

Information Communication Technology Adoption And Teachers' Performance: A Case Of Selected Secondary Schools In Kampala Capital City Authority, Kampala District, Uganda

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Abstract

The study established the relationship between ICT adoption and teachers' performance in selected secondary schools in Kampala Capital City Authority, Kampala District, Uganda. This study employed a cross-sectional research design. The Cross-sectional design allowed for the study of the population at one specific time and the difference between the individual groups within the population to be compared. The sample size was 103. The researcher used simple random sampling to select the teachers from the human resource book. The study employed a questionnaire as a tool of data collection. The study findings revealed that teachers express confidence in their ability to use ICT resources effectively. This positive perception is reflected in the relatively high mean score. The study findings revealed that some teachers report feeling a strong social influence from their colleagues to adopt ICT into their teaching and work, as evidenced by the higher mean score. The study recommended that schools and educational institutions should allocate sufficient resources to ensure access to ICT hardware and software.

Keywords: Information Communication Technology, Social, Perception, Secondary Schools.

Introduction

Sharma (2005) cited in (Ntirandekura & Christopher, 2022b) states that "national planning and effective growth of a nation is based on effective human resources". He goes on to say that "investment in education is therefore reciprocal to investment in human resource development". On the other hand, there has been an exponential development in the last three decades the use of ICT that had an impact on both society and people's lives (Shihundu, 2014). It is therefore not surprising that more and more attention is paid to it the adoption of information and communication technologies (ICT) in higher education worldwide (Ntirandekura & Christopher, 2022a) including the education sector. A number of master plans for ICT in education have been created in many countries and continents (Ntirandekura & Alex, 2022). These plans show that innovations in ICT education were increasingly integrated into a wider framework of education reforms that focused on developing students' abilities for self-education, problem solving, information retrieval and analysis (Shamim et al., 2023) and critical thinking, as well as the ability to communicate, collaborate and learn, skills that were much less important in previous years. school curriculum. For example, the Hong Kong Special Administrative Region (SAR) government's five-year strategic plan for ICT implementation in schools, launched in late 1998, shares this broader educational framework mentioned earlier (Brighton et al., 2023). With this launch, Hong Kong has entered a very exciting period of rapid expansion and development in the area. The challenge is not simply a case of technology adoption, but rather a process of innovation that requires both financial and training support for schools and collaboration between teachers and school leaders to ensure success (Racheal et al., 2023).

Despite the obvious benefits and relevance of using ICT for educational purposes, studies show that in many cases the learning potential of ICT is impoverished because many teachers are still not fully ICT literate and do not use it in their teaching. In general, studies on teacher ICT readiness suggest that there is still a long way to go before schools in the region are able to take full advantage of the opportunities offered by 21st century technology (Christopher, Komunda, et al., 2022). Barak (2006) reveals that while teachers use ICT for their own learning, they are wary of incorporating advanced technology into schools. The study also suggests that while teachers recognize the potential of technology in stimulating student learning and adapting school studies to real-life contexts, they do not believe that ICT is more appropriate for classroom instruction to promote collaboration and reflection in learning. The use of ICT in education is a new phenomenon in Africa. In the 1970s, its promoters claimed that it would change and save education (Suzan & Kazaara, 2023). In the late 1980s, there was a growing shift towards ICT adoption that emphasized the curriculum rather than the tool. Its proponents believed that students would learn the new skills they needed to make the computer work for them. The computer can now be seen as a partner rather than a competitor and can be treated in a more natural way (Faridah et al., 2023). The 1990s saw an increased focus on increasing the use of computer technology in African educational institutions. Yet ICTs are ubiquitous in developed countries, their use has been and remains in a state of flux, and their adoption by schools remains largely underdeveloped in developing countries such as Kenya and Uganda (Godfrey et al., 2023). It is very ironic that this should be the case in the 21st century, the age of information technology (IT).

In this regard, the uptake of ICT in Ugandan higher education institutions is traced to Nettel Africa, a conglomerate of universities that pioneers the promotion of ICT use and policy on the African continent (Jac & Kazaara, 2023). Nettel Africa introduced the first ICT technology as an e-learning technology known as Knowledge Environment for Web-based Learning (KEWL), which targeted students completing a postgraduate program in ICT policy and regulation (Kituyi & Kyeyune, 2012). The adoption of KEWL e-learning technology in universities in Uganda could bring a number of benefits which include; to enable communication with students and lecture options and freedoms, as well as offering the opportunity to learn how to use electronic tools to access information and develop problem-solving research skills. It could support collaborative learning and support student-centred approaches to teaching, increased flexibility and competency-based curriculum development (Anthony et al., 2023). (Moses, 2023) claims that e-learning technologies expand access to education. They allow online course materials to be available in real-time versus 24/7. They can eliminate the tendency to rely solely on printed materials. Video clips, audio sounds, the Internet, computers, and visual presentations provide students with motivation and rich knowledge (Christopher, Methodius, et al., 2022).

