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## A Conceptual Model of Unified Theory of Acceptance and Use of Technology (UTAUT) Modification with Management Effectiveness and Program Effectiveness in Context of Telecentre

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**ABSTRACT:** Limited access to telecommunication infrastructures has left communities in remote and rural areas in most of the developing countries at disadvantage positions in terms of accessibility to ICTs. Telecentre projects are implemented in an attempt to curtail this anomaly by providing IT facilities in shared manner. This paper attempts to put forward a conceptual Model of UTAUT Modification with Management effectiveness and Program effectiveness constructs towards user acceptance of Telecentre. The paper's approach is base on literature review on the basis that, the incorporation of these constructs into UTAUT model in context of Telecentre demand attention. The constructs are proposed as antecedent factors of user acceptance of this useful tool of bridging digital divide. Consequently, the proposed model is set forward as the basis for future empirical study in this area.

**Keywords:** Telecentre projects, Telecommunication infrastructure, ICT; Limited access, Program effectiveness, UTAUT

### 1. Introduction

In developing countries, geographic and interconnected adversities are some factors that may hinder accessibility and physical access to ICTs (Akinsola, Herselman, & Jacobs 2005). Basic infrastructure provisions, like roads and electricity can pose challenges to the physical access to technology. High cost of hardware, telecommunication and internet connectivity can create a barrier to availability, accessibility and affordability of ICTs in rural areas (Zahurin, Shafiz, Wan & Yusop, 2010). The advancement in technological innovations has not yet conveyed any remarkable transformation in the living standards of rural communities of sub-Saharan nations. For instance, despite the liberalization of telecommunication sub-sector in Nigeria in 1990's, the rate of Internet diffusion is slow compared to spread of mobile telephone, at the moment only 11 million Internet users are documented (ITU, 2009).

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From the foregoing, one of the major constraints to the accomplishment of the viability of ICTs in rural areas in sub-Saharan Africa is lack of access (Mayanja, 2001). The most viable solution to this problem is the establishment of Telecentres (Adam & Wood, 2001; Gomez & Hunt 1999). Telecentre provide wired, wireless or satellite connectivity and quality assured portals to the global network. Telecentre are typically equipped with networked of computers, internet access program and application software. They are also equipped with common accessories like printers, scanners, photocopiers and telephones. Deployment of Telecentre will bring the benefit of new ICT to the rural poor in an attempt to enhance universal access. Telecentre permit access to Information and Communication Technologies facilities in a shared manner, whereas, the goals of providing access to individual or household for most people of the world could not be realized. The conception of Telecentre is a proven essential tool for addressing the digital divide by providing the unserved and or underserved populations access to ICT resources that could not have been afforded privately (Zahurin et al., 2010). In recent time, the Universal Service Provision Fund (USPF) in Nigeria implements school Net and the Community Telecentre (USPF, 2009). The USPF has roll-out twelve communities Telecentre. Two centre in each of the six geopolitical zones in Nigeria. The community Telecentre are being operated through franchise that deliver connectivity to un-served and underserved communities with the intention of using ICT to facilitate poverty alleviation, employment generation, improving understanding between different ethnic and religious group and as well as an improvement in e-governance and e-commerce.

There is a paucity of studies regarding the users' acceptance of Telecentre in various communities where this initiative commenced. Though, a lot of literature exists in understanding technology acceptance in general, research in Telecentre acceptance is still at infancy. Moreover, as an emerging strategy for bridging digital divide; sufficient literature is scarce in understanding the acceptance of this useful tool of bridging digital divide. This paper proposed a conceptual model for UTAUT Modification by incorporation of Management Effectiveness and Program Effectiveness as determinant of behavioral intention in context of user acceptance of Telecentre. The model can be applied to find the answers to the following research questions:

- a. To what degree does the four constructs in the UTAUT model demonstrate effect on user acceptance of Telecentre?
- b. Does anxiety has effect on behavioral intention on user acceptance of Telecentre?
- c. Does management effectiveness and program effectiveness have effect on behavioral Intention in UTAUT model in context of Telecentre?

