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# Individual Characteristics as Correlates of Attitudes to Information Technology among Nigerian University Lecturers

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## Abstract

*Positive attitudes to information technology (IT) among relevant stakeholders are an important precursor to the effective IT use at different levels of education. This paper presents the findings of a study that investigated the relationships between the individual characteristics of Nigerian university lecturers and their attitudes towards the use of information technology (IT) for teaching, research and related purposes. The study used a self-administered questionnaire to collect data from 718 lecturers sampled randomly from 10 of the 40 federal and state universities in Nigeria at the time of the study in 2003. Findings from the study showed that Nigerian university lecturers generally have positive attitudes towards IT and its use in education. Attitudes were independent of age, academic rank and, to some extent, academic discipline, but were not independent of gender and experience of using IT. Previous negative experience with using IT had a significant influence on attitudes towards IT. The study concluded that programmes aimed towards facilitating the use of IT for teaching, research and related processes by lecturers in Nigerian universities are more likely to succeed if they are both gender - and discipline-targeted, and also provide effective support for everyday use of IT by the lecturers.*

## Keywords

Information technology, attitudes, higher education, Nigeria, technology adoption

## Introduction

For developing countries, Information Technology (IT) affords university academics and researchers a unique opportunity to bridge the knowledge gap between them and their counterparts in developed nations. In fact, IT is seen as crucial to the continued survival of universities and research institutes in developing countries (UNISIST Newsletter, 1999). This point is supported by Paterson (1995), who identified three areas in which IT can make significant contributions to the economic and social development of developing countries, namely: as an instrument to make existing productivity sectors more efficient, as an area of economic activities in its own right, and as a tool in education. This observation was also buttressed by the World Bank's 1998/99 World Development Report, which observed that radical changes (for example, the infusion of IT) are called for in post-secondary education if Africa is to equip its labour force with the skills needed to survive in the new technological age.

In line with this realisation, a number of international and national initiatives have been undertaken to improve access to, and use of, IT in universities in developing countries. For example, the African Virtual University (AVU), based in Nairobi, Kenya, was initiated by the World Bank in 1999 in an attempt to bridge the north-south digital divide by linking sites or learning centres in African countries with learning institutions in the US, Canada, and Europe via voice-conferencing and other Internet technologies (Phombeah, 2000). Mangesi (2007) remarked that ICT use in education is now at a

particularly dynamic stage in Africa with new developments and announcements happening on a daily basis somewhere on the continent.

In Nigeria, the Federal Government, in 1989, launched a National Policy on Computer Education, aimed at making Nigeria a computer literate society by the middle of the 1990s. The objectives of the policy included the introduction of computer education into the curriculum at all levels of education from primary to university and other tertiary schools (Alabi, 1994). At the university level, the National Universities Commission (NUC), which is charged with the responsibility of setting minimum standards and accreditation of all academic programmes run in Nigerian universities, has been a key player in efforts to integrate computer skills training into the programmes of Nigerian universities. Toward this end, the NUC prepared a series of documents titled "Minimum Academic Standards for Nigerian Universities" which have formed the basis for the accreditation of academic programmes in Nigerian universities since 1990. The Approved Minimum Academic Standards (AMAS) provide guidelines on minimum hardware and software requirements for programmes run in Nigerian universities. AMAS also specifies that computer studies be offered as a unit course in all undergraduate programmes run in Nigerian universities (www.nuc.edu.ng). Other NUC initiatives have led to the introduction and development of university databases through the Nigerian universities management information system (NUMIS) and electronic connectivity of universities through the Nigerian universities network (NUNet). They also led to the automation of university library operations using the TINLIB software and the computerization of university accounting processes using the Computerised Accounting System (CAS) for bursary departments of Nigerian universities (Abdulkadir, 1995).

## Problem Statement

In Nigeria, many universities are acquiring computers and other IT equipment for use by academic and administrative staff and students. However, as Adeya (2001) has observed, awareness of IT does not necessarily lead to immediate application. Hopkins (1996) pointed out that in acquiring IT, universities very often exhibit a blind faith in technology; a sort of technological determinism, seeming to suggest that merely installing a machine will lead to its efficient and rational use. This attitude of technological determinism also seems to prevail in the process of acquiring and providing access to IT in Nigerian universities. There have been reports of departments and faculties that acquire computers before deciding what to do with them, IT equipment that are purchased but never used, and of Internet access that have never been personally utilised by academic staff for a variety of reasons (Missen, 1999; Idowu, Adagunodo & Popoola, 2003).

Gilmore (1998) and Young (1998) have observed that although there are more computers and other information technologies in universities nowadays, the use of these technologies have, in a large number of cases, not enhanced either individual or institutional level productivity. The reasons advanced for this include inadequate training of lecturers in new skills, and/or unwillingness by lecturers themselves to learn new skills (Gilmore, 1998; Holt & Crocker, 2000). Holt and Crocker (2000) observed that successful use of IT depends not only on the technology itself, but also on the levels of skills and expertise of the individuals using the technology. They, however, noted that though the skills of an individual can be improved by proper training, the attitudes of a user towards the technology will affect his/her willingness to learn about the technology, the decision to use the technology, and the actual uses to which the technology is put.

