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# Information & Communication Technology Adoption Among Adults in South Western Nigeria: An Assessment of Usage-Phobia Factors

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## Abstract

Measures for predicting and explaining ICT adoption among different age groups have practical implications for educators, designers and vendors who would like to assess user preferences for new products. Studying how adults adopt and use technology is therefore premised on the fact that adults must keep up with technological advancements to be able to function effectively in the information age. Our investigation of factors affecting adult's acceptance of ICT applications in South Western Nigeria is based on the Perceived Ease of Use (PEU) and Perceived Usefulness (PU) constructs. Selected ICT products and applications such as web access (for commercial, educational and social purposes), cell phones, Ipods, ATMs and e-Banking Platforms were employed as usage parameters. A multi-item questionnaire for PEU and PU was pre-tested, validated and administered. Findings from the study showed that the fear of using technology is subsumed by the benefits accruable from usage. Results from the study also gave insights into subtle but important factors that create ICT-Phobia among adults. We conclude by recommending acceptable use environment that will provide positive experiences with ICT products and applications among the target group.

**Keywords**: Adoption, adults, age groups, fear, usage, acceptance.

## Introduction

While information technology offers the potential for substantial improvement of white collar performances, the gains are often obstructed by user's unwillingness to accept and use available products, applications and services (PAS). Finding tenable explanations for adults' adoption of new electronic products have been a long-standing issue in management information System research, more so with the advent of ICT. The development of improved measures for key theoretical construct in this regards is therefore a priority for information system research. Adoption refers to the point at which a technology is chosen or selected for use by individuals or organizations. An Adult is a person (man or woman) who has attained full physical development.

He/she has the right to participate as a citizen, responsible homemaker, worker and member of the society. However, adulthood as an age is not strictly defined, this depend on specific natural consistence of different nations. In Nigeria for instance any individual that has attained the age of eighteen is regarded as adults. Adults are also grouped as young adults (18-35) middle age adults (35-54) young old (55-66) and older adults (65 and above) (Amanda, 1997). This age bracket varies among authors.

The root of the failures of most ICT adult literacy programmes in Nigeria stems from the techno-centric approach, dominated by scientific view of computing and ICT which delivers a curriculum that works technically but that fails to make an all encompassing ICT usage contribution. This approach does not emphasize the relative interaction between perceived usefulness and perceived ease of use. Most curriculum lacks ICT flavor, only concentrating on teaching rudimentary computer operations and application packages at the expense of focusing on basic usability concepts that empower adults to extend acquired knowledge and apply them to the usage of other ICT products.

Our investigation focuses on two theoretical constructs viz - perceived usefulness and perceived ease of use which are theorized to be fundamental determinant of Information Communication Technology (ICT) product use. Definition of these construct are formulated and the theoretical rationale for their hypotheses influence on Information Communication Technology (ICT) product use is reviewed. Davis (1989) found that perceived usefulness is a primary determinant and perceived ease of use is a secondary determinant of people's intention to use computers. Perceived ease of use and perceived usefulness, however, have been primarily tested and discussed in the context of organization settings and with reference to computer based processing. There have been a number of studies on technology acceptance explaining the user acceptance of internet marketing through the Technology Acceptance Model (TAM) (David, 1993; David, 1998; Pam, 2002). TAM points out that perceived ease of use and perceived usefulness affect the intention to use. The purpose of this research is to ascertain the effect of PU and PEU as a predictor of adoption and usage of ICT among adults in South Western Nigeria.

The remaining part of the paper is organized as follows: In the next section, we examined classical theoretical foundations in literature for PEU and PU. This is followed by an overview of the adult learner and ICT usage. The section on methodology deals with the research design and analytical approach adopted for the study. This is followed by data presentation. Findings were discussed and the research implications highlighted. We conclude with recommendations for policy and practice and make suggestion for future work.

