Management attitude, support and integration of information communication technologies in higher education in Uganda

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ABSTRACT

This study investigated management attitude effect on integration of Information Communication Technology (ICT) in classroom environment. The study was prompted by limited research in developing countries on attitude and integration of ICT’s in teaching and learning process by higher institutions of learning.

A cross-sectional and correlational study was conducted in two public institutions in Uganda namely; Makerere and Kyambogo. A Statistical Package for Social Sciences (SPSS), Pearson Correlation Coefficient and hierarchical linear Multiple Regression Analysis were used to determine the strength of the relationships and prediction of ICT integration.

Findings revealed that management attitude and support positively affect integration of ICTs in the teaching and learning process.

There is need for institutions to integrate ICTs through provision of appropriate resources, skills and infrastructure.

Administration should appreciate dynamics, use and benefits of ICTs to change beliefs, feelings, thoughts and reluctance for successful integration of ICTs.

Key words: Attitude, Support, ICTs.
INTRODUCTION

It is acknowledged that Information Communication Technologies (ICTs) are revolutionalizing the teaching and learning process in universities. Museveni (2006) observed that ICT is no longer a matter of choice it is a necessity in today’s world which is driven by technology and knowledge.

Many Universities have seen the importance of integrating Information and Communication Technologies (ICTs) in their teaching process as reported by UNDP (2001) that: Across a range of educational applications, ICT is being harnessed to improve the efficiency, accessibility and quality of the learning process in developing countries.

According to a report on ICT Education Needs by ICT Consultants (2005), Information and communication technology (ICT) education is relatively new in Uganda. The earliest formal ICT training may be traced back to the Makerere University Institute of Computer Science (MUICS). However the university has made tremendous strides towards the integration of ICT into its functions and operations over the last five years. From the Resource document (2005/2006) it was noted that equipments like laptops, stand-alone computers, Projectors are used in teaching in some Departments.

Tusubira et al (2006) noted that Kyambogo University completed its ICT policy and master plan document in August 2004 and it was recently finalized and approved by the University senate. A detailed master plan indicating the various ICT projects has also been developed. The ICT infrastructure base in Kyambogo is still at its infancy and only a few networked laboratories exist. The University does not have a university-wide network and no central network services are offered.

However, there is an initiative by a US Agency for International Development's (USAID) Connect-ED (2006) http://www.wougnet.org/Links/ictresources.html which is supporting activities to improve the quality of education. This project is increasing computer literacy among teachers and equipping 9 educational centers throughout the country and a development laboratory at Kyambogo University (KYU). In conjunction with KYU, Connect-ED has produced online teacher training curriculum based on a student-centered learning approach and the Ugandan core curriculum; it is enabling teachers and student teachers to integrate information and communication technologies (ICTs) into the classroom; it has developed a series of free CD-ROMs to complete a subject-based, digital resource library with localized content generated by Ugandans for Ugandan educators.

A project by the Institute for Communication and Development (IICD) whose goal is to make the content available as printed pamphlets, via a website, on CD-ROMs, and through intranet web servers, is trying to integrate ICTs in teaching and learning process through two projects, the ‘ICT-Based Educational Content’ and ‘ICT Basic Training’ projects (Kaweesa 2002).

Likewise, Nuffic, a Netherlands Organisation for International Corporation in Higher Education started a project for addressing the ICT capacity building in public universities in Uganda (http://www.nuffic.nl/npt), Kyambogo and Makerere Business School being part of the project. The NPT is a programme of South-North cooperation which helps developing countries to strengthen their institutional capacity for providing post-secondary education and training (Zaken 2005). Structures are being put up but the project will basically handle procurement courses.
Thus whether or not to adopt the use of the internet by universities is one of the most vital decisions administration can make today given the current changing environment which will determine the development of any university both locally and globally. Much as an effort is being made to incorporate ICTs in the teaching and learning process, still the old tradition of teaching prevails.

**RELATED LITERATURE**

It is a proven fact that ICT does improve the teaching and learning process. Higgins (2004), however, there is always a problem when it comes to the acquisition of the necessary infrastructure from administrations who are the financial controllers and decision makers of any organization.

