INSTITUTIONAL FACTORS AND TEACHERS' ICT USAGE IN SECONDARY SCHOOLS. A CASE OF KAJJANSI TOWN COUNCIL, WAKISO DISTRICT.

BY

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DECLARATION

I, Lukenge Samuel, hereby declare that this dissertation under the title "*institutional factors and teachers' ICT usage in secondary schools. A case of Kajjansi Town Council, Wakiso District*", is my original work and has never been submitted for any academic award in any institution or university except where due reference is clearly exemplified in the text.

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APPROVAL

We certify that this research dissertation entitled; "institutional factors and teachers' ICT usage in secondary schools. A case of Kajjansi Town Council, Wakiso District." by Lukenge Samuel has been carried out under our supervision and is now ready for submission with our approval.

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ACKNOWLEDGEMENT

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ACRONYMS AND ABBREVIATIONS.

ACPA - American College Personnel Association

DES   – District Education Service

IAEG - Inter-Agency and Expert Group

ICT   - Information and Communication Technology

MoES – Ministry of Education and Sports.

NASPA - National Association of Student Personnel Administrators.

NEPAD - New Partnership for Africa's Development

NIISP - National ICT Initiatives Support Programme

UCC   - Uganda Communications Commission

UNESCO – United Nations Education, Scientific and Cultural Organization.

ABSTRACT

The study aimed at establishing the underlying institutional factors that affect ICT usage by teachers in secondary schools in Kajjansi Town Council, Wakiso District. Specifically the study sought; to establish whether the secondary schools in Kajjansi Town Council have adequate ICT infrastructure; to determine whether the secondary schools have competent ICT staff; and to find out whether the secondary schools have ICT school policies that support. The study used cross-sectional research design that included both qualitative and quantitative approaches. Questionnaire, observation and interview methods were used. Simple random and purposive sampling techniques were employed. The quantitative data was analyzed using the Statistical Package for Social Sciences (SPSS) software and Correlation and regression analysis were generated.

Results show that there is a significant relationship between ICT infrastructure and teachers' ICT usage. ICT Competence of Teachers significantly affect the teacher's ICT usage. ICT school policies also significantly affect teachers ICT usage.

In conclusion, it was established that ICT infrastructure, ICT policies and teachers competence influence teacher ICT usage. ICT infrastructure, like computers, makes it easy for teachers to impart skills to the students. It also gives them morale to practice every time and acquire more skills. Policies for ICT use are also very important as they can influence the of ICT equipment to schools and the learning of ICT by learners. The competency of teacher's supply is also key in influencing teacher ICT use because it increases their morale to teach students and also practice ICT. The study recommends that the government of Uganda through the line Ministry should supply enough ICT infrastructure to schools for both teachers and students use. The government should set up favorable policies for support the use of ICT in both private and public secondary schools.

<p align="center">**CHAPTER ONE**</p>

<p align="center">**INTRODUCTION**</p>

1.0. Introduction

This chapter covers the background to the study, statement of the problem, purpose of the study, research objectives and research questions, scope of the study, significance of the study and the conceptual frame work.

1.1 Background to the study

1.1.1 Historical perspective

UNESCO, (2002), Technological revolution has become a global phenomenon. It is no longer taken as a luxury as it used to be in the early 1990's. Many countries now regard understanding of Information and Communication Technology (ICT) as part of the core of education, alongside reading, writing and numeracy.

World governments through *Sustainable Development Goals* (SDGs) have realized the need and value of ICTs in their respective economies to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". They believe that integrating ICTs in teaching and learning could improve learners 'capabilities' (Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs), 2016)

The introduction of the modern library and the pencil in the mid-1600s marked the beginning of the use of technology in education. In the latter part of the 1970s, the very first computer was integrated into schools. By the early 1980s when IBM created the first PC, nearly twenty percent of schools in the UK and the US had computers in use.

By the year 2005, more than 50% of public schools in UK and US included laptops for students in their technology budget. It was at this same time, more than 90% of schools had access to the Internet. By 2011, both in UK and US many schools were including tablet PCs for students and teachers in their technology budget.

In African, governments have equally invested in the ICT infrastructures with South Africa in the lead where by 2009, 85% of the country had gone digital (David Souter, 2012). East Africa has greatly advanced in technology as reflected in the ICT policies designed by the different countries for example Kenya, Rwanda, Tanzania have already implemented the one laptop one child policy.

Uganda started embracing ICTs as part of its economic development strategy when the first mobile phone service came onto the Ugandan scene in December 1994. The telecom company Celtel, using the GSM 900 technology mainly targeted high end users like business people and the diplomatic community. The cost of owning and maintaining a mobile phone was so high that that having a car was estimated to be a cheaper undertaking. Owning a mobile phone was a status symbol.

Since then, the ICT sector grew by 30.3% in the 2009/10 financial year accounting for 3.3% of the GDP. Over 50% of the population are subscribed to mobile phone service provider and the number of internet users increased from 2,475,812 in 2008 to 4,178,085 in 2010 (168% of growth). Millions own smartphones, a fact driving digital penetration even in the rural countryside. Internet users are estimated at 6.5million as of 2012, accounting for 18.5 percent of the country's population of 35 million. The increase in internet usage has been further fueled by the country's youth bulge. Uganda has the world's youngest population, with over 78%

below 30 years. These are more embracing of ICTs than their older, and inevitably old school, parents. (Sabiti 2016)

The Ministry of Education and Sports in Uganda has become much more proactive over the last two years as a result of the recent policy emphasis on ICT. Uganda was the first country in Africa that has used Microsoft Partners in learning to develop localized digital content basing on the national curriculum (MAPEA, 2004)

1.1.2 Theoretical perspective

This kind of thinking can be related to the beliefs that were highlighted by constructivists theorists like Dewey in the famous constructivism theory. According to *Mascolol and Fischer, 2005*" Constructivism is the philosophical and scientific position that knowledge arises through a process of active construction."

In the constructivist classroom, the focus tends to shift from the teacher to the students. The classroom is no longer a place where the teacher ("expert") pours knowledge into passive students, who wait like empty vessels to be filled. In the constructivist model, the students are urged to be actively involved in their own process of learning.

The main activity in a constructivist classroom is solving problems. Students use inquiry methods to ask questions, investigate a topic, and use a variety of resources to find solutions and answers. As students explore the topic, they draw conclusions, and, as exploration continues, they revisit those conclusions. Exploration of questions leads to more questions.

It's therefore important to expose learners to primary data sources (internet) to build their potentials in discovering and interacting with others to share experiences. ICTs on this note

give instant access to knowledge so that learners become their own teacher to a certain extent. It's therefore important to check teachers ICT competence levels, if this is to be realized.

1.1.3 Conceptual perspective

For many people, Information and Communication Technology, means computers and computing related activities. However, this is not the case although computers and their applications play a significant role in modern information management systems (Law, 2003).

Perron, (2010), ICTs are broadly defined as diverse set of technological tools and resources used to communicate, convey, create, disseminate, manipulate, manage, and store data or data by electronic means. It includes computers, the internet, broadcasting technologies (radio and television), telephone, e-mail, text messaging, video chat (example, Skype), and online social media (example, Facebook, watsapp).

In this study ICTs is viewed as a set of tools that can be used by the teacher to process, avail and access information and communication from within and abroad to facilitate teaching and learning in secondary schools in Kajjansi Town Council, Wakiso District. The services and products may include but not limited to internet, mobile phones, computers, radios, television, and photocopiers among others.

In this study as defined by Bakabulindi (2008), ICTs can still refer to the availability and user-ability of these gadgets. Roediger (2017) defines learning as "Acquiring knowledge and skills and having them readily available from memory so you can make sense of future problems and opportunities" such learning empowers student to make wise choices and solve problems in future. Learning can be obtained through academic studies and working experiences while on job. In this study learning will simply refer to the process through which learners will acquire

knowledge and skills with the interaction of different technologies with an aim of achieving academic excellence and applying the acquired skills and knowledge in solving future challenges.

Recent trends towards the constructivist approach and teacher learner interaction suggest that the learning process can be enhanced through the use of technology, which adapts to the presentation of user needs, preferences and requests. Due to the interactive nature of the internet, it is well suited for a creative learning approach (World Bank, 2004).The ability to share knowledge and experiences with an emerging global community is one of the biggest benefits of internet to education. This enables the students to actively seek out their counterparts in other countries in order to come up with joint research projects on a variety of topics (World Bank, 2004).

In this study, the institutional factors include; adequate ICT support infrastructure, and adequate ICT competent staff and ICT school policy. ICT support infrastructure in this case refer to well-equipped computer laboratory, power supply, internet access, ICT accessories such as mobile phones, radios televisions. Competent staff include, trained staff to use the equipment, special capacity building sessions in ICT, support staff in ICT such as laboratory technicians, having enough ICT teachers. ICT school policy include, timetable allocations to lessons, laboratory policies, ICT budgets and procurement processes in schools, school rules and regulations on possession of ICTs by both teachers and learners.

1.1.4. Contextual perspective.

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and much of it is available to students as well as teachers at the same time.

As new concepts of learning have evolved, teachers are expected to facilitate learning and make it meaningful to individual learners rather than just to provide knowledge and skills. Modern developments of innovative technologies have provided new possibilities to teaching professions but at the same time have placed more demands on teachers to learn how to use these new technologies in their teaching.

These new technologies are seen currently as mind tools, because they might function as intellectual tool kits that allow the citizen of the third millennium to create new knowledge; To reflect on the process of their own learning; To engage in critical thinking about a subject; To help them in internal negotiations and meaning making; To construct personal representations of meanings and to support mindful thinking, (Wegerif, 2004); Improvement of communication among students and teachers Stensaker (2007); Promotion of collaborative learning and learning centered approaches to teaching (sellinger,2003); Increased flexibility and the development of competences-based curriculum, Dede (2009) ; alters the learning environment and the learners. With all the efficiencies of ICT and its continuous innovations for the teaching and learning process, it is expected that all learners have access to benefit from these efficiencies. Full access to the benefits of ICT for teaching and learning is limited by the unavailability and inability to purchase relevant resources particularly in developing countries.

ICTs are exerting impacts on pedagogical approaches in the classrooms. Their contribution to changes in teaching practices, school innovation, and community services is considerable. A research review by Kozma (2005) suggests three significant concerns of consideration regarding ICTs impact on education. Firstly, student out comes such as higher scores in school subjects or the learning of entirely new skills needed for a developing economy. Secondly, we should consider teacher and classroom outcomes such as development of teachers' technology

skills and Knowledge of new pedagogic approaches as well as improved attitudes toward teaching. Finally, one has to consider other outcomes such as increased innovativeness in schools and access of community members to adult education and literacy.