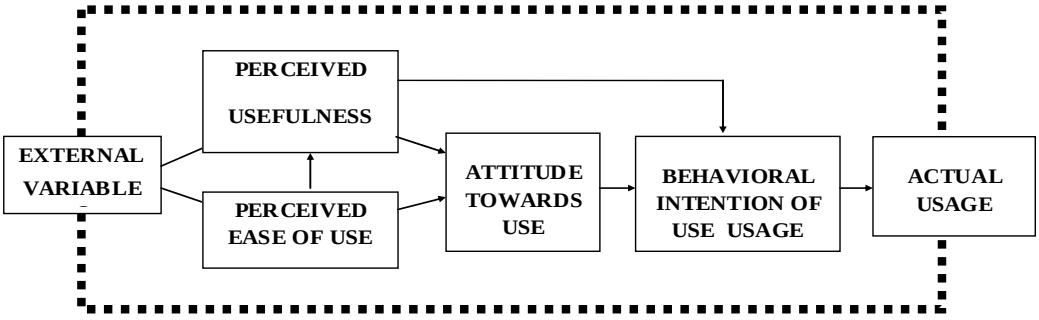
## Theoretical Foundation

The theoretical importance of perceived usefulness and perceived ease of use as determinant of user behavior is indicated by several diverse lines of research. The impact of PU on system utilization was suggested by the work of Schultz and Slevin (1975) and Robey (1979). They conducted factor analysis which yielded the proposition that a system that does not assist users in their jobs delivery is not likely to be received favorably in spite of careful implementation effort. Bandura's (1982) supported PEU in their research on self efficacy as the judgment of how well one can execute course of action required to deal with prospective situation. Self efficacy is similar to perceived ease of use as its belief is theorized to function as proximal determinant of behavior. Bandura's theory distinguished self efficacy judgment from outcome judgment—the

latter being concerned with the extent to which a behavior, once successfully executed is believed to be linked to valued outcomes. The cost- benefit paradigm from behavioral decision theory (Bearch & Mitchel, 1978; Johnson & Payne, 1985; Payne, 1982; Payne, 1993) is also relevant to perceived usefulness and ease of use. These researchers outlined the strategic importance and strength of human choices among competing decision- making strategies.

Research on the adoption of innovation suggests a prominent role of PEU in their meta-analysis of the relationship between the characteristics of an innovation and its adoption. Tornatzky and Kelvin (1982) find that compatibility relative advantage and complexity have the most consistent significant relationship across a broad range of innovation. Type complexity defined by Rogers and Shoemaker (1971) on the extent to which an innovation is perceived as relatively difficult to understand. "Integration" connotes a sense of acceptance, and perhaps transparency, within the user environment. Typically, past adoptions of a new technology for education have signaled a confidence in its potential to alleviate a particular problem or to make a job easier or more efficient. Rarely has bringing about new social and functional conditions been a consideration. Internet and World Wide Web technology, however, have provided a means of creating totally new learning environments thereby initiating adoption on different grounds. In such instances, "innovation" and "adoption" may be seen as virtually synonymous elements of the adoption/diffusion process.

Davis (1989) defines perceived ease of use as the extent to which a person believes that using a particular system would be free from effort and perceived usefulness as the degree to which a person believes that a particular system would enhance his or her job performance. Perceived ease of use also affects the perceived usefulness. To move from an intention to use to real usage, the user has to take the service into use. Fenech (1998) tested perceived ease of use to predict user acceptance of internet marketing tools and the results indicated a poor fit for the model until the introduction of an additional construct, computer self efficacy. This transition is affected by the perceived ease of adoption, perceived value, perceived ease of use, trust and perceived ease of adoption need to be studied in order to assess user acceptances of mobile services, Agarwal and Parsa (1998)examined individual’s perception towards the characteristics of information technology innovations as explanatory and predictive variables for acceptance behavior.



In ICT-adoption research, rational, social and symbolic, as well as situational and resource based explanations of adoption have been suggested (Rice & Webster, 2002). Since functional services are believed to be adopted for utilitarian reasons primarily, rational adoption models are typically suggested when explaining their adoption. This represents one way of using the properties of the ICT-artifact investigated to more carefully limit the set of relevant explanations of its adoption, uses and effects (Orlikowski & Iacono, 2001). Mobile parking services were believed to be functional services adopted for utilitarian reasons, TAM when applied to the adoption of mobile services produced mixed results (Hu et al., 1999; Kwon & Chimbaram, 2000, Lee et al., 2002). One of the main suggestions from these studies is that the model should be extended when applied to these services.

Uses and gratifications research has identified motivations for adopting mobile services that go far beyond the instrumentality of usefulness, flexibility and availability suggested by rational ICT-adoption theory. For example, Leung and Wei (1999; 2000) identified the gratifications of mobile phones to be "fashion/status", "affection/sociability", "relaxation", "mobility", "immediate access", "instrumentality" and "reassurance". In domestication research similar findings have been made suggesting that mobile service adoption and use may be explained by a "theory of fashion" (e.g. Ling, 2001), by the use of services as "ritual gift giving" (e.g. Taylor & Harper, 2001a,), by treating the mobile phone as "symbolic capital" (Skog, 2002) or as an instrument in "family differentiation and symbol of individuality" (Taylor & Harper, 2001b), and by the use of services as a "group marker or social identifier" (Weilenmann & Larsson, 2000), or as a "self identifier" (Hume & Peters, 2001). Thus, intrinsic motivations of enjoyment seem to be most consistently identified in uses and gratifications research, whereas derived motivations of self-expressiveness, social-identity and self-identity seem to be most consistently identified in domestication research.