## **2. Literature review**

The UTAUT proposed by Venkatesh et al., (2003), through the incorporating eight famous Models/Theories in the diverse discipline. The Models/Theories were integrated in terms of their conceptual differences as well as empirical resemblances (Jackson, Park & Probst, 2006). The idea behind the unifications of these Models/Theories is to arrive at the unified view of user acceptance of IT (Venkatesh et al., 2003). The eight Models/Theories 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, Bagozzi and Warshaw (1992) and the Model of PC Utilization (MPCU) (Thompson, Higgins & Howell, 1991). Empirical results of the UTAUT model revealed it was able to account for 70% of variance in usage intention (Venkatesh et al., 2003; Shaper & Pervan, 2007). This result to a large extent does better than that of any of the original eight Models/Theories and their extensions (Venkatesh et al., 2003). A recommendation by Venkatesh et al., (2003), suggested that future studies on UTAUT model should include developing deeper understanding of the dynamics that may influence user acceptance of information technology by concentrating on construct that can add to the prediction of intention and behavior over and above what is known and understood in understanding the organizational outcomes associated with success of new Information System.

Previous literature on Technology Acceptance Model (TAM) identified perceive usefulness and perceive ease of use as an important antecedents of an individual intention to use a technology (Davis, 1989). In a later research, the perceived usefulness has been associated with performance expectancy while perceived ease of use has been equated to effort expectancy (Venkatesh et al., 2003). Performance expectancy and effort expectancy is by extension been posited as determinant of an individual intention to use particular technology. Studies by Venkatesh et al., (2003),

established that performance expectancy remain robust in both voluntary and mandatory environments. The used of social influence has foundation from both TRA Fishbein and Ajzen (1975) and TPB Ajzen (1991). Its applicability to Telecentre initiatives required additional attention, being that Telecentre apart from providing ICTs facilities, it does provide an avenue for social cohesion and inclusion to the community it is intended to serve (Zulkhairi et al., 2009). Anxiety as a construct was introduced to information system (IS) literature by (Campeau & Higgins, 1985). Studies by Venkatesh et al., (2003) found that it has no significant relation with behavioral intention the need to re-examine this construct in different context and culture required further attention. Prior Models in TAM assume Information System (IS) adoption to be free of obstacles. The introduction of a facilitating condition construct by Triandis (1980) and adaptation by Venkatesh et al., (2003), makes the UTAUT model more robust and attractive in both mandatory and voluntary environment.

Individual studies that reported the achievement aspect for Telecentres exist in the literature (Benjamin 2000; Pade, Mallinson & Sewry, 2006). But few of them address the issue of effectiveness of Telecentres (Pal, 2007). A broad study on effectiveness of Telecentre from the demand side (users) using the two levels of management effectiveness and program effectiveness is scarce more so in non- profit organization like Telecentre. This study introduces a two-level competing value approach, the two levels are effectiveness of the Telecentre at management and program levels which are proposed by Sowa, Selden and Sandfort (2004) using multidimensional and integrated model of nonprofit organizational effectiveness (MIMNOE), these two constructs has a theoretical foundation from Competing Value Approach (CVA) originated by (Quinn & Rohrbaugh, 1983). The need for an effective organization to function at both the management and program levels is imperative more so in non-profit organization. An organization that provide well run programs but has unmotivated staff or poor overall organizational operations is not fully effective, on the other hand an organization that is well managed and operated but delivers poor programs is not fully effective (Sowa et al., 2004). Most often out-come has been the indicator of measuring effectiveness in an organization without considering the vital roles associated with these two levels of effectiveness. The relationships between Management effectiveness and Program effectiveness with the behavioral intention in UTAUT need to determined as suggested by Venkatesh et al., (2003), earlier studies in the literature that examined this relation with behavioral intention in UTAUT to the best of our knowledge is limited and that research focusing on measuring the two level of effectiveness in Telecentre from the bottom up perspective is sparse. The Figure 1, Shows the original UTAUT Model.

