Research Journal of Information Technology

ISSN 1815-7432

Academic
Journals Inc.

www.academicjournals.com

Research Journal of Information Technology 4 (3): 85-105, 2012
ISSN 1815-7432 / DOI: 10.3923/rjit.2012.85.105

Modeling the Determinants and Gender, Age and Ethnicity Difference in Telecommunication Centre Acceptance

L. Abdulwahab and MD Zulkhairi
Graduate Department of Information Technology, College of Art and Sciences, Universiti Utara Malaysia (UUM) 06010 Sintok, Kedah, Malaysia

Corresponding Author: Lawan Abdulwahab, Graduate Department of Information Technology, College of Art and Sciences, Universiti Utara Malaysia (UUM) 06010 Sintok, Kedah, Malaysia Tel: +2348034980173, +60164710821

ABSTRACT

Telecommunication centre is an avenue by which shared access to information and communication technology facilities are provided to some members of disadvantage communities. Recent studies have shown that this initiative is rapidly spreading around the developing countries. The telecentre initiatives no doubt offer a cost effective means of bridging the problems of access to computer and internet. Thus, identifying the factors that influence acceptance by individual represents a fundamental challenge to the successful implementation of this tool of bridging digital divide. Despite the benefits derived through utilizations of the telecentres. The number of studies that have been conducted to examine its acceptance in Nigeria is very limited. It is also doubtful whether the information system acceptance models can be effectively used to examine the acceptance of telecentre by individual in Nigeria. The main objectives of this paper was therefore, to determine the significant factors that influenced user accepta.

Key words: Digital divide, behavioral intention, structural equation modeling, UTAUT model

INTRODUCTION

Telecommunication centre (Telecentre) is a platform by which shared access to Information and Communication Technology (ICT), facilities are provided to some members of disadvantage communities. Being that providing access of ICTs to individual and or household for the generality of people became a herculean task by various governments along the developing world. Hence, shared access to ICTs is considered as an effective means towards an inclusive information society. Research has shown that the outset of telecentre is proven as an essential tool for addressing the prevalence of digital divide (Gurstein, 2008; Zulkhairi *et al*., 2009; Clark and Gomez, 2011). In recent times number of developing countries implements telecentre through the support of Universal Service Provision Fund (USPF). For instance the USPF in Nigeria supported school based telecentre and the community telecentre (USPF, 2009). The purpose of which is to facilitate widespread availability and accessibility of ICTs throughout the country (USPF, 2009).

Presently, the USPF has roll-out 12 Community Telecentres (CTCs), 2 centres' in each of the six geopolitical zones of Nigeria with the aim of serving as a pilot project. It is envisaged that by the end of 2011 telecentres is expected to be established throughout the country. Primarily telecentre are meant to promote digital literacy, alleviate digital divide, poverty alleviation, employment generation as well as an improvement in e-governance and e-commerce initiatives (Kamel *et al*.,

2009). However, despite the anticipated benefits derived through utilizations of the telecentres. The number of studies that have been conducted to examine the acceptance of telecentre by users in Nigeria is very limited. Recent research identified the determinants of telecentre acceptance in developing countries using a modified version of the unified theory of acceptance and use of technology (UTAUT) model (Abdulwahab and Zulkhairi, 2011). The research proposed intends to extend those findings by investigating the effects of moderating variables on the relationships between the determinants of telecentre acceptance.

Researches on moderating effects in telecentre acceptance settings are sparse. Some studies only suggested the moderating effect of gender, age, experience and voluntariness on the determinants of behavioral intention (Venkatesh *et al*., 2003, 2011). The findings of moderating effects obtained on the relationships between the determinants of behavioral intention are unclear (Venkatesh *et al*., 2011; Wang and Shih, 2008). Though Sun and Zhang (2006) and Srite and Karahanna (2006) suggested the inclusion of location and ethnic identity as a moderators of the technology acceptance model. But few empirical tests were conducted to test the effect of these on the determinants of intention. Consequently, the objective of this research is to investigate the determinants in addition to gender, age, ethnicity and location differences, in the acceptance of telecentre based on UTAUT proposed by Venkatesh *et al*. (2003, 2011) as a theoretical framework.

LITERATURE REVIEW

Telecentre acceptance is the focal point of this research, identifying the factors that influence acceptance by individual represents a fundamental challenge to the successful implementation of this tool of bridging digital divide. User acceptance is regularly the yardstick of Information System (IS) in determining success or failure of an IT implementation. Understanding what motivate users to adopt and use technology has been research all over the world specifically in the US (Davis, 1989; Davis *et al*., 1992; Venkatesh *et al*., 2003), in Asia (Wang and Shih, 2008; Park *et al*., 2007) and Middle East (Al-Gahtani *et al*., 2007; Al-Somali *et al*., 2009).

Base on eight famous models in the domain of IT acceptance, Venkatesh *et al*. (2003, 2011) proposed a Unified Theory of Acceptance and Use of Technology (UTAUT) model. The models were integrated in terms of their conceptual differences as well as empirical resemblances (Yi *et al*., 2006). The idea behind the unifications of these models is to arrive at the unified view of user acceptance of IT (Venkatesh *et al*., 2003).

The eight models used, include the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), Technology Acceptance Model (TAM), (Davis, 1989), the Theory of Planned Behavior (TPB), (Ajzen, 1991), the Combined TAM and TPB (C-TAM-TPB) (Taylor and Todd, 1995), the Diffusion of Innovation Theorem (DOI), (Rogers, 2003), the Social Cognitive Theory (SCT), (Bandura, 1986) the Motivational Model (MM), (Davis *et al*., 1992), the Model of PC Utilization (MPCU) (Thomson *et al*., 1991). An empirical research was conducted by Venkatesh *et al*. (2003) to compare the aforementioned models on the basis of which a unified model of technology acceptance was advanced. The unified model comprises four constructs that were classified as the determinants of behavioral intention and usage behavior. These are: performance expectancy, effort expectancy, social influence and facilitating conditions. Venkatesh *et al*. (2003) proposed four moderating effects of gender, age, experience and voluntariness of use as shown in Fig. 1. The moderating variables attempt to explain the influence of individual differences in technology use (Sun and Zhang, 2006).

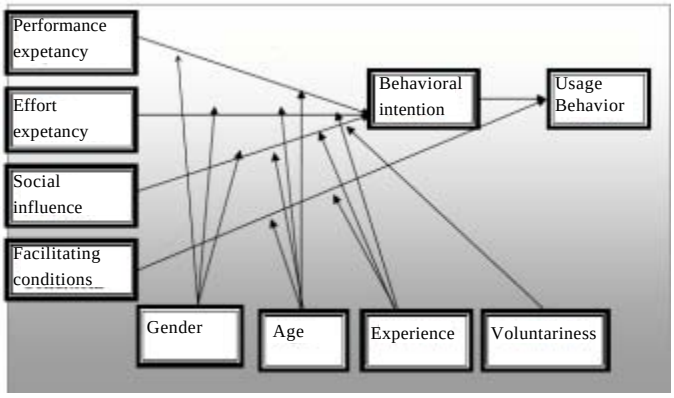


Fig. 1: The Unified Theory of Acceptance and Use of Technology (UTAUT) model. Source: Venkatesh *et al.* (2003)

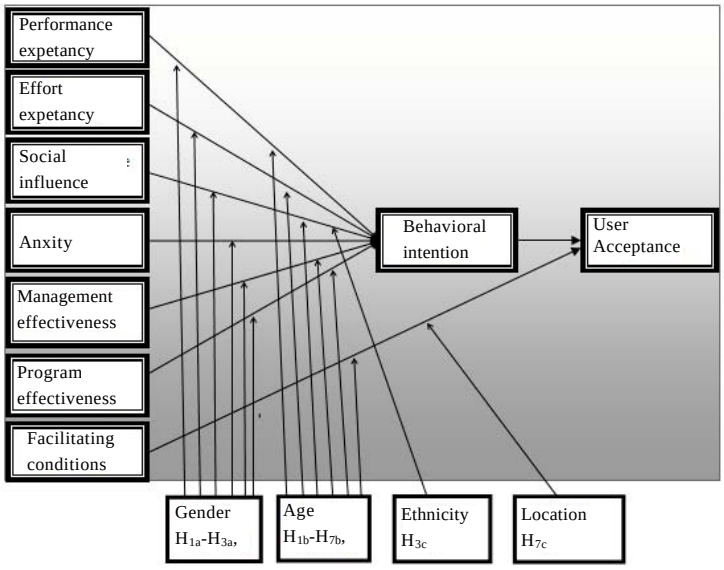


Fig. 2: The Research model

The previous studies provide support and implication for understanding intention in telecentre acceptance. Review of extant studies provided theoretical foundation for the formulation of hypotheses.