Because of the increased global technological changes, it forced the government of Uganda through cabinet to approve the National ICT policy frame work 2003, drafted a sector policy on ICT in education whose main objective was to Update the legal and security measures for the effective use of ICT in education.; Address the language, socio-economic, disability, and cultural barriers to accessing ICT; Adopt cost-reducing measures to counter the high cost of ICT equipment, installation, and maintenance, paving the way for more equitable access; Produce more ICT-literate teachers; Streamline operations of the different ICT providers in order to avoid duplication and conflict of interest, and to secure everyone's co-operation; Provide the requisite ICT infrastructure to the poor rural schools during the first phase of implementation; Define the minimum technical specifications of the ICT equipment.

Many schools Uganda in various district Wakiso in particular are faced with a lot of institutional challenges which at times may be a major hindrance in the teacher's usage of ICTs in teaching and learning process. This has made many teachers to maintain the traditional methods/classical method of teaching such as chalk and talk, dictation of notice and at times lecture methods which may not be as interactive as when ICTs have been incorporated.

According to DES report (2018), few teachers in Wakiso district have embraced the use of ICTs in teaching and learning process yet if properly used could yield all the mentioned above benefits to the learners especially academic excellence and future problem solving skills as well as helping transforming the current teacher-centered methods of teaching to an interactive

child-centered method where learners highly interact with the environment both within the country and outside the country through the use of ICTs. It's therefore important for the government to pay a closer attention to the challenges that affect teachers ICT usage in secondary schools in order to realize the benefits of education. On this note therefore, this study seeks to investigate the institutional challenges that affect teachers from using ICTs in secondary schools in Kajjansi Town Council Wakiso District.

1.2 Statement of the Problem

Whereas ICT is common in Uganda, and Kajjansi Town Council in particular, a good number of teachers have not yet embraced these new ICTs for purposes of enhancing learning in the classroom in a systematic way. Much as the government of Uganda has continued to support and increase awareness for example according to Uganda Communications Commission (UCC) report and Ministry of Education and Sports report (2014), 1027 school have been provided with 816 labs installed with internet connectivity, 634 schools have virtual science content installed, 930 teachers have been retooled with computer skills and 62,000 community training labs (person) have been put in place (UCC, 2014). Ministry of ICT and national guidance report 2018, 2.5billion shillings through National ICT Initiatives Support Programme (NIISP) was issued out to support ICT use in schools, retooling of teachers in form of workshops, training of support staff such as laboratory technicians, develop ICT frameworks and manuals as well as developing ICT curriculum. Despite all the above efforts by the government, teachers ICT usage is still very low at less than 40% in Kajjansi Town council. More than 60% of the teachers do not use the available ICT equipments. This remains a key challenge because if its not solved it can lead to low student competency in ICT skills and therefore affecting their employment status in future.

Apparently there is no empirical study that has been conducted in Kajjansi Town Council secondary schools to establish the institutional factors that are responsible for low ICT usage by teachers. This study therefore is intended to address this gap by establishing institutional factors that significantly affect teachers from using ICTs in the teaching and learning process

1.3 Purpose of the study

The purpose of this study was to establish the underlying institutional factors that affect ICT usage by teachers in secondary schools in Kajjansi Town Council, Wakiso District.

1.4 Objectives of the study

The objectives of the study included:

1. To establish the effect of adequate ICT infrastructure on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

2. To establish the effect of adequate staff on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

3. To establish the effect of ICT support policies on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

1.5 Research questions

1. What is the effect of adequate ICT infrastructure on teachers' ICT usage in Secondary Schools in Kajjansi Town Council?

2. What is the effect of adequate staff on teachers' ICT usage in Secondary Schools in Kajjansi Town Council?

3. What is the effect of ICT support policies on teachers' ICT usage in Secondary Schools in Kajjansi Town Council?

1.6 Significance of the study

The findings of this study may be useful to the following;

Teachers need to know more about ICT and what it can provide. They also need to be able to critically evaluate and discriminate what resource to use and whether one should be used at all. They need to be able to understand conceptually and in pedagogically-appropriate ways, how, where and why to use ICTs, improve teachers' awareness to the available ICT facilities in school to expand their knowledge and skills to improve the quality of teaching and learning. Ministry of education and sports as well as the school management in policy making and prioritizing while funding school activities and formulating institutional capacity building framework to empower ICTs for education.

1.7.0. Scope of the study

1.7.1. Content scope

The content scope of the study was limited to ICT support policies, ICT support infrastructure and ICT competent teachers and how they affect teachers in the use of ICT during teaching and learning process in Kajjansi Town Council, Wakiso District.

1.7.2. Geographical scope

The study was carried out in secondary schools in Kajjansi Town Council formally Ssisa Sub-country, Busiro county, Wakiso district. It is bordered by Katabi Town Council in the East, Nsangi in the West, Lake Victoria in the South and Makindye -Ssabagabo in the North. The schools in Kajjansi Town council were selected because there low ICT utilization in the area.

1.7.3. Time scope

The study utilized research studies for the last 15 years from 2004 to 2019. This is because it is within this period that ICT usage by teachers in schools becoming too significant

1.8 Conceptual framework.

Figure 1.1 conceptual framework showing the relationship between the study variables.

Independent variables (I.V)   Dependent Variable (D.V)

Institutional factors.

- School policies on ICT
- Adequate ICT infrastructure in school
- Staff ICT competence

Teacher ICT usage

- Assessment and evaluation of learners
  ICT incorporated lessons
- Promoting research
- Digitalized Record keeping

Extraneous Variables

- Students Absenteeism
- Management of the school
- Students population
- Staff attitude towards ICT

Source: Adopted from* Dede, (2009) *and Modified by the Researcher.

From the conceptual frame work, both the independent and extraneous variables affect the nature of the dependent variables. Extraneous variable are the other factors that affect the dependent variable. In order to minimize their effect, the researcher will use standardized procedures and instructions.

The independent variables that is to say ICT school policies, ICT infrastructure and teachers competence are expected to bring about increased number of ICT facilitated lessons, proper record keeping, promoting research amongst teachers, academic excellence of learners

1.9. Operational Definitions of Key Terms

In this study ICTs are a set of tools that can be used by the teacher to process, avail and access information and communication electronically within and abroad to facilitate teaching and learning.

Institutional factors refer to ICT skills of teachers, ICT infrastructure, and ICT policies

Secondary School is an intermediate level between elementary school and college and usually offering general, technical, vocational or college preparatory courses

An institution is a social structure in which people corporate and which influences the behavior of people and the way they live.

A teacher is a person who helps students to acquire knowledge

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter analyses the theoretical review and reviews literature related to the effect of institutional factors on teachers' use of ICT in secondary schools in Kajjansi Town Council. The literature was reviewed with the guidance of the objectives.

2.1 Theoretical review

The study was guided by Technology Acceptance Model. Technology Acceptance Model or TAM states that user acceptance of technology is affected by perceived usefulness and perceived ease-of-use (Davis, 1989). Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" and perceived ease-of-use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989).

Use refers to an individual's actual direct usage of the given system in the context of his or her job**.** Thus, use is a repeated, multiple-act behavioral criterion (Pavlou & Fygenson, 2006) that is specific with respect to target (specified system), action (actual direct usage) and context (in person's job), and non-specific with respect to time frame. Attitude refers to the degree of evaluative affect that an individual associates with using the target system in his or her job. Therefore, the definition and measurement of attitude corresponds in specificity with the definition of the behavioral criterion (Pavlou & Fygenson, 2006).

Perceived ease of use is hypothesized to have a significant direct effect on perceived usefulness, since, all else being equal, a system which is easier to use will result in increased job performance (i.e., greater usefulness) for the user. Given that a non-trivial fraction of a

user's total job content is devoted to physically using the system per say, if the user becomes more productive in that fraction of his or her job via greater ease of use, then he or she becomes more productive overall. Thus, characteristics of the system may indirectly influence usefulness by affecting ease of use(Chuttur, 2009).

Numerous empirical studies have found that TAM consistently explains a substantial proportion of the variance in usage intentions and behaviors with a variety of information technologies. The direct effect of subjective norms on behavioral intention has yielded mixed results in the past. This theory used perceived usefulness and perceived ease of use to replace the subjective norm. TAM is a robust, powerful, and parsimonious model for predicting user acceptance of information technologies. It has been used in many empirical studies and proven to be of quality and statistically reliable (Chuttur, 2009).

Most TAM studies reiterate the importance of perceived usefulness without investing much effort in trying to investigate what makes a system useful. Some researchers have criticized TAM's dominance as a paradigm for creating a narrow slice of the IT adoption domain (Pavlou & Fygenson, 2006). The perceived usefulness of a TAM construct is also subjective since individuals have different perceptions of the utility of technology (Thomas, 2013). TAM's over emphasis on usage as the dependent variable prevents researchers from investigating other important user behaviors. The shortcomings of TAM are due to the constantly changing context of IT organizations making it less relevant.

Lack of consideration of the human computer interface design suggests that a Technology acceptance model that is sensitive to design issues is needed (Alomary & Woollard, 2015).

Many researches were done over TAM and its adoption and validation. These researches showed that TAM provides feedback on two factors: (1) usefulness and (2) ease of use. But, it

doesn't provide any feedback on some factors that may enhance the adoption like integration, flexibility, completeness of information, and information currency (Legris, Ingham and Collerette, 2003). In addition, TAM and TAM2 do not specify how expectancies are influencing on behavior. By studying the major constructs of both of the models, and the relationships between these constructs, some results of these studies showed the relations were statistically significant, and indicating that TAM and its extension as powerful models, while others concluded opposite finding (Surendran, 2012). By studying the cultural dimension, TAM and TAM2 in the same way cannot predict user behavior within culture.

Technology Acceptance Model does not explicitly include any social variables. Thus motivation is more likely to be captured by the Theory of Planned Behavior than by the Technology Acceptance Model. The Theory of Planned Behavior incorporates social norms and perceived behavior control. Referring to the skills, opportunities, and resources needed to use the system, the only variable included in TAM is ease of use (internal control factors), while the external control factors such as time, opportunities and cooperation of others were included in TPB.

