E-ISSN: 2710-2572
2021: Vol 3, No. 2, pp 30-40. https://doi.org/10.51986/ijrcs-2021.vol3.02.04
Interdisciplinary Journal of Rural and Community Studies

Teacher characteristics and the Use of ICT in Rural Secondary Schools in Bwera Sub County, Kasese District, Uganda

Ashirafu Masudi Kule[1]
Assistant Lecturer, Kampala International University, Uganda
Wilson Mugizi[2]
Lecturer, Kyambogo University, Uganda
Kariisa Henry Ampeire[3]
Lecturer, Makerere University, Uganda
Victor Turiabe[4]
Assistant Lecturer, Kampala International University, Uganda

CORRESPONDENCE
Ashirafu Masudi Kule
Faculty of Education
Kampala International University
Western Campus, Uganda
Email: kule.ashraf@kiu.ac.ug

DOI: 10.51986/ijrcs-2021.vol3.02.04

Abstract: *This study investigated the relationship between teachers' characteristics and their use of ICT in teaching in rural secondary schools located in Bwera Sub County, Kasese District of Uganda. Bwera Sub County is a hard-to-reach rural area in western Uganda. Specifically, the study examined whether teacher characteristics, namely, teachers perceived usefulness, perceived ease of use and teacher ICT competence, influenced teachers' use of ICT in teaching with the secondary schools. Using the correlational research design, data were collected using a self-administered questionnaire on a sample of 127 school teachers. Descriptive results revealed that teachers rated their use of ICT and perceived competence as poor, rated ICT's usefulness as good, and their use of ICT as fair. Regression analysis revealed that perceived usefulness, ease of use, and ICT competence had a positive and significant influence on ICT use in teaching and learning. It was concluded that perceived usefulness is a prerequisite for teachers' use of ICT, perceived ease of use is imperative for the use of ICT, and competence are essential for the use of ICT. Therefore, it was recommended that in rural secondary schools, the Ministry of Education and headteachers should provide awareness training to teachers about the usefulness of IC, train teachers to use ICT, and develop their ICT competences.*

Keywords: Rurality, Teacher Characteristics, Perceived usefulness, Perceived ease, Teachers ICT competence.

1. Introduction

The use of technologies in education has evolved over time. In the 1960s, technologies such as televisions, tape recorders and video were used as teaching tools (Salehi & Salehi, 2012). However, the use of computers in teaching also finds its origins in the 1960s at the University of Illinois at Urbana with Don Bitzeras as its developer. He was an electrical engineering professor who had an interest in using computers for teaching (Lee & Impagliazzo, 2006). Later, with the advent of the World Wide Web, new teaching systems developed that provided a plentiful of reformed services that supported a computer-aided teaching/learning environment (Ghavifekr & Rosdy, 2015). For example, blackboard offers a complete suite of enterprise software products and services that power e-education programs in primary markets such as pre-college, college, university, corporate/government, and international education programs (Lee & Impagliazzo, 2006). Nonetheless, the introduction of computers in the school curricula has raised many issues in both developed and developing countries. Some believe that computers have replaced teachers, which has created unemployment and has deprived benefits of students that computers cannot deliver (Kaino, 2008).

Due to the importance attached to ICT usage in developed countries like the USA and the United Kingdom, ICT is widely used in schools, workplaces, and homes. Approximately 76% of schools in the European Union have computer laboratories, and 50% have classes equipped with computers and a high percentage of students and teachers have laptops (Ampofo et al., 2014). ICT has also been accepted as a meaningful medium used in the classroom to motivate students (Wekke & Hamid, 2013). In Asia, in a country like Malaysia, teachers have been encouraged to use ICT. The government has invested a lot in buying computers and installing internet to make full use of ICT

Cite this article (APA):
Kule, M. K., Mugizi, W., Ampeire, K. H., & Turiabe, V. (2021). Teacher characteristics and the use of ICT in rural secondary schools of Bwera Sub County, Kasese District, Uganda. *Interdisciplinary Journal of Rural and Community Studies*, 3(2), 30-40. https://doi.org/10.51986/ijrcs-2021.vol3.02.04

in schools (Huang & Lau, 2014). In Pakistan, the usage of ICT has increased among teachers, and students have been able to use ICT for their academic and non-academic purposes (Khokhar & Javaid, 2016). Similarly, today all African countries in the mainly sub-Saharan have embraced the use of ICT. However, there are challenges to teachers' willingness and self-confidence to use ICT tools in teaching (Kurga, 2014).