RESEARCH MODEL AND HYPOTHESES

The proposed research model to be tested in this study is not an exact replica of the UTAUT model (Fig. 2). In this model, despite maintaining four UTAUT variables, three more variables were incorporated in to the original UTAUT model, Anxiety (ANX), Management Effectiveness (MEF) and Program Effectiveness (PEF). Previous research has found the relationships between the enumerated constructs with behavioral intentions as inconsistent (Abdulwahab and Zulkhairi, 2011). This research hypothesized the entire proposed constructs as determinants of behavioral intention and user acceptance. In addition, gender, age, ethnicity and location moderate the

influence between these determinants and behavioral intention. The proposed constructs and hypotheses are supported by previous researches (Venkatesh *et al.*, 2003; Abdulwahab and Zulkhairi, 2011). The following section will elaborate on the theory and the derivation of hypotheses base on possible linkages.

Performance expectancy: Venkatesh *et al.* (2011) define Performance Expectancy (PE) as "the degrees to which an individual believes that using a system will help h/her better attain significant reward". The theoretical foundation was base from five Theories/Models that describe the concept of performance expectancy: perceived usefulness (TAM/TAM 2 and C-TAM-TPB), job-fit (MPCU), extrinsic motivation (MM), outcome expectation (SCT) and relative advantage (DOI). This construct was reported as the most influential among the four constructs by Venkatesh *et al.* (2003) in predicting behavioral intention. It remains significant at all point of measurement regardless of environmental settings and was supported by other studies (Al-Gahtani *et al.*, 2007; Wang and Shih, 2008). Recent studies have established that the construct may have gender and age bias (Al-Gahtani *et al.*, 2007; Wang and Shih, 2008; Wang *et al.*, 2009). In this study, gender and age were posited to play a moderating role on the relationship between performance expectancy and behavioral intention. Thus, the effects of performance expectancy on behavioral intention will be moderated by gender and age, such that the effects will be stronger for male more particularly younger male. Therefore, the following hypotheses will be determined:

H_{A1}: Performance expectancy has a significant influence on behavioral intention on user acceptance of telecentre

H_{1a}: Performance expectancy influences behavioral intention on user acceptance of a telecentre more strongly for male than for female

H_{1b}: Performance expectancy influences behavioral intention on user acceptance of a telecentre more strongly for younger than for older

Effort expectancy: Effort Expectancy (EE) is defined as "the degree of ease associated with the use of the information system (Venkatesh *et al.*, 2011)". This construct has a theoretical foundation from the three constructs from different models that relate to effort expectancy: perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (DOI) (Venkatesh *et al.*, 2003). In most of studies conducted using UTAUT model, effort expectancy was found to positively influence behavioral intention to use information system (Wang *et al.*, 2006, 2009; Park *et al.*, 2007; Wang *et al.*, 2009; Lm *et al.*, 2011). Also, this relationship was found to have an insignificant effect on behavioral intention (Al-Gahtani *et al.*, 2007). In context of this research, since telecentre initiatives is still emerging, it is expected that effort expectancy will be a determinant of behavioral intention. Gender and age will influence the relationship between effort expectancy and behavioral intention, such that the effect will be stronger for female, specifically older female (Venkatesh *et al.*, 2003). Hence, this study will test the following hypotheses:

H_{A2}: Effort expectancy has a significant influence on behavioral Intention on user acceptance of telecentre

H_{2a}: Effort expectancy influences behavioral intention on user acceptance of telecentre more strongly for female than for male

H_{2b}: Effort expectancy influences behavioral intention on user acceptance of telecentre more strongly for older than for the young

Social influence: Venkatesh *et al.* (2011) defined social influence as"the degree to which an individual perceives that important other believe he or she should use the new information system. Three constructs from the six models portray the concept of social influence: social factors (MPCU), subjective norm (TRA, TAM2, TPB and C-TAM-TPB) and image (DOI) (Venkatesh *et al.*, 2003). Social influence was suggested as a significant factor in influencing individual behavioral intention to acceptance of new information system platform(Venkatesh and Davis, 2000; Shaper and Pervan, 2007). In this study, we theorized that social influence has effect on behavioral intention. And the relationships are moderated by gender, age and ethnicity, such that the effect is more strongly for female, mainly elderly female. Further, the major ethnic groups will utilize telecentre more than the minority groups. Thus, the following hypotheses will be tested:

H_{A3}: Social influence has a significant influence on behavioral Intention on user acceptance of telecentre
H_{3a}: Social influence has effect on behavioral intention on user acceptance of telecentre strongly for female than for male
H_{3b}: Social influence has effect on behavioral intention on user acceptance of telecentre more strongly for older than for younger
H_{3c}: Social influence has an effect on behavioral intention on user acceptance of telecentre more strongly on ethnicity such that the major ethnic groups utilize the telecentre more than minor

Anxiety: Anxiety (ANX) towards used of technology is described as evolving anxious or emotional reactions when it comes to performing a behavior (e.g., using a computer). The apprehension or even the fear an individual has toward the possibility to use a technology is referred to as an anxiety (Venkatesh *et al.*, 2003). Anxiety as a construct has foundation from the Social Cognitive Theory (SCT) introduced to information system by Compeau and Higgins (1995) as an extended SCT in the context of computer utilization. The relationship between anxiety and behavioral intention was found to be inconsistent. Anxiety was found to have significant effect on behavioral intention in previous studies (Loo *et al.*, 2009). Also, the relationship between anxiety and behavioral intention was found to have insignificant effect in most studies (Venkatesh *et al.*, 2003; Curtis *et al.*, 2010). In this study, we theorized that anxiety has influences on behavioral intention on user acceptance of telecentre. The relationship is moderated by age, such that the effect is more strongly for younger. The following hypothesis will be verified:

H_{A4}: Anxiety has a significant influence on behavioral intention on user acceptance of telecentre
H_{4b}: Anxiety influences behavioral intention on user acceptance of telecentre more strongly for younger than for older

Management effectiveness: Management Effectiveness (MEF) refers to "characteristics that deal with organizational issues and management actions of the staff within organizations (Balduck and Buelens, 2008)". This construct has basis from the four quadrants of Competing Value Approach theorem (CVA) (Balduck and Buelens, 2008). Management effectiveness was found to negatively influence behavioral intention on user acceptance of telecentre (Abdulwahab and Zulkhairi, 2011). The relationship between management effectiveness and behavioral intention is theorized to be moderated by gender and age such that the influence is stronger for female and mainly elderly. Hence, we test the following hypotheses:

H_{A5}: Management effectiveness has a significant influence on behavioral intention on user acceptance of telecentre

H_{5a}: Management effectiveness influences behavioral intention on user acceptance of a telecentre more strongly for female than for male

H_{5b}: Management effectiveness influences behavioral intention on user acceptance of a telecentre more strongly for older than for younger

