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## HUMAN DEVELOPMENT IMPLICATIONS OF EXPANDED USAGE OF ICTs IN ACCOUNTING

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### ABSTRACT

*Access to information in a society is considered an important dimension of human development. ICTs offer the potential to contribute to human development by providing easy access to information. As stated in the World Bank report (2008), significant progress has not been noticed in terms of ICTs utilization. This study argues that innovative use of ICTs in accounting activities has the potential to promote the achievement of a major objective of human development by not only placing more quality information at the disposal of the populace, but also accelerating their usage in other areas of the economy.*

*The study through a review of relevant literature identifies the potential contributions of greater access and usage of ICTs in the accounting function to human development. Using a questionnaire survey of 108 professionals, it also examines the extent of usage of ICTs by accountants in comparison to other business professionals. The study finds that ICTs usage by accountants is yet at a low level with no significant differences in access and usage between accounting and non-accounting business professionals. From the results, high cost of access ranks first among the major challenges identified with infrastructural inadequacies and lack of requisite level of IT education following closely. The study recommends greater involvement of business organizations, more active role for accounting professional bodies, educational institutions and professionals and government's sincere commitment to infrastructural improvements in addressing these challenges.*

### I. INTRODUCTION

There has been much discourse and increasing global awareness on the potential and promise of Information and Communications Technologies (ICTs) for human development especially for the developing countries. It is believed that increased usage of ICTs has the potential to accelerate socio-economic development, alleviate poverty and generally improve standards of living in these countries (UNDP, 2006). Better access to information offered by ICTs is expected to extend the range of goods and services available to individuals in a society and to thus play a role in improving their quality of life. Based on this expectation, various policies have been adopted to promote ICTs usage in Nigeria. A notable step in that direction was the approval in March 2001 of a National Policy for Information Technology.

The National Policy for Information Technology had a vision "to make Nigeria an information technology (IT) capable country in Africa and a key player in the information society by year 2005, using IT as engine for sustainable development and global competitiveness" (NITDA, 2004). The policy further stated that government recognizes IT as a strategic imperative for national development and taking cognizance of its immense benefits, has resolved to provide considerable national resources both financial and otherwise, for the realization of the IT vision statement. The policy outlined lofty objectives which if realized should lead to improvements in human development in Nigeria and acknowledged the need for collaboration of all stakeholders, the government, the private sector institutions and individuals in achieving them. However, according to the UNDP (2006), there has not been much progress in Nigeria towards an information based society. Although, ICTs utilization has noticed substantial achievement in the area of mobile telecommunications; access to telephones increasing at a tremendous rate (Mowete, 2007), Internet penetration remains at a low level with the majority of Internet users found in Lagos the commercial nerve centre of the nation. How then does the country achieve ICTs popularization and deployment in communities to promote human development?

Since ICTs constitute the infrastructure of the knowledge economy, skilled professionals will be required who create, design, operate, maintain and deploy ICTs. The accounting professional who performs the role of an information specialist in organizations is one of such skilled professionals, involved in information systems design, development,

implementation and usage. Accountants (as well as other specialists) are increasingly being called upon to integrate systems technology within the managerial and organizational structures of their clients and employers (Dillard, 2000). Accounting has come to occupy an ever more significant position in the functioning of the modern organization. The profession can thus be regarded as a powerful stakeholder in the IT vision of Nigeria.

However, difficulties in measuring benefits in relation to costs have been identified as one of the major constraints to information systems and ICTs investments in both public and private sector organizations. Decisions to invest in ICTs have emphasized profits or cost reduction benefits derivable from such investments, consequently, studies of the benefits of information systems have focused largely on the financial benefits of ICTs (Fairbank, 2000). While success in bringing human development concerns into ICT application is likely to be conditioned by the perception of benefits of different stakeholders including government, the private sector, the individual and the society (UNDP, 2004), little or no research exists on these seemingly less quantifiable benefits of ICTs investments in organizations.