To address the challenges associated with teachers attitudes towards the use of ICT in teaching, African countries are taking a number of steps. For instance, the Tanzania Ministry of Education and Vocational Training (MoEVT) has made the training of teachers in ICT use a priority area (Andersson, Nfuka, Sumra, Uimonen & Pain, 2014; Barakabitze, 2014). In Uganda, a study carried by Newby, Hite, Hite and Mugimu (2013) reveals that schools have invested heavily into ICT for administrative work, entertainment, and pedagogical purposes. However, a study by Ndawula, et al. (2013) on getting schools ready for integration of pedagogical ICT in Uganda schools revealed that fifty per cent of the teachers and headteachers indicated that teachers had limited skills for the use of ICT. Also, they reported that their schools had insufficient ICT resources. According to Guma, Haolader and Khushi (2013), the challenges to the use of ICT in teaching in Uganda include lack of computer skills, lack of proper ICT training skills and lack of expert technical staff.

These challenges were higher in the rurally located schools in Uganda, and observation showed that the usage, knowledge, and availability of ICT were moribund. This was consistent with Omodan, Tsotetsi and Dube's (2019) who indicated that rural communities and their schools suffered from access to equitable educational facilities such as computers and other teaching materials. This was not limited to Uganda rural locations; reports also showed that South Africa rural areas encountered various issues, including epileptic power supply and ill-infrastructures, including lack of internet of things (Adukaite, et al., 2017; Omodan, 2020). In the same vein, Mestry and Ndhlovu (2014) also confirmed that rural schools were affected by inadequate and insufficient usage of teaching and learning materials. This argument informed the choice of this study to be conducted at Bwera Sub County in Kasese District being a rural community.

Specifically, the study was done in Mpondwe Lhubiriha Town Council, one of the administrative areas in Bwera Sub County. By government policy, secondary schools in the area were required to teach ICT because computer studies were compulsory for secondary school students in Uganda (Uganda Communications Commission [UCC], 2014). To implement the policy, the government of Uganda established computer laboratories in 634 (62.0%) government-aided secondary schools with computers having virtual science content installed. In addition, 930 teachers were retooled with computer skills (Lukenge, 2019). In Bwera Sub County, schools such as St Charles Vocational S.S Kasanga, and Bwera Secondary School benefited from the government programme of establishing computer laboratories (UCC, 2014). However, despite introducing ICT in secondary schools in the country, most teachers continued to use the traditional methods (classical methods) of teaching that included chalk and talk, dictation of notice and lecture methods without incorporating ICT in teaching (Lukenge, 2019). This was because, despite the retooling of teachers with computers, their computer skills remained low. Indeed, the Ministry of Education struggles to get computer literate teachers to train fellow teachers in government-aided secondary schools to promote e-learning (Otage, 2021).

Still, Bwera Sub County being rural, internet connectivity was poor or nonexistent with all schools not connected to the internet broadband. This was because only 9 percent of rural areas had access to the Internet in Uganda due to low penetration (Gillwald, 2019). The internet connectivity problem was exacerbated by the internet tax of 12 per cent on mobile bundles (MBs) that increased the cost of internet usage. Besides, some schools were not connected to electricity. Even those connected to the hydroelectricity national grid used it to the minimum level because of the high service fee cost. The above contextual evidence suggested that a myriad of problems affected ICT usage in teaching in schools in Ugandan secondary schools. This study thus examined the extent of ICT usage in secondary schools and the factors relating to it specifically looking at teacher characteristics in rural secondary schools of Bwera Sub County in Kasese District.

2. Literature Review

This section contains both the theoretical framework and the literature review. The adopted theory, Innovation Diffusion Theory was discussed alongside other relevant literature under the following sub-headings; perceived usefulness of ICT and use of ICT in teaching, ease of use and use of ICT in teaching and teachers' ICT competence and use of ICT in teaching.

2.1 Theoretical Review

The Innovation Diffusion Theory (IDT) developed by Everett Rogers in 1962 and Technological Acceptance Model (TAM) advanced by Davis in 1989 and Davis, Bagozzi and Warshaw in 1989 were the basis for this study. IDT describes the several parts within the diffusion process, how they interact, facilitate or impede the adoption of an innovation, and how they can be controlled or manipulated to maximise adoption (Gray, 2012). The theory postulates that innovation is an idea, object, or practice perceived as new by the individual or organisation. Since various individuals may perceive the innovation differently and therefore decide to adopt the innovation at various points in the diffusion process, diffusion thus is the process by which overtime an innovation is conveyed through certain channels among the members of a social system (Robert, Greenhalgh, MacFarlane & Peacock, 2009). There are four main elements of diffusion of innovation: innovation, communication channels, time, and social system. Innovation refers to an idea, practice, or object that is perceived as new by an individual or any other unit of adopters. There are five characteristics that determine the innovation's adoption rate: relative advantage, compatibility, complexity, trialability, and observability (Soffer, Nachmias & Ram, 2010).

