INFORMATION AND COMMUNICATION TECHNOLOGY USE: AN EFFECTIVE STRATEGY FOR UNIVERSITY EDUCATIONAL SERVICES MANAGERS

BY
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Note: This article is made up of extracts from an ongoing doctoral thesis study on *ICT and Educational Services Management at Makerere University*, Uganda.

ABSTRACT

This article specifically focuses on the use of Information and Communications Technology (ICT) as a strategy for delivering effective management of educational services in a cross-section of educational institutions universities inclusive. Makerere University in Uganda is taken as a case study where ICT was introduced with the main aim of improving effectiveness in the delivery of educational services. Information and Communication Technology (ICT) has become a matter of great importance in today's business in all spheres of life globally. From commerce to aeronautics, medicine to education, there is no discipline which is an exception in the need to use ICT in their daily operations. In the area of higher education management, ICT use is of central significance too. Universities of the contemporary world cannot afford to ignore the role of ICT in carrying out their business lest they are left behind by the supersonic developments in the various areas of life. Therefore, as a matter of necessity, the universities must embrace ICT adoption in teaching/learning and administrative activities. This study discusses the concept of ICT, perceptions of stakeholders in the effectiveness of ICT adoption, educational services management and ICT and strategies for effective ICT use in educational services management.

Keywords: Information and Communication Technology (ICT)-educational services management-perceptions- stakeholders- strategies-effectiveness

1.0 BACKGROUND

Educationists get concerned when ICT fails to solve problems in their sector generally (Mac Callum,2010) and in university education in particular (Odey, 2009). In Uganda, ICT was adopted to enhance management (Ministry of Works,Housing and Communications, 2003) for improving the effectiveness of service delivery in higher education. ICT was introduced at Makerere University when enrolments had risen leading to heavy workloads onto lecturers who were poorly remunerated (Ndagire, 2011).Management of educational services fell below stakeholders expectations(Kasenene, 2012). ICT was introduced to improve the management of these services (Tabaire & Okao, 2010; Matovu,2009).

1.1 Rationale

The rationale of adopting ICT is articulated by the Adaptive Structuration Theory (AST) selected to inform the conceptualization of this study. When a university adopts ICT in and continues to provide services that do not meet the abovementioned expectations, questioning the role of ICT becomes inevitable (Mac Callum, 2010).

1.2 Broad Aim

The aim of the study was to analyse the nature of ICT introduced at Makerere University and how it affects the university's educational service management and university management with a view to proposing strategies for the university to meet stakeholders' expectations.

1.3 Specific Objectives

1) To establish the nature of ICTinstalled and accessed to facilitate the management of educational services at Makerere University
2) To establish the perceptions and experiences of educational services managers on the effectiveness regarding the implementation of ICT at Makerere University
3) To establish the role of ICT in the improvement of University management and student learning at Makerere University
4) To propose ways by which the role of ICT can be improved to make educational service management meet the stakeholders' expectations at Makerere University

1.4 Research Problem

The overall aim of adopting ICT was to establish a university-wide access to and utilization of ICT was to enhance the position of Makerere University academically and as a contributor to societal development (Makerere University Policy, 2005-2009; Baryamureeba, 2007).ICT was adopted to make educational service management effective. University-wide access and utilization of ICT minimizes manual labour through automationof management of educational services (Maccallum, 2010).The management of educational services is still ineffective despite ICT use. The educational programs do not meet stakeholder expectations, most graduates are not as useful to society as expected (Nabayego, 2011). This casts doubt at the role of ICT in enhancing the effectiveness of educational service management at Makerere University leading to the broad research question:

1.5 Broad Research Question

What is the nature of ICT installed and accessed at Makerere University and what role does it play in enhancing the effectiveness of educational service management at the university?

