4%) and subjective norm (4.5%) to the variance of the dependent variable, *intention to share knowledge,* is quite minimal, it is probably safe to conclude that positive attitude of ICT personnel towards knowledge sharing is an antecedent to their knowledge sharing intentions. Moreover, it is very likely that these respondents would engage in knowledge sharing because of their belief that this is what is expected from them. Other prior studies although not carried out among similar population, have also observed that attitude [35] and subjective norms [29] significantly influence

knowledge sharing intentions. Alajmi [36] however, in a survey of 158 group members of an online community of educators reported that while subjective norms have a strong influence on an individual's intention to share knowledge, the influence of attitude was insignificant among this online community of educators. Moreover, Jolaee *et al*. [37] investigated factors affecting knowledge sharing intention among academic staff at three social science faculties in one public university in Malaysia. Findings showed that subjective norm did not significantly influence knowledge sharing intentions.

This study observed that self-efficacy had the most significant influence on ICT personnel's intention to engage in knowledge sharing. Over 30% of the variance for respondents' intention to share knowledge was accounted for by self-efficacy. The implication of this is that the more ICT personnel in these institutions believe in their capacity to successfully engage in knowledge sharing, the greater their intentions to share their knowledge. This study corroborated research conducted by Alajmi [36], Hung *et al*. [38], Skaik and Othman [15, 31]. These studies reported that self-efficacy significantly influences an individual's intention to share knowledge. However, an earlier study by Chen *et al*. [30], reported that self-efficacy did not significantly influence knowledge sharing intention among respondents in virtual learning communities.

According to Kanaan *et al*. [39] and Tohidinia and Mosakhani [29], ICT is one of the factors that influence knowledge sharing activities among personnel, and organizations that manage ICT systematically are able to make their organizations more competitive and have added advantage. Findings in this study also revealed that ICT usage among ICT personnel significantly influenced their knowledge sharing behaviour. Use of ICT enhances rapid search, access and retrieval of information as well as support communication and collaboration among ICT personnel. It can also facilitate the speedy and timely sharing of information and knowledge through social media platforms and intranets among ICT personnel. Rad *et al*. [40] and Cheng *et al.* [41] however argued that ICT does not exert influence on knowledge sharing. The studies suggested that to promote knowledge sharing activity in knowledge-based institutions, it is essential to create an environment which is people-oriented, rather than technological-oriented.

The study observed that controllability and trust did not significantly influence knowledge sharing intentions. The implication of this is that the fact that ICT personnel have total control over the knowledge they share does not translate to their actually sharing their knowledge. Also, even when ICT personnel trust their colleagues, this does not mean that they would engage in knowledge sharing. Although findings on controllability contradicts Ajzen [23] which stated that controllability is an important determinant that influences an individual's behaviour through intention, it however agrees with Skaik and Othman [15] which concluded that individuals' controllability and decision to share knowledge is not a predictor of their intention.

van den Hooff and Huysman [42] noted that clarity of roles and responsibilities and less formal divisions in the organisation may lead to a more informal climate, where trust, identification and reciprocity exist. However, Omotayo and Babalola [28] in a study among artisans reported that trust does not influence knowledge sharing behaviour, although their findings could be due to the fact that artisans generally engage in their profession to make money and will want to have an edge over others by not giving out the secrets they are using to make income. However, in this current study, findings from data collected through open ended questions showed that factors inhibiting knowledge sharing included pride, fear, secrecy and unwillingness of other personnel to learn new things. Attitudes are related with feelings of individuals. Sometimes individuals are not willing to share their knowledge due to feelings of insecurity. They feel fear from the loss of superiority and knowledge ownership after sharing their distinctive ideas with others [43]. Chennamaneni [44] surveyed 180 full-time employees enrolled in MBA and senior level classes at the University of Texas, Arlington, to examine factors that promote or discourage knowledge sharing behaviours of knowledge workers in the organizational context and reported that perceived loss of knowledge power has a negative effect on the knowledge worker's attitude towards knowledge sharing. The current study however, observed that pride, fear of loss of knowledge power and other inhibitors were not a common experience by the respondents. Majority of the ICT personnel had positive attitude and strong intentions to engage in knowledge sharing.

5. Conclusion and Recommendation

Findings from this study have shown that ICT personnel engage in knowledge sharing activities irrespective of their gender and age. Also, attitude, subjective norm, self-efficacy were shown to significantly influence ICT personnel's intention to share knowledge while ICT usage significantly influence knowledge sharing behaviour. ICT personnel's intention to share knowledge was also observed to have a significant influence on their knowledge sharing behaviour. Finding from this study are consistent with those of previous studies and they provide significant practical implications for higher institutions of learning and decision makers. This study therefore recommends that knowledge sharing practices should be further encouraged and imbibed as a culture among ICT personnel tertiary institutions in Nigeria. Management and heads of department in these institutions should create an environment that encourages knowledge sharing so that it will further enhance the efficiency of ICT personnel in discharging their duties. Management policies on ICT personnel having control over the available resources to enhance knowledge sharing among personnel should be reviewed and heads of department should not encourage unethical rivalry among personnel so that they can be encouraged to freely engage in knowledge sharing without fear of losing their knowledge.

Like any study, this study naturally leaves some clues and limitations for further research. Future studies can be expanded to include a comparative study between private and public higher institutions of learning. This will provide a holistic view on knowledge sharing behaviour among ICT personnel in the different institutions.

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