Relative advantage is the degree to which an innovation is considered as being better than the idea it replaced (perceived usefulness) (Bakkabulindi, 2014). Compatibility refers to the degree to which innovation is regarded as being consistent with the potential end-users' existing values, prior experiences, and needs and users' competence (Vagnani & Volpe, 2017). Complexity is the end-users' perceived level of competence or difficulty in using innovations. Trialability refers to the degree to which innovations can be tested on a limited basis (Scott, Plotnikoff, Karunamuni, Bize & Rodgers, 2008). Observability refers to the degree to which the results of innovations can be visible by other people. According to Lee, Hsieh and Hsu (2011), these characteristics explain end-user adoption of innovations and decision-making. Innovations that are perceived as having all these elements will be adopted more rapidly than other innovations (Rogers, 2010). IDT reveals that characteristics that lead to the use of technology, such as the use of ICT in teaching, include complexity that is the end-users' perceived level of competence or difficulty in using an innovation (Buabeng-Andoh, 2012). Therefore, IDT will relate teachers 'competence and use of ICT in teaching in secondary schools. In addition, the study used TAM, which is a model that explains how knowledge and perceptions such as perceived usefulness and perceived ease of use affect integration or use of ICT. TAM, which identifies the importance of perceived usefulness and ease of use in relation to ICT integration, was used to relate the two variables to the use of ICT.

2.2 Perceived Usefulness of ICT and use of ICT in Teaching

Different scholars have related perceived usefulness and use of ICT in teaching. For instance, Ali, Nargis, Yasmeen and Iqba (2015) examined the use of ICT to make the teaching-learning process effective and the factors influencing ICT use in the teaching-learning process in secondary schools in Pakistan. The findings revealed that secondary teachers had a keen desire for the use of ICT and its integration within the classroom environment. Akinde and Adetimirin (2017) investigated the effect of perceived usefulness on the use of ICT in teaching by library educators in universities in Nigeria. The findings showed that many ICTs were beneficial to teaching. Asubiojo and Ajayi (2017) examined the role of information and communication technology in enhancing instructional effectiveness in teacher education in Nigeria. The findings revealed that the implementation and use of ICT in Education improved the education system by enhancing teachers' instructional effectiveness. Khokhar and Javaid (2016) investigated students' and teachers' use of ICT in their everyday life in Pakistan. The study found that both students and teachers believed that ICT was a very important tool to maximise learning in the classroom.

In relation to the above, Ogwuche, Musa and Nyam (2018) assessed secondary school teachers' use of information and communication technology (ICT) in Nigeria with teachers as a unit of analysis.

The finding revealed that teachers' perceived use of ICT was useful in facilitating knowledge delivery and improved learners' performance. Venkatesh, Croteau and Rabah (2014) explored perceptions of the effectiveness of instructional uses of technology in higher education in Hawaii. The results indicated that ICT facilitated students' learning experiences, improved their learning and increased their interactions with others. Tella, Tella, Toyobo, Adika and Adeyinka (2007) examined secondary school teachers' use of ICTs and its implications for further development of ICTs use in Nigerian secondary schools. The results indicated that the application of technology in teaching had the advantage of heightening the motivation; helping recall of previous learning; and providing new instructional stimuli, among others. However, the context of all the studies above was outside Uganda, whose contextual situation might have been different. Therefore, the researcher deemed it imperative that this study be conducted in the context of teachers in Uganda.

2.3 Ease of use and use of ICT in teaching.

Different scholars have related ease of use and use of ICT in teaching. For instance, Agufana, Too and Mukwa (2018) explored the relationship between perceived ease of use and instructional use of ICT by lecturers in technical training institutions in Kenya. The results showed that a larger per cent of the respondents believed that use ICT eased teaching. Elkaseh, Wong and Fung (2016) studied the perceived ease of use and usefulness of social media for e-learning in Libya. The results revealed that the respondents indicated that when people begin regarding social networking media as simple and easy to use, individuals would feel that social media is more useful and have more intention to use e-learning technology for learning and teaching in schools. Khlaif (2018) examined factors influencing teachers' attitudes towards the integration of tablets into their classrooms for teaching purposes in Palestine on teachers. The results reported that the complexity of using the devices had a negative impact on teachers' attitudes. Razak, Othman and Hamzah (2017) examined information communication and technology (ICT) usage and teachers' acceptance of using ICT in the teaching process in Malaysia. The result revealed that teachers indicated that they used ICT in the teaching process because it was easy for them to apply it in their teaching. The literature above showed that studies revealed that ease of use influences the use of ICT in teaching. However, all the studies were skewed outside Uganda, making it essential that this study be carried out in Uganda.