Program effectiveness: Sowa *et al.* (2004) refers to program as the specific service or intervention provide by the organization. Going by this telecentre as an intervention to under served folks, suitably fit into this definition. Further, Sowa *et al.* (2004) suggested that the program has a variable that relate to the capacity (structure and process) as well as outcomes created by the intervention. The Program Effectiveness (PEF) is defined as"the characteristics that deal with the services or programs provided by the organizations (Balduck and Buelens, 2008)". The construct of program effectiveness construct has the same theoretical support from the four quadrants of (CVA) (Balduck and Buelens, 2008). Program effectiveness was found to positively influence behavioral intention to acceptance of telecentre(Abdulwahab and Zulkhairi, 2011). In this study, we theorized that program effectiveness influences on behavioral intention on user acceptance of telecentre is moderated by gender and age, such that the effect is stronger for male and mainly younger male. Therefore, the following hypotheses will be tested:

H_{A6}: Program effectiveness has a significant influence on behavioral intention on user acceptance of telecentre

H_{6a}: Program effectiveness influences behavioral intention on user acceptance of a telecentre more strongly for male than for female

H_{6b}: Program effectiveness influences behavioral intention on user acceptance of a telecentre more strongly for younger than for older

Facilitating conditions: Facilitating conditions is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of new information system (Venkatesh *et al.*, 2011)". The theoretical foundation of facilitating condition is derived from four theories/models used by (Venkatesh *et al.*, 2003). The constructs are perceived behavioral control (TPB/DTPB, C-TAM-TPB) and the initial facilitating condition (MPCU) by (Thomson *et al.*, 1991). Facilitating conditions was found to have positively influenced usage of information technology platform (Venkatesh *et al.*, 2003; Wang *et al.*, 2006). However, there are some studies suggesting that facilitating condition does not influence usage of information technology (Al-Gahtani *et al.*, 2007). In this study, we posited that facilitating conditions influences behavioral intention on user acceptance of telecentre. The relationship between facilitating conditions and user acceptance is moderated by age and location such that the effect will be stronger for older. Therefore, we test the following hypotheses:

H_{A7}: Facilitating conditions has a significant influence on user acceptance of telecentre

H_{7b}: Facilitating conditions influences user acceptance of telecentre on Location more strongly on older than younger

H_{7c}: Facilitating conditions influences user acceptance of telecentre more strongly for older than for younger

Behavioral intention: The Behavioral Intention (BI) construct was derived from the Theory of Reasoned Action (TRA) by Fishbein and Ajzen, 1975. The construct is defined as "a measure of the strength of one's intention to perform a specified behavior (Davis, 1989)". Research has shown that behavioral intention has a direct impact upon the individuals' actual use of a given technology (Davis, 1989).

Davis (1986) introduced the behavioral intention construct to the MIS discipline through the technology acceptance model. An extremely important construct in the information system acceptance research (Igbaria *et al.*, 1997; Jackson *et al.*, 1997). Due to its importance, it is, referred to "as a key criterion in user acceptance research" (Venkatesh *et al.*, 2003). In this research we hypothesis that behavioral intention in using telecentre has significant influence towards its acceptance:

H_{A8}: Behavioral intention has a significant influence on user acceptance of telecentre

METHODOS

Six telecentre from the three zones of Nigeria (North: Izom, Azare and Kamba, South: Ihiteowerri and Itigidi; lastly from the South west: Ido) were chosen, user from those telecentres were selected as target sample base on simple random sample. Three hundred and seventy five (375) questionnaires were distributed to the respondents, only 191 were found useful for conducting multivariate analysis. The respond rate obtained was approximately 52% and the response rate is also comparable to many studies that have adopted users of information technology initiatives as sample (Park *et al.*, 2007; Wang and Shih, 2008; Loo *et al.*, 2009; Venkatesh *et al.*, 2011). Detail information on the survey instruments is shown in the appendix. The research model was tested using Structural Equation Modeling (SEM) techniques base on Amos version 16.0 computer software. SEM technique was adopted being an extensive approach use by researcher to test hypotheses on associations among observed latent variables (Suki and Ramayah, 2010).

DATA ANALYSIS AND FINDINGS

The demographic profile of the respondents include: gender; age, ethnicity, income, educational attainment and access to telecentre as shown in Table 1. The total sample of the cross sectional survey comprises of 191 respondents. The gender distribution of the respondents' shows that 64% were male and only 36% were female. The ages of the respondent's ranged from 20 to 50 years with a higher percentage in the ages between 21-25 and 36-40 (38.2 and 23.6%), respectively. Ethnic groups or sub-culture of the respondent is an important demographic variables used in the survey. The ranges of respondent's ethnic background (66.0%) were from the major ethnic groups (i.e., Hausa/Fulani, Yoruba and Ibo) while (34.0%) were from minority groups. The majority of the respondents (43.5%) had at least a secondary certificate. The level of educational attainments could be a reflection of the respondents' occupations. The majority of the respondents were students (74.3%), only (14.7%) were governments' employee. On the ownership of personal computer only (37.7%) have access to a computer and internet at home. In addition, location of telecentre might contribute or hinder the acceptance and used of ICT initiatives of the respondent only (44.5%) were comfortable with the telecentre location while (55.5%) were uncomfortable.

Reliability analysis: This study, has evaluated the construct reliability using Cronbach's alpha for each construct and their composite reliability score as suggested by Fornell and Larcker (1981) and Hair *et al.* (2006). The fundamental measure of construct reliability is the index of composite

Table 1: Demographic profile of the respondents (N = 191)

Characteristics	Number	Percentage
Gender		
Male	122	63.9
Female	69	36.1
Age		
≤20	39	20.4
21-25	73	38.2
26-30	7	3.7
31-35	13	6.8
36-40	45	23.6
41-45	9	4.7
≤46	5	2.6
Ethnicity		
Major (Hausa, Yoruba, Igbo)	126	66.0
Minor	65	34.0
Income		
Low	127	66.5
Middle	59	30.9
High	3	2.6
Educational attainment		
Primary	6	3.1
Secondary	83	43.5
Diploma	38	19.9
Bachelor	49	25.7
Masters/Doctorate	3	1.6
Others	12	6.2
Occupation		
Student	142	74.3
Government employee	28	14.7
Unemployed	15	7.9
Others	6	3.1
Computer and internet access		
Home access	72	37.7
Lack of home access	119	63.3
Location of telecentre		
Convenient	85	44.5
Not convenient	106	55.5

reliability, which is reported as more robust than Cronbach's alpha (Fornell and Larcker, 1981). Composite reliability of a constructs is argued at 0.70 or higher to indicate adequate convergence or internal consistency (Hair *et al.*, 2006; Gefen and Straub, 2005). To compute composite reliability this study adopted, the formula suggested by previous researches (Fornell and Larcker, 1981; Hair and Anderson, 2010).

Computed from square sum of factor loadings for each construct and sum of the error variance terms for a construct e_i. With the exception of construct measuring facilitating conditions with value (CR = 0.646). Composite reliability of the remaining constructs ranges from 0.730 to 0.876. As shown in Table 2, above the recommended threshold of 0.70 (Fornell and Larcker, 1981).

Discriminant validity: Discriminant validity is defined as the degree by which a construct is established as truly being difference from the other constructs in the model (Byrne, 2010). The review of extant literature has reported two main methods through which researchers can

Table 2: Final composite reliability and Cronbach's alpha of items remaining

Factors	Code	Factor loadings	Composite reliability	Cronbach's alpha
Performance expectancy	PE1	0.758	0.752	0.723
	PE2	0.846		
	PE5	0.500		
Effort expectancy	EE2	0.768	0.730	0.730
	EE3	0.589		
	EE5	0.702		
Social influence	SI1	0.717	0.807	0.803
	SI2	0.832		
	SI3	0.639		
	SI4	0.663		
Anxiety	ANX1	0.772	0.876	0.874
	ANX2	0.852		
	ANX3	0.861		
	ANX4	0.702		
Management effectiveness	MEF1	0.625	0.746	0.745
	MEF2	0.674		
	MEF4	0.667		
	MEF5	0.636		
Program effectiveness	PEF1	0.725	0.740	0.733
	PEF3	0.589		
	PEF4	0.774		
Facilitating condition	FC1	0.624	0.646	0.619
	FC2	0.768		
	FC4	0.437		
Behavioral intention	BI1	0.801	0.797	0.796
	BI2	0.827		
User acceptance	UA1	0.827	0.857	0.853
	UA2	0.807		
	UA3	0.862		
	UA4	0.802		

statistically measure the discriminant validity of their data set, these are: average variance extracted AVE (as recommended by Fornell and Larcker (1981) and comparing Chi-square of a model through its nested model (Hair *et al.*, 2006). This study used AVE procedures to assess the discriminant validity of the data set as suggested by Fornell and Larcker (1981). The average variances extracted is calculated using standardized loadings by the formula:

$$AVE = \frac{\sum_{i=1}^{n} Li^2}{n}$$

L_i- Represent standard factor loading
i - Number of items

Discriminant validity was measure by comparing the square root of AVE obtains for a given construct with the correlation between their construct and all other constructs. Table 3 shows the correlation matrix of the constructs. The diagonal elements have been replaced by square root of the average variance extracted. For the discriminant validity to be confirmed sufficient, the diagonal element should be greater than the off-diagonal element in the corresponding rows and columns (Chin, 2010; Fornell and Larcker, 1981).