Stefl-Mabry (1999) declared that an understanding of how and why users either accept or reject new technologies is paramount to the issue of effective integration of a technology into organizational functions. Studies by Goldenfarb (1995) and Moxley (2000) in universities have identified academic staff as a core group whose attitudes can play a major role in determining the extent of IT adoption by a university. Attitudes of lecturers may in fact shape university policy regarding IT (Young, 1998), and university IT policy may also affect levels of adoption and utilisation of IT by academic staff (Grineski, 1999). This study was therefore carried out to examine, amongst other things, attitudes of lecturers (academic staff) in Nigerian universities towards IT and how the individual characteristics of the lecturers affect their

use of IT. The study also aimed to generate information that will help define the current status of IT adoption and use in Nigerian universities, as well as help to guide programmes and projects aimed at facilitating the effective use of computers and other IT equipment by university lecturers.

This paper presents the findings of those aspects of the study that investigated the relationships between the individual characteristics of Nigerian university lecturers and their attitudes towards the use of information technology (IT) for teaching, research and related purposes.

### Research Questions

Accordingly, the study investigated the following six research questions:

Is there a significant relationship between the gender of lecturers and their attitudes towards IT?

Is there a significant relationship between age and attitudes towards IT by Nigerian university lecturers?

Are there significant differences in attitudes towards IT among lecturers from different academic disciplines?

1. Are there significant differences in the IT related attitudes of lecturers in different academic ranks?
2. Is there a significant relationship between the lecturers' experience with using IT and their attitudes towards IT?

What is the influence of prior negative experience on current attitudes towards computers?

## Literature Review

Several information systems studies have identified attitude as one of the strongest factors influencing successful IT use in any organisation (Christensen, 1997; Agarwal & Prasad, 1998; Gilmore, 1998). Furthermore, researchers have found that although technological and financial barriers are quite significant in the processes of integrating IT into education, educators' attitudes, beliefs or perceptions are even more so (Gilmore, 1998). Attitudes have been found to affect perceptions, and hence, rates of adoption and extent of utilisation of IT (Agarwal & Prasad, 1998; Pajo, 2000). In line with this, Green (1996) and Christensen (1997) observed that educators are resistant to change, so changing attitudes is a key factor in fostering IT adoption in education. In this regard, studies of the potential influence of attitude have used such constructs as enthusiasm, anxiety, avoidance, enjoyment, obsession, phobia, perceived usefulness, perceived ease of use, and so on, to measure attitudes towards information technology (e.g. Knezek & Christensen, 2000; Agarwal & Prasad, 1998; Karahanna, Straub & Chervany, 1999; Venkatesh, Morris, Davis, & Davis, 2003). Most of the studies have also concluded that the personal and job characteristics of the individuals adopting a technology, such as, gender, age, experience, rank, and work/discipline/profession can significantly influence attitudes towards the technology and can help predict information technology acceptance and usage behaviour (Zmud, 1979; Rogers, 1995; Spotts, Bowman and Mertz, 1997; Mitra et al., 1999). Some of the findings and conclusions of studies of the influence of these individual variables are reviewed next.

*Gender:* Hafkin and Taggart (2001) stressed that it is imperative for women in developing countries to understand and use IT, in order to avoid being marginalized from the mainstream of their societies; and that gender issues should be considered early in the process of introducing IT in developing countries, so that gender concerns can be incorporated from the beginning and not as a corrective afterthought. Already, there are growing concerns about the low participation of women in information technology related careers (Green, 1996; Idowu, Adagunodo & Popoola, 2003). Factors that have been cited as affecting female enrolment in IT courses and their use of computers include socialization and cultural practices, importance of role models, access to computers, experience with computers, and attitude towards computers (Idowu, Adagunodo & Popoola, 2003; Olorunda & Oyelude, 2003). Studies have repeatedly found gender differences in attitudes towards IT. For instance, Venkatesh and Morris (2000) and Drup (2004) found that males had more positive attitudes towards the use of computers than females. Others such as Ray, Sormunen and Harris (1999) found the reverse to be the case. However, in contrast to both sides, researchers such as Busch

(1995), Idowu (1997), Asan (2000), and Tiamiyu, Ajayi and Olatokun (2002) found no significant relationship between gender and attitudes towards IT.

*Age:* Powell (1996) found a significant difference among faculty attitudes toward computers relative to age. Kjerulff et al. (1992) studied nurses in a medical school and found that older nurses tended to be more technology anxious than younger nurses. Igbaria and Parasuraman (1991) also reported an inverse relationship between computer attitudes and age. On the other hand, Tiamiyu, Ajayi and Olatokun (2002) found that age did not significantly associate with information anxiety.