Studies have also indicated a relationship between digital capital and symbolic capital suggesting that services designed for young users should not be too easy to use (Taylor & Harper, 2001b) because then, no status would stem from being able to handle the device, application or service. This explanation may also generalize to innovative users. The other issue is that of service differences in the importance of ease of use. Studies applying the perspectives of "flow" and "telepresence" have shown that to provide intrinsic motivation, some services must represent a certain challenge to the user. Challenge positively influences flow through increased telepresence (Novak, Hoffman, & Young, 2000; Hunter & Kalafatis, 2001). This, in turn, implies that we might expect a negative effect of ease of use (challenge inversed) on perceived enjoyment for highly involved users and for services which are used for reasons of intrinsic motives.

There is a striking convergence among the wide range of theoretical perspectives and research studies discussed so far. The accumulated body of knowledge regarding self-efficacy, contingent decision behavior and adoption of innovations provides theoretical support for perceived usefulness and ease of use as key determinants of behavior. From multiple disciplinary vantage points, perceived usefulness and perceived ease of use are indicated as fundamental and distinct constructs that are influential in decisions to use information technology. Although certainly not the only variables of interest in explaining user behavior they do appear likely to play a central role.

As Davis and Venkatesh (2000) have proved, the model can be enhanced from the original purpose of studying user acceptance of existing product to study planned product concepts, e.g. in the form of mock-ups. This indicates that TAM could also be used in connection with technology development projects and processes to assess the usefulness of proposed solution. Applied in this way, the model also supports the human-centered design approach (Pedersen & Nysveen, 2003). The intention to use affects real usage behavior. TAM (as shown in figure 1) was originally developed for studying technology at work. It has been used as such or modified to study user acceptance of consumer services such as internet services or e-commerce (Kaasinen, 2005). The technology Acceptance model constitutes a solid framework for identifying issues that may affects user acceptance of technical solution. TAM for Mobile Services (Kaasinen, 2005) suggests that perceived ease of use, perceived value and trust affects the intention to use a mobile service. However, different cultures in different places influence consumer awareness and acceptance of electronic and web-based applications.

Back et al (1991) showed that the growth of computers and its usages is one potential area of intimidation for older adults and found that older adults have a less favorable attitude toward computers than do younger adults. Yet others suggest the opposite; older adults have more interest in learning about computers, greater confidence, and exhibit less computer anxiety than do younger adults (Klein, Knupfer, & Crooks, 1993). A discrepancy is evident between research on age and its relationship to computer anxiety (Pam, 2002). Researchers also agree that previous proficiency of usage and experience with computers contribute to lower levels of ICT usage anxiety (Ayersman & Reed, 1995; Dyck & Smither, 1994; Hakkinen, 1994; Maurer & Simonson, 1993; Longe & Otti, 2006). Increased exposure to the subject minimizes the negative conditions that exist and results in positive attitudes toward Usage (Wlodkowski, 1993). Amanda (1997) shows that older adults have challenges with new technologies and do not use new forms of automated machines despite a strong desire to do so.

## Related Works on TAM in Developing Countries

Researchers have applied the TAM model in studying technology acceptance in developing countries using various constructs. Oyelaran-Oyeyinka and Adeya (2004) posited that ease of use is a major constraint for the adoption and use of the internet among academics in Kenya. Olatokun and Igbinedion using the TAM model and diffusion theory on target innovations (the Automatic Teller Machines (ATMs)) in Northern Nigeria found that compatibility, and trial ability has significant impact on Attitude towards usage intention. As applied to developing countries in Asia, Quibria et al. (2003) found Internet use and tertiary education showing significant positive statistical association.

Bjorn and Stein (2006) in their study of Indonesia and Tanzania show that Internet cafés serves to improve usage competence hence contributing positively to technology acceptance among users. Olusegun & Shawn (2008) investigates the applicability TAM to agriculturist's acceptance of a knowledge management system (KMS), developed by the authors and suggest that the considerable body of previous TAM-related information technology research may be usefully applied to the knowledge management domain to promote further investigation of factors affecting the acceptance and usage of knowledge management information systems by farmers, extension workers, and agriculture researchers.

Mpofu et al (2009) in their research on the identification of the key ICT adoption attributes and their influence on ICT adoption and development of e-business and SMEs in South Africa suggest internet; websites; fixed-line and mobile phone networks as the most common technologies adopted by SMEs to support their e-business operations. They also identified both formal and informal networks such as information, technology, social and business support as being very important for ICT adoption. Longe et al (2006) evaluated the level of acceptance of Internet marketing in Nigeria and found that there are significant differences in the perceived usefulness and the ease of use of Internet marketing among Nigerian consumers. Longe and Otti (2007) opined that for the adults, computer literacy is at the forefront of ICT acceptance. Knowledge of its usage therefore, will dispel the inherent fears and anxiety displayed by adult learners in appreciating information technology PAS.