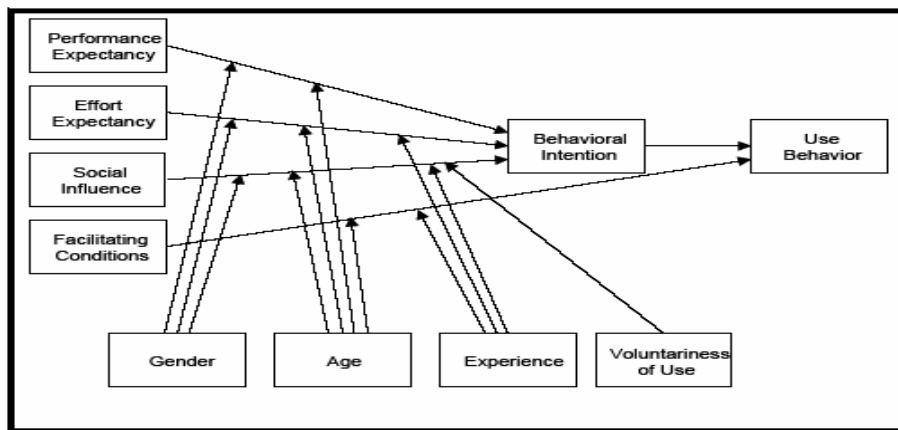


Figure 1. Source: The UTAUT Model (Venkatesh et al., 2003, p.447)

### 3. Proposed Conceptual Model

The constructs of UTAUT model are performance expectancy, effort expectancy, social influence and facilitating conditions Venkatesh et al.,(2003), including anxiety that was established not to have a positive relation with behavioral intention. The proposed constructs are management effectiveness and program effectiveness which are entirely posit to have a significant role as direct determinants of behavioral intention toward user acceptance of Telecentre. Moderated by age, gender, voluntariness, ethnicity and Location, Venkatesh et al., (2003) in their analysis of eight models/theories of technology acceptance, found that with the exception of Social Cognitive

Theory (SCT) and Motivational Model (MM), the predictive validity of the models increased after including the moderating variables. The model is constructed to answer the following research question:

(i) To what degree did the four constructs of the UTAUT model demonstrate effect on user acceptance of Telecentre?, (ii) Does anxiety has effect on Behavioral Intention on user acceptance of Telecentre?, and (iii) Does management effectiveness and program effectiveness have effect on behavioral intention in UTAUT model in context of Telecentre? These questions are in line with Venkatesh et al., (2003), recommendation, that future studies on UTAUT model should concentrating on construct that can add to the prediction of intention and behavior over and above what is known and understood in understanding the organizational outcomes associated with success of new Information System. Figure, 2 below shows the conceptual model of the UTAUT modifications.