*Academic Discipline:* Faseyitan and Hirschbuhl (1992) examined the effects of personal attributes, as well as organizational and attitudinal factors, on the adoption of computers for instruction by university faculty. The results from their study indicated that discipline, computer self-efficacy, computer utility beliefs, and attitude toward computers were predictors of adoption. Similarly, Larose et al. (1999), in a survey of faculty members at a major Quebec university, found significant differences in "anxiety about computer environments" according to the faculty of origin of respondents. An anonymous survey conducted by JSTOR among faculty members at higher education institutions in the United States also showed disciplinary differences in faculty perceptions and attitudes towards electronic resources (Heterick, 2002). However, Mitra et al. (1999), in a study of use and non-use of email by faculty members in a US university, found that even though users and non-users tended to differ in their attitudes towards computers, these differences were not significant by discipline.

*Academic Rank:* Zayim, Yildirim and Saka (2006), in a study of technology adoption among medical faculty in a Turkish university, found that faculty members whose ranks were lower than professor had higher self-efficacy beliefs and were more likely to be early adopters of technology. A related observation was made by Adeya and Oyelaran-Oyeyinka (2002) in their comparative study of Internet use by faculty members in Nigerian and Kenyan universities. In contrast, Larose et al. (1999) found that associate professors reported a significantly higher level of anxiety about computer environments than full professors.

*Experience with Computers:* Studies have shown that people who have used IT for some time exhibit more positive attitudes towards IT (Christensen, 1997; Gilmore, 1998). Powell (1996) found that faculty who integrated computer technology into non-computer courses perceived computers to be more useful, had more confidence, more liking and less anxiety toward computers than their cohorts who did not integrate. Igbaria and Chakrabarti (1990) also found that computer experience significantly affected attitudes toward computers. Similarly, Ajayi, Olatokun and Tiamiyu (2001) reported an inverse correlation of computing experience with information anxiety, computer phobia, and obsessive computing. Christensen (1997) observed that with familiarity, anxieties and fears tend to decrease and confidence increases, and that people with prior positive experience tend to be more willing to adopt a technology than those who have had either a prior negative experience or no experience at all. In line with this observation, Wilberly and Jones (1994), in a longitudinal study of the IT adoption behaviour of eleven humanist scholars over a five-year period, concluded that while lack of money may be only a minor factor in the slow adoption of IT, frustrating experience with computers and negative reports of such experiences played a greater role in hindering the adoption of IT by the scholars. Agbonlahor (2006) showed that frequency of IT use and number of computer applications used by Nigerian university academics was significantly influenced by perceptions of ease of use.

## Theoretical Framework

Agarwal (2000) noted that the term *individual differences* can generally be interpreted to connote dissimilarities among people, including differences in perceptions and behaviours, traits and personality characteristics, and in variables that connote differences attributable to circumstances such as education and experience. She identified a variety of research streams, including information systems, production, and marketing, that have found that individual differences can play a crucial role in the implementation of any technological innovation, and pointed out that most of the major theories in technology acceptance recognize the importance of individual differences in influencing technology acceptance and usage behaviour.

One of such theories was developed by Zmud (1979), based on a review and synthesis of the research literature on IT implementation and use. He developed a conceptual model to explicate two causal pathways through which individual differences influence IT implementation success, namely: cognitive and attitudinal. He further noted that individual differences can be categorized into three classes: (1) cognitive style, (2) personality, and (3) demographic/situational variables. Cognitive style represents the mode of functioning shown by an individual in his or her perceptual and thinking behaviour. Personality refers to the cognitive and affective structures (such as locus of control, need for achievement, extroversion/introversion, risk-taking propensity, etc) maintained by individuals to facilitate adjustments to events, people, and situations encountered. Lastly, demographic/situational variables refer to personal characteristics such as intellectual abilities, domain-specific knowledge, sex, age, experience, education, professional orientation, and organizational level (Zmud, 1979). This study focused on the relationships between demographic/ situational attributes of lecturers and their attitudes towards information technology.

Much of the research that have studied the relationships between individual characteristics and IT adoption have focused on commercial environments in developed countries (e.g. Agarwal and Prasad, 1999; Venkatesh & Davis, 1996), and there is a dearth of studies that are situated in developing countries or in educational environments. This study therefore sought to extend knowledge by examining the relationships between the individual characteristics and technology-related attitudes of adopters in a higher educational setting in a developing country context.

This study utilises Zmud's (1979) model in investigating the relationship between individual differences and attitudes towards IT by lecturers in Nigerian universities. The study posits that attitudes of lecturers towards IT will be influenced by the following personality/situational variables: gender, age, academic rank, academic discipline, and lecturers' experience with using IT.