According to Szajna (1996), the ease of use variable normally becomes less significant with increased experience among users). This suggests that Internet use may increase when users gain knowledge and experience. Tella (2007) assessed secondary school teachers uses of ICTs in Nigeria and concluded that although teachers generally have access to ICTs in their various schools (except e-mail and Internet because their schools are not connected to the information highway) , technical support are lacking in the schools and teachers lack expertise in using ICT. These factors are perceived as the prominent factors hindering teachers readiness and confidence in using ICTs for job delivery. To the best of our knowledge and based on available literature, research is sparse in the context of how PEU and PU influence the adoption and usage of ICT products and applications among adults from a Nigerian perspective.

## ICT Penetration in Nigeria

The International Telecommunications Union' records show ICT penetration is gradually upward in sub-Saharan Africa especially with internet and mobile phone subscription on the increase. Progress is also being made in terms of policies and technology development, resulting in an increasingly competitive and networked world. Although, the bulk of the progress with increased usage seemed to concentrate in few urban centers, efforts are being made to provided access to rural and grassroots area (ITU, 2008). Today, there are more people using ICTs worldwide and more people communicating than at any other time in history. Statistics also seems to suggest some shrinking in the digital divide that separates the developing and the developed countries in terms of usage and mobile subscription, fixed telephone lines, access/subscriptions to satellite TVs and Internet usage.

Despite these gains, we cannot deny the fact that the growth and development of ICT infrastructure and implementation in Nigeria are still faced with some challenges that has prevented the nation from maximizing the potentials offered by ICT and related technologies. In Nigeria, various means of disseminating information in the past consists of the Post offices, Town criers, PSTN, Telegram e.t.c. As ICT evolved, other mediums, which are faster, cheaper, portable and more reliable, came to play. The major ones in Nigeria today are the Internet and the Global System for Mobile Communication (GSM). GSM products brought with it convenience, mobility and portability in the information and communication process. Today, Internet services are becoming available on mobile phones making it possible to transact a wide range of services formally. Fixed and mobile wireless systems offer key advantages in making internet services

universally available because of the speed of deployment. Fast deployment means quicker connection to subscribers resulting in faster payback of capital investment. The rapid rate of deployment will also make phones services widely available and this will accelerate the pace of national economic development and growth (Chiemeke & Longe, 2006).

This scenario led to the production, approval and adoption of the national ICT policy by the Federal Executive Council in March 2001 and has the National Information Technology Development Agency (NITDA) as implementing body (Ajayi, 2002). According to its vision statement, the policy is aimed at making Nigeria an IT capable country in Africa and a key player in the Information society by using ICT as the engine for sustainable development and global competitiveness. The mission statement, centers on using ICT for education, creation of wealth, poverty eradication, job creation, and global competitiveness. For majority of the populace, rudimentary Internet access is provided by cyber cafes, in educational Institutions and business organizations. As opposed to most developed countries where the populace is well connected to the Internet via service lines, individuals in Nigeria might not get connected due to the absence of adequate communication network infrastructures, relatively high cost of usage, the challenges of sustainable wired and wireless networks, system security issues such as spamming, phishing, credit card fraud other forms of unethical usage, policy inconsistencies and lack of effective coordination.

As the country embrace ICT and its dividends, access to ICT products and application is increasingly crucial to research and development efforts, many of which yield tangible economic benefits. Information poverty remains one of the significant and insidious obstacles to effective exploitation of ICT resulting especially among adults into lack of adequate information regarding development in other countries, continuous usage of old techniques and procedures without the conscious knowledge of better alternatives. This scenario coupled with misconceptions and deliberate adamancy about the costs and benefits of network connectivity have resulted in decisions to delay investment in ICT infrastructures which may be considered too expensive relative to other needs.

## The Adult Learner and ICT Usage

An adult is a person (man or woman, employed or unemployed) who has attained full physical development. He/she has the right to participate as a citizen in civil issues as member of the society. However, adulthood age is not strictly defined. This depends on specific national constitutions of different nations. In Nigeria for instance, any individual that has attain the age of eighteen is regarded as an adult. Adults are also demarcated as young adults (18-35), middle age adults (35-54), young-old (55-64) and older adults (65 and above) (Amanda, 1997). This age bracket varies among authors and adult educators (Pam, 2002). This age group is expected to have a relatively higher level of curiosity and be interested in ICT systems (Olivia, 2009).

In response to a growing dependency on ICT, learning how to use the computers has become part of many public educational curricula. However, not all people receive their computer training in public schools. In recent years there has been increasing emphasis on adult computer training, often through community education programs or in-service training (Rogers, 2005). Other adults receive their initial computer experience as part of their post- secondary education. In many instances it is mandatory. This is the case for students registered in the Polytechnics, Colleges of Education and Universities. Introductory computer courses are made mandatory as part of the

General Studies requirements for graduating. Some of the adults falling in the categories of young and old adults today went to school when mandatory computing courses were not part of the graduating requirements. Secondly, those who were opportune to take computing courses then and are not in computing and allied fields are in possession of knowledge that has become very obsolete. Emerging economic situation, the popularity of self-employment as an alternative to a high rate of unemployment, opportunities pervading the public and private sector and the need to make use of modern innovative information technology applications has become a driving force behind the quest for ICT skills by adults (Olaitan, 2002).