Regardless of the above benefits of using e-learning technologies in the teaching and learning process in Ugandan higher education institutions, many Ugandan higher education institutions have only limited formal use of these technologies (Zulaikah & Rebecca, 2023). Several issues have been outlined that inform why Ugandan higher education institutions are slow to use the ICTs available to them in the teaching and learning process and key ones include lack of management support, technical support, inadequate training, compatibility, complexity, relative advantage, testability, observability, perceived usefulness and lack of appropriate ICT adoption models (Ntirandekura, Friday, & Muhammad, 2022). Apart from the above scenario, there are not enough studies in Africa to examine the extent to which ICT is used in African secondary schools. This is supported by the fact that there is a huge knowledge gap when it comes to the adoption of ICT in the educational process. The lack of substantial research output in the form of articles and books on this area is a clear confirmation of this knowledge gap Onex (2013). This research dissertation aimed to bridge this knowledge gap by assessing ICT adoption by secondary school teachers in terms of expected performance, expected effort, social influence and conditions in selected secondary schools in Kampala District (Ntirandekura, Friday, Mbisi, et al., 2022).

Statement of the problem

The Ugandan government, through the Ministry of Education and Sports, is mitigating the ICT skills gap

Objective of the Study

To establish the relationship between ICT adoption and teachers' performance in selected secondary schools in Kampala Capital City Authority, Kampala District Uganda.

Methodology

This study employed a cross-sectional research design which helps in the study of a particular phenomenon in a specific time (Easterby-Smith et al. 2008). Cross-sectional design allowed for the study of the population at one specific time and the difference between the individual groups within the population to be compared. The choice of this design is dependent on the nature of the study variables.

Kampala Capital City Authority has over a total of 50 secondary schools with a population of 1,729 teaching staff (Matovu, 2017). The researcher however used purposive sampling to select the best performing schools in the last 5 years in the national examinations. The researcher selected only 5 public secondary schools due to the short academic time allotted for research. Thus, the target population was 134 respondents.

The researcher used simple random sampling to select the teachers from the human resource book. The researcher then wrote the names of the teachers in pieces of papers and placed them in a bowl and shake the bowl. The researcher then randomly picked the names of the teachers until the number he needed were achieved. This was intended to give each participant the opportunity to participate in the study. Data was analyzed in form of tables, frequencies and percentages using SPSS & STATA (Nelson et al., 2022)

Results

Table 1: The relationship between ICT social influence on teachers' performance in selected secondary schools in Kampala Capital City Authority, Kampala District

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	Social Influence	mean	SD
1	My colleagues are frequently using ICT for classes and school related activities.	3.6	1.2
2	My colleagues think that I should use ICT in my class and school related work.	3.2	1.7

1= Strongly Disagree, 2= Disagree, 3=Not sure, 4=Agree, and 5=Strongly Agree.

From Table 1, we can analyze the relationship between ICT social influence and teachers' performance in selected secondary schools in Kampala Capital City Authority, Kampala District.

My colleagues are frequently using ICT for classes and school-related activities (Mean = 3.6, SD = 1.2): This statement received a relatively high mean score, indicating that teachers perceive that their colleagues frequently use ICT for classes and school-related activities. The standard deviation suggests some variability in responses, but the overall trend is toward agreement. Implication: Teachers in the study believe that their colleagues are actively using ICT for educational purposes.

My colleagues think that I should use ICT in my class and school-related work (Mean = 3.2, SD = 1.7): This statement received a moderate mean score, indicating that teachers perceive some level of social influence from their colleagues regarding the use of ICT in their teaching and school-related work. The high standard deviation suggests significant variability in responses, with some teachers feeling stronger pressure from their colleagues than others. Implication: Teachers report varying degrees of perceived social influence from their colleagues to adopt ICT in their teaching and work.