## Methodology

The study population comprised lecturers in all federal and state universities in Nigeria. Statistics from Nigeria's National Universities Commission (NUC) for the year 2000, which was the most comprehensive statistics available at the time of this study in 2003, gave the total number of academic staff in federal and state universities in Nigeria as 21,809, comprising 15,649 males and 6,160 females. The NUC statistics also gave the total number of federal and state universities in Nigeria as 40; made up of 25 federal and 15 state universities.

A survey design was used for data collection, with the study targeting a sample size of 1000 lecturers (about five per cent of the NUC figure) from the universities. A proportional sampling procedure was used to select lecturers from each university and, within university, the number of lecturers from each discipline. A self-administered questionnaire was used in data collection. The questionnaire sought, amongst other things, information about the demographic attributes of respondents, frequency of computer use, length of time using computers, and previous experiences with using computers. It also measured respondents' attitudes towards IT and the use of IT in education using five constructed and validated scales that respectively sought to measure respondents' level of *enjoyment, enthusiasm, anxiety* and *avoidance* relative to use of IT, and *attitude towards use of IT in education*. The attitudinal variables were defined and measured as follows:

- E*njoyment:* Amount of pleasure or feeling of satisfaction derived from (the prospect of) using IT.
- *Enthusiasm:* Level of excitement about IT use.
- *Anxiety:* Extent to which an academic feels uneasy or apprehensive about using IT.
- *Avoidance*: Extent to which a lecturer shies away from using IT.
- *Attitude towards using computers in education*: A lecturer's perception of the value of the use of computers for his/her own

productivity, as well as for the benefit of his/her students.

The constructed scales all had 5-point Likert-type items and were adapted from the Faculty Attitudes Toward Information Technology questionnaire, version 1.1 (FAIT v1.1), an instrument developed by Knezek, Christensen, Miyashita & Ropp (2000) for assessing the attitudes of university lecturers' towards new information technologies. The FAIT instrument has been validated in several studies (e.g. Gilmore, 1998; Knezek et al., 1999; Soloway, Norris, Knezek, Becker, Riel and Means, 1999). The internal consistency tests of the scales constructed for this study yielded Cronbach alpha values ranging between 0.63 and 0.73.

A total of 718 (out of the 1000 targeted) completed and usable copies of the questionnaire were retrieved from the sampled lecturers and used in the data analyses, giving a response rate of 71.8% (Table 1).

Five hundred and twenty-nine of the respondents (73.7%) were males, and 170 (23.7%) were females. Most of the sampled lecturers were between 30 to 49 years old. The lecturers were from seven major faculty groups (Table 2) and occupied academic positions that ranged from Graduate Assistant to Professor (Table 3).

## Results

### Attitudes Towards IT

Item scores on a scale were added up to generate a respondent's attitude score on that scale. Scale items that were negatively worded were reverse coded. Thus, on the Enjoyment, Enthusiasm, and Avoidance scales that had three items each, respondents could score a maximum of 15 points on each scale, while respondents could score a maximum of 20 points each on the Anxiety and Use of computers in Education scales that had four items each. The results show that attitudes of the lecturers towards information technology were generally positive, as their average score on each scale were closer to the scale maximum than the scale minimum (Table 4).

**Table 1: Questionnaire Distribution and Response Rates**

| University | Questionnaire Copies Distributed | Questionnaire Copies Returned and Usable | Response Rate (%) |
|---|---|---|---|
| Ahmadu Bello University, Zaria | 120 | 107 | 89.2 |
| Obafemi Awolowo University, Ile-Ife | 155 | 135 | 87.1 |
| University of Nigeria, Nsukka | 150 | 122 | 81.3 |
| University of Jos | 90 | 34 | 37.8 |
| University of Port Harcourt | 68 | 44 | 64.7 |
| University of Agriculture, Abeokuta | 48 | 48 | 100 |
| University of Lagos | 105 | 58 | 52.3 |
| University of Ilorin | 70 | 49 | 70.0 |
| University of Ibadan | 155 | 96 | 61.9 |
| Delta State University, Abraka | 39 | 25 | 64.1 |
| **Total** | **1000** | **718** | **71.8** |

**Table 2: Faculty Groups of Respondents**

| Faculty Groups | Frequency | % |
|---|---|---|
| Arts | 166 | 23.1 |
| Social Sciences/Law | 88 | 12.3 |
| Medical Sciences/ Veterinary Medicine | 79 | 11 |
| Science | 130 | 18.1 |
| Education | 126 | 17.5 |
| Engineering/Technology | 61 | 8.5 |
| Agriculture | 68 | 9.5 |
| **Total** | **718** | 100 |

**Table 3: Academic Ranks of Respondents**

| Academic Ranks | Frequency | % |
|---|---|---|
| Graduate Assistant | 47 | 6.5 |
| Assistant Lecturer | 90 | 12.5 |
| Lecturer II | 150 | 20.9 |
| Lecturer I | 210 | 29.2 |
| Senior Lecturer | 132 | 18.4 |
| Reader/ Associate Professor | 47 | 6.5 |
| Professor | 28 | 3.9 |
| No Response | 14 | 1.9 |
| **Total** | **718** | **100.0** |

