REVIEW OF OBSTACLES WHICH INHIBIT ICT ADOPTION IN HIGHER EDUCATION

Samuel NiiBoi Attuquayefio
Methodist University College Ghana

Hillar Addo, PhD
University of Professional Studies Accra

Abstract
In view of the important role Information Communication and Technology play in education, most administrators of higher educational institutions have invested into these tools to advance teaching, learning and research. In spite of these huge investments, students, lecturers and administrators are yet to fully adopt these tools. This paper seeks to review obstacles which inhibit adoption of ICT in higher educational institutions. The review identified lack of institutional support, financial support, time to learn new technologies, access to computing, technical support and training. Other obstacles identified were technology reliability, uncertainty about its worth, resistance to change, negative attitude, awareness, relevance, ease of use, attitude of organization, and computer literacy. The article concluded that knowing the extent to which these barriers affect individuals and institutions may help in taking decision on how to tackle them.

Keywords: Higher Education, ICT, teaching and learning

Introduction
Information and Communication Technology as the life blood of an organization has permeated different organization. It is currently relevant in all spheres of life. In the banking industry, players’, in the industry are seriously competing with the use of technology. In the telecommunications industry, survival for any of the players in that industry depends on the availability of the requisite ICTs which are very responsive and agile. The health sector also has his fair share of the ICT required. The use of telemedicine is now common all over the world. Computer-Assisted Instruction and ICT have been used to foster patients’ ability to acquire early skills in intra oral radiography Howerton, Platin, Lndlow & Tyndall, (2002, p.1157). The study of Alam, Khatibi, Ahmad & Ishmail, (2007) showed that SMEs can increase their market reach, enhance customer service, and reduce
both marketing and distribution cost with the use of ICT. In addition, Carolina Lopez-Nicolas, Pedro Soto-Acosta (2010) analyzed ICT adoption and use effects on knowledge creation: Socialization, Externalization, Combination, and Internalization Nonaka & Takeuchi, (1995) using SMEs from Spain found that ICT has a significant positive influence on the, four processes for creating knowledge.

In education, the literature reviewed show that ICT application has been from elementary through secondary to tertiary level. The higher educational institutions around the globe have increasingly adopted ICT as tools for teaching, curriculum development, staff development, and student learning (Kumpulainen, 2007; Usluel, As_kar, & Bas_, 2008). Clearly, with the proliferation of ICTs in all industries, organizations need to support its investment into ICT with other complementary assets to yield the necessary productivity which will in turn translate into higher returns. It is evident from Sharifah, (2006) and Kwapong, (2009) that governments are also using ICT to develop rural communities. Technology offers opportunities for enhancing strategic learning Carolina Lopez-Nicolas, Pedro Soto-Acosta (2010).

ICT Definitions

It is apparent from the literature reviewed that researchers into ICT had different definitions for it. While some of the definitions were based on inception of the ICT others defined it based on the industry in which the research was carried out. Some were even based on the traditional ICT used.

Information and Communications Technology can be defined as the totality of the electronic means to collect, store, process and present information to the end-users in support of their activities, and consists of computer systems, data communication systems, knowledge systems, office systems and consumer electronics. Rather than simply IT, ICT shows the importance of communications integrated with computers Schipper I and de Haan E (2005). According to Olatoye R (2011) Information and Communication Technology (ICT) refers to the totality of methods and tools that are used in gathering, storing, processing and communicating information. The definition of Olatoye R (2011) covers all the technologies used to distribute information to audience which include internet services provision, telecommunications equipment and services, media and broadcasting and other related information and communication activities. Modern ICT products include e-mail, voice mail, FAX, internet, electronic bulletin boards, cellular phones, videoconferencing among others Olatoye R (2011).

Berce, Lanfranco and Vehovar (2008) defined ICT as “a mixture of hardware, software and communication facilities which includes both local and wide area Networks. In 2007, Wang and Woo also defined ICT as
 hardware (such as computers, digital cameras), software (such as Excel, discussion forums) or both. In education, Wang and Wool (2007) referred to ICT as the various resources and tools (software) presented on the computer. Integration of ICT is defined as a process of using any ICT (including information resources on the web, multimedia programs in CD-ROMs, learning objects, or other tools) to enhance student learning (Wang & Woo 2007, p.149). ICT is not particularly reserved for education. The common point in ICT definition is that ICT is a tool to realize learning objectives (Koçak-Usluel, Mumcu-Kuşkaya & Demiraslan, 2007).

Many researchers examine the ICT integration process with various variables at the class level (micro level), at a national level (macro-level), or at the local school level (meso-level) (Tondeur, Keer, Braak & Valcke, 2008). According to Altun S. A., Kalaycı E, Ümmühan A (2011 ) ICT integration efforts can be examined at the state level, such as examining the – central- government ICT policies and its integration efforts; another one is at the institutional level, like the efforts of Higher Education Councils on the way of integrating ICT policies. The third one is the organizational level, like universities and schools do; finally, it can be at a faculty level, at a department level, or at an individual level indicating the integration of ICT into the instructional process. Thus, ICT integration can be studied at macro level as a system, or it can be studied at micro level.