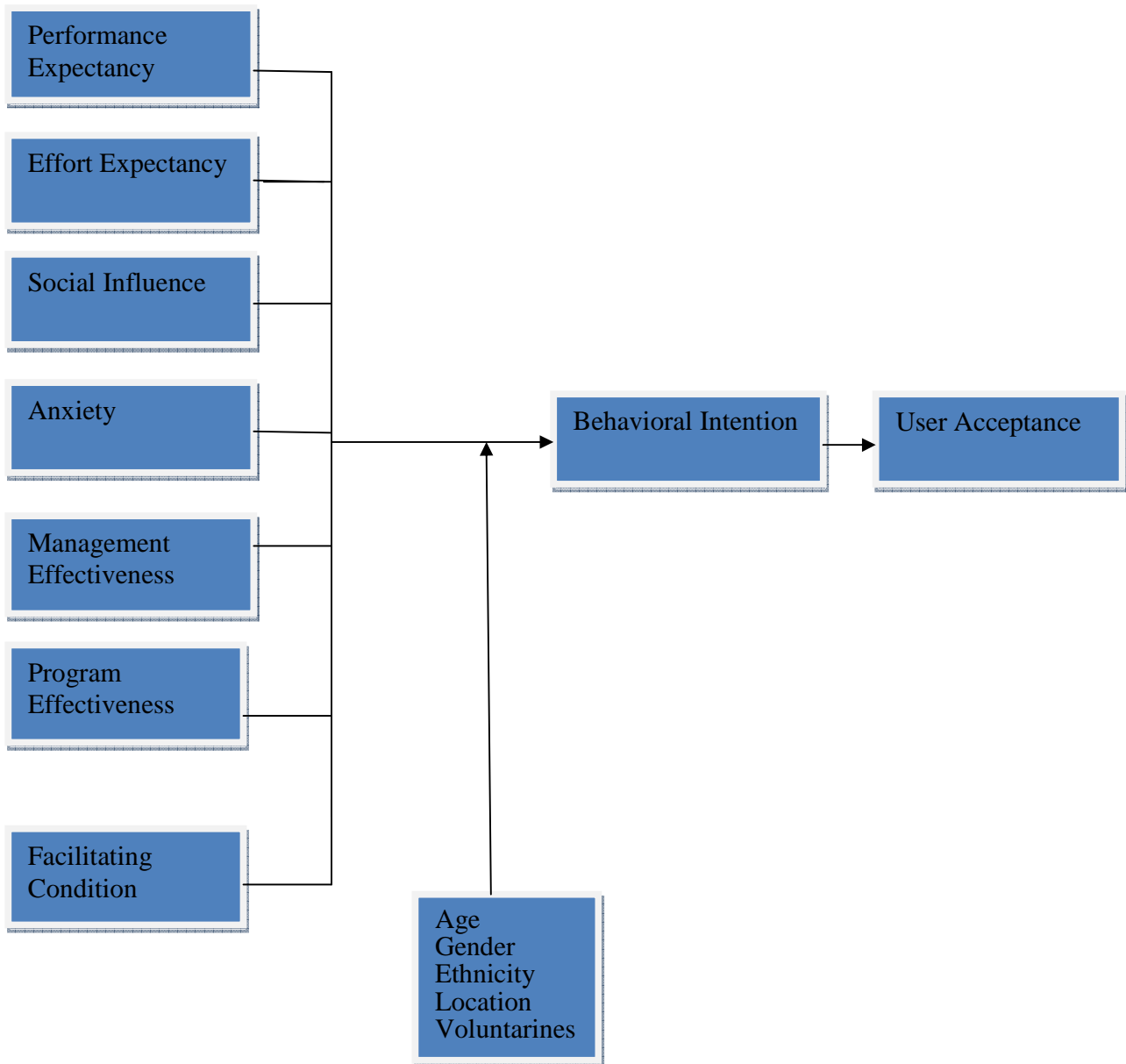


Figure 2. A Conceptual Model of UTAUT modification in context of Telecentre

The variables indicated in the conceptual model are thus defined based on (Venkatesh et al., 2003; Balduck & Buelen, 2008; Sowa et al., 2004):

## **Performance expectancy**

Performance expectancy is defined, as the degree an individual user believes that using the Telecentre will assist in enhancing his/her performance (Venkatesh et al., 2003). This construct was reported as the most influential among all the UTAUT in predicting behavioral intention and remains significant at all point of measurement regardless of environmental settings (Venkatesh et al., 2003).

## **Effort Expectancy**

Effort Expectancy is related to the degree of simplicity associated with the use of Telecentre. This construct has theoretical foundation from the three Theories/Models used by (Venkatesh et al., 2003).

## **Social Influence**

Social Influence is defined as the extent to which an individual user perceives that important other believe he or she should use Telecentre. Social influence has basis from six Theories/Models used by (Venkatesh et al., 2003).

## **Anxiety**

Anxiety 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 (Venkatesh et al., 2003). Anxiety as a construct has foundation from the Social Cognitive Theory (SCT) introduced to Information System by Campeau and Higgins (1985), as an extended SCT in the context of computer utilization.

## **Management Effectiveness**

Management effectiveness refers to characteristics that deal with organizational issues and management actions on the staff within organizations (Balduck & Buelen, 2008). Measure of management encompasses variables that tap capacity (structure and process) as well as those represent the outcomes of these management systems and activities (Sowa et al., 2004). This construct has basis from (CVA) theory (Quinn & Rohrbaugh, 1983).

## **Program Effectiveness**

Sowa et al., (2004) refers to Program as the specific service or intervention provide by the organization. Going by this definition Telecentre as an intervention to underserved folks, has suitably fits into this definition. Further, Sowa et al., (2004), support that program has a variables that relate to the capacity (structure and process) as well as outcomes created by the intervention. The program effectiveness refers to the characteristics that deal with the services or programs provided by the organizations (Balduck & Buelen 2008). Program effectiveness construct has the same theoretical support from CVA.