2.4 Teachers' ICT Competences and Use of ICT in Teaching

Scholars have related Teachers' ICT Competence and the use of ICT in teaching. For instance, Agbo (2015) studied factors influencing the Use of ICT in teaching computer studies in Ohaukwu Local government area in Ebonyi State, Nigeria. The results revealed that teachers were more likely to integrate ICT in their courses if they are competent in ICT use. Aworant (2016) examined ICT use in Nigeria educational assessment system with its emerging challenges on teachers and students. The results indicated that poor literacy levels among teachers and students', lack of ICT skilled personnel, inadequate ICT infrastructures and lack of funding among others were the major challenges of ICT in Nigeria educational assessment system. Maisamari, Adikwu, Ogwuche and Ikwoche (2018) assessed teachers' competency in the use of ICT on teachers in Nigeria. The findings indicated that lack of competence in ICTs was one of the factors hindering readiness and confidence of some teachers in the use of ICTs in teaching.

Further, Marcial and Rendal (2014) examined the factors that determined the use of ICT in Aba North District secondary schools in Malaysia. The results showed that ICT competency was one of the factors that influenced the implementation and use of ICT in Education. Varol (2013) sought to find out the relationship between elementary school teachers' ICT engagement and their attitudes towards the use of technology in Turkey. The study found out that teacher ICT competency was a driving force towards achieving technology integration goals into the classroom. Wei, Piaw, Kannan and Moulod (2016) examined the relationship between teacher competency and teacher acceptance with the use of ICT in Negeri Sembilan secondary schools in Malaysia. The findings showed that teachers rated themselves as having a high level of ICT competency, and that was why they used ICTs. However, the studies above suggest that there were a number of challenges affecting the use of ICT in teaching, such as lack of ICT skilled personnel, inadequate ICT infrastructures, and lack of funding. This study limited itself to teachers' ICT competencies because, overall, the study was on teacher characteristics.

3 Methodology

3.1 Sample and Procedure

The sample comprised 127 teachers from Mpondwe Lhubiriha Town Council in the rural sub-county of Bwera in Kasese District in Western Uganda selected using simple random. The study location was consistent with Ievoli et al. (2019) definition that rural areas are characterised by low economic activities and infrastructural development with little or no access to modern life. The study adopted descriptive and correlational research designs. The descriptive research design helped describe the state of teachers' characteristics and use of ICT, while the correlational design enabled establishing relationships between the variables. The study adopted the quantitative, which helped testing hypotheses to make statistical inferences. During data collection, ethical considerations were given paramount significance. The researcher remained ethical throughout the whole study. For instance, before data collection, the researcher first obtained approval of the proposal from the Kampala International Institutional Research Ethics Committee. During data collection, the researcher ensured informed consent, anonymity, confidentiality and respected the privacy of the respondents.

3.2 Instrument

The data collection instrument was a self-administered questionnaire (SAQ) comprising three sections, namely; A through C. Section A was on demographic characteristics of the respondents, section B on the dependent variable and section C on the independent variables. The questionnaire was simple, short, and structured, enabling the respondents to fill it more easily. The items were measured on four-point Likert- scale categories 4 = Strongly Agree, 3= Agree. 2= Disagree, 1= Strongly Disagree. Validity of the items in the instrument was obtained through inter-judge that was the basis for calculating the content validity index (CVI). Using two judges, each of the judges provided his/ her opinion on a two-point rating scale of relevant (R) and irrelevant (IR). The CVIs for the different constructs was attained at above 0.70, which is the minimum index recommended for survey data. This ensured accuracy of the instrument. The reliability of the items in the various constructs was tested using the Cronbach Alpha (α) method provided by SPSS. Reliability for the items in the different constructs was achieved at the standard of $\alpha = 0.70$ and above. The reliabilities for the different constructs are presented in appropriate sections in the results in section 4.

3.4 Data Analysis

After the data were collected, they were coded, entered the data into the computer using the SPSS, summarised them using frequency tables to identify errors, and edited to remove errors. Data were analysed at univariate, bivariate level and multivariate levels. At univariate level, data analysis involved calculating descriptive statistics that were means. At bivariate and multivariate levels, correlation and regression analyses respectively carried out to establish the relationship between the independent and dependent variables. This produced the results required for the generalisation of the findings.

4 Results and Analysis

4.1 Background Characteristics

The results in Table 4 show that the typical respondent was male (64.7%), with 6-10 years (42.9%) experience, bachelor's degree holder (68.1%), and teaching in private schools (67.2%). The results were as presented in Table 1.