1.6 Specific Research Questions

1) How has Makerere University provided access to and enabled utilization of ICT in the management of educational services ?
2) How do educational services managers perceive and experience the effectiveness regarding the implementation of ICT at Makerere University?
3) How has ICT adoption improved management and student learning at Makerere University?
4) How can ICT be made as effective as expected by stakeholders in the management of educational services Makerere University?
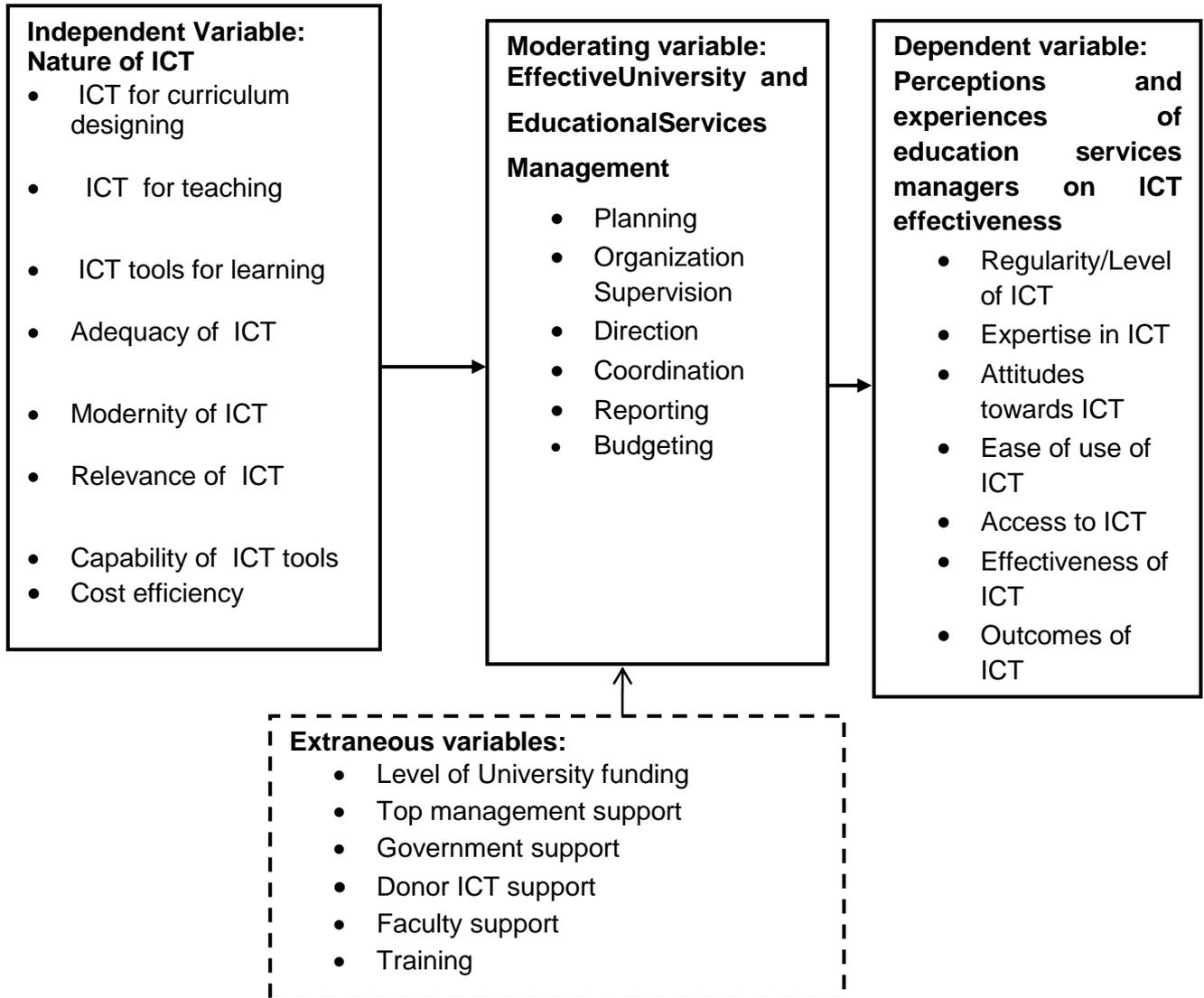
1.7 Benefits

The study will help Makerere University to evaluate the role of ICT in enabling to be a centre of academic excellence and contributor to social development. The study can also be used by the Ministry of Education and Sports and other universities to appreciate the role of ICT in university education. It can be used by concerned parties to enrich the theoretical and conceptual relationship between ICT and educational services management.

1.8 Limitations

The findings are limited in statistical generalization. What happens at Makerere University may not apply elsewhere. Makerere University has no records of job placements of its alumni denying it views of stakeholders outside it. The factors that affected the management of educational services atMakerere University included: lecturers' motivation and commitment, students' willingness to use the services, the financing of the university, and top management support. All the factors were not studied in this research to focuson ICT and the management of educational services at Makerere University.