2.2 Information Communication Technology (ICT)

ICT stands for information & communication technologies. ICT refers to technologies that provide access to information through communications. In the past few decades information & communication technologies have provided to society with vast array of a new communication capabilities. People can communicate in real time with others in different countries using technologies such as instant messaging, voice over IP and video conferencing, social networking websites like face book allow users from all over the world to remain in contact and communicate on a regular basis. Modern information communication technologies have

created a global village in which people communicate with others across the world as if they were living next door (Dede, 2009).

Information Communication Technologies (ICTs) encompass a range of electronic technologies that facilitate the production, storage and exchange of information, though a distinction is often made between new ICTs such as computers, Internet and mobile phones and older ICTs such as newspapers, radio, television and landline telephony. The new ICTs are known for their digital transmission mechanisms, greater interactivity, wider geographical coverage, cost-effectiveness, and availability on a 24/7 basis. Indeed, most literature seems not to put a difference between digital ICTs and traditional ICTs as well as the integration of traditional ICTs into digital technologies (Priscilla, 2008).

Karen (2013) asserted that ICT has been around since the 1980s, when it was popularized in the United Kingdom and stresses that ICT is different from information technology (IT) because it emphases the role of communications and the integration of telecommunications networks and computer networks. The communications component is critical when designing and delivering technology that is meant to widen dissemination among communities, deepen understanding for individuals and increase democratization of information which allows more people to provide and access information.

ICT stands for information & communications technology is an umbrella term that includes any communication device, encompassing radio, television, cell phones, computer and network hardware, satellite systems and so on, as well as the various services & applicate with them such as video conferencing and distance learning. "ICT are often spoken of a particular context such as ICTs in education, health care, or libraries" (Margaret, 2005).

ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries (Abe & Adu, 2007).

2.3 Related literature

2.3.1 Availability of adequate ICT infrastructure that support teachers in the use of ICT in teaching and learning process.

There are several evidences that, ICT can be an effective tool in supporting teaching and learning process in the classroom. However, its introduction into schools does not by itself improve the quality of education or raise students attainment (Hennessy, Harrison and Wamakote, 2010).v Effectively introducing technology into schools is also largely dependent upon the availability and accessibility of ICT infrastructure (e.g. hardware, software and communications infrastructure). Clearly if technology cannot be accessed by the teacher, as in so many educational settings in Sub Sahara African countries, then it will not be used as it should be (Hennessy, Harrison and Wamakote, 2010).

The national ICT policy draft (2012) highlighted government commitment to expand ICT infrastructure and its integration throughout the county giving priority to education institutions.

A 2002 preliminary base line study on the status of ICT in Uganda (UNCST, 2002) indicated computer availability in the education sector in sampled districts in Uganda to have ranged from 0-27 in number per district. When compared against the reported supply by MoES in the subsequent years, one notices a remarkable difference. In the financial year 2007/2008 alone,

more than 2800 computers, both new and refurbished, were supplied to secondary schools in the country under different arrangement (ESSPR, 2008)

According to sources from one of the Director of Studies (D.O.S), schools have invested limited resources in the ICT budget especially towards acquisition of equipment such as computers and other gadgets as much of the money is spent on purchase of textbooks and laboratory equipment which has really affected the ICT department. He noted that the school has only one functional projector which must be shared by all the teachers. He further noted that internet connectivity is only limited to school administrators like head teacher and accounts department mainly to do administrative work.

Mukalele (2018) adds that while a good number of schools have benefited from donated used computers, they have not been adequately equipped with the same on maintenance and repair, hence its very common to see a school's computer lab full of broken down computers, some repairable and some not.

More still Lack of internet or slow connectivity; where most schools are not able to connect to the World Wide Web, due to the high costs involved in the connectivity. The government of Uganda through its statutory companies has such as Uganda electricity distribution company, UEDCL, under then electricity regulatory Authority among other have tried to distribute electricity through various programs such as the rural electrification programs alongside with other energy sources such as solar and fossils. According to Priscilla (2008), inadequate and unreliable power supply in some schools has limited the effective use of ICTs by teachers in lessons. Some teacher don't have it at home where much of the preparations can be done from. In addition to that the high cost of electricity of 718.9 shillings per unit according to (ERA

annual report 2018) for domestic use and Ug shs.686.1 for schools and commercial and Ug.shs.4000 per litre of fuel. In most of the schools in Kajjansi town council have classrooms without electricity because students vandalized the sockets or it was not be connected at all limiting the teacher from using ICT in classroom lessons.

More still the government of Uganda through the Uganda Revenue Authority (URA)has tried its best to subside the cost of ICT facilities for schools by either waiving off the tax or subsiding to a manageable amount, research by (Mutyaba, 2017) a business analyst indicated that ICT equipment importation and manufacture in the country had increased by 15%, this gives schools an opportunity buy ICT infrastructure as much as they can. However most teachers cannot afford personal computers and supporting accessories like projectors to enable them smoothly and adequately prepare ICT lessons.

In most countries of Sub-Saharan Africa, inadequate technological infrastructure, such as lack of hardware and software, and internet, limit individual and community access to ICT and also pose a barrier to its integration with the curriculum in schools (Menda, 2006). In addition to the commonly listed issues of infrastructure, the African region faces "many external systemic factors such as electricity, transport networks, import duties" (Jensen, 2005), technical faults and network configuration problems (Minishi-Majanja, 2007).

The available literature confirms the well-known fact that the East African countries face a shortage of electrical energy supply. In Tanzania, the national electricity grid is limited to commercially viable areas missing out most of the schools in the rural areas. This, together with frequent power breakdowns and power cuts, has increased the cost of owning ICT

infrastructure (Farrel, 2007) and made it almost impossible for schools in the rural areas to access and use ICT in education.

Kenya and Uganda too face similar electrification challenges. In these countries, hydro-power constitutes the bulk of energy supply. Other major sources of commercial energy include petroleum and biomass energy resource such as fuel-wood and charcoal, causing a sharp rise in deforestation in the region. Alternate sources such as wind and solar energy options have not been exploited to their full capacity (Hennessy et.al, 2010). Erratic electricity supply with occasionally lengthy blackouts limits the use of ICT in schools. Moreover "the digital divide is very much expressing itself across Africa as a bandwidth divide" (Unwin, 2005). Parts of South Africa and capital cities elsewhere have much better provision than that across much of the continent.

While good broadband connectivity, for example, is now taken for granted in many of the richer countries of the world, and educational software is increasingly being developed to take advantage of this, such access to the internet is rare and expensive in Africa due to dependence on expensive satellite (VSAT) connections. Eastern Africa has no submarine connectivity at present, while some West and Southern African countries benefit from the SAT-2 and SAT-3 cables38. Two-way satellite connectivity is now widely available, but the costs of using this for educational purposes remain prohibitively high to be a sustainable choice for classroom use or for teacher education in the short- to medium-term (Unwin, 2005).

For instance, internet was first introduced in Tanzania in 1989 when a "store-and-forward" email system was used (Sheriff, 2007). In 1995, a network of users in Tanzania was built without any link with the global internet. The first live internet connection was available in

1996. The cost of connectivity remained high with a mere 32kbps link costing an internet provider about US$ 16,000 in 1999. While over the years, the cost of connectivity has reduced, it still remains high as compared to the other parts of the world. Hence, use of ICT in education is hampered by the cost of bandwidth which is unaffordable for many schools. Many rural schools located outside the national telecommunications network have to use expensive satellite technologies.

2.3.2 ICT competent staff that support the use ICT in teaching and learning process

The ICT literate and expert teachers is the need of the time in all type of educational institutions for their success. As, ICT skills of teachers enhanced their teaching theoretically and practically in vocational education specifically and tertiary education generally (Khan & Markauskaite, 2017). There is a growing demand to incorporate ICT in the mainstream of teaching in vocational education (Bliuc, Casey, Bachfischer, Goodyear & Ellis,2012; Khan 2015) to have positive effects on teaching and learning (Tamim, Bernard, Borokhovski, Abrami & Schmid, 2011), which are defined approaches as the strategies adopted by teachers for their effective teaching (Postareff & Lindblom-Yläinne, 2008) and achievement of students. These approaches placed into two broad categories such as technology-focused and student-focused approach.

First approach defines ICT as media for delivering information and managing teaching activities, while second approach focuses ICT as media to engage students in knowledge building (Ellis, Hughes, Weyers & Riding, 2009) process. This process consists of the maximum use of ICT in teaching across different disciplines (Lindblom-Yläinne, Trigwell, Nevgi & Ashwin, 2006) in order to prepare students for professional work such as technical and social professions through active engagement (Gonzáez, 2012). All stakeholders in

universities need to continue to focus on broad knowledge and understanding and be flexible enough to learn new technologies (Hagan, 2004). It is a basic need and requirement of newly appointed (or beginning) teachers and lecturers at schools or universities to be assisted and supported for the first three years of their profession.

According to International Society for Technology in Education, 2010 (ISTE), ICT Competencies are a set of technology standards that define proficiency in using computer technology in the classroom

Administrators have recognized that there is a need to equip teachers with the necessary skills and experiences that will enable them become 21st century teachers and contribute to the global community. This is so because ICT is believed to be able to enhance teaching in the world since these tools can play a role in reforming education systems, increase access to pedagogical resources, improve management of resources and enhancing pedagogical techniques (Okolie, 2012)

The ICT competency focuses on the use of digital tools, resources, and technologies for the advancement of student learning, development, and success as well as the improved performance of teachers. Included within this area are knowledge, skills, and dispositions that lead to the generation of digital literacy and digital citizenship within communities of students and teachers (Brinton, 2013)

Among the competence that where highlighted by (UNESCO, 2008) and National Council for Curriculum and Assessment UK, 2004) include basic knowledge in computer application. This includes competencies related to technical operations and concept, and productivity usage of various ICT tools like computers and communication devices as well as applications that are

available on-line or off-line. Here the teachers will be tested to demonstrate knowledge and skills in basic computer operation and other information devices including basic troubleshooting and maintenance of computers. This includes the proficiency and skills in different productivity applications such as Word processing, Spreadsheets, Presentations and Antivirus softwares. It also focuses on the use of Internet applications to search, locate and retrieve information resources to support the learning environment.

The UNESCO (2008) ICT competency standards for teachers go further, describing three approaches: technological literacy, knowledge deepening, and knowledge creation. These approaches are seen as part of a development continuum, and each approach has different implications for education reform and improvement, plus different implications for changes in the components of the education system.