Table 3: Correlation matrix and square roots of the AVEs (shown as diagonal elements)

Factors	BI	UA	MEF	FC	PEF	ANX	SI	EE	PE
Behavioral Intention (BI)	0.814								
User Acceptance (UA)	0.526	0.777							
Management Effectiveness (MEF)	0.152	0.102	0.651						
Facilitating Condition (FC)	0.229	0.267	0.282	0.624					
Program Effectiveness (FC)	0.312	0.318	0.504	0.228	0.701				
Anxiety (ANX)	-0.132	-0.034	0.075	-0.103	-0.091	0.799			
Social Influence (SI)	0.553	0.313	0.355	0.316	0.311	0.025	0.717		
Effort Expectancy (EE)	0.338	0.206	0.382	0.471	0.420	-0.134	0.562	0.691	
Performance Expectancy (PE)	0.436	0.305	0.307	0.125	0.225	-0.092	0.394	0.376	0.777

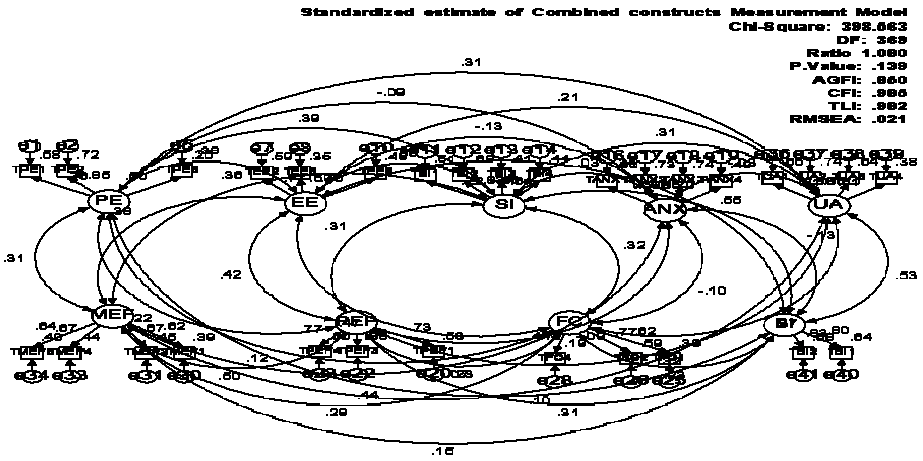


Fig. 3: Measurement models

Discriminate validity appears to be adequate for all the constructs. The implication of this, each construct shared more variances with it items than it does with other construct (Chin, 2010; Fornell and Larcker, 1981). In summary, all the nine constructs that formed the model in this study passed the test of converagence validity and discriminant validity. The implication of which the final modified measurement model possessed constructs validity and reliability. A final step to be followed after measurement model testing and model modification, is testing hypothesis structural model with the entire group of samples (N = 191) which is discussed in the next section. Figure 3 shows the measurement model.

ASSESSMENT OF MEASUREMENT AND STRUCTURAL MODEL

The following indices were used to establish the overall model fit. The CMIN/DF (i.e., ratio) for measurement model was 1.080 (χ^2 = 398.563, DF = 369) the value obtained is smaller compared to the cut-off criterion of 3 recommended by Bagozzi and Yi (1988). Further, the subsequent fit indices for the measurement model exhibits a good fit. The Adjusted Goodness of Fit Index (AGFI) was 0.850 which exceeds the recommended cut-off level of 0.8 (Chau and Hu, 2001). The Comparative Fit Index (CFI) was found as 0.985 and the Tucker Lewis Index (TLI) was 0.982, these values are greater than the 0.9 recommended by Bagozzi and Yi (1988). The Root Mean Square Error Approximation (RMSEA) was 0.021, lower than the recommended cut-off level of 0.08 suggested by Browne and Cudeck (1993). As shown in Table 4, all the model fits indices were above the

Table 4: Goodness of fit indices for measurement and structural models

Quality-of-fit measure	Recommended value	Measurement model	Structural model
χ^2/df	≤3.00	1.080	1.078
AGFI	≥0.80	0.850	0.850
CFI	≥0.90	0.985	0.985
TLI	≥0.90	0.982	0.983
RMSEA	≤0.08	0.021	0.020

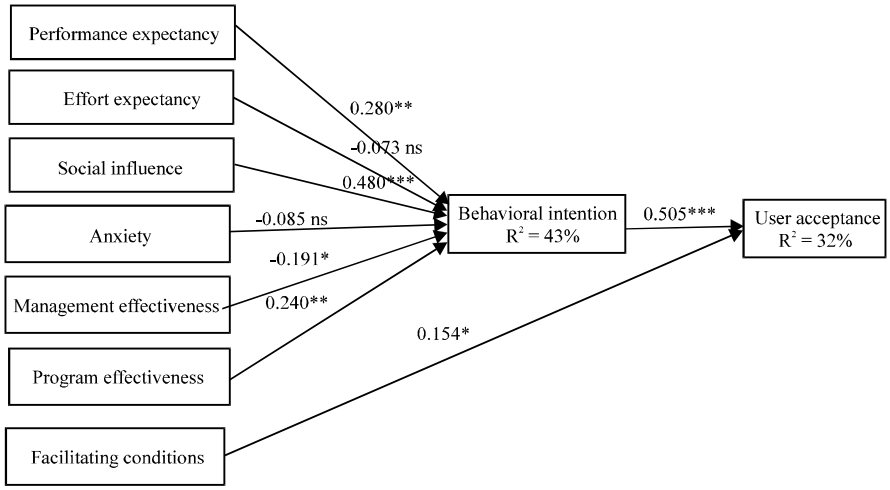


Fig. 4: Estimated research model, standardized path coefficients *p<0.10; **p<0.05; *** p<0.001, ns: Not significant

recommended level suggested by previous researches (Bagozzi and Yi, 1988; Chau and Hu, 2001; Browne and Cudeck, 1993). Accordingly, the result demonstrated that the measurement and structural model fits with the data collected (Suki and Ramayah, 2010). The detail on structural model is shown in the appendix.

Results of main hypotheses: The hypothesis testing was conducted using two-step process: by first testing the main hypotheses, followed by the test of moderating effects (Park *et al*., 2007). With respect to the main hypotheses H_{ai}, the standardize path coefficient in the hypothesized model is shown in Fig. 4, the antecedent factors of performance expectancy, social influence, management effectiveness and program effectiveness were found to have a significant influence on behavioral intention ($\beta = 0.280$, $\beta = 0.480$, $\beta = -0.191$ and $\beta = 0.240$, respectively). Thus, H_{A1}, H_{A3}, H_{A5} and H_{A6} were supported. However, effort expectancy and anxiety were found to have non-significant influence on behavioral intention ($\beta = -0.073$ and $\beta = -0.085$, respectively). Consequently, the path between effort expectancy and behavioral intention and the path between anxiety and behavioral intention towards user acceptance of telecentre were not supported; hence H_{A2} and H_{A4} were rejected. Further, both behavioral intention and facilitating conditions were also found to have a significant effect on user acceptance ($\beta = 0.505$ and $\beta = 0.154$, respectively). Thus H_{A7} and H_{A8} were supported. On the whole, the model explained 43% of the variance in behavioral intention and 32% of the variance in user acceptance.