1.10 CONCEPTUAL FRAMEWORK
Figure 1

Independent Variable: Nature of ICT	Moderating variable: EffectiveUniversity and EducationalServices Management	Dependent variable: Perceptions and experiences of education services managers on ICT effectiveness
• ICT for curriculum designing • ICT for teaching • ICT tools for learning • Adequacy of ICT • Modernity of ICT • Relevance of ICT • Capability of ICT tools • Cost efficiency	• Planning • Organization Supervision • Direction • Coordination • Reporting • Budgeting	• Regularity/Level of ICT • Expertise in ICT • Attitudes towards ICT • Ease of use of ICT • Access to ICT • Effectiveness of ICT • Outcomes of ICT

Extraneous variables:
- Level of University funding
- Top management support
- Government support
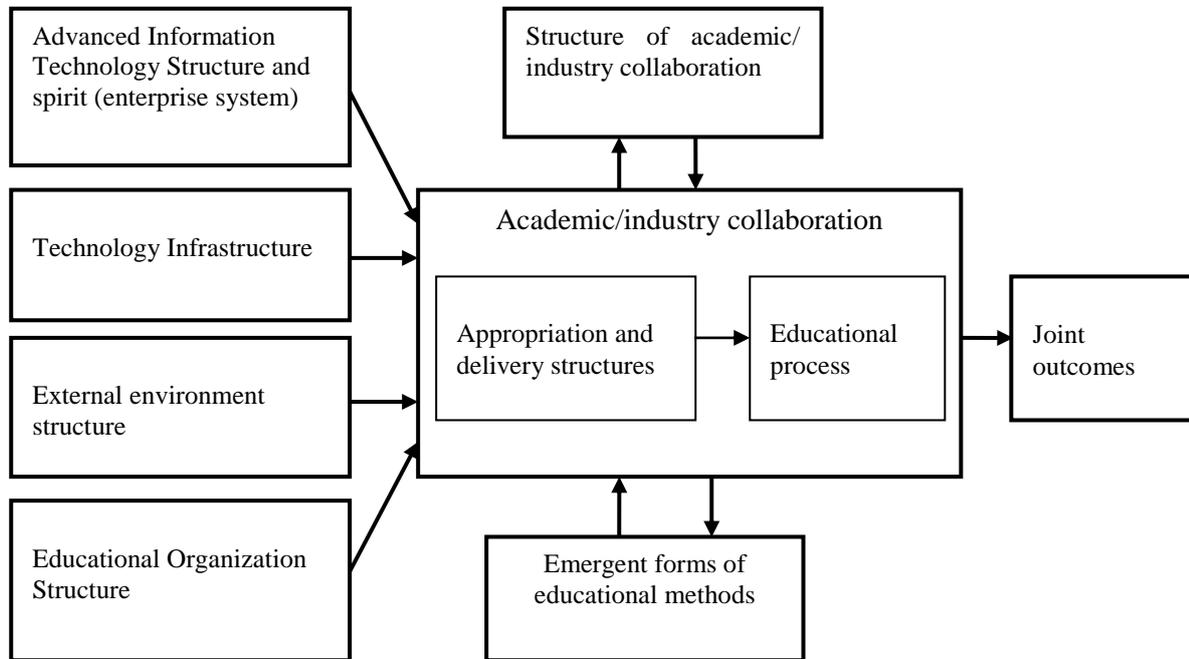- Donor ICT support
- Faculty support
- Training

Source: Developed by Author based on DeSanctis and Poole's Adaptive Structuration Theory (AST)

1.11 THEORETICAL FRAMEWORK
This is derived from the Adaptive Structuration Theory by DeSanctis and Poole (1994). The rationale covers the diffusion and infusion theories illustrated in Figure 2.

Figure 2: Adaptive Structuration Theory as Applied to Management of Educational Services Management

Advanced Information Technology Structure and spirit (enterprise system)

Technology Infrastructure

External environment structure

Educational Organization Structure

Structure of academic/ industry collaboration

Academic/industry collaboration

Appropriation and delivery structures → Educational process → Joint outcomes

Emergent forms of educational methods

Source: Adapted from DeSanctis and Poole (1994: 132)

2.0 REVIEW OF RELATED LITERATURE

2.1 NATURE OF ICT TOOLS USED IN THE MANAGEMENT OF EDUCATIONAL SERVICES
Literature suggests thenature of ICT used in managing educational services(Baryamureeba2010; Mac Callum 2010).The studies explain the nature of ICT used in this management and discuss its use but fall short of analysing its effects on Makerere UniversityManagement. Notwithstanding this gap, they delineate the nature of this ICT, providing indicators introduced in the management of educational services at Makerere University. The scholars left a gap regarding the ICT tools used at Makerere University.