Bitner, (2012) goes ahead to say that it's the skill and attitude of both student and the teacher that determine the effectiveness of technology. Once teachers develop the skill, they could begin to find ways of integrating it into the teaching and learning process. Studies show as highlighted by Mbwesa (2011) that ICT skills and knowledge amongst both teachers and students are increasing day by day which gives hope for smooth transition from the classical methods to the ICT powered lessons.

A report by the Irish government on ICT in Schools found that: "only 30% of primary teachers and 25% of post-primary teachers reported themselves to be comfortable users of ICT; fewer again felt they knew how to apply it effectively in their teaching". This report further indicate that, one contributor to the skills gap for teachers seems to be age. The Irish report found a big disparity in how much newly qualified and younger teachers are using ICT, compared to those

over 35 "92% of post-primary teachers under 35 reported using computers for preparation purposes, compared with 68% of teachers over forty-five."

In a related research carried out in Holland, (Afshari, Kamariah, Wong, Samah and Fooi, 2009) adds that other than the age, lack of confidence and skills were the main hindrances to ICT integration in teaching and learning process. This made them conclude that computer competence can be observed in terms of beliefs concerning their knowledge, basic skills and capacity of performing essential functions using computers (Priscilla et al, 2008).

Farrell (2007) states that, computer training should not be limited to teachers who teach computing as a discipline but to all teachers. This can be attributed to the fact the teachers today graduate with little or no computer skills from the training institutions. Teachers need to know how to use computers before they can integrate them into the curriculum. On this note therefore school administrators should come up with strategies to ensure that teachers receive this regular training to enhance their skills. Some of the strategies could be, employing the emailing system as a way of communicating other than phone calls, opening up of whatsapp groups for teachers, accepting only soft copies of records of work and schemes of work .

In Uganda information obtained from the ICT teachers association of Uganda reveal that, teachers are receiving training through workshops like the recent in Nkumba University (Wakiso) in March 2019 which was sponsored by different NGOs and government of Uganda. The government of Uganda as played a significant role in providing schools with, 62,000 community ICT training laboratories, 930 teachers had been retooled and 1,027 computer laboratories have been put in place (UCC report, 2014).

Wakiso district and Kajjansi town council in particular being advantaged by the geographical location of its proximity to the capital has given it an upper hand over some other districts in Uganda, however, some conditions may not differ as fur as necessary skills for teachers is concerned because teachers in secondary schools can be transferred from any part of the country coming with or without the necessary skills to support him/her use ICT.

2.3.3 Availability of school policies that support teachers to use ICT in teaching and learning process.

For any program to be successful, it has to be guided by policies that supports its establishment and guide its operations. Uganda being part of the entire global word it was mandated to observe the recommendation of the United Nations and the Millennium Development Goals (MDGs) that required it come up with ICT policies to achieve sustainable development by 2040. (UNESCO, 2011)

According to the Uganda Ministry of works report (2003), investment in ICT was no guided by any policy where by schools could lead their own initiatives with donor agencies to have ICT in the schools. In 2012, the government of Uganda came up with a national ICT policy that stream lined and guided institutions with emphasis on including ICT in the curriculum at all levels of learning from primary, secondary and tertiary. (ICT policy report, 2012). At secondary level the policy mandates all teachers at secondary level to be equipped with ICT skills through works, seminars, conferences as well as formal academic training from institutions of learning, introduce E-learning and increase investment in educational ICT equipment. (Educational ICT Policy, 2006))

The educational policy Establish educational networks for sharing educational resources, Create opportunities and providing assistance for the disadvantaged, people with special needs,

women and the youth to acquire ICT skills (Educational ICT Policy, 2006). The policy continue to mandate teachers to be equipped with skills to make use of ICTs in preparation of lessons, assessment, record keeping and evaluation of the learning process. (Educational ICT Policy 2006)

For any institution to be successful in its endovours, it has to customize national policies to suit its potentmials, in this case schools with in Kajjansi town council came up with asset of policies which they think can guide to translate the national policies into reality. Policies such as time tabling ICT lessons, staff ICT trainings, loan scheme policy on computer acquisition for teachers, use of mobile phones while at school, computer laboratory rules and many others.

Some of policies however have proved to working well fro teacher for example the ministry directed all teacher to stop using mobile phones while at school yet mobile phones are a short term solution to the expensive computer accessories especially internet. In a directive according to the former minister of education on 10th September 2013 "The Education and sports minister; Jessica Alupo said that government will work with Head teachers towards ensuring that students concentrate on their studies and make use of alternative technological advancement using ICT Equipment already present in many schools other than phones" (New vision, 10th September 2013) this shows that sometimes policy makes are inconsiderate of the Global ICT transformation where phones are no longer for making phone calls but can be used beyond making phone calls. More still many schools do not include internet connectivity as its only limited to administrators which limit teachers' access to internet and other pedagogical information that can facilitate teaching and learning.

Absence of policies to regulate the growth and use of ICT in the country creates a barrier. Schools themselves are under-funded and have little resource to spend on technology. Minishi-Majanja (2007) mentioned that computers and related items are often treated as luxury items and heavy government taxes are imposed which increases the cost of such equipments. Deregulation of polices related to satellite communication and other telecommunication links, and regulating ISPs, government and cross-border data flows is needed. Mutula (2004) has argued for government subsidy on technology to educational institutions.

In Uganda, students taking computer studies as a subject have greater access to computers and in schools that have cyber schooling and computer clubs, science students and club members often enjoy greater access to the computer rooms (Ndidde, Lubega, Babikwa & Baguma, 2009). Access to ICT facilities therefore varies with school and students. For instance a study by Ndidde, Lubega, Babikwa and Baguma, (2003) revealed variations in ICT use for learning by students, depending on access to computers, institutional rules and regulations and the level of ICT skills by the learners. Primary school pupils may use the computer laboratory only once a week for about 30 minutes at secondary level, students' use of computers for learning varied according to school and instruction by teachers, class level and whether they belonged to the computer club or not. Only students taking computer studies as an examinable subject at 'O' level have regular access to the computer-based library. Lack of proper integration of ICT with the school curriculum is thus a problem, as we have flagged up in earlier sections.

2.3 Summary of literature review

In summary, the reviewed literature suggests that the government of Uganda has done everything possible to ensure that ICT infrastructure are put in place to help teachers smoothly integrate ICT in teaching and learning process such as availing internet, providing computers

as well as ensuring that necessary training programs for teachers are put in place to equip them with the basic skills in the use of ICT. This has been done through making the necessary policies such as the ICT frame work 2012 which highlights the rules and regulations that are to be followed in the transition process. Therefore the current study is aimed at establishing how ICT infrastructures in schools, school ICT policies and human resources of the schools affect the teachers in the use of ICT in the teaching and learning in secondary schools particularly in Kajjansi Town Council, Wakiso district.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methods that were used in conducting the study. It describe methodology, the area of study, the study population and sampling design, sources of data, data collection, data collection procedure and instruments, data analysis tools, research instrument validity and reliability and Ethical Considerations

3.1 Study design

Trochim, (2006) noted that a research design is the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data.

The study design adopted was cross-sectional, to investigate *institutional factors and teachers' ICT usage in secondary schools*. Because it helps the researcher to examine the relationship between study variables as they exist in a defined population at a single point in time. By using this design, the researcher was able to obtain numerical data complemented by qualitative views, opinions and feelings from various groups to best understand the research problem (Sekaran, 2003)

3.2 Location of the study

The study was carried out in Kajjansi Town Council, (former Ssissa Sub-County), it's situated along the shores of Lake Victoria in Busiro south constituency which is located in Wakiso

district. This location was selected because no significant studies have been carried out on institutional factors and how they affect teachers' ICT usage in secondary schools.

3.3 Population, Sample size and sampling techniques

3.3.1 Population

The study population considered 10 out of 22 secondary schools located in Kajjansi Town Council, Wakiso district. The schools were both private and public owned. Teachers in the schools were considered for the study.

3.3.2 Sample size

Rowley, (2002) defines a sample as a finite part of the statistical population whose properties are studied to gain information about the whole. In this study, sample is a set of respondents selected from a larger population for the purpose of survey. Sampling is the procedure a researcher uses to gather people, places, or things to study (Rowley, 2002). A sample size of 174 respondents was selected for the study using Krejcie and Morgan, (1970) sample size formular. The study used a confidence level of 95% and margin of error at 5%.

3.3.3 Sampling techniques

Stratified random sampling was used where teachers in the same school with similar characteristics were put in the same strata for example science teachers and Arts teachers, ordinary level teacher and advanced level teachers. Also, Simple random sampling techniques was used to select from different strata to avoid being biased. In particular, purposive (judgmental) sampling was used. This was convenient because the researcher was judgmental regarding the Participants (teachers) from whom information was collected from. The

researcher selected respondents basing on his experience and knowledge of the group to be sampled.

Table 3.0: sample Size of the study

CATEGORY	TARGET POPULATION	SAMPLE SIZE
SECONDARY SCHOOLS	22	10
TEACHERS	366	174
HEAD TEACHERS	10	6

Table 3.1: Sample Size of the Study

Schools	Teachers' population	Percentage	Sample size
A	70	19	33
B	50	14	24
C	17	5	8
D	20	5	10
E	16	4	8
F	40	11	19
G	50	14	24
H	25	7	12
I	18	5	9
J	60	16	29
Total	**366**	**100**	**174**

Source: Adopted and modified from Krejcie and Morgan (1970)

3.4 Data collection instruments

3.4.1 Questionnaire

This was used to collect data from teachers. The research relied on self-administered questionnaires (Appendix I). A questionnaire is a research instrument that gathers data over a large sample (Rowley, 2002). The questionnaire was used on the basis that some variables such as views, opinions and perceptions of people cannot be observed. Furthermore,

questionnaires can easily collect data from a large sample in a very short period of time and minimizes costs. And lastly since all the respondents were educated, they could read and write which simplified the data collection process (Sekaran, 2003).

The questionnaires contained both open ended and closed ended questions. The closed ended questions provided an easy way of coding, while the open ended ones enabled the researcher to gather wide and free opinions from the participants. The closed ended questions were used to collect quantitative data while the open ended were used to collect qualitative data.