The knowledge of usage of microcomputers can provide adults with potential for employment, job satisfaction, and good quality of life. Computer literacy may be the beginning of a broader technological literacy associated with the perception that a technological society will have to be proficient in the use and language of technology. Knowing fully-well that understanding and speaking a language is arguably the most important component of any culture (Maurer & Simonson, 1993). Learning the language of technology means to become acquainted with the jargons and being able to communicate with ICT PAS in the case of ICT. Communication, in this sense, refers primarily to knowing how to use these products, getting acquainted with the right inputs and recognizing the significance of the outputs. Literacy, however, means to understand the cultural significance of the communication. Technological literacy provides the means and leverage to understand, appreciate and critique technology, thus enhancing and enabling participation in a technological culture (Dale & Charles, 1993).

Agarwal and Prasad (1998) examined individuals' perceptions toward the characteristics of information technology innovations as explanatory and predictive variables for acceptance behavior. Fenech (1998) tested perceived usefulness and perceived ease of use to predict user acceptance of internet marketing tools and the results indicated a poor fit for the model until the introduction of an additional construct, computer self-efficacy. Kucuk and Arslan (2000) investigated by comparing the AIM in TAM basis into three countries of Britain, Denmark and Turkey. It was reported that significance difference was found between Turkey and Britain and Denmark in terms of AWMF, and no significant difference between Britain and Denmark. Wang (2000) investigated consumers' acceptance of web marketing facilities (AWMF) in Macau, the special economic zone of China and concluded that internet facilities and usage was mature in Macau but different gender had different attitude towards several items of the AWMF).

The Senior Technology Acceptance & Adoption model (STAM) developed and employed by Karen and Judy (2008) assessing the use of mobile phones by the elderly produced a set of interlinked acceptance factors and adoption phases. Judy et al. (2008) investigated mobile phone usage among adults based on the Mobile Phone Usage Space Model (MUSM) and produced factors that aids designers in improving product acceptance based on the inclusion of additional features in order to maximize return on investment. Kucuk and Arslan (2000) investigated by comparing the AIM in TAM basis into three countries of Britain, Denmark and Turkey. Also the panorama of customers adopting internet as a tool of buying and shopping has evoked businesses developing web- marketing strategies in a new marketing arena of competition. The evolution of brand management is one of the important changes of paradigm that businesses will have to make for successful internet marketing. Farzana et al. (2009) investigated the factors that influence user intention to use Wireless Internet-using Mobile Devices (WIMDs) in Malaysia and showed trust has a positive impact on the attitude to use mobile internet facilities. Sanghyun and Gary

Garrison (2009) extended the TAM to include Perceived Ubiquity and Perceived Reachability and used the new constructs termed the Mobile Wireless Technology Acceptance Model (MWTAM) to evaluate their impact on Behavioral Intention.

## Methodology

Basic assumptions made about the target population and administration of the research instruments are related to the target population. We assume that the respondent in the four large cities, Lagos, Ibadan, Abeokuta and Oshogbo, Akure, Ilorin and Ado-Ekiti, all capital cities in South Western Nigeria, are generally representative of all the adults in the south western Nigeria. The survey method employed using questionnaires solicit information about attitude towards usage and the impact of perceived usefulness and perceived ease of use. The researchers also assumed that an adequate number of respondents would complete the questionnaire, and that they answered the question fully and truthfully. Based on the responses obtained we have the assurance that a worthwhile set of conclusions could be drawn from the data that were collected. By using a non experimental methodology, the research is able to gather and explore data about several key characteristics and attributes tailored to the type of itineraries and lifestyle of adults in the target area.

### Research Question

Questions to aid us in gathering baseline information on the effect of the perceived usefulness and perceived ease of use, attitudes and adoption of Information Communication Technology (ICT) products by adults in Nigeria include:

(a) What are the effects of perceived ease of use and perceived usefulness on the adoption of Information Communication Technology ICT products?
(b) What demographic or other variables such as age, culture and background determine the adoption of these Information Communication Technology (ICT) product?
(c) How do Nigerian adults relate with these Information Communication Technology (ICT) products?
(d) Do all these Information Communication Technology (ICT) products really serve their purposes among Nigeria adults?

### Study Population

The research population consists basically of civil servant in the ministries, undergraduate and postgraduate students, workers in the private sector and other self employed citizens. A total of 515 Questionnaire were distributed. We selected 400 responses that satisfy stratification for Age (bracket), Sex, Employment Status and Level of Education and previous computer usage (or knowledge). Previous computer knowledge/usage is taken as a factor that normalizes experience with IT among the respondents.