Emans (2002) noted that for many teachers and learning institutions, the use of computers for educational purposes might be a threatening step because there is often little expertise, and teachers and administration are reluctant to take the first step.

Jaway (2003) observed that many governments are now facing challenges to adopt their higher education system to the demands of a rapidly changing social, economic and technological order in line with (Maier and Waren 2000).

The number of secondary school leavers has more than doubled since 1980s without a commensurate increase in the number of educational institutions (Maier et al 1998). The impact of ICT, the large volume of student intake, the need to deliver timely and accurate learning, delivering student support services, providing accurate information require the use of ICT. (Pasad 1999) and similar studies with Dean (2000); (Davis and Tearle, 1999; Lemke and Coughlin, 1998); (Kirschner and Woperies, 2003). Uganda is not in isolation on large student intake at both secondary and tertiary education which has exponentially increased.

Jaway (2003) observed that when developing nations are reaping the fruits of state of the art ICTs in their educational system, educational delivery in poorest countries of Africa in particular Ethiopia is solely based on student-teacher face-to-face contact. In Uganda, many sectors like in Education are still heavily relying on traditional systems and severely lagging behind as far as new technologies are concerned (Kaweesa, 2002).

The successful integration of any technology into the classroom warrants careful planning and depends largely on how well policy makers understand and appreciate the dynamics of such integration. (Dean, 2000).

More studies on management attitude were done by Muwonge (2005); Becta (2003); (Larner & Timberlake 1995); (Russell & Bradley 1997); (Fabry & Higgs 1997); Becta (2002); Passey (2002); Christensen (2002) Loyd and Gressard (1986); Lillard (1985); Summers (1990); Gressard and Loyd (1985); (Woodrow, 1992) and Moisan (2006). This is relevant to the study as it is important that management attitude towards ICTs is changed in order to enable the provision of quality services at Makerere University and Kyambogo University and this is in line with purpose of study.

Turban et al (2005) observed that there is need for real time operations given the fast rate at which the economy is evolving. Decisions need to be made very quickly to remain competitive (Gates, 1999; Davis, 2001; Wetherbe, 1996; Cullen, 2005); Becta, 2002); Jhurree, 2005); Wilmore and Betz, 2000).
The support given by administration is vital for the enhancement of ICTs in the teaching and learning process as Hawkins (2002) noted that teachers need support in good practice and leadership from administration to become more effective in their work. This justifies the inclusion of management support as one of the study variables.

Emans (2002) noted that a success factor for ICT in education is the availability of good equipment. It is important that both pupils and teachers have regular access to up-to-date ICT equipment. Nowadays, in many schools there are computer labs. But having enough equipment available might involve designing entire new school architecture, with computer labs. This is inline with (Jhurree, 2005); Becta , 2003; and Waema, 2002).

Other researchers like Mudasiru (2005); Moursund and Bielefeldt’s (1999); Christensen (2002);(Woodrow,1992); (Bear, Richards, & Lancaster, 1987); Hassan (2002) ; Walsh (2000);Turban et al (2004); Becta (2002);Wilmore and Betz (2000); Tusubira (2005) noted that apart from financial resources to buy computers and software, and to set up and operate international and internal connectivity on a sustainable basis ICTs integration challenges may come up.

The researchers above have used or applied the following theories;

- Theory of Reasoned Action TRA, Theory of Planned Behavior (TPB), Unified Theory of Acceptance and Use of Technology (UTAUT), Technology Acceptance Model (TAM) which focus on users of technology mainly.

- According to the theory of reasoned action (TRA), a person's performance of a specified behavior is determined by his or her behavioral intention to perform the behavior, and behavioral intention is jointly determined by the person's attitude and subjective norms concerning the behavior in question (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975).

- TPB posits that individual behavior is driven by behavioral intentions where behavioural intentions are a function of an individual's attitude toward the behaviour, the subjective norms surrounding the performance of the behavior, and the individual's perception of the ease with which the behavior can be performed (behavioral control). Fishbein (1967); Ajzen and Fishbein (1973); Fishbein and Ajzen (1975).