Table 5: Structural equation result for moderating effects

Basic model		χ^2	Df	RMSEA	CFI	TLI	χ^2 /df		Pn
		405.497	376	0.020	0.985	0.983	1.078		0.000
Moderating variable	Model	χ^2	Df	RMSEA	CFI	TLI	CR	$\Delta\chi^2$	Pn
Gender	A	883.173	752	0.030	0.936	0.926	12.592	15.315	0.001
	B	898.488	758	0.029	0.939	0.939			
Age	A	907.752	752	0.033	0.952	0.914	19.675	21.672	0.001
	B	929.424	763	0.033	0.925	0.916			
Ethnicity	A	919.956	752	0.034	0.920	0.907	12.592	13.551	0.000
	B	933.507	758	0.034	0.923	0.914			
Location	A	977.604	752	0.040	0.895	0.879	32.675	23.123	0.000
	B	100.727	773	0.039	0.894	0.881			

The moderating variable has statistical significance on the baseline model only if the $\Delta\chi^2$> CR

MODERATING EFFECTS RESULTS

A multiple group analysis was used to evaluate the effect of moderating variables of gender, age, ethnicity and location by comparing the two groups (i.e., male vs. female, young vs. old etc.). The examination of the moderating effect was conducted using a two-step approach suggested by Li (2006) and Lm *et al.* (2011). Two structural models for the group were created for the purpose of comparison. The first model was an unconstrained model in which path coefficients were allowed to vary across two subgroups (e.g., male vs. female). The second model was a constrained model in which path coefficients were constrained to be equal across the two subgroups. The next step was to test the difference between the unconstrained and constrained models. The chi-square value (χ^2) difference was determined to compare the (χ^2) values of the unconstrained structural model and the constrained structural model. The unconstrained model must have less degree of freedom than the constrained model. Also, the (χ^2)value is lower for the unconstrained model than for the constrained model. The significant increase of (χ^2) from unconstrained model to constrained model signifies the testing of moderating variable has a discrepancy result on the tested causal path and could be confirmed as a moderator. Thus, the criterion of establishing moderating effect is given by these conditions: If the $\Delta\chi^2$>CR, (CR- Table value at α = 0.05), then the moderating variable has statistical significance on the baseline model. Hence, moderating effect is established. Otherwise, moderating variable has no statistical significance on the baseline model if the $\Delta\chi^2$<CR, at α = 0.05 (Byrne, 2010). The results of the multi group analysis of the moderating effects of gender, age, ethnicity and location based on the hypothesized model are shown in Table 5.

The results of comparison between constraint and unconstraint model provide evidence of significant difference between the model in terms of gender, age and ethnicity ($\Delta\chi^2$: 15.315> 12.592, 21.672>19.675, 13.551>12.592), respectively suggesting the significant moderating effects of gender, age and ethnicity. However, the moderating effect of location could not be supported with the differences obtained (i.e.,$\Delta\chi^2$<CR: 23.123<32.675).

Table 6, indicates that the effect of by performance expectancy on behavioral intention was stronger in female group (β_{Female} = 0.409, t-value=2.139) than male (β_{male} = 0.195, t-value = 2.278) refuting hypotheses H_{1a} while performance expectancy influence on behavioral intention was stronger for younger than older; (β_{young}= 0.377, t-value = -3.129) thus, H_{1b} is supported. The effect of effort expectancy on behavioral intention is not significant for both gender and age groups indicating that H_{2a} and H_{2b} are not supported. The effect of social influence on behavioral intention

Table 6: Results of moderating effects hypotheses

	Path	Estimate (β)	CR (t)	Estimate (β)	CR (t)	Hypotheses
H_{1a}	PE ⇨ BI	0.195**	2.278	0.409**	2.139	Male > Female
H_{1b}	PE ⇨ BI	0.377**	3.129	0.036	0.181	Younger > Older
H_{2a}	EE ⇨ BI	0.268	0.043	-0.252	-1.495	Female > Male
H_{2b}	EE ⇨ BI	-0.202	-1.304	0.039	0.196	Older > Younger
H_{3a}	SI ⇨ BI	0.454**	2.337	0.637**	3.036	Female > Male
H_{3b}	SI ⇨ BI	0.538***	3.747	0.503**	2.560	Younger > Older
H_{3c}	SI ⇨ BI	0.475***	3.510	-0.377	-0.897	Major > Minor
H_{4b}	ANX ⇨ BI	-0.059	-0.617	-0.063	-0.507	Younger > Older
H_{5a}	MEF ⇨ BI	-0.009	-0.683	-0.297*	-1.650	Female > Male
H_{5b}	MEF ⇨ BI	0.034	0.248	-0.441**	-2.377	Older > Younger
H_{6a}	PEF ⇨ BI	-0.100	1.249	0.178	1.126	Male > Female
H_{6b}	PEF ⇨ BI	0.168	1.285	0.355	1.578	Younger > Older
H_{7b}	FC ⇨ UA	0.103	0.908	0.254**	1.887	Older > Younger
H_{7c}	FC ⇨ UA	0.066	0.451	0.143	1.396	Conv.> Not conv.

was stronger for female than male (β_{Female} = 0.637, t-value = 3.036) and social influence effects on behavioral intention was stronger in younger than older (β_{young} = 0.538, t-value = 3.747) hence, H_{3a} and H_{3b} are supported.

Social influence effect on behavioral intention is stronger on major ethnic groups than minority (β_{major} = 0.475, t-value = 3.510), consequently, H_{3c} is supported. Age does not influence the relationship between anxiety and behavioral intention, thus, H_{4b} is not supported. Management effectiveness influence on behavioral intention is stronger for female than male (β_{Female} = -0.297, t-value = -1.650) affirming hypothesis H_{5a}. The same relationships is found to be stronger on older than younger (β_{old} = -441, t-value = -2.377), asserting H_{5b}. The relationship between program effectiveness and behavioral intention is not influenced by both gender and age, consequently H_{6a} and H_{6b} are rejected. The effect of age groups on facilitating condition on user acceptance of was stronger on older than younger (β_{old} = 0.254, t-value = -1.887). Thus, H_{7b} is supported. Finally, the moderating effect of location c old not be established base on the multi group analysis from Table 5, consequently, H_{7c} is not supported.

On the whole of the eight main hypotheses proposed six were supported with a positive or moderate relationship (most values β = 0.505). Except the path coefficient of the relation between management effectiveness and behavioral intention is negative (β = -0.191). And two hypotheses were rejected. The result of comparative moderating effects shows that seven hypotheses were supported while same numbers were not supported as shown in Table 7.