3.4.2 Interviews

In circumstances where the questionnaires cannot generate sufficient information, the interview method that comprised of personal (face to face) interviews with key individuals considered to have the necessary information relevant to objectives of the study was applied using interview guides. This was mostly used in collecting data from headteachers. Structured interviews with a set of pre - determined questions and standardized recording as constructed in the interview guide was used (Appendix II). This method have an advantage of providing in depth data which cannot be got using the questionnaire (Mugenda and Mugenda, 2003). Interviews were used in face-to-face format intending to have in-depth understanding of the study variables. This was used because it is flexible in terms of adopting and changing the questions as the research proceeds.

3.4.3 Observation check list.
An observation checklist is a list of things that the researcher looked at when observing a class (Creswell, 2008). This list was prepared by the teacher. Observation checklists (Appendix III) did not only give the researcher a structure and framework for an observation but also served as

a contract of understanding for the study. The use of the observation checklist enabled the researcher to see physically the infrastructure, staff and polices that were in the schools in Kajjansi town council.

3.5 Validity of the Instrument.

Validity of the instrument is the degree to which instrument used during the study measures the issue they are intended to measure (Mugenda and Mugenda, 2003).

There are various types of validity; Content validity is the degree to which sample of test item represents the content that test is designed to measure. The external validity is the generalization of the study findings. The researcher established content validity by first giving the questionnaire to a team of experts , thereafter, a content validity index (CVI) was computerized using the formula below, 0.84 was obtained which is above 0.7, the instruments were declared valid as given by (Amin, 2005)

Content validity index (CVI) $= \dfrac{Number\ of\ items\ rated\ relevant}{Total\ number\ of\ items\ in\ the\ questionaire.}$

$$= \dfrac{32}{38} = 0.84$$

Triangulation method was employed to ensure validity of the interview guide and observation checklist.

3.6 Instrument reliability

Mugenda and Mugenda, (2003) a research instrument is reliable if repeated measurements but under similar condition give the same results. This was done by piloting the instrument to a few respondents that were randomly selected.

To ensure reliability, the research instrument was pre-tested to selected 5 respondents from Katabi sub-county to ensure consistency and comprehensiveness. Furthermore, some consultations with other researchers, supervisors were done to review the research instrument. The degree of reliability was established using Cronbach's coefficient Alpha.

A high Cronbach's coefficient Alpha above 0.72 is considered to indicate high reliability hence acceptable for social research (Mubazi, 2008). The Cronbanch's Alpha reliability Coefficient (a) was calculated by running a statistical test using Statistical Package for Social Scientists (SPSS).

Items	38
Cronbach Alpha Coefficient	0.81

3.7 Data collection procedures

The researcher designed the most appropriate research instrument to collect data and upon approval from the supervisor, he obtained a letter from Kyambogo University that introduced him to the different head teachers for permission to collect data in their schools. Upon being allowed, the researcher contacted some people in the schools to build rapport and made appointments. The researcher then administered questionnaires to the respondents. They filled and collected as soon as possible to avoid losing any of the questionnaires.

3.8 Data analysis techniques

After the data was collected, it was sorted and cleaned. Qualitative data was coded and organized into themes. This was done after editing and checking out whether all questionnaires were filled in correctly. Coding is assigning a code number to each answer to a

survey question. The quantitative data was analyzed using the Statistical Package for Social Sciences (SPSS) software. Correlation and regression analysis were conducted. Qualitative data was edited and analyzed thematically following the study objectives

3.9 Ethical Consideration

This study was conducted ethically such as keeping privacy and the confidentiality of data, and also used for academic purpose only. Similarly, to maintain ethical issue, the researcher requested head teachers for permission to interview teachers and students in their schools.

Under this study, the respondents were informed that participation was voluntary so enable them make informed decision to participate or not, the researcher also tried to avoid any action against an ethical issue.

A reference letter from the university was also used to seek for permission.

3.10. Limitations of the study

The researcher faced problems of unresponsive respondents in conducting the research. The fact that the study was undertaken within business hours, the researcher faced the timing of respondents as a challenge because there was no time convenient to everyone. Respondents were involved in their day-to-day activities thus, sparing time for an interview or filling the questionnaire was somehow regarded as an inconvenience and interruption of one's working schedule. However the researcher solved this by being polite and humble and seeking for respondent's attention and audience in this regard. By so doing the researcher created rapport process, explaining to them why one's responses to the study is vital and therefore sparing some little time to adjust and participate in the study could   be important and desirable. In

cases of un adjustable schedules, appointments were secured for the next time. Lunch time hours were also mostly used.

The researcher faced the challenge of some category of participants not being genuine as far as answering adequately and responsibly to the administered tools as it is required from them hence leading to the risk of uncoordinated data that could affect the quality of the study. The researcher endeavored to first assure the various participants of confidentiality about the information delivered to the researcher.

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND ANALYSIS OF RESULTS

4.1. Introduction.

This chapter presents the findings on establishing the underlying institutional factors that affect ICT usage by teachers in secondary schools in Kajjansi Town Council, Wakiso District. The chapter contains the presentation, analysis and interpretation of the findings. Statistics were generated with the aim of generating responses for the research. The chapter begins with the demographic characteristics of the respondents. Descriptive statistics, (mostly frequency tables), derived from the statistical package for social science (SPSS) were used to generate the results for this chapter. The presentation was guided by the following research objectives; to establish whether secondary schools in Kajjansi town council have adequate ICT infrastructure and how this affects teachers' ICT usage; to determine whether secondary schools in Kajjansi town council have adequate staff equipped with ICT skills and how it affects teachers ICT usage; and to find out whether secondary schools in Kajjansi town council have ICT school policies that support ICT and how they affect teachers from using ICTs

4.2 Response Rate

Out of the 174 tools distributed, only 150 were returned as valid. This implies that 86.2% of the questionnaires were returned valid. This can be shown in Table 4.1 below.

Table 4.1: Distribution of questionnaires according to positions of respondents

Schools	Expected Sample Size	Actual	Response Rate(%age)
A	33	25	75.7
B	24	19	79.2
C	8	8	100
D	10	10	100
E	8	8	100
F	19	15	78.9

G	24	22	91.7
H	12	12	100
I	9	9	100
J	29	24	82.7
Total	**174**	**150**	**86.2**

4.3 Respondent's Demographic Characteristics

The first aspect of the study deals with the personal information of the respondents; thus, the study presents the information in the following sub section; gender, age, level of education and the length of time in the teaching profession.

Table 4.2: The characteristics of the respondents

Factor	Characteristics	Frequency	Percentage
Sex	Male	85	56.7
	Female	65	43.3
Age of the respondent	20 -25 yrs	41	27.3
	26 - 30 yrs	59	39.3
	31- 35 yrs	20	13.3
	Over 36 yrs	30	20
Level of education	Diploma	30	20
	Degree	88	58.7
	Post graduate	32	21.3
Length of time working in the teaching profession	Below 5yrs	44	29.3
	5-10yrs	81	54
	10-20yrs	25	16.7

Source: Primary Data 2019

Findings further revealed that 85(56.7%) of the respondents were males whereas 65(43.3) were females. The majority were males, and this was attributed to the nature of Uganda's working force where most of the formal jobs are occupied by males. This also applied in the area of study.

Figure 4.1: Respondent's Demographic Characteristics by sex

SEX

Female 43%

Male 57%
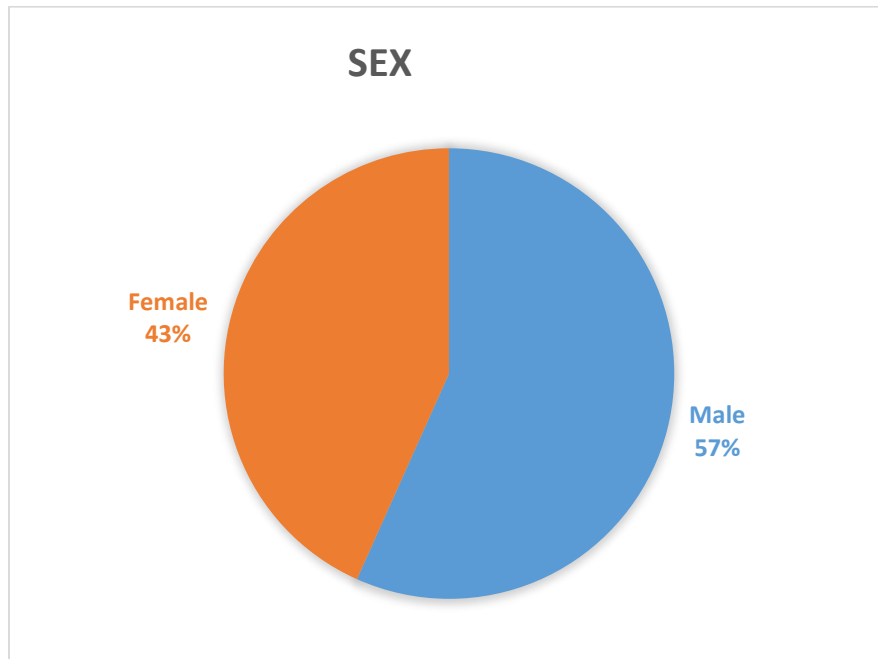
Source: Primary Data 2019

The study revealed that 41(27.3%) of the respondents were between 20-25years, 59(39.3%) were between 26-30years, 20(13.3%) were between 31-35yrs and 30(20%) were over 36years. The majority of the respondents were less than 35years of age and this was attributed to the nature of Uganda's population where the youth contributes the majority.