- The UTAUT aims to explain user intentions to use an IS and subsequent usage behavior. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behavior (Venkatesh et. al., 2003).

- The Technology Acceptance Model as a Theoretical Framework Understanding why people accept or reject new information or communication technology has been one of the most challenging issues in the study of new technologies (Swanson, 1988). Among the various efforts to understand the process of user acceptance of information systems, the Technology Acceptance Model (TAM) introduced by Davis (1986) is one of the most cited theoretical frameworks. The model aims not only to explain key factors of user acceptance of information systems, but also to predict the
relative importance of the factors in the diffusion of technological systems (Davis, Bagozzi, & Warshaw, 1989). According to Davis et al. (1989), the model is an attempt to derive "the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time trying to be parsimonious and theoretically justified. The current study acknowledges the above theories and goes further to focus on the provision of ICTs in learning environment by administration.

From the literature reviewed above it is evident that most of the research was done in developed countries. Similarly, there is limited research done on attitude. This therefore, gives the motivation to research on management attitude effect on the integration of ICTs in the teaching and learning process in two public universities in Uganda namely Makerere University and Kyambogo University.

MATERIALS AND METHODS

Having looked at various theories and models of technology and related literature thus, Theory of Reasoned Action TRA, Theory of Planned Behavior (TPB), Unified Theory of Acceptance and Use of Technology (UTAUT), Technology Acceptance Model (TAM).

The conceptual framework below was developed shows influence of management attitude towards the integration of ICTs in the teaching and learning process. These are the integration of ICTs in the teaching and learning process as the dependent variable and management attitude as the independent variables.

The integration of ICTs in the teaching and learning process is said to be affected by management attitude and management support. However, Organizational factors, integration problems, ICT literacy and Economic factors may also affect the integration of ICTs in the teaching and learning process.
In this study a cross-sectional survey design was used. Cross-sectional research refers to the study of particular phenomena at a particular time. Top management, Heads of Departments and Lecturers’ attitude towards the integration of ICTs in the teaching and learning process were studied at one point in time. A snap-shot survey was chosen because it gathers quick perceptual information from respondents.

The study population was 773 and the sample size of 100 was reached using the sample size decisions predetermined by Bailey (1994) who stated that a sample size of 100 is adequate. The sample size of 100 was confirmed big enough according to the Rule of thumb, which states that a sample size of 30 and less than 500 is appropriate for most researches (Roscoe 1975).

The selected respondents included Top Management, Heads, and Lecturers. Proportionate Stratified sampling was used to obtain the sample of 25 from Kyambogo
University and 75 sample from Makerere University because it helped in achieving a desired representation from various subgroups in the population. Purposive sampling was used to select Top management because these subjects are informative and possess the required information for the study. According to (Mugenda 1999).

Management attitude was measured in terms of beliefs, feelings, thoughts and reluctance. Management support was measured in terms of provision of the necessary infrastructure, materials, maintenance, staffing and integration of ICTs was measured in terms of resources, skills, availability of infrastructure. The researcher used the 4-point Likert scale in order to avoid respondents who had no opinion at all. Thus, the responses were: Strongly Agree, Agree, Disagree, and Strongly Disagree.

The questionnaire and observation formed the key data collection methods. Questionnaires were found suitable for this research because it collects a lot of primary data at one point in time. It is also the most suitable instrument to collect data based on opinions from the population. Four experts in the area of study were given questionnaires to rate the relevancy of the questionnaires using the 4-point scale of Relevant, Quite Relevant, Somewhat Relevant and Not Relevant. The proportion of Relevant and Quite Relevant was computed to give the CVI. The CVIs for four experts were 0.647, 0.824, 0.882 and 0.647 which were above 0.50 thus qualifying the instrument as relevant.