DISCUSSION

The study is concerned with an empirical investigation of the determinants in addition to gender, age, ethnicity and location differences, that could affect the acceptance of telecentre in Nigeria based on UTAUT proposed by Venkatesh *et al.* (2003, 2011). The revised UTAUT model has accomplished the model fits and six of the main hypotheses were supported. As hypothesized $H_{A1,}$. Performance expectancy is a positive determinant of behavioral intention towards telecentre acceptance. The finding suggests that an individual with high performance expectancy is more likely to accept telecentre than an individual with lower performance expectancy. This finding is consistent with the results of previous studies proposing a direct positive relationship between

Table 7: Summary of main and moderating effect hypothesis results

	Hypothesized paths	Hypotheses	Results
Main effect			
H_{A1}	PE ⇨ BI	Significant	Supported
H_{A2}	EE ⇨ BI	Not significant	Unsupported
H_{A3}	SI ⇨ BI	Significant	Supported
H_{A4}	ANX ⇨ BI	Not significant	Unsupported
H_{A5}	MEF ⇨ BI	Significant	Supported
H_{A6}	PEF ⇨ BI	Significant	Supported
H_{A7}	FC ⇨ UA	Significant	Supported
H_{A8}	BI ⇨ UA	Significant	Supported
Gender difference			
H_{1a}	PE ⇨ BI	Male > Female	Unsupported, Female >Male
H_{2a}	EE ⇨ BI	Female > Male	Unsupported
H_{3a}	SI ⇨ BI	Female > Male	Supported
-	-	-	-
H_{5a}	MEF ⇨ BI	Female > Male	Supported
H_{6a}	PEF ⇨ BI	Male > Female	Unsupported
Age difference			
H_{1b}	PE ⇨ BI	Younger > Older	Supported
H_{2b}	EE ⇨ BI	Older > Younger	Unsupported
H_{3b}	SI ⇨ BI	Younger > Older	Supported
H_{4b}	ANX ⇨ BI	Younger > Older	Unsupported
H_{5b}	MEF ⇨ BI	Older > Younger	Supported
H_{6b}	PEF ⇨ BI	Younger > Older	Unsupported
H_{7b}	FC ⇨ UA	Older > Younger	Supported
Ethnicity difference			
H_{3c}	SI ⇨ BI	Major > Minor	Supported
Location difference			
H_{7c}	FC ⇨ UA	Conv. > Not Conv.	Unsupported

H_{ai}: Main hypotheses; PE: Performance expectancy; EE: Effort expectancy; SI: Social influence; ANX: Anxiety; MEF: Management effectiveness; PEF: Program effectiveness; FC: Facilitating conditions; BI: Behavioral intention

performance expectancy and behavioral intention (Al-Gahtani *et al*., 2007; Wang and Shih, 2008; Wang *et al*., 2009). In contrast to the hypothesized H_{A2}, the finding suggests that effort expectancy had insignificant influence on behavioral intention in telecentre acceptance. The implication of this result indicates that ease of use becomes less important in predicting user's behavioral intention in context of this research. This finding is consistent with the results of obtained by Venkatesh *et al*. (2011) and Al-Gahtani *et al*. (2007) who reported that ease of use ceases to be important in studies related to technology acceptance after just few months of system implementation.

The third hypotheses H_{A3} suggested positive relationship between social influence and behavioral intention. The finding shows that, Social influence was the strongest predictor of behavioral intention in context of this research. The result obtained is consistent with most prior research in technology acceptance (Wang and Shih, 2008; Park *et al*., 2007; Lm *et al*., 2011). This finding further validates the significance of maintaining social influence in assessing technology acceptance more so, in technologies that are prone to the public as revealed by Van Biljon and Kotze (2007). The results obtained on the relationship between anxiety and behavioral intention H_{A4} is consistent with the findings by Venkatesh *et al*. (2003) which reported that anxiety influence

on IT acceptance with insignificant relationship. Management effectiveness was found to negatively influence behavioral intention on user acceptance of telecentre, the finding is analogous to result reported earlier by Abdulwahab and Zulkhairi (2011). Program effectiveness was found to have a significant positive influence on behavioral intention H_{A6}, this results is supported by empirical study related to non-profit initiatives Abdulwahab and Zulkhairi (2011). Facilitating conditions was found to have a significant influence on user acceptance of telecentre H_{A7}. This finding is consistent with most prior research in technology acceptance proposing a direct positive relationship between facilitating conditions and user acceptance (Wang and Shih, 2008; Park *et al.*, 2007; Lm *et al.*, 2011). Thus, in order for telecentre to be accepted generally by users, the implementers' should afford the users with required technological and human resources necessary for the smooth running of the initiatives. Of the eight main hypotheses proposed, the finding has suggested that behavioral intention is the most important determinants of user acceptance of telecentre. Indicating that the higher the intention of an individual the more he/she will be inclined to accept telecentre. This finding is consistent with the results of previous studies proposing a positive relationship between behavioral intention and usage (Al-Gahtani *et al.*, 2007; Wang and Shih, 2008).

On the effects of moderating variables, the finding has shown that effect performance expectancy on behavioral intention to telecentre acceptance is more strongly for female than for male. This result is in consistent with prior studies of Venkatesh *et al.* (2003) and Wang and Shih (2008) which have found that performance expectancy as a strong determinant on behavioral intention for male than for female. The gender difference obtained from this finding could be attributed to women higher motivation in their quest of interacting with Information Technology initiatives in context of the study. Thus, their perceptions of usefulness of telecentre strongly influence their intention. Another interesting finding from this study was that the effect of social influence on behavioral intention, found to be stronger for female than male. This finding is consistent to prior research which has found social influence as stronger determinant of IT usage intention for female than male (Venkatesh *et al.*, 2003; Park *et al.*, 2007; Wang and Shih, 2008). The effect of management effectiveness on behavioral intention was stronger for female than male. This may be due to the fact that, female are more inclined to managers' decision to provide the best possible services within available resources than male. The unexpected findings from this study were effect of effort expectancy and program effectiveness on behavioral intention which is inconsequential for both gender groups. This is not surprising as the effect of effort expectancy was not significant in main hypothesis reported earlier.

Age groups have demonstrated significant moderating effects on the relationships between the main determinants of behavioral intention towards user acceptance of telecentre. For both age groups (i.e., the younger group with ages = 30 years and older group with age>30), all determinants of behavioral intention other than effort expectancy, anxiety and program effectiveness were significant for younger group. Specifically, performance expectancy and social influence were stronger for younger than older. These finding is consistent with prior research (Wang and Shih, 2008; Wang *et al.*, 2009; Venkatesh *et al.*, 2011) which have found that performance expectancy and social influence as stronger determinant on behavioral intention for younger. Another interesting finding from this study was that the effect of facilitating condition on user acceptance of telecentre was found to be stronger for older than younger group. This finding also agrees with studies by Czaja and Sharit (1998) that found older group perceived more comfort and efficacy over computer than younger groups. Finally, social influence effect on behavioral intention is stronger on major ethnic group than minority group.

CONCLUSION

An empirical research was conducted based on prior studies to identify the determinants of user acceptance of telecentre in Nigeria. The empirical result suggested that the acceptance of telecentre can be explained by performance expectancy; social influence, management effectiveness, program effectiveness and facilitating conditions. The findings from the multi group analysis suggested significant moderating effects of gender, age and ethnicity on the relationships between those determinants. While the moderating effect of location could not be established. A comprehensive understanding of this model will assist government to identify the reason for the acceptance or rejection of telecentre among the users in the future and support them to enhance the telecentre acceptance and usage. The fact that gender, age and ethnicity are key moderating variables, attention should be accorded to the male, older and the minority ethnics' group since the empirical results highlighted in balances in those groups. This study has demonstrated that the revised UTAUT model could be successfully used in assessing user acceptance of telecentre in Nigeria. The strengths upon which the study was conducted base on relying on prior conceptual and empirical research, through concentrating on the factors that have significant effect on telecentre acceptance. Future research could investigate other factors relevant to non-profit initiatives. It would be interesting for instance to explore the constructs of perceived trust and user satisfaction. The results of this research offer some implication for other developing countries, specifically in African countries having same peculiarity with Nigeria. Additional research is needed to see if comparable result will be obtained.