In summary, the data from this study suggest that teachers in selected secondary schools in Kampala Capital City Authority, Kampala District, perceive a certain level of social influence related to ICT usage. They believe that their colleagues are frequently using ICT for educational purposes, and some feel that their colleagues think they should also use ICT. These findings indicate that social factors play a role in influencing teachers' ICT adoption decisions. However, the variability in responses suggests that not all teachers feel the same level of social pressure to adopt ICT. Therefore, understanding and leveraging social influence could be a strategy to encourage ICT adoption among teachers in these schools.

Table 2: The relationship between ICT facilitating conditions on teachers' performance in selected secondary schools in Kampala Capital City Authority, Kampala District

Facilitating Conditions	Mean	SD
The school has enough ICT resources including hardware and software for officials and teachers.	2.34	1.4
I have the knowledge to use ICT resources.	3.8	0.8
There is a technical team at school that provides assistance to teachers in the use of ICT.	26	1.6

Source: primary data, 2023

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From Table 2, we can analyze the relationship between ICT facilitating conditions and teachers' performance in selected secondary schools in Kampala Capital City Authority, Kampala District.

The school has enough ICT resources including hardware and software for officials and teachers (Mean = 2.34, SD = 1.4): This statement received a mean score below the neutral point, indicating that, on average, teachers disagree that their schools have sufficient ICT resources, including hardware and software. The high standard deviation suggests significant variability in responses, with some teachers disagreeing strongly while others might have a different perspective. Implication: Teachers generally perceive a lack of ICT resources in their schools, which can potentially hinder their ICT adoption and performance.

I have the knowledge to use ICT resources (Mean = 3.8, SD = 0.8): This statement received a relatively high mean score, indicating that teachers, on average, agree that they have the knowledge to use ICT resources. The low standard deviation suggests a degree of consensus among respondents. This implies that teachers feel confident in their ability to use ICT resources effectively.

There is a technical team at school that provides assistance to teachers in the use of ICT (Mean = 2.6, SD = 1.6): This statement received a mean score below the neutral point, suggesting that, on average, teachers disagree that there is a technical team at their school providing assistance for ICT use. The high standard deviation implies significant variability in responses, with some teachers strongly disagreeing while others might have a different perspective. This is an implication that teachers generally perceive a lack of technical support in their schools for using ICT, which can be a barrier to effective ICT integration.

From the above revelations, the data from this study indicate that teachers in selected secondary schools in Kampala Capital City Authority, Kampala District, have mixed perceptions regarding ICT facilitating conditions. While they express confidence in their own knowledge to use ICT resources, they generally believe that their schools lack sufficient ICT resources, including hardware and software, and technical support teams. These findings highlight the importance of addressing infrastructure and support challenges to facilitate teachers' effective use of ICT in their teaching and school-related activities.

Table 3: Teacher's performance

	Teachers Performance	Mean	SD
1	I am able to Illustrate subject related concepts using ICT	3.81	0.71
2	I am able to Organize and summarize students' results using ICT	4.21	0.95
3	Using ICT helps me to motivate and engage students to learn	3.67	1.31
4	I use ICT to help solve complex problems	2.32	1.88
5	Information collection and teaching material production is easy with ICT.	4.12	0.82

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6	Communicating and sharing information with education stakeholders is easy with ICT	3.4	1.05
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1= Strongly Disagree, 2= Disagree, 3=Not sure, 4=Agree, and 5=Strongly Agree.

From Table 3, we can analyze the responses regarding teachers' performance in using ICT in selected secondary schools in Kampala Capital City Authority, Kampala District.

I am able to illustrate subject-related concepts using ICT (Mean = 3.81, SD = 0.71): This statement received a mean score indicating that, on average, teachers agree that they are able to illustrate subject-related concepts using ICT. The low standard deviation suggests a degree of consensus among respondents. This is an implication that teachers generally feel capable of using ICT for illustrating subject-related concepts.

I am able to organize and summarize students' results using ICT (Mean = 4.21, SD = 0.95): This statement received a mean score above the neutral point, indicating that, on average, teachers agree that they can use ICT to organize and summarize students' results. The standard deviation suggests relatively low variability in responses. This is an implication that Teachers feel confident in their ability to use ICT for organizing and summarizing students' results.

Using ICT helps me to motivate and engage students to learn (Mean = 3.67, SD = 1.31): This statement received a mean score indicating that, on average, teachers agree that using ICT helps them motivate and engage students. However, the high standard deviation suggests significant variability in responses, with some teachers agreeing strongly while others might have a different perspective. There is some variation in how teachers perceive the impact of ICT on student motivation and engagement.