Table 1: *Respondents Background Characteristics*

Item	Categories	Frequency	Percent
Gender	Male	77	64.7
	Female	42	35.3
	Total	119	100.0
Experience	Less than 5 years	36	31.9
	5 - 10 years	51	45.1
	10 - 15 years	20	17.7
	15 years and above	6	5.4
	Total	113	100.0
Highest level of Education attained	Diploma	23	19.3
	Bachelors	81	68.1
	Postgraduate diplomas	14	11.8
	Masters	1	0.8
	Total	119	100.0
Type of School	Private	80	67.2
	Government	39	32.8
	Total	119	100.0

4.1 Use of ICT

This section presents results on ICT, the dependent variables. The concept of ICT was studied using 11 question items, and the results on the same include mean Cronbach's alpha. Table 2 shows that the respondents rated themselves as being poor because the overall mean = 1.93. However, the standard deviation = 0.41 was low, suggesting the normal distribution of the responses. Therefore, the data could be subjected to linear correlation and regression, and appropriate results obtained. The Cronbach's alpha = 0.820 implied that the data obtained on ICT use were reliable.

Table 2: *Descriptive statistics for use of ICT*

Use of ICT	**Means**	**α**
I use ICT in lesson preparation	1.46	0.820
I use ICT in lesson deliver	1.73	
I use ICT in sharing information with colleagues	2.06	
I use ICT when carrying out research	2.03	
I use ICT when accessing more information from internet	2.15	
use ICT in making progress reports	1.86	
I use ICT in keeping students' information	1.89	
I use ICT to monitor attendant of students	1.62	
I use ICT in sharing resources with colleagues	1.96	
I use ICT to interacting with my students	2.18	

Overall mean and Standard deviations: (mean = 1.93, Std = 0.41)

4.2 Teacher characteristics

This section presents results on teacher characteristics which was the independent variable. The concept of teacher characteristics was perceived as a multi-dimensional construct made of three concepts that are namely, perceived usefulness of ICT, Perceived ease of use of ICT and ICT competencies. The results on the same presented in Table 3 include means and Cronbach's alpha.

Table 3: *Descriptive statistics for Teacher Characteristics*

Perceived use of ICT	**Means**	**α**
Using ICT makes my lesson more interesting	3.68	0.894
Using ICT makes my lesson more fun	3.57	
Using ICT makes my lesson more diverse	3.83	
Using ICT improves my presentation of materials	3.65	
Using ICT makes lesson easier	3.56	
Using ICT increases my job performance	3.61	
Using ICT makes me work more quickly	3.67	
Using ICT in my teaching is enjoyable	3.43	
Ease of use	**Means**	**α**
Using ICT makes it easy to control my class.	2.47	0.75
ICT is easy to use	2.33	
I easily prepare lessons using ICT	2.54	
It is less expensive to use ICT	2.92	
Using ICT is very flexible for me	2.48	
I rarely encounter technical problems when using ICT	2.87	
It is cheap using ICT in teaching	2.53	
ICT competencies		α
Using internet to search for information	2.50	0.917
Using Microsoft excel	2.28	
I can use formula in spreadsheet	2.29	
Storing and sharing files using a storage device like USB.	2.58	
Transferring files for example digital camera, mobile phone	2.66	
Finding, downloading and installing software from internet	2.35	
Sending emails with attached files (documents, videos, pictures videos)	2.44	

Overall mean and Standard deviations: Perceived use of ICT (mean = 3.63, Std = 0.789), Ease of use (mean = 2.60, Std = 0.815), and ICT competencies (mean = 2.44, Std = 0.89).

The results in Table three on perceived usefulness indicate that the overall mean =3.63. This suggests that the teachers rated that ICT is useful was high. The overall results on ease of use were a mean = 2.60 indicating that the teachers rated their ease of use as fair. For the results on ICT competence, the overall mean = 2.44. This means that the teachers rated ICT competence as poor. With all standards deviations being low (Perceived use [Std = 0.789] Ease of use [Std = 0.815] and ICT competencies [Std = 0.89]), the data suggested that it was amenable to linear correlation and regression. The respective Cronbach's alphas that were α= 0.894, 0.75 and 0.917 suggested that the items measuring the three concepts respectively were reliable. The results were above the threshold Cronbach alpha of 0.70.

4.3 Regression of Use of ICT on Teachers Characteristics

A regression analysis was carried out to establish whether teacher characteristics, namely; perceived use of ICT, ease of use, and ICT competence had an influence on ICT use. The results were as presented in Table 4.

Table 4: *Regression of Retention of Health Workers on Motivational Strategies*

Teachers Characteristics	Standardised Coefficients Beta	Significance p
Perceived Usefulness	0.230	0.008
Perceived ease	0.235	0.008
ICT Competences	0.509	0.000
Adjusted R^2 = 0.333		
F = 18.485, p = 0.000		

The results in Table 4 show that teacher characteristics namely; perceived usefulness, perceived ease of use of ICT and ICT competence, explained 33.3% of the variation in the use of ICT (adjusted $R^2 = 0.333$). This means that 66.7% of the variation was accounted for by other factors not considered under this model. All the teacher characteristics namely; perceived usefulness ($\beta = 0.230$, $p = 0.008 < 0.05$), perceived ease of use ($\beta = 0.235$, $p = 0.008 < 0.05$) and ICT competences ($\beta = 0.509$, $p = 0.000 < 0.05$) had a positive and significant influence on use of ICT. However, the magnitudes of the respective betas (β) suggest that ICT competence were the most significant, followed by ease of use and perceived usefulness, respectively.