This paper attempts to highlight the human development benefits of the application of ICTs in accounting functions in organizations. The following three research questions are addressed: What are the human development implications of ICTs usage? What is the role of accounting in promoting ICTs usage? To what extent has the accounting professionals embraced ICTs usage in Nigeria? The paper through a review of relevant literature, explores the relationship between ICTs, accounting and human development and the status of ICTs usage in Nigeria. It attempts to measure the extent of ICTs usage among accountants in comparison with other business professionals and to identify challenges to such usage. It also offers suggestions to help strengthen efforts at utilizing ICTs to achieve the human development objective in Nigeria. It is hoped that the study will stimulate the interest of stakeholders in collaboration efforts to deploy ICTs to enhance human development.

The rest of the paper is presented as follows; section II considers the concepts underlying the study. Section III examines the method of the study, section IV highlights the findings, section V concludes the paper and section VI provides suggestions on ways of strengthening the efforts to utilize ICTs in enhancing human development.

## II. CONCEPTUAL FRAMEWORK HUMAN DEVELOPMENT

MacDonald (1972) defined development as "the act of bringing out what is latent or potential in". Human development may therefore be viewed as the act of bringing out what is latent or potential in human. Human development according to UNDP (2006) is about creating an environment in which people can develop their full potential and lead productive, creative lives, in accord with their needs and interest. UNDP further stated the purpose of development as that of improving peoples' lives, by expanding the choices they have to lead lives that they value. Expanding peoples' choices fundamentally involves building human capabilities, i.e. the range of things people can do or be in life, in the area of health, knowledge, access to resources needed for a decent standard of living and participation in the life of the community.

Knowledge or information is, of course, basic to achieving all other aspects of human development. Without knowledge for instance, the populace cannot appreciate all that constitute hazards to their health nor good standards of living. Knowledge is believed to play a critical role in expanding people's choices far beyond those that may be available to them otherwise. These choices generate opportunities for increased participation economically, socially, politically and culturally (UNDP, 2004). An important dimension therefore captured in a number of the tools used to measure a nation's extent of human development relates to knowledge. It is believed that an information-society would enjoy an accelerated and improved development in regional economy, society, culture and technology (JICA, 2005). Much of the gap between developed and developing countries and between the rich and the poor within countries has been argued to arise from the difference in access to knowledge and education (CAB International, 2006). It is no wonder that every society is striving to be an Information-based society.

The extent of human development within nations is usually measured using several tools, which capture different dimensions of living productive and creative lives. The major tools include the Human Development Index (HDI), Gender Related Development Index (GDI), Gender Empowerment Measure (GEM) and Human Poverty Index (HPI). An essential component of all these tools is access to knowledge.

## INFORMATION SYSTEMS AND INFORMATION COMMUNICATION TECHNOLOGIES

An information system is a means of collecting, entering and processing data and of storing, managing, controlling and reporting information so that an organization can achieve its goals and objectives. It refers to the complete apparatus for handling all aspects of information within an organization; including everything from the completely human-oriented aspects of information to the technologically-oriented aspects (Oliver *et al.*, 1990). Information systems are believed to be traditionally the result of the intersection between managerial information needs and information techniques (Desmond & Lebas, 1998). They have since their commercial introduction, gone through several developmental stages, from being organized systems processing business transactions, to systems providing support for management decisions and then to providing support for strategic decisions. They have advanced through the period of manual processing using mechanical aids to the current period of advances in information and communications technologies (ICTs).

Information is regarded as a key organizational resource essential to accomplishing important organizational activities including problem-solving, action generating (Starbuck, 1983) and increasing an organization's knowledge base. Information (or knowledge) has been suggested as a more important success factor than other more traditional factors like production efficiency, marketing, capital surplus. Increasing organizational knowledge extends beyond merely the creation function, to include the ability to distribute knowledge throughout the organization, so that it is ultimately embodied in the product or services offered to its customers. This dissemination process requires a systematic means; a haphazard mechanism will simply not do in today's competitive environment (Nonaka & Takeuchi, 1995 cited in Fairbank, 2000). This is where ICTs come in as mechanisms for effective dissemination of knowledge.