APPENDIX

Abbreviation: ICTs Means Information and Communication Technology

Section A: Describe your expectations and facilitating conditions towards users' behavioral intention

Please indicate the degree to which you agree or disagree with statement base on 7-point Likert scale e.g., 1 = Strongly disagree (SD) 4 = Neutral (N) 7 = Strongly agree (SA)		
PE1	Using telecentre enhances job performance	1 2 3 4 5 6 7
PE2	Using telecentre help in accomplishment of job more quickly	1 2 3 4 5 6 7
PE3	Using telecentre can increase my productivity	1 2 3 4 5 6 7
PE4	Using telecentre enhances job efficiency	1 2 3 4 5 6 7
PE5	My frequent use of telecentre, earn me value as being competent	1 2 3 4 5 6 7
EE1	My interaction with telecentre will be clear and understandable	1 2 3 4 5 6 7
EE2	I find using facilities in telecentre easy	1 2 3 4 5 6 7
EE3	I find using facilities in telecentre to be flexible	1 2 3 4 5 6 7
EE4	Using telecentre frequently makes one easy to be skillful	1 2 3 4 5 6 7
EE5	Over all, I find facilities in telecentre easy to use	1 2 3 4 5 6 7
SI1	Important people in my community think I should use telecentre	1 2 3 4 5 6 7
SI2	People who are important to me would want me to use telecentre	1 2 3 4 5 6 7
SI3	People in my community that use telecentre have more prestige	1 2 3 4 5 6 7
SI4	Using telecentre has enhances my knowledge about environment	1 2 3 4 5 6 7
SI5	In general, my community has supported the use of telecentre	1 2 3 4 5 6 7
ANX1	I fell nervous in using facilities in telecentre	1 2 3 4 5 6 7
ANX2	It scares me to think I could make mistakes using facilities in telecentre	1 2 3 4 5 6 7
ANX3	The facilities in telecentre are somehow intimidating to me	1 2 3 4 5 6 7
ANX4	It scares me to use facilities in telecentre because I lack adequate skills	1 2 3 4 5 6 7
MEF1	I have confidence that this telecentre will be durable	1 2 3 4 5 6 7
MEF2	The management receives assistance to render efficient service	1 2 3 4 5 6 7
MEF3	The management and staff of this telecentre are accommodative	1 2 3 4 5 6 7
MEF4	I observed team spirit and motivated staff within the telecentre staff	1 2 3 4 5 6 7

Abbreviation continued		
MEF5	Capable hands are available to impart knowledge in the telecentre	1 2 3 4 5 6 7
PEF1	Using telecentre help in socio-economic development	1 2 3 4 5 6 7
PEF2	ICTs facilities in telecentre are always accessible within the operating hours	1 2 3 4 5 6 7
PEF3	Telecentre staffs are competent enough in discharging their work	1 2 3 4 5 6 7
PEF4	There is mutual cooperation between telecentre staff and the users	1 2 3 4 5 6 7
PEF5	Over all, the likelihood of replicating this program in neighborhood is clear	1 2 3 4 5 6 7
FC1	I have the resources and knowledge to use ICTs facilities in telecentre	1 2 3 4 5 6 7
FC2	Detail instruction about telecentre use is available to me	1 2 3 4 5 6 7
FC3	Sufficient Electricity and Internet service are available to use ICTs in telecentre	1 2 3 4 5 6 7
FC4	Adequate ICTs facilities in telecentre are available for access	1 2 3 4 5 6 7
FC5	A central support is available to help with technical problems	1 2 3 4 5 6 7
FC6	A specified person (or group) is available in case of difficulty	1 2 3 4 5 6 7
Section B : Describe behavioral intention towards user Acceptance		
BI1	I intend to use ICTs facilities of the telecentre in the future	1 2 3 4 5 6 7
BI2	I predict I would use ICTs facilities of the telecentre in the future	1 2 3 4 5 6 7
BI3	I plan to use ICTs facilities of the telecentre in the future	1 2 3 4 5 6 7
B14	I do not plan to use the ICTs facilities in the near future	1 2 3 4 5 6 7

Section C: Describe usage (Choose your choice the list below)

(a) How many times do you use telecentre during a month?

☐ About once ☐ 2 or 3 times ☐ 4 or 5 times ☐ Not at all ☐ 6 or 7 times
☐ 8 or 9 times ☐ More than 9 times

(b) How many hours do you use telecentre during a month?

☐ Less than 1 h ☐ 1-2 h ☐ 2-3 h ☐ 2-3 h ☐ 3-4 h
☐ 5-6 h ☐ Greater than 5 h

(c) How many days do you visit telecentre during a month?

☐ Less than 1 day ☐ 1–2 days ☐ 6–7 days ☐ Not at all ☐ 8–9 days
☐ 10-11 days ☐ Greater than 11 days

(d) How frequent do you use telecentre?

☐ Very irregular ☐ Fairly irregular ☐ Slightly irregular ☐ Neither
☐ Slightly regular ☐ Fairly regular ☐ Very regular

This section intends to get information about the respondents' demographic background

(1) Please indicate your gender

Male ☐ Female ☐

(2) Please indicate your age _____

(3) Which of the following represents your ethnicity/or tribe

☐ Yoruba ☐ Hausa/Fulani ☐ Igbo ☐ Others

(4) Please indicate your highest qualification:

☐ Primary ☐ SSCE /TCII ☐ OND ☐ HND/BSc ☐ Msc/PhD
☐ Others

(5) Which of the following describe your occupation/Job?

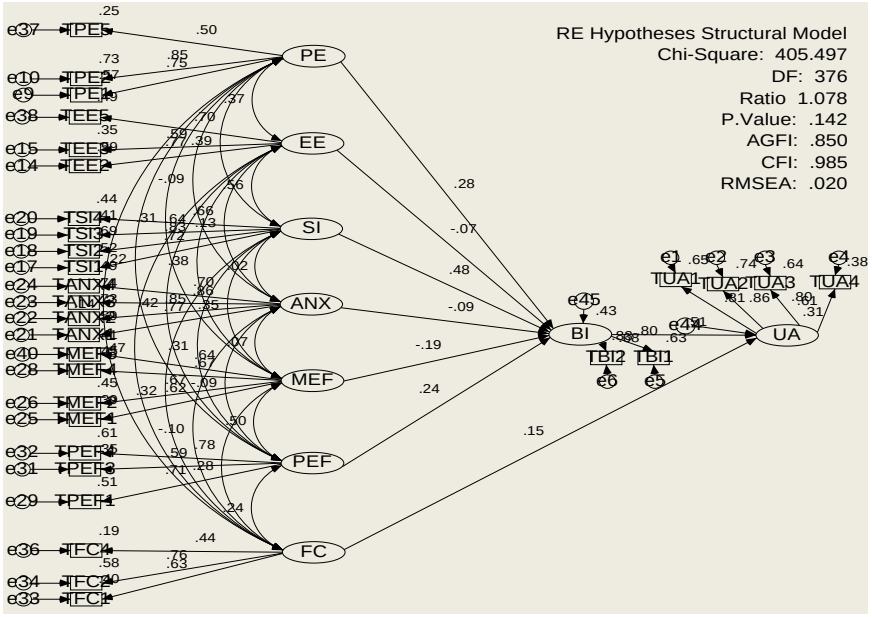
☐ Student ☐ Civil Servant ☐ Unemployed ☐ Others

(6) Your monthly income (US$)
☐ Less than $66 ☐ $ 67-$433 ☐ More than $434

(7) Do you have personal computer at home?
☐ Yes ☐ No

(8) Do you have access to internet at home?
☐ Yes ☐ No

(9) Did the location of telecentre affect your accessibility?
☐ Yes ☐ No



REFERENCES

Abdulwahab, L. and M.D. Zulkhairi, 2011. Effectiveness of telecentre using a model of unified theory of acceptance and use of technology (UTAUT): Structural equation modeling approach. J. Emerging Trend Comput. Inform. Sci., 2: 402-412.

Ajzen, I., 1991. The theory of planned behavior. Organiz. Behav. Hum. Decis. Process., 50: 179-211.

Al-Gahtani, S., G. Hubona and J. Wang, 2007. Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. Inform. Manage., 44: 681-691.

Al-Somali, S.A., R. Gholami and B.T. Glegg, 2009. An investigation in to the acceptance of online banking in Saudi Arabia. Technovation, 29: 130-141.

Bagozzi, R.P. and Y. Yi, 1988. On the evaluation of structural equation models. J. Acad. Market. Sci., 16: 74-94.

Balduck, A.L. and M. Buelens, 2008. A two-level competing values framework to measuring nonprofit organizational effectiveness. Vleric Leuven Gent Working Paper Series 2008/19, Pages: 29.

Bandura, A., 1986. Social Foundations of Thought and Action: A Social Cognitive Theory. Prentice Hall, Englewood Cliffs, New Jersey.