The questionnaire was pre-tested through a pilot study at Uganda Christian University, Mukono in order to find out it’s appropriateness to the intended respondents. Cronbach Alpha test was used to measure the internal consistence of the liker scale used in the instrument. The Cronbach Alpha was found to be above 0.60 thus passing the instrument as reliable as indicated below:

**Table 1: Reliability Coefficient**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach alpha coefficient</th>
</tr>
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<tbody>
<tr>
<td>Management attitude</td>
<td>0.6529</td>
</tr>
<tr>
<td>Management support</td>
<td>0.7355</td>
</tr>
<tr>
<td>Integration of ICTs</td>
<td>0.6861</td>
</tr>
</tbody>
</table>

Source: Primary Data

Statistical Package for Social Scientists (SPSS) version 17. Pearson correlation was used to determine the relationship between study variables and hierarchical linear multiple regression was used to predict the integration of ICTs at two levels and determine the contribution of mediating variable. **Normality tests**, P-P, Q-Q, Histogram, stem leaf plots, skewness and kurtosis, Shapiro test sig >0.05 exhibited normal distribution after transformation to natural logs. **Linearity test**, there were sig. correlations between study variables and also sig F<0.01. **Multicollinearity test**, VIF<2.4, CI<8. **Homogeneity test**, Leven test sig>0.05. **Serial correlation**, Durbin Watson test > Adj R-Square for both models.
FINDINGS

Relationship between management attitude, management support, and integration of ICTs.

The Hierarchical linear Multiple Regression models 1 in table 2 below shows a linear relationship between management support, and integration of ICTs (F = 10.155, Sig< 0.01).

Management support explained 37% of the total variation in the integration of ICTs for both institutions. Change in management support led to 0.423 positive changes in integration of ICTs.

In model 2 Management support and attitude explained 47% of total variation in the integration of ICTs for both institutions. Management attitude explained more of integration of ICTs (Beta = 0.503) than management support (Beta = 0.460) as indicated below:

Table 2: Hierarchical linear multiple Regression Model

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Beta</td>
</tr>
<tr>
<td>Constant</td>
<td>2.010</td>
<td></td>
</tr>
<tr>
<td>Management Support(MS)</td>
<td>0.554</td>
<td>0.423</td>
</tr>
<tr>
<td>Management Attitude(MA)</td>
<td></td>
<td>0.689</td>
</tr>
<tr>
<td>R²</td>
<td>0.370</td>
<td></td>
</tr>
<tr>
<td>Adj R²</td>
<td>0.350</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>10.155</td>
<td></td>
</tr>
<tr>
<td>Sig</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

Model 1: ICT=2.010+0.554MS

Change in R²=0.350

Durbin Watson =0.643

Model 2: ICT=2.362+0.567MS+0.689MA

Change in R²=0.12

Durbin Watson=0.865

Management support plays a moderating role in integration of ICTs in institutions of higher learning.

DISCUSSION OF RESULTS

The study focuses on the effect of management attitude on the integration of ICTs in the teaching and learning process. Basing on the findings of this study the discussion of the results is highlighted as below:

The findings indicated that management attitude significantly and positively affected the support given by management in the integration of ICTs in both institutions. The findings indicated that the support management gives in the integration of ICTs in the teaching and learning process determines how well the diffusion will take place.

This is in line with Leonard-Barton and Decamps (1988) in the implementation of an organizational innovation, managers are usually presumed to influence the extent to which an innovation is adopted and used by their subordinates. Employees whose characteristics incline them to adopt an innovation will do so without management support or arguing if it is simply made available. Employees low on these characteristics will wait a managerial directive before adopting. Fichman (1992) noted that Individuals...
rarely have complete autonomy regarding the adoption and use of work place innovations. Management can encourage (or discourage) adoption explicitly through expressed preferences and mandates (Leonard-Barton and Deschamps 1988; Moore and Benbasat (1991), or implicitly through reward systems and incentives (Leonard-Barton 1987). In addition, immediate supervisors typically control access to the infrastructure supporting adoption, such as training and consulting, and may even control physical access to the hardware and/or software needed to use innovation (Leonard-Barton 1987; Leonard-Barton and Deschamps 1988). The net result is that studies of individual adoption within organizational settings must either incorporate managerial influences into the analysis or rule them out as a potentially confounding factor. Becta (2002) noted that a further consideration in this process is that of personal relationships. Managers are in a position where their relationship with their team is critical to its effectiveness. Resource management is now a key function of school management.