ICTs are basically information handling tools; a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information, including the old tools such as radio, television and telephone, as well as the new tools of computers, satellite and wireless technology and the Internet (UNDP 2004). ICTs as stated in the Nigerian Policy on IT are computers, ancillary equipment, software and firmware (Hardware) and similar procedures, services (including

support services) and related resources (NITDA, 2004). They include any equipment, or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information. ICTs are simply often just referred to as IT, although, Nicol (n.d., cited in Olubamise & Awe, 2008), suggested a classification of ICTs, (which indicated that IT is only a subset of ICTs) into the following three groups:

- a. Information Technology - the use of computers to process data and save time.
- b. Telecommunications technologies - include telephones, mobile and fixed (with facsimile facilities) and broadcasting through radio, television and often through satellites.
- c. Networking Technologies - which include the Internet, mobile phone technology, Voice over IP telephony and satellite communications.

The use of ICTs was introduced into business information systems in the 1950s. These systems, which were then made up of large mainframe computers were strictly operations support systems, responsible for processing day to day transactions of the business organization. By 1960s, attempts were made to use information systems for the support of business decisions. The management information systems (MIS), which were used to generate predefined reports in support of management decisions, were such first attempts. The advancements in information technology in the 1970s enabled the introduction of decision support systems which were interactive systems that allowed users to customize output and make enquiries. They were used for planning, modeling, analyzing alternatives and decision-making. Further developments in the 1980s saw the introduction of decentralized computing, with processing of information being done by users for their own purpose with personal computers, spread around the organization instead of one large mainframe computer for the entire enterprise. This however, was attended with generation of mounds of reports, which were often too detailed and voluminous to be of much value to the busy executives. The executive information systems were thus developed to mitigate information overload, by giving the executives exactly the information they wanted. The 1980s also saw the first commercial application of artificial intelligence techniques in the form of "expert systems" which are computer programmes that make expert knowledge in defined areas available to managers, thus bringing

nearer, the realization of the promise of decision-making support, first attempted in management information systems in the 1960s (Delmond and Lebas 1998). The revolution in ICTs witnessed in the 1990s, has however had significant impact on the way information is accessed and used. The 1990s saw the most important development in ICTs, the convergence of communication and information media into a single medium, the Internet. With the Internet came greater access to information both for the business and the society in general (CAB International, 2006).

ICTs have had a significant impact on both commerce and society in general affecting virtually every aspect of life. ICTs are being used in offices, homes, banks, supermarkets, schools, government establishments and other places to carry out transactions, provide information, record data, make decisions and perform an ever increasing range of tasks (Lucey, 1997). Information is now being used by managers of business organizations as a strategic tool for developing new products and services, improving on organizational efficiency and in gaining competitive advantage. It is also being used by managers of public establishments and the state to define new roles of the citizens, determine inter-relationship between citizens and between nations and develop short and longer term plans for the upliftment of the citizenry and the nation in general (Mohammed, 2005). This remarkable achievement is directing attention to the potential of ICTs in enhancing human development (UNDP, 2004).

### **SIGNIFICANCE OF ICTs TO HUMAN DEVELOPMENT**

ICTs derive their significance in the human development equation from being one of the most important means of transferring knowledge. They offer potential for rapid acquisition of knowledge and enable the flow of knowledge across geographical, political, economic and social borders (UNDP, 2004). Such easy access to knowledge provided by ICTs has a number of advantages including the following:

- i. Allowing the capture and use of global knowledge base for better management of organizational and national resources;
- ii. making statistics available for comparison and for policy making;
- iii. allowing people more participation in government through easier access to government information;
- iv. providing a means for people to improve on their health;
- v. providing opportunity for education and training at reduced cost; and

- vi. addressing the gap in access to knowledge.

Apart from enhancing the flow of knowledge, ICTs also offer contributions to human development in other ways including the following:

- i. The creation of new jobs and business opportunities, for overall economic growth of a nation and the global economy. For instance, in Nigeria, telecommunications industry ranks as the fastest growing employer of labour. According to available statistics, total number of employees in that sector increased from 17,409 in 1999 to 467,260 in 2005 (Mowete, 2007);
- ii. supporting operational efficiencies and innovations in products and processes in other industries including, the manufacturing, air travel, banking, resources extraction, hospitality and entertainment thus enhancing human productivity (UNDP, 2004); and
- iii. simplifying and reducing tasks needing manual skill and strength, and reducing efforts that people exert and thereby enhancing human productivity (Lucey, 1997).