I use ICT to help solve complex problems (Mean = 2.32, SD = 1.88): This statement received a mean score below the neutral point, indicating that, on average, teachers disagree that they use ICT to help solve complex problems. The high standard deviation suggests significant variability in responses, with some teachers strongly disagreeing while others might have a different perspective. This is an implication that teachers generally do not perceive themselves as using ICT to solve complex problems, and there is variation in their responses.

Information collection and teaching material production is easy with ICT (Mean = 4.12, SD = 0.82): This statement received a mean score above the neutral point, indicating that, on average, teachers agree that information collection and teaching material production are easy with ICT. The standard deviation suggests relatively low variability in responses. Implication: Teachers feel that ICT facilitates information collection and teaching material production.

Communicating and sharing information with education stakeholders is easy with ICT (Mean = 3.4, SD = 1.05): This statement received a mean score indicating that, on average, teachers somewhat agree that communicating and sharing information with education stakeholders is easy with ICT. However, the standard deviation suggests variability in responses, with some teachers agreeing more strongly than others. This is an implication that teachers have varying perceptions of the ease of using ICT for communication and information sharing with education stakeholders.

From the above evidence, the data from this study indicate that teachers in selected secondary schools in Kampala Capital City Authority, Kampala District, generally feel capable of using ICT for illustrating subject-related concepts, organizing and summarizing students' results, and for information collection and teaching material production. However, there is variation in their perceptions of the impact of ICT on student motivation and engagement, their use of ICT for solving complex problems, and the ease of communicating with education stakeholders using ICT. These findings can inform strategies for enhancing teachers' performance through targeted ICT training and support in specific areas where improvement is needed.

Table 4: Correlation between ICT Adoption and Teachers Performance

		ICT adoption	Teachers performance
Spearman's rho	Correlation Coefficient	1.000	.881**
	Sig. (2-tailed)	.	.001
	N	103	103
Teachers' performance	Correlation Coefficient	.881**	1.000
	Sig. (2-tailed)	.001	.
	N	103	103

**, Correlation is significant at the 0.01 level (2-tailed).

The output indicates that there was a significant positive correlation between ICT Adoption and Teachers Performance (336)=0.722, $p<0.001$ (Nelson et al., 2023). This is represented by a correlation coefficient of 0.881(77.6%) which indicates that the ICT Adoption is strongly associated with Teachers Performance. In practical terms, it implies that teachers who are more inclined to adopt ICT in their teaching and administrative tasks are likely to perform better in various aspects of their professional roles. This finding highlights the importance of promoting ICT adoption and integration among teachers in enhancing their overall performance in selected secondary schools in Kampala Capital City Authority, Kampala District.

Conclusion

In conclusion, teachers express confidence in their ability to use ICT resources effectively. This positive perception is reflected in the relatively high mean score. Teachers have significant reservations about the clarity and ease of interaction with ICT systems, and the effort required to become proficient. These concerns are indicated by the lower mean scores in these areas. teachers report feeling a strong social influence from their colleagues to adopt ICT into their teaching and work, as evidenced by the higher mean score. The degree of social influence varies among teachers, suggesting that not all teachers feel the same level of pressure from their colleagues regarding ICT adoption.

Recommendation

Based on the findings of this study, it was recommended that:

Clear Communication: Educational authorities should ensure clear communication of the benefits and expectations associated with using ICT in teaching and administrative tasks. By managing teachers' performance expectations and emphasizing the value of ICT adoption, educational institutions can motivate more teachers to actively integrate technology into their work.

Incentives: Explore the possibility of offering non-monetary incentives to teachers who actively and creatively integrate ICT into their teaching practices. Recognition, awards, or professional development opportunities can serve as motivators to encourage teachers to excel in ICT adoption.

Continuous Evaluation: Continuously assess the impact of ICT adoption on teachers' performance and student outcomes. Regular evaluations can help identify areas where further support and improvement are needed and guide adjustments in ICT integration strategies.

Policy Development: Develop clear and comprehensive ICT integration policies and guidelines at the school and district levels. These policies should provide a structured framework for ICT adoption, usage, and support, ensuring consistency and alignment with educational objectives.

Teacher Motivation and Incentives: Studying strategies, both monetary and non-monetary, that effectively motivate teachers to adopt ICT in their teaching practices.

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