5. Discussion

The findings revealed that perceived usefulness had a positive and significant influence on the use of ICT. This finding is consistent with the findings of previous scholars. For instance, Akinde and Adetimirin (2017) found out that many ICTs were beneficial to teaching. Similarly, Asubiojo and Ajayi (2017) reported that that the implementation and use of ICT in Education improved the education system by enhancing teachers' instructional effectiveness. Khokhar and Javaid (2016) indicated that teachers believed that ICT was a very important tool to maximise learning in the classroom. Also, Ali et al. (2015) revealed that secondary teachers had a keen desire for the use of ICT and its integration within the classroom environment. Further still, Ogwuche et al. (2018) established that teachers' perceived use of ICT was useful in facilitating knowledge delivery and improved learners' performance. Venkatesh et al. (2014) found out that ICT facilitated students' learning experiences, improved their learning and increased their interactions with others. Likewise, Tella et al. (2007) reported that the application of technology in teaching had the advantage of heightening motivation; helping recall previous learning; and providing new instructional stimuli. With the finding of the study consistent with the findings of previous scholars, it can be inferred that perceived usefulness had a positive and significant influence on the use of ICT.

The study also found out that perceived ease of use had a positive and significant influence on the use of ICT. This finding concurs with the findings of previous scholars. For example, Agufana et al. (2018) reported that the larger per cent of the respondents believed that use ICT eased teaching. Relatedly, Elkaseh et al. (2016) revealed social networking media was easy to use and was useful for learning and teaching in schools. Similarly, Razak et al. (2017) found out that teachers indicated that they used ICT in the teaching process because it was easy for them to apply in their teaching. However, Khlaif (2018) disagreed that the complexity of using the devices had a negative impact on teachers' attitudes. Nevertheless, with the fining of the study concurring with the findings of most scholars, it can be deduced that perceived ease of use had a positive and significant influence on the use of ICT.

Lastly, the study revealed that ICT competence had a positive and significant influence on the use of ICT. The findings of previous scholars support this finding. For example, Agbo (2015) revealed that teachers were more likely to integrate ICT in their courses if they were competent in ICT use. Relatedly, Aworant (2016) indicated that poor literacy levels among teachers and students', lack of ICT skilled personnel, inadequate ICT infrastructures and lack of funding, among others, were the major challenges of ICT in Nigeria educational assessment system. Similarly, Maisamari et al. (2018) established that lack of competence in ICTs was one of the factors hindering readiness and confidence of some teachers in the use of ICTs in teaching. Further, Marcial and Rendal (2014) reported that ICT competency was one of the factors that influenced the implementation and use of ICT in Education. Also, Varol (2013) found out that teacher ICT competency was a driving force towards achieving technology integration goals into the classroom. Similarly, Wei, Piaw et al. (2016) found out that teachers rated themselves as having a high level of ICT competency, and that was why they used ICTs. With the finding of the study supported by previous scholars, it can be conjectured that ICT competence had a positive and significant influence on the use of ICT.

6. Conclusion

The discussion above led to the making following conclusions teacher characteristics and use of ICT in teaching-learning. First, perceived usefulness is a prerequisite for teachers' use of ICT. This is especially so when ICT makes lessons more interesting, fun, more diverse, improves the

presentation of materials, makes lessons easier, increases job performance and makes work quicker. Secondly, perceived ease of use is imperative for the use of ICT. This is when teachers are able to easily prepare lessons using ICT, ICT is less expensive to use and teachers rarely encounter technical problems when using ICT. Finally, ICT competence are essential for the use of ICT. This is because teachers can use the internet to search for information and store and share files using storage devices like USB. Therefore, it is recommended that the Ministry of Education and headteachers in rural secondary schools should provide awareness training to teachers about the usefulness of ICT. The Ministry of Education and Schools should train teachers in the use of ICT and develop their ICT competence.

References

Adukaite, A., Van Zyl, I., Er, Ş., & Cantoni, L. (2017). Teacher perceptions on the use of digital gamified learning in tourism education: The case of South African secondary schools. *Computers & Education, 111*, 172-190. https://doi.org/10.1016/j.compedu.2017.04.008

Agufana, P. B., Too, J. K., & Mukwa, C. W. (2018). Assessment of perceived ease of use and instructional use of ICT by lecturers in technical training institutions in Kenya. *African Journal of Education, Science and Technology, 5*(1), 150-154.