Figure 4.2: Respondent's Demographic Characteristics by age

Age of the respondent

- 20 -25 yrs — 27%
- 26 - 30 yrs — 40%
- 31- 35 yrs — 13%
- Over 36 yrs — 20%
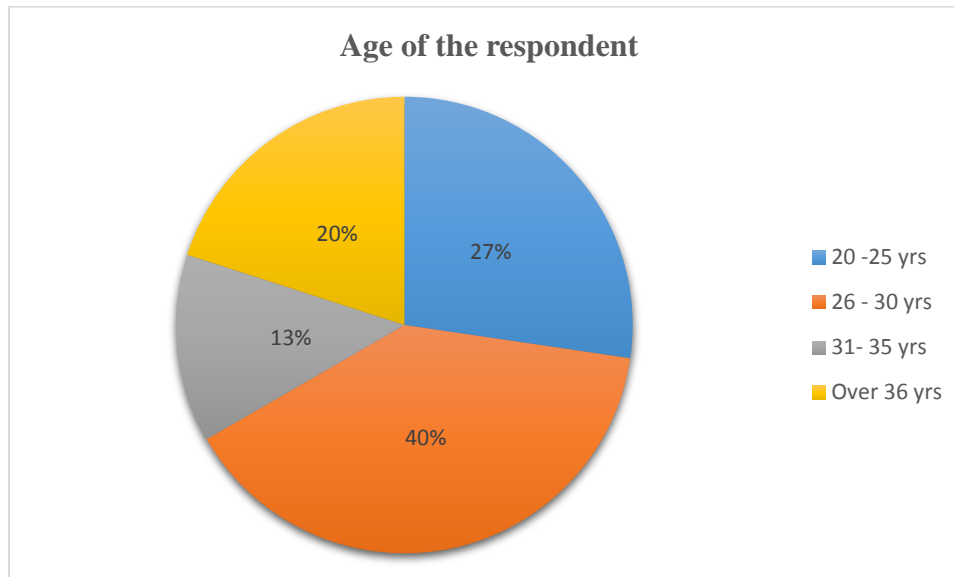
Source: Primary Data 2019

The results revealed that 88(59%) of the respondents were bachelor's degree holders whereas 30(20%) were diploma holders and the remaining 32(21.3%) were postgraduate holders. This was attributed to the nature of the teaching profession as most of the people cannot manage to attain much qualifications due to low salaries provided and high costs of living in their areas of residence.

Figure 4.3: Respondent's Demographic Characteristics by level of education.

level of education

- Diploma — 20%
- Degree — 59%
- Post graduate — 21%
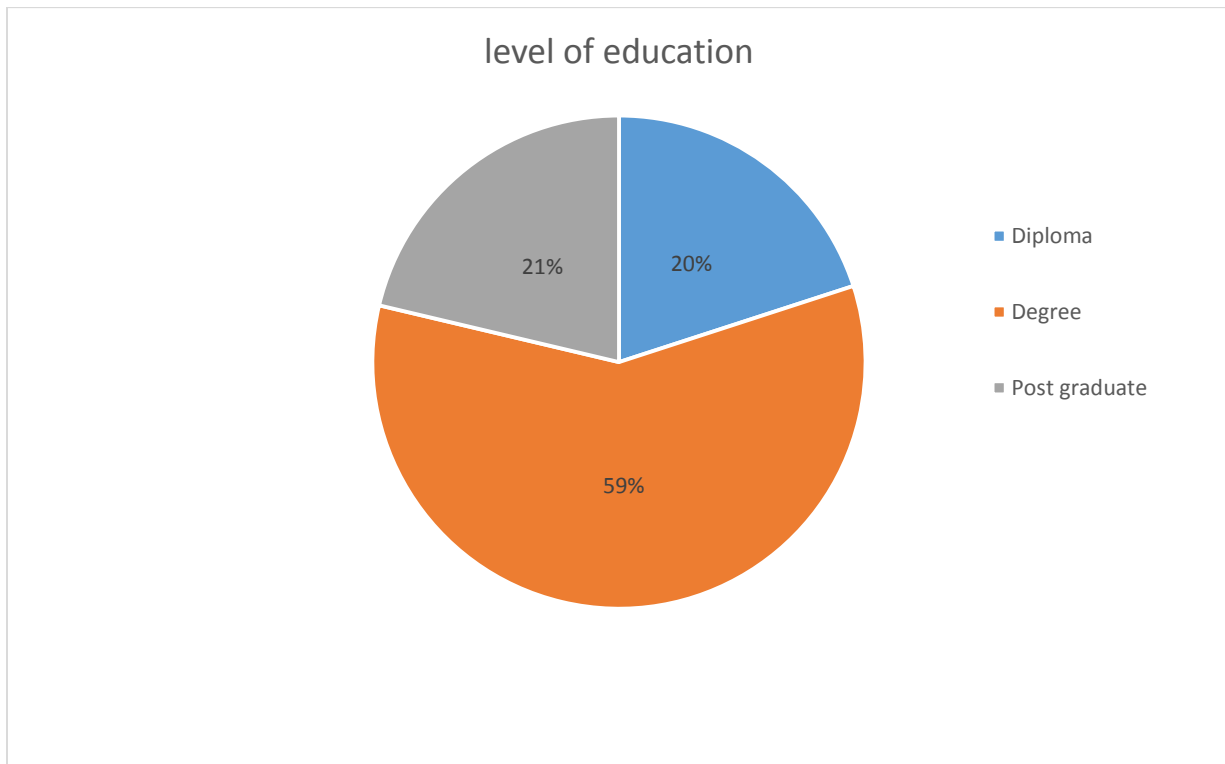
Source: Primary Data 2019

The findings revealed that majority 81(54%) of the respondents had worked in the teaching profession for a period of between 5 to 10years and this was intended by the researcher to have unbiased data as most of the respondents were well informed about the topic of study. This was followed by 44(29.3%) that had been in the teaching profession for less than 5years and then 25(16.7%) that had been in the profession for 10-20yrs.

Figure 4.4: Respondent's Demographic Characteristics by length of time working in the teaching profession.
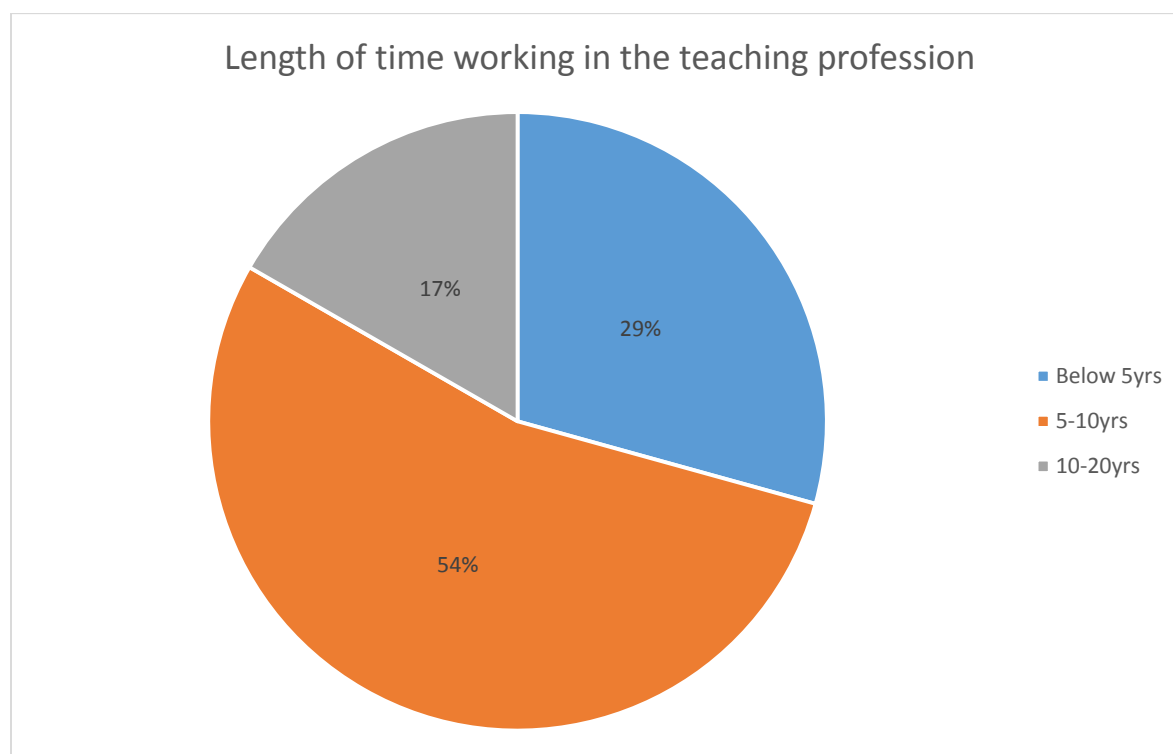
Source: Primary Data 2019

4.4 The effect of adequate ICT infrastructure on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

The researcher also asked the respondents about ICT Infrastructure that support teachers and the results obtained can be shown here under;

Table 4.3: Showing ICT Infrastructure that Support Teachers

Variable	SD (%)	D (%)	NS (%)	A (%)	SA (%)	Mean	SD
The school has a well-equipped computer laboratory	5(3.3)	49(32.7)	20(13.3)	11(7.3)	65(43.3)	2.764	1.21
The school has reliable power sources	20(13.3)	25(16.7)	10(6.7)	35(23.3)	60(50)	2.302	1.11

Teachers own personal ICT equipment	58(38.7)	32(21.3)	0(0)	30(20)	30(20)	1.988	1.51
The school has internet connectivity in the entire campus for academic purpose.	27(18)	23(15.3)	22(14.7)	20(13.3)	58(38.7)	2.566	1.35
All classrooms are equipped with ICT facilities like projectors	12(8)	60(40)	28(18.7)	13(8.7)	37(24.7)	2.514	1.18
Teachers have the necessary software for academic purpose.	18(12)	34(22.7)	7(4.7)	40(26.7)	51(34)	2.734	1.42
Regular repairs and maintenance of ICT equipment is done	22(14.7)	30(20)	7(4.7)	40(26.7)	51(34)	3.912	1.61
Aggregate mean and Std						**2.479**	**1.296**

Source: Primary Data 2019

Legend: 4.20 - 5.00 = very high, 3.40 - 4.19 = high, 2.60 - 3.39 = average, 1.80 - 2.59 = low and 1.00 - 1.79 = very low. N= 150

The findings revealed that 5(3.3%) strongly disagreed that the school has a well-equipped computer laboratory, 49(32.7%) disagreed, 20(13.3%) were not sure, 11(7.3%) agreed and lastly 65(43.3%) strongly agreed. Majority of the respondents agreed with the idea. This is in line with one of the head teacher who noted that;

> "*Our computer laboratory is well equipped with enough computers in relation to*
>
> *the number of students that learn the subject. This has helped in ensuring that*
>
> *congestion is avoided while learning and effectiveness improved*"
>
> (A male Head teacher, 15th June, 2019)

The findings revealed that 20(13.3%) strongly disagreed that the school has reliable power sources, 25(16.7%) disagreed, 10(6.7%) were not sure, 35(23.3%) agreed and lastly 60(50%)

strongly agreed. The majority of the respondents agreed. This is in line with one of the head teacher who noted that;

"*The school has no power problems as the electricity does not usually get off. This has helped in ensuring smooth learning by both learning and teachers. In addition, the school pays its electricity bills in time to ensure that they are not interrupted by the suppliers* " (A male Head teacher, 16th June, 2019)

The findings revealed that 58(38.7%) strongly disagreed that teachers own personal ICT equipment, 32(21.3%) disagreed, 0(0%) were not sure, 30(20%) agreed and lastly 30(20%) strongly agreed. The majority of the respondents disagreed with the idea.