**Regularity of Use of IT**

In this study, use of IT was characterised and measured by use of computers, in line with other studies which have found use of computers to be a good indicator of general IT use (e.g. Anadarajan, Igbaria & Anakwe, 2002). A total of six hundred and fifty-five respondents (91.2%) reported that they used computers and had been using computers for periods ranging from less than a year to over 30 years with a mean of 5.5 years and a median of 4.0 years. The respondents were categorized into regular, non-regular and non-users based on their reported frequency of computer use. Regular users were classified as those who used computers everyday or every two to three days; non-regular users were classified as those who used computers less often; and non-users were classified as those who did not use computers (Table 5).

**Table 5: Regularity of Computer Use**

| | Frequency | Percent |
|---|---|---|
| Regular | 486 | 67.7 |
| Irregular | 169 | 23.5 |
| Never | 37 | 5.2 |
| Total | 692 | 96.4 |
| No response | 26 | 3.6 |
| Total | 718 | 100.0 |

**Gender and Attitudes towards IT**

Table 6 presents the gender distribution of the means and standard deviations of respondents' scores on

**Table 4: Mean and Median of Respondents' Attitude Scores**

| | Enthusiasm | Enjoyment | Anxiety* | Avoidance* | Computers in Education |
|---|---|---|---|---|---|
| N | 713 | 715 | 712 | 711 | 693 |
| Mean | 12.79 | 12.67 | 15.44 | 12.58 | 17.00 |
| Std. Error of Mean | .098 | .099 | .133 | .111 | .103 |
| Median | 14.00 | 13.00 | 16.00 | 14.00 | 17.00 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 6.00 |
| Maximum | 15.00 | 15.00 | 20.00 | 15.00 | 20.00 |
| Alpha | 0.71 | 0.69 | 0.64 | 0.73 | 0.63 |
| * Due to reverse coding, higher scores indicate lower anxiety or avoidance. | | | | | |

the attitude scales. From the data presented, males recorded higher mean scores on all five attitude scales than females. A t-test showed that with the exception of enjoyment, gender differences in attitudes were significant for all the other attitude scales.

**Age and Attitudes towards IT**

No significant differences in scores were observed on any of the attitude scales when compared among the different age groups ($p > 0.05$).

**Table 6: Gender Differences in Attitudes towards IT**

| | Gender | N | Mean | Std. Deviation | T | Df | p | Remark |
|---|---|---|---|---|---|---|---|---|
| Enthusiasm | *Male* | 526 | 12.91 | 2.592 | 2.300 | 692 | 0.022 | Significant |
| | *Female* | 168 | 12.38 | 2.662 | | | | |
| Enjoyment | *Male* | 527 | 12.76 | 2.548 | 1.397 | 894 | 0.163 | Not Significant |
| | *Female* | 169 | 12.44 | 2.762 | | | | |
| Anxiety | *Male* | 525 | 15.62 | 3.505 | 2.373 | 691 | 0.018 | Significant |
| | *Female* | 168 | 14.88 | 3.562 | | | | |
| Avoidance | *Male* | 523 | 12.78 | 2.822 | 2.528 | 259.36 | 0.012 | Significant |
| | *Female* | 169 | 12.09 | 3.173 | | | | |
| Computers in Education | *Male* | 510 | 17.10 | 2.649 | 1.979 | 673 | 0.048 | Significant |
| | *Female* | 165 | 16.62 | 2.921 | | | | |

**Academic Discipline and Attitudes towards IT**

Table 7 presents the means and standard deviations of respondents' scores on the attitude scales distributed by faculty groups. From the data presented, lecturers in the Arts and Engineering groups appeared to be less enthusiastic about IT than lecturers in other faculty groups. Furthermore, on the enjoyment scale, the Medical Sciences/Veterinary Medicine and Agriculture groups scored higher than all others possibly indicating that they experienced higher levels of enjoyment with using IT. Lecturers in the Education and Agriculture groups seemed to be less technology anxious than lecturers in the other groups, while lecturers in the Agriculture faculty group reported the least level of technology avoidance amongst all faculty groups.