Browne, M.W. and R. Cudeck, 1993. Alternative Ways of Assessing Model Fit. In: Testing Structural Equation Models, Bollen, K.A. and J.S. Long (Eds.). Sage, Newbury Park, USA., pp: 136-162.

Byrne, M., 2010. Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming. 2nd Edn., Routledge Taylor and Francis Group, New York, USA.

Chau, P. and P. Hu, 2001. Information technology acceptance by individual professionals: A model comparison approach. Decision Sci., 32: 699-719.

Chin, W.W., 2010. How to Write Up and Report PLS Analyses. In: Handbook of Partial Least Squares: Concepts, Methods and Application, Vinzi, V.E., W.W. Chin, J. Henseler and H. Wang (Eds.). Springer, New York, USA., ISBN-13: 9783540328254, pp: 655-690.

Clark, M. and G. Gomez, 2011. The Negligible role of fees as barrier to public access computing in developing countries. Electron. J. Inform. Syst. Dev. Countries, 46: 1-14.

Compeau, D.R. and C.A. Higgins, 1995. Application of social cognitive theory to training for computer skill. Inform. Syst. Res., 6: 118-143.

Curtis, L., C. Edwards, K.L. Fraser, S. Gudelssky, J. Holmquist, K. Thornton and K.D. Sweetser, 2010. Adoption of social media for public relations by nonprofit organizations. Public Relations Rev., 36: 90-92.

Czaja, S. and J. Sharit, 1998. Age differences in attitudes toward computers. J. Gerontol. Ser. B Psychol. Sci. Soc. Sci., 53: P329-P340.

Davis, F.D., 1986. A technology acceptance model for empirically testing new end-user information systems: Theory and results. Ph.D. Thesis, Sloan School of Management, Massachusetts Institute of Technology.

Davis, F.D., 1989. Perceived usefulness, perceived ease of use and user acceptance of information technology. Manage. Inform. Syst. Q., 13: 319-340.

Davis, F.D., R.P. Bagozzi and P.R. Warshaw, 1992. Extrinsic and intrinsic motivation to use computers in the workplace. J. Applied Social Psychol., 22: 1111-1132.

Fishbein, M. and I. Ajzen, 1975. Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. 1st Edn., Addison-Wesley, Reading, MA.

Fornell, C. and D.F. Larcker, 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Mar. Res., 18: 39-50.

Gefen, D. and D. Straub, 2005. A practical guide to factorial validity using PLS-graph: Tutorial and annotated example. Commun. Assoc. Inform. Syst., 16: 91-109.

Gurstein, M., 2008. What is Community Informatics and Why Does it Matter?. Polimetrica, Milan, Italy, ISBN-13: 9788876990977, Pages: 107.

Hair, J.F. and R.E. Anderson, 2010. Multivariate Data Analysis. 7th Edn., Prentice Hall, Upper Saddle River, NJ., ISBN: 9780138132637, Pages: 785.

Hair, J.F., R. Anderson, R.L. Tatham and W.C. Black, 2006. Multivariate Data Analysis. Prentice Hall, Upper Saddle River, USA., ISBN-10: 0138948585.

Igbaria, M., N. Zinatelli, P. Cragg and A.L.M. Cavaye, 1997. Personal computing acceptance factors in small firms: A structural equation model. Manage. Inform. Syst. Q., 21: 279-305.

Jackson, C.M., S. Chow and R. Leitch, 1997. Toward understanding of the behavioral intention to use information system. Decis. Sci., 28: 357-389.

Kamel, S.H., D. Rateb and M. El-Tawil, 2009. The impact of ICT investments on economic development in Egypt. Electron. J. Inform. Syst. Dev. Countries, 36: 1-21.

Li, M.N., 2006. An introduction to Amos and its Uses in Scale Development: Graphics and Basics. Psychological Publishing Company, Taipei, Taiwan.

Lm, I., S. Hong and M.S. Kang, 2011. An international comparison of technology adoption: Testing the UTAUT model. Inform. Manage., 48: 1-8.

Loo, W.H., P.H.P. Yeow and S.C. Chong, 2009. User acceptance of Malaysian Government multipurpose smartcard application. Government Inform. Q., 26: 358-367.

Park, J.K., S.J. Yang and X. Lehto, 2007. Adoption of mobile technology for Chinese consumers. J. Electron. Commerce Res., 8: 196-206.

Rogers, E.M., 2003. Diffusions of Innovations. 5th Edn., Free Press, New York, USA., ISBN-13: 978-0743222099, Pages: 512.

Shaper, L.K. and G.P. Pervan, 2007. ICT and OTS: A model of information and communication technology acceptance and utilisation by occupational therapist. Int. J. Med. Inform., 76: S212-S221.

Sowa, J.E., S.C. Selden and J.R. Sandfort, 2004. No longer unmeasurable? A multidimensional integrated model of nonprofit organizational effectiveness. Nonprofit Voluntary Sector Q., 33: 711-728.

Srite, M. and E. Karahanna, 2006. The role of espoused national cultural values in technology acceptance. MIS Q., 30: 679-704.

Suki, N.M. and T. Ramayah, 2010. User acceptance of the E-Government services in Malaysia: Structural equation modelling approach. Interdisciplin. J. Inform. Knowledge Manage., 5: 395-412.

Sun, H. and P. Zhang, 2006. The role of moderating factors in user technology acceptance. Int. J. Hum. Comput. Stud., 64: 53-78.

Taylor, S. and P.A. Todd, 1995. Understanding information technology usage: A test of competing models. Inform. Syst. Res., 6: 144-176.

Thomson, R.L., C.A. Higgins and J.M. Howell, 1991. Personal computing: Toward a conceptual model of utilization. MIS Q., 15: 125-143.

USPF, 2009. Universal service provision annual report 2009. Community Communication Commissions Information Brochure: Universal Service Provision Secretariat Nigerian Commissions. http://www.uspf.gov.ng/

Van Biljon, J. and P. Kotze, 2007. Modeling the factors that influence mobile phone adoption. Proceedings of the Annual Research Conference of the South African Institute of Computer Scientists and Information Technologists on IT Research in Developing Countries, September 30-October 3, 2007, Sunshine Coast, South Africa, pp: 152-161.

Venkatesh, V. and F.D. Davis, 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. Manage. Sci., 46: 186-204.

Venkatesh, V., M. Morris, G. Davis and F. Davis, 2003. User acceptance of information technology: Towards a unified view. Manage. Inform. Syst. Q., 27: 425-478.

Venkatesh, V., T. Sykes and X. Zhang, 2011. Just what the doctor ordered: A revised UTAUT for EMR system adoption and use by doctors. Proceedings of the 44th Hawaii International Conference on System Sciences, January 4-7, 2011, Kauai, HI., USA., pp: 1-10.

Wang, Y.S., Y.H. Hung and S.C. Chou, 2006. Acceptance of E-Government service: A validation of the UTAUT. Proceedings of the 5th WSEAS International Conference on E-Activities, November 20-22, 2006, Italy, pp: 165-170.

Wang, Y.S. and Y.W. Shih, 2008. Why do people use information kiosk? A validation of the unified theory of acceptance and use of technology. Government Inform. Q., 26: 158-165.

Wang, Y.S., M.C. Wu and H.Y. Wang, 2009. Investigating the determinants and age and gender differences in the acceptance of mobile learning. Br. J. Educ. Technol., 40: 92-118.

Yi, M., J. Jackson, J. Park and J. Probst, 2006. The use of unified theory of acceptance and use of technology to confer the behavioral model of 3G mobile telecommunication users. J. Stat. Manage. Syst., 43: 350-363.

Zulkhairi, M., Y. Nor Iadah, I. Huda, M. Khairudin and M. Zahurin, 2009. Socio-economic benefits of Telecentre implementation in Peninsular Malaysia. Proceedings of the 2nd International Conference on Computing and Informatics, June 24-25, 2009, Malaysia, pp: 374-376.