### Research Instrument

The research questionnaire titled "***Effect Of Perceived Usefulness And Perceived Ease Of Use On The Adoption of Its Products Among Adults In South Western Nigeria***" consist of three sections. Section A solicits information on personal data of respondent such as age, sex, marital status, occupation religion and educational status while section B consists 20 (twenty) question requiring information from the adult on the attitude toward the adoption of IT products. Section B poses questions on ICT usage and adoption. The intention is to explore PE and PEU factors on the acceptance of products and applications such as the world wide web, the internet, e-mail, chat, cell phone, phone messaging, Ipods, the Blueberry, PDA satellite viewing and ATMs, Online payment systems, internet banking systems, electronic marketing and computers generally. Section C consists of ten questions partitioned into PE and PEU factors on a 5-point Likert scale.

### Validation/Reliability of the Instrument

The face-validity and content-validity of the instrument were verified by experts in the University of Ibadan. The various suggestions made were used to modify the instrument. In order to ascertain the consistency of the instrument, test-retest method was used to ascertain the reliability. The questionnaire was administered twice on the sample. The interval between the first and second administration was 4 months. A correlation coefficient of 0.84 was achieved which was considered high enough to justify the reliability of the questionnaire

### Method of Data Collection

The questionnaire was administered manually and through electronic mail. A website was also set up on the internet for respondents to fill in their responses.

### Methods of Data analysis

Descriptive and inferential statistics were employed using simple descriptive statistics and chi test ($X^2$) to test for differences between groups. All the hypotheses were tested at a 0.05 level of significance.

## Data Presentation

We present the data gathered from the questionnaire in a collated format for ICT Products, Applications and Services (PAS) below.

*Table 1.* Demography

| ITEM | Factor | Percentage |
|---|---|---|
| Age Distribution | Age (Year) | Percentage |
| | 18-35 | 30 |
| | 36-54 | 64 |
| | 55-64 | 6 |
| | 65 And Above | Nil |
| Sex Distribution | Sex | Percentage |
| | Female | 35 |
| | Male | 65 |
| Marital Status | Frequency | Percentage |
| | Single | 58 |
| | Married | 42 |
| Educational Qualification | Secondary | 03 |
| | NCE/OND | 22 |
| | BSC/HND | 35 |
| | MSC/MA | 22 |
| | PHD | 10 |

*Table 2a.* Structured questions and responses

| Perceived Usefulness Questions | Yes | No |
|---|---|---|
| Respondent Opinion On Whether ICT PAS Increases Job Productivity per person | 86 | 14 |
| Respondent Opinion On Whether ICT PAS Increases reduces stress on job delivery | 82 | 18 |
| Respondent Opinion On Whether ICT PAS Saves Times | 88 | 12 |
| Respondent Opinion On Whether ICT PAS Enable Adults Accomplish Task More Efficiently | 92 | 08 |
| Respondent Opinion Whether ICT PAS Increases Improves The Quality Of The Work Done | 80 | 20 |
| Respondent Opinion Whether They Find ICT PAS Useful | 93 | 07 |
| Respondent Opinion On Whether Job Would Be Difficult To Perform With ICT PAS | 92 | 08 |
| Respondent Opinion Whether ICT PAS Increases Gives Greater Control Over Their Work | 93 | 07 |

*Table 2b*. Structured questions and responses

| Perceived Ease Of Use Questions | Yes | No |
|---|---|---|
| They Often Become Confused When using ICT PAS | 90 | 10 |
| Users Make Mistakes When Using ICT PAS | 59 | 41 |
| Interacting With ICT PAS Requires A Lot Of Mental Effort | 47 | 53 |
| They Consult The User Manual When Using ICT PAS | 34 | 66 |
| They Find It Easy To Remember How To Perform Task Using ICT PAS | 79 | 21 |
| Respondent Opinion Whether They Find It Cumbersome To Use ICT PAS | 14 | 86 |
| ICT PAS Provides Helpful Guidance In Performing Task | 82 | 18 |
| They Find ICT PAS Easy To Use. | 87 | 23 |

## Hypothesis Formulation and Testing

The following hypotheses were formulated and tested for the research:

### Hypotheses 1a

Age does not significantly influence Perceived Usefulness of ICT PAS among adults of different age groups .

*Table 3(a)*. Test for difference between young and old adults

| Adult Age Group | Mean Diff. | t | df | p | Remarks |
|---|---|---|---|---|---|
| Young Adults | 2.7321 | 0.886 | 13 | 0.392 | Not Significant |
| Old Adults | | | | | **Accept** |

Table 3(a) shows no significance difference between young and old adults P> 0.05, hence we accept the hypothesis. This means that the perception here is not age-discriminatory.

### Hypotheses 1b

Age does not significantly influence Perceived Ease of Use of ICT PAS among adults of different age groups.