The size of the national ICT infrastructure is thus often taken as a good indication of the nation's progress towards an information-based society and the usage of the Internet a good indicator of the extent of ICTs usage, as it requires the integration of most of the individual components - telecommunications, infrastructure, electricity, computers and the skills to use these technologies. Measuring the number of Internet users in developing countries is considered more difficult because many people share accounts, use corporate and academic networks or visit rapidly growing cyber cafes, tele-centers and business services, the measure nevertheless provides at least a rough estimate of ICT penetration in these countries (Jensen, 2003).

### **NIGERIAN ICT SECTOR PERFORMANCE**

The World Bank Reports (2005; 2008) suggested that in terms of ICT sector performance there has not been significant improvement in Nigeria since 2000. The reports showed that while access to mobile telephone experienced a significant boost, access to the Internet and personal computers has not improved significantly over the period examined as shown in Table 1. This situation is indeed a major hurdle in the effective application of ICT for overcoming the human development challenge.

**Table 1: NIGERIAN ICT SECTOR PERFORMANCE USING SELECTED INDICES**

Access	2000	2004	2006
Telephone main lines per 1000 people	4	8	12
Mobile subscribers per 1000 people		66	223
Population covered by mobile telephony (%)	38	58	58
Internet users per 1000 people	1	7	55
Personal computers per 1000 people	6	6	8
Households with television (%)	26	26	32

Source: The World Bank Group (2005, 2008) *ICT at a glance - Nigeria*.

### ACCOUNTING AND ICTs

Accounting has been defined as a process of identifying, measuring and communicating economic information to permit informed judgement and decisions by the users of the information (Glautier & Underdown 1976). Accountants have traditionally been involved in collecting and analyzing data and distributing relevant information to managers of business organizations, to assist them in effectively planning, controlling and making decisions. The growing need of management of more complex organizational forms and the need to satisfy this requirement led to the development of business information systems. Information management has thus from its origin been a major function of management accounting (Desmond & Lebas, 1998). In fact, information systems and accounting systems within organizations are becoming synonymous in many respects (Dillard, 2000). The accounting professionals are involved in information systems not only at the information system design and implementation levels; they are also the primary users of the output. They are normally looked up to for the presentation of information in a useful and transparent manner for decision making by management. The economic calculations provided by the enterprise level accounting systems have also come to be used as not only a basis for taxation but also as a means for enabling the more general economic management policies of the state to grow in significance and impact. Accounting has thus come to occupy an ever more significant position in the functioning of the modern industrial society (Burchell et al., 1980).

Before the advent of information technologies, most data were in paper form and the accounting professional manually collected and processed

the data for management decision. The modern business organizational form, with complex processes and in the face of the increasingly competitive global climate requires up to the minute, useful and relevant information to make the right decisions. In order to meet up with this demand, the volume of information that the accounting professionals are required to manage on a daily basis is immense. Rapid ICT advancements in the 1990s have significantly transformed business data processing, making it possible to process and manage such large volumes of data and information. Large storage systems and efficient information retrieval led to the integration of ICTs into the management accounting systems contributing to the effectiveness of the systems (Chandra, Cheh & Kim 2006). Appropriate use of ICTs became necessary to ensure peak performance for the accountant and consequently for the organization as a whole.

### ROLE OF ACCOUNTING IN EXPANDING ICTs USAGE FOR HUMAN DEVELOPMENT

ICTs were first used in business organizations in the accounting function. Most of the internal transactions controlled and initiated by the accounting and finance function are amenable to automation with the use of ICTs. Since accounting information is central to all business activities within an economy ensuring availability of ICTs for accounting work will not only improve the productivity of the accountant, it has the potential of improving the knowledge base of the society as a whole. It also influences the jobs and lives of not just the managers but also other people within and outside the organization. ICTs provide an opportunity for accounting to add value to the organization that also benefits other stakeholders. Accounting can thus play a critical role in expanding ICTs usage by supporting the development of internal expertise to embrace the technologies in the following ways:

Active involvement of accounting in system development and functioning may help to encourage organization wide ICTs usage through identifying the primary areas where the organization could benefit from information automation. Security concerns about the systems are also often reduced with accounting involvement as the accounting and finance function is regarded as the guardian of transactions reliability and integrity (Rom & Rhode, 2007).