## **Facilitating Conditions**

Facilitating conditions are defined as the degree to which a user believes that an organizational and technical infrastructure exist to support use of Telecentre (Venkatesh et al., 2003). The theoretical foundation of Facilitating condition is derived from four Theories/Models used by (Venkatesh et al., 2003).

## **Behavioral Intention**

The Behavioral intention construct originated from the Theory of Reasoned Action (TRA) by Fishbein&Ajzen, 1975. The construct is defined as “a measure of the strength of one’s intention to perform a specified behavior” (Ajzen, 1991). Research has shown that behavioral intention has a direct impact upon the individuals’ actual use of a given technology (Ajzen, 1991). The behavioral intention construct was introduced to the MIS discipline through the technology acceptance model, an extremely important construct in the information management, due to its importance; it is, referred to “as a key criterion in user acceptance research” (Venkatesh et al., 2003).

## **User acceptance**

Use behavior is used in this study as the indicator of user acceptance; as it is quite challenge to have data about actual usage. Study by Venkatesh et al., (2003), focuses on individual acceptance of technology by using intention or usage as a dependant variable. The study will adhere strictly to the measurements and analysis base on [6] with respect to reliability, validity. The survey instrument is described for further validation.

## **5. Conclusion**

A review of the IS success literature, reveals a paucity of studies that broadly address the issues of effectiveness incorporation into UTAUT model. This paper under studies the UTAUT model and proposed a modification particularly as it regard to management effectiveness and program effectiveness and the needs for the incorporation of these constructs in to UTAUT model in context of Telecentre. The paper merely proposes a conceptual model for measuring this effectiveness in context of Telecentre. The research presented is limited being that, the proposed model is only based on literature review. Subsequent researches should focus on empirical validation of the conceptual model using the survey instruments described in the appendix.

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## **Appendix**

### **Performance Expectancy**

I would find ICTs in Telecentre useful in my job.  
Using ICTs in Telecentre help in accomplishment of job more quickly  
Using ICTs in Telecentre will increase my productivity.  
Using ICTs in Telecentre enhances job efficiency.  
If I use ICTs in Telecentre, I will increase my chances of getting an elevation. (Raise)

### **Effort Expectancy**

My interaction with ICTs in Telecentre would be clear and understandable.  
I find using ICTs in Telecentre' easy.  
I find using ICTs in Telecentre to be flexible.  
Using ICTs in Telecentre frequently makes one to be skillful  
Overall, learning to operate facilities in Telecentre is easy for me

### **Social Influence**

People in my community think I should use ICTs in Telecentre  
People who are important to me think that I should use ICTs in Telecentre.  
People in my community who use Telecentre have more prestige than those who do not  
Important people in my community have been helpful in the use of ICTs in Telecentre.  
In general, my community has supported the use of ICTs in Telecentre.

### **Anxiety**

I feel nervous about using ICT facilities in Telecentre.  
It scares me to think that I could make mistakes by using the ICTs in Telecentre  
The ICTs in Telecentre are somehow intimidating to me.  
It scares me to use ICTs in Telecentre because I lack adequate skills.

### **Management Effectiveness**

My expectation of this Telecentre is that it will be long-lasting  
The management of this Telecentre receives financial assistance towards rendering efficient service  
The management & staff of this Telecentre are friendly.  
I observed team spirit and motivated staff within the Telecentre staff  
Capable hands are available to impart knowledge in the Telecentre



### **Program Effectiveness**

Using Telecentre help in socio-economic development of my community  
*ICTs* Facilities in Telecentre are always accessible within the operation hours  
Telecentre staffs are competent enough in discharging their work.  
There is mutual cooperation between Telecentre staff and the users.  
Over all, the likelihood of replicating this program in our neighboring community is clear.

### **Facilitating condition**

I have the resources necessary to use *ICTs facilities in* Telecentre.  
I have the knowledge necessary to use *ICTs facilities in* Telecentre.  
Detail instruction about Telecentre use is available to me  
There is sufficient Electricity and Internet service to use *ICTs facilities' in Telecentre*  
A central support is available to help with technical problems  
A specified person (or group) is available in case of difficulty

### **Behavioral intention**

I intend to use *ICTs facilities in* Telecentre in the future.  
I predict I would use *ICTs facilities in Telecentre* in the future.  
I plan to use *ICTs facilities* Telecentre in the future.