*Table 3(b)*. Test for difference between young and old adults

| Adult Age Group | Mean Diff. | t | df | p | Remarks |
|---|---|---|---|---|---|
| Young Adults | 2.7321 | 0.886 | 13 | 0.03 | Significant |
| Old Adults | | | | | **Reject** |

Table 3(b) shows that there is significance difference between young and old adults perception of ease of use. Here P< 0.05, hence we reject the hypothesis. This means the perception here are age-discriminatory.

### Hypotheses 2a

Gender does not significantly influence Perceived Usefulness of Use of ICT PAS among adults.

*Table 4(a).* Test for difference between male and female adults

| Gender | Mean Diff. | t | df | p | Remarks |
|---|---|---|---|---|---|
| Male<br>Female | 0.7500 | 0.237 | 13 | 0.817 | Not. Sig.<br>**Accept** |

From Table 4(a), p> 0.05, thus, we accept the hypothesis. We therefore conclude that at 5% level of significant, there is no evidence of significant difference in the perception of both sexes.

### Hypotheses 2b :

Gender does not significantly influence Perceived Ease of Use of ICT PAS among adults.

*Table 4(b).* Test for difference between male and female adults

| **Gender** | **Mean Diff.** | **t** | **df** | **P** | **Remarks** |
|---|---|---|---|---|---|
| Male<br>Female | 0.7500 | 0.237 | 13 | 0.817 | Not. Sig.<br>**Accept** |

From Table 4(b), p> 0.05, thus, we accept the hypothesis. We therefore conclude that at 5% level of significant, there is no evidence of significant difference in the perception of both sexes.

### Hypotheses 3a

Prior computer use experience does not significantly influence Perceived Usefulness of Use of IC PAS among adults.

*Table 5(a).* Test for prior computer experience

| Prior Computer Knowledge | N | Mean | SD | Mean Diff. | t | df | p | Remarks |
|---|---|---|---|---|---|---|---|---|
| Yes | 71 | 62.6000 | 3.1757 | 43.6000 | 0.179 | 13 | 0.861 | Not. Significant |
| No | 21 | 19.0000 | 9.5394 | | | | | **Accept** |

From Table 5(a) we accept the hypothesis at 5% level. Thus, no significant difference exist between those with prior computer usage experience and those that have no prior experience in computer usage. It is however very clear that the first group have higher mean value, nevertheless, enthusiasm and perception of usefulness for ICT PAS does not deviate significantly.

### Hypotheses 3b

Prior computer use experience does not significantly influence Perceived Ease of Use of ICT PAS among adults.

*Table 5(b).* Test for users and non-users of computers.

| Prior Computer Knowledge | Mean Diff. | t | df | p | Remarks |
|---|---|---|---|---|---|
| Yes | 13.5000 | 0.179 | 13 | 0.861 | Significant |
| No | | | | | **Reject** |

From Table 5(b), we reject the hypothesis at 5% level. A significant difference exists between those with prior computer usage experience and those that have no prior experience in computer usage. This is in consonance with other research on TAM (Dale & Charles, 1993; Szajna, 1996; Longe & Otti, 2007).

### Hypotheses 4

Both age and previous computer usage have no joint significant impact on PE and PEU among adults.

*Table 6*. Test for joint impact of age and prior computer usage

| Model | Sum of Squares | df | Mean Square | F | P | Remarks |
|---|---|---|---|---|---|---|
| Regression | 162.282 | 2 | 81.141 | 2.728 | .0019 | Significant |
| Residual | 327.147 | 11 | 29.741 | | | **Reject** |
| Total | 489. 429 | 13 | | | | |

a. Predictors: (Constant), Computer usage experienced, Age
b. Dependent Variable: PE and PEU

Hypotheses 4 is rejected because P< 0.05. This shows that there is a joint significant impact of age and previous computer usage on PU and PEU.

### Hypotheses 5

Level of Education and experienced do not have relative significant impact on PE and PEU among adults.

*Table 7*. Test for relative impact of age and experience

| Model | Unstandardized Coefficient | | Standardized Coefficient | t | P | Remarks |
|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | |
| Level of Education | .333 | .311 | .685 | 1.072 | .0307 | Significant |
| Prior Computer Usage | -.538 | .301 | -.1.143 | 1.790 | .0101 | **Reject** |

From Table 7 for level of education , t = 1.072 P< 0.05 and for prior computer experience, t = 1.790, P< 0.05, we therefore reject the hypothesis indicating that neither age nor prior computer usage experience has any significant relative impact on PE and PEU among adults.

## General Hypothesis

The following general hypotheses were formulated for the two constructs PE and PEU:

### Hypothesis I

Perceived Usefulness (PU) does not significantly influence the adoption of ICT products and applications among adults in South Western Nigeria.

### Hypothesis II

Perceived Ease of Use (PEU) does not significantly influence the adoption of ICT products and applications among adults in South Western Nigeria.