Management accounting is a central part of the organization's information systems and control systems. Appropriate use of ICTs in such systems can provide immediate picture of the state of the organization's activities such as production level, customer balances, staff productivity making available more accounting information at the fingertips of managers for effective control, thus increasing their productivity.

Management accounting information is usually produced in conjunction with or as a by-product of some other computer applications. Computerizing the management accounting system (MAS), would therefore necessitate computerizing other systems within the organization. For instance, to produce variance analysis information and product costing information would necessitate the computerization of material usage and inventory control systems. What this means is that if accounting information production is computerized, productivity of accountants, managers and others will increase, resulting in higher efficiency for the organization.

Applying ICTs to accounting work alters the skills requirements in organizations. This would necessitate acquisition of new skills by individual staff members, to be able to perform well on the new computerized systems. Organizations under such circumstances would be persuaded to train their staff resulting in increased level of computer literacy among staff leading to expansion in ICTs usage.

It may also require the creation of new jobs. Specialists including programmers, data entry clerks, networking officers may need to be employed.

ICTs usage in accounting also has the potential to generate new business opportunities such as software and hardware sales, distribution and maintenance.

ICTs usage in accounting would improve availability of important information to people having some form of relationship with the business organization, including customers, suppliers, government.

### III. METHOD OF RESEARCH

The study consisted of a review of literature on human development implications of ICTs and a survey on the usage of ICTs.

Literature highlighting Nigeria's performance on human development based on indicators relating to access to information were examined.

The study also surveyed a sample of 160 Nigerian professionals (accounting and non accounting) in selected business organizations. The sample was selected through a process of convenience sampling in order to save time and money since the target population is very large, consisting of professionals in business organizations. Furthermore, the inability to construct a reliable sampling frame to enable a statistical random selection of sample dictated the use of convenience sampling. A questionnaire was developed on a 7-point Likert Scale for the purpose of data collection. A total of 108 usable responses, giving a 67.5% response rate were used for data analysis.

Data were analyzed using percentages, sample means, t-tests and rankings. Mean scores were computed for questionnaire items dealing with level of access to computers and Internet and their level of usage. The mean scores were grouped into three; scores ranging between 5 and 7 were considered high, 3 to 4.99, moderate and 1 to 2.99 low. Mean scores computed for the perception of respondents on the usefulness of the Internet to certain organizational and societal activities were ranked to determine respondents' awareness of the human development benefits of ICTs. Mean scores were also computed for the extent to which respondents consider certain obstacles as hindering their use of the Internet. The mean scores were ranked to determine the level of importance attached to each obstacle by respondents.

### IV. FINDINGS FROM SURVEY

The findings from analysis of data collected from questionnaire responses were summarized in Tables 2-5.

**RESPONDENTS' CHARACTERISTICS:** Respondents were grouped into two, accounting and non-accounting business professionals for the purpose of the analysis of their characteristics. The respondents were made up of 48% accounting professionals and 52% non-accounting professionals. Table 2 presents information on the characteristics of each group of respondents.

TABLE 2: RESPONDENTS' CHARACTERISTICS

GENDER:	ACCOUNTANTS	NON-ACCOUNTANTS
Male	40	39
Female	12	17
	52	56
AGE:		
18 - 25	15	20
26 - 35	17	17
36 - 45	11	13
Above-45	9	6
	52	56
EMPLOYMENT STATUS:		
Operational staff	30	41
Middle management	18	13
Top management	4	2
Total	52	56
Percentages	48%	52%

Source: Analysis of survey data (2008).

### ANALYSIS OF LEVELS OF COMPUTER LITERACY, ICTs ACCESS AND USAGE

The level of computer literacy, access to personal computers, access to the Internet and the extent of usage were measured by computing the mean value of responses to questionnaire items. The results of the analysis as presented in Table 3 reveal that basic computer literacy among the respondents sampled was at a moderate level, mean literacy level at 4.31. The results further showed a significant difference between the level of literacy of the accounting professionals (mean literacy 4.79) and that of the non-accounting professionals (mean literacy 3.96). In terms of regularity of usage of computers and proficiency in the usage of specific computer packages, scores ranged between low and moderate levels (1.53 and 3.99) with no significant differences between accounting and non-accounting professionals, except in the usage of accounting packages. Low scores were observed in terms of regularity of the usage of the Internet for both groups of respondents. Low scores were also observed for the extent of usage of computers for selected Internet activities such as Internet browsing and e-mails. Higher level of usage was made of computers for processing business data (mean usage for sample equals 3.57).