2.2 EDUCATIONAL SERVICES MANAGERS' PERCEPTIONS AND EXPERIENCES ON THE EFFECTIVENESS REGARDING THE IMPLEMENTATION OF ICT
Studies have been conducted on the perceptions and experiences of diverse categories of educational services managers on the effectiveness ofICT(Deaney,Ruthven&Henness2003;Nyambane&Nzuki2014;Buabeng-Andoh 2012).There is need to verify whether or not their discussion on the perceptions and experiences apply to Makerere University. The studies suggest variation in these perceptions and experiences but the majority consider ICT as a tool that enhances performance.The scholars left a gap on the perceptions and experiences of educational managers regarding the effectiveness of ICT implementation at Makerere University.

**2.3   HOW ICT ADOPTION IMPROVES MANAGEMENT AND STUDENT
       LEARNING**

2.3.1 Effect of ICT on University management

University management ensures teaching and learning and non-teaching activities occur. Managemement controls all university operations. These departments include: academic records, library, finance, estates, student support services and human resource to mention some. Studies suggest that managers of educational institutions at various levels consider ICT as a tool that enhances their performance and that of other stakeholders (Mbwete 2013;Oboegbulem&Ochai 2013;Emmanuel &Sife 2008).

2.3.2 Effect of ICT on student learning

ICT has revolutionised the management of educational services   and enhanced itseffectiveness by providing consolidated data center services and enabling efficient access to the centers (Bassey, Akuegwu & Udida 2009). ICT powerful in delivering educational services (Carnoy 2004).(James & Hopkinson 2009,Daniels 2002) concluded that ICT integration in education was inevitable. According to Moeller & Reitzes (2011) ICT has a significant effect on teaching and learning because it increases interaction with educational information. The scholars left a gap regarding how ICT improves management at Makerere University.

2.3.4 STRATEGIES FOR EFFECTIVE ICT USE IN EDUCATIONAL
       SERVICES MANAGEMENT

Many studies discuss strategies for effective educational services management using ICT.Scrimshaw (2004)states that for teachers benefit from ICT,they should make radical changes in their teaching. A study by Virvou, Katsionis & Manos (2005) on the effect of ICT on students' learning and motivation showed that educational virtual reality games motivate students, retain and improve educational effects on students. The study showed that the educational effectiveness of the game was high for students who had poor performance prior to their learning experience with the game.None of the above literaturerefers to use of ICT at Makerere University.

3.0 METHODOLOGY

3.1 Research design

The concurrent nested/embedded mixed research design was adopted in this study after establishing that its rationale was suitable for the study (Creswell 2012). The design enables understanding a given unit of analysis in details, in its context and setting based not only on a triangulation of data collection and analysis methods and strategies but also on a triangulation of data sources and theories (Willis 2014; Verschuren 2003). It therefore permits the collection and analysis of both primary and secondary data using both qualitative and quantitative methods of data collection and analysis (Scholz & Tietje 2013; Berg & Lune 2012; Stake, 2008).

3.2 Area of Study

The research was done at the Makerere University in Uganda . The researcher chose this university due to its position as the leading university in the East African region.

3.3 Population of the study

The total population of the study was 3,503 lecturers, 33,000 students, 123 educational services managers, 30 ICT administrators and08 Officers of the University all based at Makerere University in Uganda

3.4 Sample Size and Selection

A total sample of 817respondents (students, lecturers, ICT administrators and officers of the Universities) was used in data collection. The researcher employed stratified sampling technique to cater sub groups in ICT use in educational services management. Purposive sampling technique was used which enabled selection of relevant respondents. The researcher also used simple random sampling technique which involved assigning the respondents random numbers.

The following categories of respondents were sampled:
Table 1: Total population and Sample size

Category of respondent	Total population	Sample size	Realised sample size
Students	33,000	380	374
Lecturers	3,503	346	323
ICT Administrators	30	26	26
Educational services managers(deans, principals and HODs)	123	57	42
Officers of the University	08	08	07
Total	36,664	817	772

Source of population size: Uganda Bureau of statistics. 2010.

A total of altogether 817 respondents were targeted to give chance to all the stakeholders in ICT and educational services management to contribute to the data collected but only 772 responded.

3.5 Data collection methods and instruments

A number of instruments were used for both primary and secondary data collection and the instruments used include:

3.5.1 Primary sources
- **Questionnaires**

374 Questionnaires were received from students and 323 from lecturers using another set of questionnaires.

- **Interview guides**

77 key informants responded including; the Officers of the University, principals of colleges, faculty deans, departmental heads and ICT administrators.