Akinde, T. A., & Adetimirin, A. A. (2017). Perceived usefulness as a correlate of extent of Information and Communications Technologies (ICTs) use for teaching by library educators in universities in Nigeria. *International Journal of Library and Information Science, 9*(3), 14-24. doi: 10.5897/IJLIS2016.0739

Ali, M. Q., Nargis, N., Yasmeen, R., & Iqba, Z. (2015). ICT use for effective teaching-learning process in secondary schools in Punjab Province. Asian Journal of Social Sciences & Humanities, 4(3), 138-143.

Ampofo, S. Y., Bizimana, B., Mbuthi, J., Ndayambaje, I., Ogeta, N., & Orodho, J. A. (2014). Information communication technology penetration and its impact on education: Lessons of experience from selected African Countries of Ghana, Kenya and Rwanda. *Journal of Information Engineering and Applications, 4*(11), 84-95.

Ampofo, Y. S., Bizimana, B., Mbuthi, J., Ndayambaje, I. Ogeta, O. & Orodho, A. J. (2014). Information Communication Technology Penetration and its Impact on Education: Lessons of Experience from Selected African Countries of Ghana, Kenya and Rwanda. *Journal of Information Engineering and Applications,* 4(11), 225-256.

Andersson, B., Nfuka, E. N., Sumra, S., Uimonen, P., & Pain, A. (2014). Evaluation of implementation of ict in teachers' colleges project in Tanzania (Final EvaluationReport No. Retrieved from http://sida publications.citat.se/ interface/ stream/ stream.asp

Asubiojo, R. O., & Ajayi, J. A. (2017). The role of information and communication technology in enhancing instructional effectiveness in teachers' education in Nigeria. *KIU Journal of Social Sciences, 3*(2), 289-295.

Bakkabulindi, F. E. K. (2014). A call for return to Rogers' Innovation Diffusion Theory. *Makerere Journal of Higher Education*, *6*(1), 55-85.

Barakabitze, A. (2014). The context of education initiatives, importance and inhibitors of ICTS towards improving teaching in Tanzania: A critical literature review. *Information and Knowledge Management, 4*(10), 83-97.

Buabeng-Andoh, C. (2012). Factors influencing teachersâ adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using ICT*, *8*(1). Open Campus, The University of the West Indies, West Indies. Retrieved March 2, 2020 from: https://www.learntechlib.org/p/188018/.

Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: A structural equation modeling analysis. *International Journal of Information and Education Technology*, *6*(3), 192-198. doi: 10.7763/IJIET.2016.V6.683

Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: A structural equation modeling analysis. *International Journal of Information and Education Technology*, *6*(3), 192

Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*, *1*(2), 175-191.

Gillwald, A. [Ed]. (2019). The state of ICT in Uganda. Cape Town: Research ICT Africa.

Guma, A., Haolader. F. A., & Khushi, M. (2013). The role of ICT to make teaching-learning effective in higher institutions of learning in Uganda. *International Journal of Innovative Research in Science, Engineering and Technology*, 2 (8), 4061-4073.

Huang, K., & Lau, V. K. (2014). Enabling wireless power transfer in cellular networks: Architecture, modeling and deployment. *IEEE Transactions on Wireless Communications*, *13*(2), 902-912.

Ievoli, C., Belliggiano, A., Marandola, D., Milone, P., & Ventura, F. (2019). Information and communication infrastructures and new business models in rural areas: The case of Molise region in Italy. *European Countryside, 11*(4), 475-496. https://doi.org/10.2478/euco-2019-0027

Kaino, L. M. (2008, March). Information and Communication Technology (ICT) developments, utilisation and challenges in ICMI history. In *Symposium on the Occasion of the 100th Anniversary of ICMI Rome* (pp. 5-8)

Khlaif, Z. N. (2017). Factors influencing teachers' attitudes toward mobile technology integration in K-12. *Tech Know Learn*. DOI 10.1007/s10758-017-9311-6

Khokhar, A. J., & Javaid, S. (2016). Students and teachers perceptions of ICT use in classroom: Pakistani classrooms. In *The Asian Conference on Technology in the Classroom*.

Kurga, S. J. (2014). The influence of teachers' age, gender and level of training on attitudes towards the use of integrated e-learning approach to the teaching of Business Studies in Kenyan secondary schools. *Journal of Emerging Trends in Educational Research and Policy Studies*, *5*(2), 190-198.

Lee, J. A. N., & Impagliazzo, J. [Eds.]. (2006). *History of computing in education*. New York: Springer Science and Business Media, Inc.

Lee, Y.-H., Hsieh, Y.-C., & Hsu, C.-N. (2011). Adding Innovation Diffusion Theory to the Technology Acceptance Model: Supporting Employees' Intentions to use E- Learning Systems. Educational Technology & Society, 14 (4), 124–137

Lukenge, S. (2019). *Institutional factors and teachers' ICT usage in secondary Schools: A case of Kajjansi Town Council, Wakiso District* (Masters Dissertation, Kyambogo University). Kampala, Uganda.