**Table 7: Respondents' Attitude Scores by Faculty Groups**

| Attitude | | Faculty | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Arts | Social Sciences/ Law | Medical Sciences/ Veterinary Medicine | Science | Education | Engineering/ Technology | Agriculture |
| **Enthusiasm** | N | 158 | 87 | 76 | 121 | 121 | 58 | 65 |
| (F = 1.009, p = 0.418) | Mean | 12.59 | 13.09 | 13.17 | 12.82 | 13.03 | 12.95 | 13 |
| | Std. Dev. | 2.58 | 2.02 | 2.08 | 2.53 | 2.72 | 2.13 | 2.69 |
| **Enjoyment** | N | 158 | 87 | 76 | 121 | 121 | 58 | 65 |
| (F = 1.971, p = 0.068) | Mean | 12.44 | 12.68 | 13.42 | 12.79 | 12.78 | 12.83 | 13.09 |
| | Std. Dev. | 2.77 | 2.55 | 1.88 | 2.28 | 2.54 | 1.99 | 2.40 |
| **Anxiety** | N | 158 | 87 | 76 | 121 | 121 | 58 | 65 |
| (F = 2.006, p = 0.063) | Mean | 15.34 | 15.55 | 16.3 | 15.27 | 15.91 | 15.26 | 15.95 |
| | Std. Dev. | 3.41 | 2.98 | 2.85 | 3.12 | 3.61 | 2.89 | 3.69 |
| **Avoidance** | N | 158 | 87 | 76 | 121 | 121 | 58 | 65 |
| (F = 2.125, p = 0.049) | Mean | 12.42 | 12.45 | 12.92 | 12.76 | 12.56 | 12.26 | 13.75 |
| | Std. Dev. | 2.77 | 3.05 | 2.82 | 2.80 | 3.03 | 3.30 | 2.02 |
| **Computers in Education** | N | 158 | 87 | 76 | 121 | 121 | 58 | 65 |
| (F = 1.707, p = 0.117) | Mean | 16.70 | 16.59 | 17.11 | 16.83 | 17.17 | 17.43 | 17.63 |
| | Std. Dev. | 2.85 | 3.02 | 2.58 | 2.58 | 2.89 | 2.41 | 2.18 |

ANOVA test results showed that the observed differences in attitudes were significant only for the avoidance scale (F= 2.125, p <0.05). A post hoc analysis (Duncan multiple ranges test) revealed that lecturers in the Agriculture and Medical Sciences/ Veterinary Medicine groups demonstrated significantly less technology avoidance than lecturers from other faculties.

**Academic Rank and Attitudes towards IT**

When compared across academic ranks, ANOVA test results showed no significant differences in the average scores of respondents on the five attitude scales (p > 0.05).

**Experience with Using Computers and Attitudes towards IT**

The length of lecturers' experience with using computers correlated significantly, though weakly, with their attitudes towards IT (Table 8). Attitudes towards IT were also compared for the three user groups (regular, irregular and non- users). Aside the attitude towards computers in education scale, significant differences were found among the three groups of respondents on all the other scales (Table 9). Regular users were the most enthusiastic, enjoyed IT more, and displayed the lowest level of computer anxiety. Computer avoidance did not however differ between regular and irregular users – a possible

indication that even though their use of computers was not regular, irregular users were not consciously avoiding them. They probably didn't have enough computer related tasks to justify regular use. Non-users, on the other hand, displayed the highest level of computer avoidance – possibly indicating that a number of them were consciously avoiding the use of IT.

assess the influence of previous negative experiences on the five attitude variables (Table 10). The results showed that negative experiences with using IT significantly influenced attitudes towards IT. The influence of negative experiences on respondents' scores on the attitude scales ranged from as low as 6.6% for attitudes towards computers in education ($R^2$ = 0.066) to as high as 17.9% for computer

**Table 8: Correlation of Experience with Using Computers and Attitudes towards IT**

| | | *Computers in Education* | *Enthusiasm* | *Enjoyment* | *Anxiety* | *Avoidance* |
|---|---|---|---|---|---|---|
| **How long using computers (yrs)** | Pearson Correlation | 0.183(**) | 0.110(**) | 0.115(**) | 0.145(**) | 0.156(**) |
| | p (2-tailed) | 0.000 | 0.007 | 0.005 | 0.000 | 0.000 |
| | N | 583 | 599 | 601 | 600 | 597 |
| ** Correlation was significant at the 0.01 level (2-tailed). | | | | | | |

**Table 9: ANOVA Differences in Attitude among Respondents Grouped by Regularity of Computer Use**

| | F | p | Remark |
|---|---|---|---|
| **Enthusiasm** | 11.576 | 0.000* | Non users least enthusiastic, regular users most enthusiastic |
| **Enjoyment** | 31.422 | 0.000* | Regular users showed highest levels of enjoyment. |
| **Anxiety** | 20.122 | 0.000* | Non users most anxious, regular user least anxious |
| **Avoidance** | 11.230 | 0.000* | No sig. difference between regular and irregular users. Non users displayed highest levels of avoidance |
| **Computers in Education** | 2.427 | 0.089 | No sig. difference between the three groups of users |
| * Test was significant at the .05 level. | | | |

### Relationship between Current IT Use and Previous Negative Experience with Using IT

Previous negative experience with IT was measured using a scale composed of two items framed as 5-point semantic differential with values ranging from "not at all" to "a lot". Alpha coefficient for the scale was 0.73. Regression analyses were used to

avoidance ($R^2$ = 0.179). The fact that previous negative experience with using IT had the greatest influence on computer avoidance implies that respondents who were currently avoiding the use of IT probably had unpleasant experiences with using computers, and they were yet to overcome such experiences.