TABLE 3: MEAN COMPUTER LITERACY AND ICTs USAGE / ACCESS

Mean	Accounting	Non-Accounting	Sample	T-value	p-value or Sig.
Basic Computer literacy	4.79	3.96	4.31	*9.345	.019
Regularity of usage of PC	4.09	3.90	3.99	2.450	.471
Proficiency in computer packages:					
a. Word processing	3.51	3.71	3.44	-1.880	.098
b. Spreadsheets	3.92	3.01	3.45	8.789	.071
c. Desktop packages	2.99	3.04	3.02	0.470	.136
d. Accounting packages	3.07	1.01	2.00	*19.330	.033
e. Statistical packages	1.92	1.16	1.53	6.120	.104
Regularity of usage of Internet	2.74	2.73	2.73	0.098	.059
Extent of usage of computers for:					
a. Browsing	2.93	3.01	2.97	-0.760	.19
b. E-mail	2.68	2.82	2.75	-1.010	.089
c. Processing of business data	4.01	3.17	3.57	7.320	.185
d. E-commerce	2.00	2.35	2.18	-2.900	.743
e. E-payments	2.78	2.33	2.55	3.390	.171

Source: Analysis of survey data (2008).

\* Significant at  $P < 0.05$

### ANALYSIS OF THE PERCEPTION OF RESPONDENTS ABOUT THE HUMAN DEVELOPMENT BENEFITS OF THE INTERNET

Respondents were asked to state the extent to which they perceived the Internet as useful for purposes ranging from improvement in productivity to social benefits. The results as shown in Table 4 reveal a high perception (6.51) regarding productivity benefits of ICTs but low perceptions regarding the human developmental benefits; for instance perception regarding the extent to which ICTs can affect governments' accountability yielded a mean of 3.31.

TABLE 4: MEAN PERCEPTION ON THE EXTENT OF USEFULNESS OF INTERNET

	Mean	Ranking
Extent to which the Internet will enhance productivity	6.51	1
Extent to which the use of Internet will affect government accountability	3.31	2
Extent to which the use of Internet will bring about better resource allocation	3.17	3
Extent to which the use of Internet will allow more people to take part in governance	2.91	4
Extent to which the use of Internet will help to eradicate poverty	2.30	5

Source: Analysis of survey data (2008).

#### FINDINGS ON THE CHALLENGES TO EXPANDED USAGE OF ICTS IN ACCOUNTING

Although, Nigeria seemingly realizes the importance of ICTs in development, the country is faced with many challenges threatening the realization of the potential benefits of ICTs. These challenges need to be identified and removed or properly managed to pave way for the achievement of the human development objective of promoting ICTs usage.

Research has identified lack of access to Internet and computers as a major obstacle in realizing the IT dream of Nigeria which must be addressed. According to World Bank group (2008) only 0.8% has access to personal computers and 5.5% to Internet. Ajayi (2003) also identified lack of infrastructure to support usage, lack of requisite skills; corruption; vandalisation of public properties; and low consumer purchasing power; lack of commitment of government to providing information through websites as some of the obstacles.

As shown in Table 5, high cost of Internet access, ranked first among the list of obstacles while other challenges like lack of infrastructure such as electricity supply to support usage; lack of requisite skills; and lack of commitment and corruption of government officials which is discouraging private investments, followed closely among the list of obstacles.

TABLE 5: MEAN PERCEPTION OF THE EXTENT TO WHICH OBSTACLES HINDER INTERNET USAGE

	Mean	Ranking
Lack of basic computer skills	2.8	8
Companies' low investments in Personal computers for office use	3.2	6
Lack of requisite skills to use the Internet	5.8	3
High cost of personal computers relative to individual purchasing power	4.8	5
High Cost of Internet connection for home/ personal use	6.5	1
Poor electricity supply	6.2	2
Poor service from Internet Service Providers	3.2	6
Lack of commitment and corruption on the part of government officials in encouraging private investments in ICTs	5.1	4
Vandalisation of public property	3.0	7

Source: Analysis of survey data (2008).