Maisamari, A. M., Adikwu, V. O., Ogwuche, C. O., & Ikwoche, F. I. (2018). Assessment of secondary school teachers' use of information and communication technology (ICT) in Anyingba Metropolis, Kogi State, Nigeria. *Journal of Education and Entrepreneurship*, *5*(1), 32-47. https://doi.org/10.26762/jee.2018.40000010

Mestry, R., & Ndhlovu, R. (2014). The implications of the National Norms and Standards for School Funding policy on equity in South African public schools. *South African Journal of Education, 34*(3). 1-11. https://doi.org/10.15700/201409161042

Mwendwa, N. K. (2017). Perception of teachers and principals on ICT integration in the primary school curriculum in Kitui County, Kenya. *European Journal of Education Studies, 3*(7), 408-430.

Ndawula, S., Kahuma, B. J., Mwebembezi, J., & Masagazi, J. Y. (2013). Getting schools ready for integration of pedagogical ICT: The experience of secondary schools in Uganda. *International Journal of Academic Research in Business and Social Sciences, 3*(2), 46-61.

Newby, L. S., Hite, J. M., Hite, S. J., & Mugimu, C. B. (2013). Technology and education: ICT in Ugandan secondary schools. *Education and information technologies*, *18* (3), 515-530.

Ogwuche, C. H., Musa, M. H., &Nyam, J. (2018). Influence of perceived organisational justice and organisational climate on job performance among secondary school teachers in Makurdi Metropolis of Benue State. *Management and Organizational Studies*, *5*(2), 34-46.

Omodan, B. I. (2020). Managing the Psycho-Social Vacuum of COVID-19 among Rural Learners through Ubuntu. *Journal of Educational and Social Research, 10*(6), 266-278. https://doi.org/10.36941/jesr-2020-0125

Omodan, B. I., Tsotetsi C. T., & Dube, B. (2019). Decolonising Rural-Urban Dichotomy in South Africa: An Asset-Based Approach. *Progressio: South African Journal for Open and Distance Learning Practice, 41*(1), 1-17. https://doi.org/10.25159/0256-8853/5665

Otage, S. (2021, January 26). Govt struggles to find ICT trained teachers. *Daily Monitor*. Retrieved from https://www.monitor.co.ug › ... › News › National

Razak, K. A., Othman, T. N. T., & Hamzah, M. (2014). Information and communication technology among excellent Islamic education teachers in Selangor Malaysia. *International Education Studies*, *7*(13), 146-156. doi: 10.5539/ies.v7n13p1 46

Robert, G., Greenhalgh, T., MacFarlane, F., & Peacock, R. (2009). Organisational factors influencing technology adoption and assimilation in the NHS: a systematic literature review. *Report for the National Institute for Health Research Service Delivery and Organisation programme*. Queen's Printer and Controller of HMSO 2

Salehi, H., &Salehi, Z. (2012). Integration of ICT in language teaching: Challenges and barriers. *Proceedings of the 3rd International Conference on e-Education, e-Business, e-Management and e-Learning (IC4E, 2012), IPEDR Vol. 27, 215-219.*

Scott, S. D., Plotnikoff, R. C., Karunamuni, N., Bize, R., & Rodgers, W. (2008). Factors influencing the adoption of an innovation: An examination of the uptake of the Canadian Heart Health Kit (HHK). *Implementation Science*, *3*(41). https://doi.org/ 10.1186/1748-5908-3-41

Tella, A., Tella, A., Toyobo, O. M., Adika, L. O., & Adeyinka, A. A. (2007). An Assessment of Secondary School Teachers Uses of ICT's: Implications for Further Development of ICT's Use in Nigerian Secondary Schools. *Turkish Online Journal of Educational Technology-TOJET*, *6*(3), 5-17.

Uganda Communications Commission [UCC]. (2014). *Integrating ICT into education in Uganda*. Kampala: UCC.

Vagnani, G., & Volpe, L. (2017). Innovation attributes and managers' decisions about the adoption of innovations in organisations: A meta-analytical review. *International Journal of Innovation Studies*, *1*(2), 107-133. https://doi.org/10.1016/j.ijis.2017.10. 001

Venkatesh, V., Croteau, A. M., & Rabah, J. (2014, January). Perceptions of effectiveness of instructional uses of technology in higher education in an era of Web 2.0. In *2014 47th Hawaii international conference on system sciences* (pp. 110-119). IEEE.

Wekke, I. S., & Hamid, S. (2013). Technology on language teaching: A research on Indonesian pesantren. *Procedia-Social and Behavioral Sciences*, *83*, 585-589.