The findings revealed that 27(18%) strongly disagreed that the school has internet connectivity in the entire campus for academic purpose, 23(15.3%) disagreed, 22(14.7%) were not sure, 20(13.3%) agreed and lastly 58(38.7%) strongly agreed. The majority disagreed with the idea.

The findings revealed that 12(8%) strongly disagreed that all classrooms are equipped with ICT facilities like projectors, 60(40%) disagreed, 28(18.7%) were not sure, 13(8.7%) agreed and lastly 37(24.7%) strongly agreed. The majority of the respondents disagreed with the idea.

The findings revealed that 18(12%) strongly disagreed that teachers have the necessary software for academic purpose, 34(22.7%) disagreed, 7(4.7%) were not sure, 40(26.7%) agreed and lastly 51(34%) strongly agreed. The majority of the respondents agreed with the idea.

The findings revealed that 22(14.7%) strongly disagreed that regular repairs and maintenance of ICT equipment is done, 30(20%) disagreed, 7(4.7%) were not sure, 40(26.7%) agreed and lastly 51(34%) strongly agreed. The majority of the respondents agreed with the idea. This is in line with one of the head teacher who noted that;

"ICT teachers play a key role in ensuring that ICT equipments are in good conditions through regular repairing and maintenance. This has helped in increasing the lifespan of ICT related equipments used by the school"

(Afemale Head teacher, 16th June, 2019)

4.5 The effect of adequate staff on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

The researcher also asked the respondents about ICT Competence of Teachers and the results obtained can be shown here under;

Table 4.5: Showing ICT Competence of Teachers

Variable	SD (%)	D (%)	NS (%)	A (%)	SA (%)	Mean	SD
Most teachers teach lessons with the support of ICT	25(16.7)	7(4.7)	18(12)	60(40)	40(26.7)	3.544	1.13
The school get technical support from ICT staff	24(16)	21(14)	15(10)	35(23.3)	55(36.7)	3.246	1.33
Teachers are aware of genuine websites for academic purpose	16(10.7)	28(18.7)	11(7.3)	40(26.7)	45(30)	3.366	1.41
Teachers receive ICT trainings regularly	14(9.3)	5(3.3)	26(17.3)	70(46.7)	35(23.3)	3.556	1.52
Teachers use ICTs to communicate with students	12(8)	9(6)	29(19.3)	39(26)	61(40.7)	3.696	1.13
Most teachers are aware of recent software for academic purposes	25(16.7)	14(9.3)	13(10.8)	44(36.7)	54(45)	2.872	1.42
Teachers are aware of cyber security codes (ethics)	19(12.7)	16(10.7)	13(8.7)	59(39.3)	43(28.7)	3.506	1.11
Teachers use ICT in record keeping for students	13(8.7)	14(9.3)	17(11.3)	68(45.3)	38(25.3)	3.218	1.33
Teachers use ICT in assessment and	16(10.7)	15(10)	16(10.7)	53(35.3)	50(33.3)	3.296	1.18

evaluation of learners							
Aggregate mean and Std						**3.382**	**1.27**

Source: Primary Data 2019

Legend: *4.20 - 5.00 = very high, 3.40 - 4.19 = high, 2.60 - 3.39 = average, 1.80 - 2.59 = low and 1.00 - 1.79 = very low. N= 150*

The findings revealed that 25(16%) strongly disagreed that most teachers teach lessons with the support of ICT, 7(4.7%) disagreed, 18(12%) were not sure, 60(40%) agreed and lastly 40(26.7%) strongly agreed. The majority agreed with the idea.

The findings revealed that 24(16%) strongly disagreed that the school get technical support from ICT staff, 21(14%) disagreed, 15(10%) were not sure, 35(23.3%) agreed and lastly 55(36.7%) strongly agreed. The majority of the respondents supported the idea. This is in line with one of the head teacher who noted that;

" *The ICT staff are well equipped to the extent that they can solve any challenge*

regarding ICT that may be faced in the school. This has been achieved through

ensuring that competent and well skilled teachers are recruited." (A male

Head teacher, 16th June, 2019)**.**

The findings revealed that 16(10.7%) strongly disagreed that teachers are aware of genuine websites for academic purpose, 28(18.7%) disagreed, 11(7.3%) were not sure, 40(26.7%) agreed and lastly 45(30%) strongly agreed. The majority of the respondents agreed

The findings revealed that 14(9.3%) strongly disagreed that teachers receive ICT trainings regularly, 5(3.3%) disagreed, 26(17.3%) were not sure, 70(46.7%) agreed and lastly 35(23.3%) strongly agreed. The majority of the respondents supported the idea. This is in line with one of the head teacher who noted that;

"Teachers are allowed to attend short courses to gain more computer skills and

equip students with the relevant content. This has helped in increasing the

performance of students in computer subject and learning of much practical

skills." (A male head teacher, 16th June, 2019)**.**

The findings revealed that 12(8%) strongly disagreed that teachers use ICTs to communicate with students, 9(6%) disagreed, 29(19.3%) were not sure, 39(26%) agreed and lastly 61(40.7%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 25(16.7%) strongly disagreed that most teachers are aware of recent software for academic purposes, 14(9.3%) disagreed, 13(10.8%) were not sure, 44(36.7%) agreed and lastly 54(45%) strongly agreed. The majority of the respondents supported the idea. This is in line with one of the head teacher who noted that;

"The teachers responsible for teaching ICT have enough knowledge about the relevant

softwares for teaching. This has been achieved through recruiting of well experienced

and trained teachers in the field of ICT" (A male head teacher, 15th June, 2019)

The findings revealed that 19(12.7%) strongly disagreed that teachers are aware of cyber security codes (ethics), 16(10.7%) disagreed, 13(8.7%) were not sure, 59(39.3%) agreed and lastly 43(28.7%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 13(8.7%) strongly disagreed that teachers use ICT in record keeping for students, 14(9.3%) disagreed, 17(11.3%) were not sure, 68(45.3%) agreed and lastly 38(25.3%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 16(10.7%) strongly disagreed that teachers use ICT in assessment and evaluation of learners, 15(10%) disagreed, 16(10.7%) were not sure, 53(35.3%) agreed and lastly 50(33.3%) strongly agreed. The majority of the respondents supported the idea.

4.6 The effect of ICT support policies on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

The researcher also asked the respondents about school policies that support teachers to use ICT, and the results obtained can be shown here under;

Table 4.6: Showing School Policies that Support Teachers to use ICT

Variable	SD (%)	D (%)	NS (%)	A (%)	SA (%)	Mean	SD
Teachers use ICT in all the lessons throughout the day	19(12.7)	16(10.7)	28(18.7)	31(20.7)	56(37.3)	2.848	1.24
There are school policies on the use of ICT by teachers in the school	11(7.3)	8(5.3)	11(7.3)	44(29.3)	76(50.7)	3.002	1.51
There is a followed time table by teachers while teaching using ICT	15(10)	17(11.3)	18(12)	25(16.7)	74(49.3)	3.32	1.21
All teachers are supposed to use ICT while teaching	18(12)	16(10.7)	15(10)	33(22)	68(45.3)	3.146	1.44
Computer laboratory is strictly out of bounds for student when not lesson time	20(13.3)	10(6.7)	17(11.3)	52(34.7)	51(34)	2.772	1.32
Computer laboratory has clear rules and regulations that govern its effective use	7(4.7)	13(8.7)	34(22.7)	38(25.3)	58(38.7)	4.162	1.11
ICT equipment are accessible to all the time for teachers	22(14)	18(12)	17(11.3)	32(21.3)	61(40.7)	3.264	1.33
Teachers receive financial support from the school to obtain personal ICT equipment.	27(18)	13(8.7)	14(9.3)	38(25.3)	58(38.7)	4.162	1.11

ICT budgets are given a priority during budgeting time by the Board of governors.	22(14.7)	18(12)	17(11.3)	32(21.3)	61(40.7)	3.264	1.33
The school observes all national ICT policies for schools	12(8)	18(12)	17(11.3)	42(28)	61(40.7)	3.264	1.33
Aggregate Mean and Std						**3.178**	**1.289**

Source: Primary Data 2019

Legend: 4.20 - 5.00 = very high, 3.40 - 4.19 = high, 2.60 - 3.39 = average, 1.80 - 2.59 = low and 1.00 - 1.79 = very low. N= 150

The findings revealed that 19(12.7%) strongly disagreed that teachers use ICT in all the lessons throughout the day, 16(10.7%) disagreed, 28(18.7%) were not sure, 31(20.7%) agreed and lastly 56(37.3%) strongly agreed. The majority of the respondents agreed with the idea.

The findings revealed that 11(7.3%) strongly disagreed that there are school policies on the use of ICT by teachers in the school, 8(5.3%) disagreed, 11(7.3%) were not sure, 44(29.3%) agreed and lastly 76(50.7%) strongly agreed. The majority of the respondents supported the idea. This is in line with one of the head teacher who noted that;

>   "*The school has policies regarding the use of computers. The policies are clear*
>
>   *about the handling of ICT equipments and their use by both teachers and learners.*
>
>   *The policy also provides details about the schools' focus to promote ICT use in*
>
>   *learning* " (A male head teacher, 16th June, 2019)

The findings revealed that 15(10%) strongly disagreed that there is a followed time table by teachers while teaching using ICT, 17(11.3%) disagreed, 18(12%) were not sure, 25(16.7%) agreed and lastly 74(49.3%) strongly agreed. The majority of the respondents agreed.