Leonard-Barton and Deschamps (1988) who observed that in the implementation of an organizational innovation, managers are usually presumed to influence the extent to which an innovation is adopted and used by their subordinates.

The findings revealed that management attitude significantly affects the support management gives to the integration of ICTs in the teaching and learning process. This is in line with Jhurree (2005) who noted that it is of paramount importance to involve all of the major stakeholders, such as teachers, schools administrators and parents at the outset in making decisions on ICT integration in education. Also, changing the attitudes of teachers toward such integration is important. Many teachers, both in developed and developing countries are apprehensive about using computers for instructional purposes. Their attitudes need to be changed such that their collaboration and commitment are secured so as to achieve success in the integration process. The successful integration of any technology, thus ICT, into the classroom warrants careful planning and depends largely on how well policy makers understand and appreciate the dynamics of such integration. Dean (2000). More studies in harmony with findings include Muwonge(2005);Becta(2003); (Larner & Timberlake 1995); (Russell & Bradley 1997) ; (Fabry & Higgs 1997); Becta(2002); Passey(2002) ; Christensen(2002) Loyd and Gressard (1986); Lillard (1985); Summers (1990); Gressard and Loyd (1985); (Woodrow, 1992) and Moisan (2006).Igbaria and Chakrabarti (1990) who observed that the quality of the computer-based information system which represents the interface and the interaction between the participants and the system has a strong positive effect on attitudes toward microcomputers, and a significant reduction on computer anxiety. Computer training contributes strongly to decrease in computer anxiety and has an indirect effect on attitudes toward microcomputers.

CONCLUSION

A positive attitude from administration facilitates fast and smooth integration of ICTs in the teaching and learning process.

Management support and involvement has impact on the expansion and integration of ICTs in the teaching and learning process in institutions of higher learning. The provision of the necessary facilities allows the integration of ICTs in the teaching and learning process to take place.
The study revealed that management attitude does affect the integration of ICTs in the teaching and learning process. The attitude of management has a positive effect on the support it gives to the integration of ICTs in the teaching and learning process.

RECOMMENDATIONS

Based on the survey of both Kyambogo University and Makerere University and the findings above it is evident that administration must address specific factors pertinent to the integration of ICTs in the teaching and learning process. These include the following:

There is need to change the attitude of the people in the institutions when you change the peoples’ attitude the institutions will change automatically. This can be achieved through intensive and continuous in-service training of staff in order to enable them keep abreast with the changing technology.

Computers should be availed to all staff or enable the staff have access to them such that they become a personal affair, an instrument to be used to broaden the mind, to cultivate one’s interests, to interact with others, to play, and indeed, to some extent, to “live”. At that point it can and will naturally become a teaching resource for the individual teacher. This can be achieved by providing an annual budget for each department for the development of ICT facilities.

Provision of computers, the Internet and e-mail accounts to staff and students should be emphasized as these provide the basic foundation for the use of ICTs in universities.

An ICT strategy should be developed at the management level in this sense, the absence of conspicuous support and priority allocated by the university administration to ICT integration and e-learning will be overcome.

The electrical power supply at the universities is often unstable. While Uninterruptible power supplies (UPS) devices could mitigate the problem, universities should go a further step and find means of acquiring a constant power supply like the purchase of stand-by generators and solar panels.

The establishment of an effective ICT unit and support structure as a driver for the integration of ICTs in the teaching and learning process should be adopted. This is because central units offering professional support and guidance concerning ICT are of key importance.

Computer laboratories be air-condition and if possible well carpeted as this will protect computers better from dust and in turn limit on the maintenance costs.

Universities should move towards the provision of e-learning. E-learning offers enormous facilitation to teaching and learning and this will reduce crowding in classes and better facility utilization will be realized. However, this will necessitate the introduction of ICTs to students at a much lower level like the primary level such that computers do not be a myth to them when they reach university level.

There should be a move to carry out curriculum review in order to incorporate ICTs and this should also involve the development of a joint curriculum in order to cater for quality control and standardization.
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