Information and Communication Technology (ICT) no doubt has improved the quality of life in the modern world. It is widely used by academics and non academics in carrying out their daily activities to enhance efficiency and increase productivity. It is expected that investment into ICT in organizations will increase efficiency and productivity.

**Obstacles with ICT Adoption**

The adoption of ICT at universities is often poorly implemented and based on unsupported optimism Taylor (1998). A large number of faculty members are still hesitant or reluctant to adopt technology for teaching tasks Jacobson (1998). Research has found serious obstacles to fully integrating technology into the teaching and learning processes in higher education Becta, (2004). Several other researchers have reported on different obstacles of ICT adoption. Table 1 provides a list of some obstacles identified in the review and the corresponding authors who recognized them in their research.

<table>
<thead>
<tr>
<th>Obstacles to fully integrating technology</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of institutional support</td>
<td>Cuban et. al (2001); Chizmar and Williams (2001); Snoeyink and Ertmer, 2001; Butler and Sellbom (2002)</td>
</tr>
<tr>
<td>Lack of financial support</td>
<td>Chizmar and Williams (2001),</td>
</tr>
<tr>
<td>Issue</td>
<td>Reference</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lack of time to learn new technologies</td>
<td>Chukwunonso and Oguike (2013)</td>
</tr>
<tr>
<td></td>
<td>Fabry and Higgs, 1997; Jacobson, 1998; Ertmer (1999); Cuban et al. (2001); Snoeyink and Ertmer, 2001; Chizmar and Williams (2001) Cuban et al., 2001; Snoeyink and Ertmer(2001); Butler and Sellbom (2002), Ebersole and Vorndam (2002); Becta (2005), Chukwunonso and Oguike(2013)</td>
</tr>
<tr>
<td>Technology reliability</td>
<td>Butler and Sellbom (2002)</td>
</tr>
<tr>
<td>Uncertainty about its worth</td>
<td>Butler and Sellbom (2002)</td>
</tr>
<tr>
<td>Lack of access to computing</td>
<td>Fabry and Higgs, (1997); Ertmer, (1999), Guha, 2000; Mumtaz, 2000; Preston et al., (2000); Pelgrum, (2001.); Snoeyink and Ertmer (2001), (Bosley and Moon, 2003; Becta 2005</td>
</tr>
<tr>
<td>Lack of technical support</td>
<td>Ertmer, (1999), Snoeyink and Ertmer(2001)</td>
</tr>
<tr>
<td>Lack of Training</td>
<td>Veen, (1993); Wild, (1996), Simpson, Payne, Munro, Hughes, &amp; Lynch; (1999);Kirkwood, Van Der Kuyl, Parton, &amp; Grant, (2000); Preston et al., 2000</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>Buttenfield (1999), Nov. &amp; Ye (2008)</td>
</tr>
<tr>
<td>Computer Literacy</td>
<td>Chukwunonso and Oguike (2013)</td>
</tr>
</tbody>
</table>

Table 1. ICT adoption obstacles

**Conclusion**

It is evident from the literature reviewed that there are myriad of obstacles that affect ICT adoption in educational institutions. The obstacles clearly stem either from the end of students, faculties or the organization. We therefore recommend that authorities of higher educational institutions must understand these obstacles identified in Table 1 that inhibit ICT adoption before any investment. Clearly, these obstacles go beyond the influence of technical conditions which most people lay much emphasis on. Administrative and behavioural conditions are also obstacles which inhibit ICT adoption. It is therefore imperative for administrators of these institutions to show keen interest in the ICTs provided to support teaching, learning and research. This can be achieved by developing ICT implementation plan which would detailed, the vision and benefits of the project. The plan must be made available to instructors. Even though, it is essential for these institutions to have the ICT, it is however much important for these institutions to support the primary investment with complementary assets such as training and management support which are critical for any ICT integration.

**References:**
Alwani, A. E. S., & Soomro, S. Barriers to effective use of information technology in science (2010)
Bar-Ilan, J., Peritz, B. C. & Wolman, Y. A Survey on the use of electronic databases and electronic journals accessed through the web by the academic
staff of Israeli universities. *Journal of Academic Librarianship*, vol. 29, no. 6, pp. 346-361, 2003
Bosley, C., Moon, S. Review of existing literature on the use of information and Communication Technology within an educational context. *Derby: Centre for Guidance Studies, University of Derby*. 2003


Koca, Meltem Usluel, Yasemin Koçak, Teachers' Acceptance Of And Intention To Use The Information And Communication Technologies. *Journal of Educational Sciences & Practices*; Vol. 6 Issue 11, p3-18, 16p, 2007

Kwak, B. H., Jun, Woodchun, Gruenwold, L. and Hong, Suk-Ki. A Study on the Evaluation Model for University Libraries in Digital Environments. In:


Preston, C., Cox M., Cox, K., Teachers as innovators: an evaluation of the motivation of teachers to use Information and Communications Technology. *MirandaNet* 2000


Thong, J. Y. L., Hong, W., & Tam, K. Y., What leads to user acceptance of digital libraries? *Communications of the ACM, 47*(11), 79-83. 2004


Veen, W. . The role of beliefs in the use of information technology: Implications for teacher education, or teaching the right thing at the right time. *Journal of Information Technology for Teacher Education, Vol. 2*, 139-153, 1993