**Table 10: Influence of Prior Negative Experience on Attitudes towards IT**

| Variable | $R^2$ | Std. Error of the Estimate | Beta | P |
|---|---|---|---|---|
| Enthusiasm Score | 0.075 | 2.528 | -0.274 | 0.000* |
| Enjoyment | 0.098 | 2.463 | -0.313 | 0.000* |
| Anxiety | 0.080 | 3.177 | -0.282 | 0.000* |
| Avoidance | 0.179 | 2.637 | -0.423 | 0.000* |
| Computers in Education | 0.066 | 2.618 | -0.256 | 0.000* |
| Predictor: Previous negative experience with computers<br>*: Test was significant at the 0.05 level. | | | | |

## Discussion

The lecturers in this survey generally had positive attitudes towards IT and the use of IT in education; however, some variations associated with some of the individual characteristics were found. These findings are discussed next.

*Gender:* Significant gender differences were observed in respondents' scores on the Enthusiasm ($t = 2.30$, $p<0.05$), Anxiety ($t = 2.373$, $p <0.05$), and Avoidance ($t =2.528$, $p<0.05$) scales. On these three scales, female respondents scored significantly lower than male respondents. This implies that female lecturers were less enthusiastic, more anxious, and avoided using IT more than male lecturers. These are all factors that can significantly affect the type and intensity of interactions that female lecturers have with IT. Both genders did not differ significantly in their scores on the Enjoyment scale ($t = 1.397$, $p >0.05$); possibly indicating that male and female lecturers did not differ significantly in the (perceived) amount of enjoyment they derived from (the prospect of) using IT. This finding lends some support to Okebukola (1993) and Dorup (2004), who found that females were more negative in their attitudes to computers than males. It however contradicts Ajayi, Olatokun and Tiamiyu (2002), who found no significant association between gender and information anxiety. The results from this study also imply that activities and policies geared towards enhancing IT adoption by female academics should seek to help them develop positive attitudes and perceptions about IT very early in their academic careers. This should be a deliberate policy issue by universities in a developing country such as Nigeria. In addition, since males and females did not differ significantly in their perceived enjoyment of IT, training which aims to make the use of IT enjoyable could facilitate the development of positive attitudes by all academics – male and female alike.

*Age:* No significant differences were observed in scores on any of the attitude scales when compared among the different age groups. This result contrasts with Igbaria and Parasuraman (1991) and Kjerullf et al. (1992), who reported an inverse relationship between computer attitudes and age. On the other hand, it supports Tiamiyu, Ajayi and Olatokun (2002), who found no significant association between age and information anxiety, and Barnes (2003), who found that age did not significantly influence attitude towards technology integration by lecturers in a US university. This finding implies that older academics did not necessarily have more positive attitudes towards IT than younger ones (and vice-versa), thus implying that intervention programmes aimed at facilitating IT adoption in Nigerian universities do not necessarily have to be targeted at lecturers in specific age brackets.

*Academic Discipline:* Although differences in average attitude scores existed among lecturers from the seven faculty groups, these differences were only significant for computer avoidance ($F = 2.125$, $p <0.05$). Post hoc analysis showed that lecturers from Agriculture and Medical Sciences faculties demonstrated significantly less computer avoidance than lecturers from other faculty groups. This is in contrast to Larose et al. (1999), who found that respondents from the faculty of applied sciences exhibited a more positive attitude towards ICTs than respondents from faculty of education. They also

found that teachers from the faculty of administration displayed a significantly more favourable attitude towards the usefulness of ICTs for teaching than their colleagues in the faculties of law, theology, ethics and philosophy. Furthermore, they found that teachers in applied sciences had significantly lower level of anxiety about computer environments than their colleagues in the faculties of theology, ethics, philosophy and education. The findings from this study seem to imply that irrespective of discipline, Nigerian university lecturers are generally positive about the prospect of adopting and using IT. However, when it comes to actual adoption, there seems to be some measure of avoidance though this is less pronounced among lecturers from the faculties of Agriculture and Medical Sciences. One way to overcome this attitude is to promote the utility of IT in enhancing teaching, learning and research in different disciplines via demonstrations and hands-on trainings customized for each faculty. Mentoring by lecturers from the same discipline who have successfully adopted IT in their work might also be a good strategy toward this end.