*Table 8*. Decision based on observed and computed chi square analysis for hypothesis I

| S/NO | Hypothesis | Computed $X^2$ Value | Table Value (T) At 4 Df | Decision At 0.05 Level Of Sig. |
|---|---|---|---|---|
| $H_1$ | Perceived Usefulness (PU) does not significantly influence the adoption of ICT products and applications among adults in South Western Nigeria | 9.00363 | 7.82 | Reject the Null hypothesis hence accept the alternative |

*Table 9*. Decision based on observed and computed chi square analysis for hypothesis II

| S/NO | HYPOTHESIS | Computed $x^2$ value | Table Value (T) at 4 df | Decision at 0.05 level of sig. |
|---|---|---|---|---|
| $H_2$ | Perceived Ease of Use (PEU) does not significantly influence the adoption of ICT products and applications among adults in South Western Nigeria | 8.67842 | 7.82 | Reject the Null hypothesis hence accept the alternative |

## Discussion

The analysis of the data collected revealed that age, sex, current usage of computer and experience have varying influence on the adult's attitude towards the adoption and use of ICT PAS. Age and experience as well as level of education and prior computer usage experience significantly influence adult's attitude towards PE and PEU. The Chi-square test showed that among adults in south western Nigeria, perceived usefulness significantly influence the adoption and use of ICT product more than the perceived ease of use. These tallies with Davis (1989) who found that perceived usefulness is a primary determinant and perceived ease of use a secondary determinant of people's intention to use computers. It is however noteworthy that the indices of measurement for both factors are quite close (9.00 to 8.67) at a margin of 1.33.

This simply shows that the fear of how to use technology is subsumed by the benefits accruable from using technology. It also shows that usage is approached with a degree of confidence that usefulness and ease of use will produce expected results. On the average, the usage and acceptance of ICT among adults in Nigeria is on the increase. ICT has appreciable positive effect on the job performance, productivity and improves the quality of work. Despite the popularity of the internet and availability of internet access points, analysis of collected data showed that there are significant differences in the perceived usefulness of electronic mail and the ease of use of electronic mail services among adults. This research revealed that ICT has appreciable positive effect on the job performance, productivity and improves the quality of work of adults in South Western Nigeria. The greatest worries and drawback on the electronic mail service is inadequate and epileptic power supply and poor internet facilities. Inadequate access to ICT infrastructure, cyber crime and poor usability remains militating factors against ICT adoption

and usage among adult. Efforts will have to be intensified on creating avenues for adults to access the internet without hindrances. Network service providers will also have to improve their quality of services in terms of larger bandwidth, consistency and the provision of users-friendly environment that can encourage adults.

## Implications Research and Practice

The implications of this study for research and practice are that it established the fact that perceived ease of use significantly influences the adoption and usage of ICT products, applications and services among adults. We also provide baseline data on the attitudes of adults towards ICT adoption in Nigeria. Invariably, the intention to use based on derivable benefits surpass the intrinsic fear of not being able to use ICT products effectively as a result of age, sex or level of education. This finding supports the change theory that explains that older people are not receptive or adaptable to technology change. The saying that "old habit die hard" may drag home the point. As opined by Smith (2001), Kurt (1951) theorised the three-step change model. He viewed behaviour as a dynamic balance of forces working in opposing directions. For IT and adults, the driving forces of PU seem to facilitate change by motivating adults in the desired direction while restraining forces of PEU hinder change because it seem to push this category of users in the opposite direction. The onus of use now rests on shifting the balance in the direction of the planned change. Steps in the process of change therefore require unfreeze the phobia in order to overcome the strains of individual resistance and the focus group. Unfreezing can be achieved by increasing the driving forces that influence adoption and use positively; decreasing the forces that negatively impact adoption and usage among adults.

These facts are very cogent and must be considered when releasing ICT products into the consumer market. Manufacturers must device usability schemes that make their product acceptable to users of different age groups. Feedback from usage is also important for practice and should be inculcated into product design in an accessible way in order to aid product improvement. Whereas perception is concerned with performances as a consequences of use, intrinsic motivation is concerned with the reinforcement and enjoyment related to the process of performing an action or the actual usage of an object. This is seen to be more pronounced and a more forceful motivating factor for usage among adults. Higher return on investment in the study domain will have to take these findings into consideration when considering products and applications for the target market.

## Future Work

A great deal of benefit could be derived from a future studies that replicate or extend the findings of this study with other sample, a larger group and a slightly different methodology. It will also be appropriate to repeat this study annually or at some designated period. This type of data will enable trend. While some theorists argue that beliefs influences behavior only via their indirect influences on attitudes, others view beliefs and attitudes as co-determinant of behavioral intentions. Research is therefore warranted on how other variable relates to usefulness, ease of use and adoption among adults.

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