#### V. CONCLUSION

As most of the internal transactions in organizations controlled and initiated by accounting are affected by computerization, ICTs have become identified as a means of improving the productivity of the accountant. Applying ICTs to accounting work has also been found to exert notable influence on the jobs and lives of not just the managers but also other people within and outside the organization and the knowledge base of the society as a whole. It is therefore argued that accounting can play an active role in championing the embrace of ICTs among other business professionals and the society. ICTs are however still far from being available to users in Nigeria, accounting professionals inclusive. Available literature on ICT sector performance suggests substantial progress in terms of telecommunications especially in mobile telephony, but slower progress is recorded in the access and usage of personal computers and the Internet (Mowete, 2007; UNDP, 2008). The data in this study also provide support for findings in extant literature; mean level of usage of the Internet was found to be low for the sample at 2.73. Accountants as information experts in organizations who are expected to lead the usage of information and communications technologies did not show significant differences in access and usage of the Internet from the

non-accounting professionals. The very low level of access to ICTs and Internet connectivity, therefore, appears to be a major hurdle in overcoming the human development challenge in Nigeria. For ICTs to have a significant impact on human development in Nigeria, expansion of their usage and sustainability is required. This is premised on increased awareness of not only the financial benefits of the application of information technology to processing business transactions, but also on the human development benefits. Knowledge about such benefits did not appear to be widespread.

This study suggests that the emerging role of an accounting professional in organizations as that of an information expert requiring an understanding of information technology tools places him in a good stead to advance and promote the usage of ICTs. The application of ICTs to accounting work apart from improving access to information for management also has the potential to result in expansion of its usage in other areas of business and improvements in access to quality information to a larger section of the society. Accountants need a good appreciation of technological constraints and possibilities to be able to provide the necessary assistance to management in responding to the current market environment. The study however, finds major challenges to expanded usage in accounting as including; high cost of access, infrastructural inadequacies and low level of proficiency in using computer packages.

## VI. RECOMMENDATIONS

Expansion of ICTs usage in accounting should play an instrumental role in harnessing information technology to provide greater access to information for better allocation of resources, monitoring of institutional accountability and stewardship and personal development of individuals in the society. Accounting professionals should play a central role in supporting any initiative that affects flow of information within an organization. Addressing the challenges to usage and access to ICTs by accountants is essential in playing this instrumental role. More active participation of business firms, accounting professionals and institutions as major stakeholders in addressing these challenges.

Accounting firms should take the lead by ensuring that their firms operate in high technology environment, where information and daily tasks have been so automated to the point of ultimate ease of accessibility. Introducing new packages in the accounting firms' systems can help

improve its staff literacy and productivity, as training and re-training of staff become imperative. Ensuring computerization of the firms' information systems can also encourage clients to computerize their own systems since linkages among the systems can be made possible for easier monitoring and audits.

The accounting professionals must arm themselves with knowledge about new technologies to take a proactive role in developing companies' strategies for expanding ICTs usage. In this regard, the professional accountancy bodies should provide assistance in building ICT literate manpower, by constantly re-training their members in ICTs skills, through workshops and seminars exposing them to new knowledge in software development. The bodies could also help to make knowledge in a wide range of educational contexts more accessible through participation in global initiatives and schemes such as virtual libraries and e-journal repositories. Network facilities to which members can hook at a low cost and Internet parks could also be funded.

The support of other stakeholders including governments, educational institutions, NGOs, individuals, banks and other private sector organizations to mobilize and commit resources to achieving effective application of ICTs is also required. Greater private sector participation in providing high cost infrastructure is necessary and bank financing would be useful in this area. Educational institutions may need to teach practical applications of information technology skills in all accounting and business courses rather than the one or two computer appreciation courses within the duration of their programmes. Research on the developmental benefits on ICTs usage should be encouraged and more empirical evidence published. Government's sincerity in addressing the problem of electricity supply and distribution and in providing investment friendly policy measures to encourage private sector participation is very essential.

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