3.5.2 Secondary sources

- **Documentary analysis**

This was done based on thematic content analysis where the Makerere University ICT Policy and Master Plan Phase Two 2005-2009and the ICT Policy/Master Plan 2010-2014 were analysed.

3.5.3 Validity of Instruments

This refers to the instruments used measuring what they are intended to measure (Amin, 2004).All the instruments were developed under close supervisor guidance. After design, the questionnaires were pre-tested to ten students and ten lecturers.

Reliability of the Questionnaires

Guba and Lincoln (1989)define reliability as"dependability" or "consistency". The reliability of the questionnaire was established by conducting a pilot study of 10 respondents among students and other 10 among lecturers from Makerere University and relevant changes were effected.

Using SPSS software the reliability coefficient for the students' questionnaire was revealed as Alpha = 0.73 meaning that the variables that were taken to measure the ICT in the educational services management were moderately correlated and therefore suitable for the purpose.

Procedure

The researcher received an introductory letter from the College of Education Research Ethics Committee of the University of South Africa(UNISA) which he showed to the respondents.

Data Analysis and Processing

After collection, data was edited, coded and entered into the computer and consequently, was analyzed using the Statistical Package for Social Scientists. Quantitative data was analyzed using frequency tables, graphs and percentages. Comparison of results between the different ICT and University management variables wasdone and regression and factor analyses were made to compare the responses. Qualitative data was edited before leaving the respondents. Coding and tabulating was done while most of the data was being collected. Qualitative data was analyzed continuously using content analysis.

4.0 FINDINGS

4.1 Nature of ICT tools used in the management of educationalservices

The nature of ICT tools that the University provides and makes access to are considered here. The quantitative data collected from students indicated that lecturers had competencies in using the ICT tools at percentages indicated:Word processors 13.1%,Linux 31.1%,SPSS 30%,Microsoft SQL 0.3%.Quantitaive data from lecturers indicates that there are desktops and projectors for teaching.

4.2Perceptions on the Effectiveness of ICT on Education service management

Findings indicate that a majority reported effectiveness at more than 80 percent in delivering what it is intended. They reveal how ICT innovations at the university have impacted heavily on research, data management, communication and accessibility. The Makerere University E-Learning Environment platform has enabled interaction between lecturers and students. ICT

has created a better research environment with free internet.A head of department in the college of Education and External Studies stated:

"Students have been able to conduct their research, contact their lecturers, submit coursework and access information on various subjects."

4.3   HOW   ICT ADOPTION IMPROVES MANAGEMENT AND STUDENT LEARNING

4.3.1 Effect of ICT on University management

The findings on the effect of ICT on Makerere University management are the views of the officers of the University. Management involves: planning, organizing, supervising, directing, coordinating and budgeting. Management includes: the Deputy Vice Chancellors(Academic Affairs and Finance and Administration),University Secretary, Bursar, Dean of Students, Registrar and Librarian. The officers acknowledged the importance of ICT through: Academic Records Information, Financial Information, Human Resource Management and Library Information Systems .They   believe   ICT in University management can be more effective than it is currently.

4.3.2 Effect of ICT on student learning

 ICT plays an important role in student learning. Respondents state clearly that the provision of online platforms for e-learning like Makerere University E-Learning Environment and Moodle accord students and lecturers interaction outside the lecture room. Additionally, through ICT students have e-mail accounts to ease communication and research online.

4.4   STRATEGIES FOR EFFECTIVE ICT USE IN EDUCATIONAL SERVICES MANAGEMENT

The following strategies were suggested by respondents:
- Expand bandwidth
- Secure cheap ICT facilities
- Secure more projectors
- Develop the capacities of lecturers and students in ICT
- Stabilize power by buying generators
- Recruit more ICT staff and improve working conditions
- Design ICT applications to address social challenges in various areas
- Set up policy to run online academic progammes
- Strengthening partnerships with ICT organizations like CISCO Academy,ITEL-Computer Companies and ICT institutions.

5.0 CONCLUSION

The following conclusions can be made from the study:
1.Makerere University has installed and provided access to many ICT tools in educational services management
2.There is a perception among its users that ICT is effective and it is being used in   educational management at Makerere University
3.ICT adoption has to some extent improved Management and student learning at Makerere University
4.Makerere still has a lot to do to make ICT as effective as expected by stakeholders

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