*Academic Rank:* No significant differences were observed in the attitude scores of lecturers in different academic ranks. This contrasts the findings of Zayim, Yildirim and Saka (2006), Adeya and Oyelaran-Oyeyinka (2002) and Mitra et al. (1999), who found that faculty members in higher ranks tended to have less positive attitudes towards computers. It is also contrary to Larose et al (1999), who found that associate professors were more anxious about computer environments than full professors. Thus, academic rank is not a significant factor that influences the attitudes of Nigerian university lecturers towards IT. This might be due to the fact that computer use by Nigerian university lecturers was still a relatively recent phenomenon as at the time of the study (most of them had been using computers for an average of 5.5 years). Thus, there is a likelihood that lecturers who were older in the academic cadre (Senior Lecturers and above) and those who were younger in the academic cadre (Lecturer 1 and below) have had about the same kind of experiences with using computers and have probably developed the same kinds of attitudes towards computers.

*Experience with Computers:* Attitudes towards IT correlated positively with the number of years for which respondents had used computers. This supports Christensen's (1998) observation that more positive attitudes towards IT are exhibited by people who have used them for a longer period. The implication of this is that lecturers need to be introduced and equipped to integrate IT into their job functions early in their academic careers, so as to develop positive attitudes, as well as competence over the years. This view is buttressed by the fact that the strongest correlation was found between the numbers of years for which lecturers had used computers and their attitudes towards the use of computers in education. When compared among the three user groups (regular, non-regular and non users), regular users were more enthusiastic, enjoyed using IT more and were less anxious about the use of computers than lecturers in the other two categories. This supports the assertion of Christensen (1998) that familiarity with IT tends to decrease anxieties and fears while increasing confidence. The finding also supports that of Idowu (1997) who found that frequency of use of computers was significantly related to positive attitudes towards computers. Regular and irregular users did not however differ in their level of IT avoidance – it could be that irregular users did not have enough computer-based tasks to warrant regular use. It could also be that they lacked the skills and training to use computers for more than a modicum of tasks. This is an area that might require further investigation. Non-users displayed the highest level of computer avoidance and their non-use might be because they were deliberately avoiding the use of IT.

The attitudes of the lecturers towards IT were significantly influenced by their previous negative experience with using computers. In fact, previous negative experience accounted for between 6.6 to 17.9% of the variations in respondents' scores on the various attitude scales. It also had the most significant influence on Computer avoidance ($R^2 = 0.179, p < 0.001$). This implies that a significant reason for avoiding computers by lecturers was a negative previous experience. It might even be the underlying factor for non-use of computers by some lecturers. These results have implications for the kinds of training and support provided to lecturers in their use of IT. If universities have resource centres or persons within the university upon whom lecturers can call and receive prompt assistance whenever

they run into problems with using computers, then any frustrations encountered might not be sufficient to make them give up using computers altogether. The active support of colleagues and peers who have successfully adopted IT can also be of assistance in this aspect.

The results also indicate that one of the ways to get university academics to adopt and use IT regularly in their job functions is to help them form positive perceptions about IT. In summary, facilitating early adoption of computers, providing effective and efficient support services, as well as providing well-targeted training and mentoring programs have all been indicated in this study as factors that can aid in the development of positive attitudes by lecturers. These are issues that university administration and other bodies interested in integrating IT into university education need to consider in designing programmes and strategies.

## Recommendations and Conclusion

A number of issues can also be highlighted from the results of this study:

1. Organizational facilitation for use of IT by lecturers needs to be improved in each university. Especially important is the need to provide functional support centres where lecturers who have problems with IT equipment or software can go and receive prompt attention whenever they run into problems with using IT.
2. Programmes and activities aimed at integrating IT into the university must take into consideration differences in the attitudes towards IT by academics in different faculties. Change agents might need to devise different strategies for different faculties – "one size fits all" strategies are not likely to work very well.
3. The significant differences observed in attitudes of male and female lecturers towards IT imply that there might be need to adopt different strategies in facilitating IT adoption for lecturers of different genders. Activities geared at increasing effective use of IT by female academics should aim at reducing anxiety about, and avoidance of computers by female lecturers. One strategy could be to introduce IT through informal classes rather than through formal lectures. Mentoring by female academics who have successfully adopted IT in their work can also help to create more positive attitudes about the use of IT.
4. It would appear that the best strategy might be to target lecturers in different disciplines, and within discipline, package different intervention programmes for lecturers of different sexes.

From the results of the study, it can be concluded that Nigerian university lecturers generally have positive attitudes towards IT and the use of IT in education. Furthermore, lecturers' attitudes towards IT appear to be influenced by their gender or experience with using IT. In fact, previous negative experience with using IT had the most significant influence on the lecturers' attitudes towards IT. Therefore, programmes geared towards facilitating the integration of IT into Nigerian universities are likely to meet with better success if they are gender- and discipline- targeted, as well as provide enough support for everyday use of IT by lecturers. Such programs should also, as a matter of policy, introduce lecturers to use of IT very early in their academic careers, so as to facilitate the formation of positive attitudes very early. Efficient and effective institutional support for lecturers' use of IT is clearly needed, as it will help alleviate the effect of negative experiences with using IT.

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