The findings revealed that 18(12%) strongly disagreed that all teachers are supposed to use ICT while teaching, 16(10.7%) disagreed, 15(10%) were not sure, 33(22) agreed and lastly 68(45.3%) strongly agreed. The majority of the respondents supported the idea. This is in line with one of the head teacher who noted that;

"*Teachers that have personal laptops are allowed to use them in lesson planning,*

doing research, teaching and other school activities. This has helped in making

their work easy but the only challenge is that most teachers do not own personal

computers" (A female headteacher, 16th June, 2019)

The findings revealed that 20(13.3%) strongly disagreed that computer laboratory is strictly out of bounds for student when not lesson time, 10(6.7%) disagreed, 17(11.3%) were not sure, 52(34.7%) agreed and lastly 51(34%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 7(4.7%) strongly disagreed that computer laboratory has clear rules and regulations that govern its effective use, 13(8.7%) disagreed, 34(22.7%) were not sure, 38(25.3%) agreed and lastly 58(38.7%) strongly agreed. The majority of the respondents agreed with the idea

The findings revealed that 22(14%) strongly disagreed that ICT equipment are accessible to all the time for teachers, 18(12%) disagreed, 17(11.3%) were not sure, 32(21.3%) agreed and lastly 61(40.7%) strongly agreed. The majority of the respondents supported the idea. This is in line with one of the head teacher who noted that;

"*The school allows all teachers to use school ICT equipments all the time they want.*

There are no restrictions towards ICT use by teachers and this has helped them to

get chance to practice and learn much regarding the use of computers"

(Interview with the head teacher, 15th June, 2019)

The findings revealed that 27(18%) strongly disagreed that teachers receive financial support from the school to obtain personal ICT equipment, 13(8.7%) disagreed, 14(9.3%) were not sure, 38(25.3%) agreed and lastly 58(38.7%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 22(14.7%) strongly disagreed that ICT budgets are given a priority during budgeting time by the Board of governors, 18(12%) disagreed, 17(11.3%) were not sure, 32(21.3%) agreed and lastly 61(40.7%) strongly agreed. The majority of the respondents agreed with the idea

The findings revealed that 12(8%) strongly disagreed that the school observes all national ICT policies for schools, 18(12%) disagreed, 17(11.3%) were not sure, 42(28%) agreed and lastly 61(40.7%) strongly agreed. The majority of the respondents supported the idea.

4.7 Teacher's ICT Usage in Secondary Schools in Kajjansi Town Council, Wakiso District

The researcher also asked the respondents about the teacher's ICT Usage in Secondary Schools in Kajjansi Town Council, Wakiso District, and the results obtained can be shown here under

Table 4.7: Showing the Teacher's ICT Usage in Secondary Schools in Kajjansi Town Council, Wakiso District

Variable	SD (%)	D (%)	NS (%)	A (%)	SA (%)	Mean	SD
Teachers teach computer lessons to students	11(7.3)	11(7.3)	26(17.3)	33(22)	69(46)	3.752	1.23

Teachers use online materials for teaching	16(10.7)	15(10)	19(12.7)	36(24)	64(42.7)	3.57	1.25
Teachers use ICT skills for teaching	19(12.7)	24(16)	17(11.3)	34(22.7)	56(37.3)	3.148	1.51
Teachers share teaching materials using internet	21(14)	5(3.3)	24(16)	41(27.3)	59(39.3)	3.772	1.17
Teachers use printers	18(12)	19(12.7)	22(14.7)	31(20.7)	60(40)	3.274	1.11
Teachers use computers in making the schemes of work	20(13.3)	20(13.3)	25(16.7)	30(20)	55(36.7)	3.168	1.31
Teachers use photocopies at school	12(8)	18(12)	24(16)	35(23.3)	61(40.7)	3.364	1.21
Teachers use computers in making lesson plans	10(6.7)	25(16.7)	22(14.7)	35(23.3)	58(38.7)	2.574	1.19
Aggregate mean and Std						**3.312**	**1.275**

Source: Primary Data 2019

Legend: 4.20 - 5.00 = very high, 3.40 - 4.19 = high, 2.60 - 3.39 = average, 1.80 - 2.59 = low and 1.00 - 1.79 = very low. N= 150

The findings revealed that 11(9.2%) strongly disagreed that teachers teach computer lessons to students, 11(9.2%) disagreed, 26(21.7%) were not sure, 33(27.5%) agreed and lastly 39(32.5%) strongly agreed. The majority of the respondents agreed. This is in line with one of the head teacher who noted that;

"*All students are allowed to attend computer lessons and they are compulsory in*

senior one and two. Students are also allowed to use computer laboratory for

learning during their free time even when they are not taking computer as a

subject" (Interview with the Head Teacher, 17th June, 2019)

The findings revealed that 6(5%) strongly disagreed that teachers use online materials for teaching, 15(12.5%) disagreed, 19(15.8%) were not sure, 36(30%) agreed and lastly 44(36.7%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 9(7.5%) strongly disagreed that teachers use ICT skills for teaching, 14(11.7%) disagreed, 7(5.8%) were not sure, 34(28.3%) agreed and lastly 56(46.7%) strongly agreed. The majority of the respondents agreed. This is in line with one of the head teacher who noted that;

"*The teachers responsible for teaching ICT have enough knowledge about the relevant*

software for teaching. This has been achieved through recruiting of well experienced

and trained teachers in the field of ICT" (A male head teacher, 15th June, 2019)

The findings revealed that 11(9.2%) strongly disagreed that teachers share teaching materials using internet, 5(4.2%) disagreed, 24(20%) were not sure, 31(25.8) agreed and lastly 49(40.8%) strongly agreed. The majority of the respondents agreed with the idea.

The findings revealed that 8(6.7%) strongly disagreed that teachers use printers, 19(15.8%) disagreed, 22(18.3%) were not sure, 31(25.8%) agreed and lastly 40(33.3%) strongly agreed. The majority of the respondents supported the idea.

The findings revealed that 10(8.3%) strongly disagreed that teachers use computers in making the schemes of work, 10(8.3%) disagreed, 15(12.5%) were not sure, 30(25%) agreed and lastly 55(45.8%) strongly agreed. The majority of the respondents agreed.

The findings revealed that 12(10%) strongly disagreed that teachers use photocopies at school, 8(6.7%) disagreed, 24(20%) were not sure, 35(29.2%) agreed and lastly 41(34%) strongly agreed. The majority of the respondents agreed.

The findings revealed that 10(8.3%) strongly disagreed that teachers use computers in making lesson plans, 15(12.5%) disagreed, 22(18.3%) were not sure, 35(29.2%) agreed and lastly 38(31.7%) strongly agreed. The majority of the respondents agreed. This is in line with one of the head teacher who noted that;

"*Most teachers have enough knowledge of using computers to make lesson plans.*

They also use internet to get much information about their areas of specialization

and therefore, enriching the content in their lesson plans"

(Interview with a male Head Teacher, 15th June, 2019)

4.8. Results from observation on the availability of ICT equipment in schools

Table 4.8: showing the availability of ICT equipment in schools

Equipment	Availability	
	Yes	No
Computers (Desktop)	89%	11%
Projectors	33%	67%
Photocopier	96%	4%
Printers	91%	9%
Internet	54%	46%
Generator	73%	27%
Functional sockets	92%	8%
Television set	66%	44%
Safety devices like lightening arresters	29%	71%

		85%	15%
Mobile phones			

89% of the schools own computers, 33% own projectors, 96% own photocopiers, 91% own printers, 54% have access to internet, 73% own generators, 92% own functional sockets, 66% own television sets, 29% have lightening arresters in place and lastly 85% own mobile phones. The majority of the schools own some ICT equipment. This has helped in supporting teacher ICT usage, students learning and enhancing their performance.

4.9 Multiple analysis for the effect of ICT school policies, ICT Competence of Teachers and ICT infrastructure on teachers ICT usage

4.9.1 Correlation analysis

		ICT infrastructure	CT Competence of Teachers	ICT school policies	Teachers' ICT usage
ICT infrastructure	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	150			
ICT Competence of Teachers	Pearson Correlation	.103	1		
	Sig. (2-tailed)	.069			
	N	150	150		
ICT school policies	Pearson Correlation	.530**	.054	1	
	Sig. (2-tailed)	.000	.339		
	N	150	150	150	
Teachers' ICT usage	Pearson Correlation	.608**	.614**	.453**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	150	150	150	150
**. Correlation is significant at the 0.01 level (2-tailed).					

The effect of ICT infrastructure on teachers' ICT usage in Secondary Schools in Kajjansi Town Council

There is a strong positive relationship between ICT infrastructure and teachers' ICT usage in Secondary Schools in Kajjansi Town Council. Results of the Pearson correlation model

showed r = .716** and p-value = .000 < 0.01 level of significance when measured at 99% confidence interval.

The effect of ICT Competence of Teachers on teachers ICT usage in Secondary Schools in Kajjansi Town Council

Results show that ICT Competence of Teachers significantly affect the teachers ICT usage (r =.600**: p= .000). This implies that the positive changes in ICT Competence of Teachers leads to positive changes on teachers ICT usage.

The effect of ICT school policies on teacher's ICT usage in Secondary Schools in Kajjansi Town Council.

Results shows that ICT school policies significantly affect teachers ICT usage (r =.808**: p= .000). This implies that the appropriate ICT school policies is done the greater impact it will have on teachers ICT usage.

4.9.2 Regression analysis

The effect of ICT infrastructure on teachers' ICT usage in Secondary Schools in Kajjansi Town Council

Results shows that 57.4% variance in teachers' ICT usage is attributed to ICT infrastructure (Adjusted R Square = .572), thus this reveals that ICT infrastructure is more statistically significant predictor of teachers' ICT usage (Beta = .758, Sig. = .000). In general, the regression model fit was significant at sig. = .000

The effect of ICT Competence of Teachers on teachers ICT usage in Secondary Schools in Kajjansi Town Council

Results shows that 36% variance in teachers ICT usage is attributed to ICT Competence of Teachers (Adjusted R Square = .35.6), thus this reveals that ICT Competence of Teachers is more statistically significant predictor of ICT usage (Beta = .600, Sig. = .000). In general, the regression model fit was significant at sig. = .000

The effect of ICT school policies on teachers ICT usage in Secondary Schools in Kajjansi Town Council

Results show that 65.3% variance in teachers ICT usage is attributed to ICT school policies (Adjusted R Square = .651), thus this reveals that ICT school policies is more statistically significant predictor of teachers ICT usage (Beta = .808, Sig. = .000). In general, the regression model fit was significant at sig. = .000.

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter includes the discussion of findings, the conclusions drawn from findings and the recommendations made by the researcher on how to solve the issues teacher's ICT Usage in Secondary Schools in Kajjansi Town Council, Wakiso District

5.2. The Discussion of the Findings

5.2.1 The effect of adequate ICT infrastructure on teachers' ICT usage in Secondary Schools in Kajjansi Town Council.

It was established that there is a significant relationship between ICT infrastructure and teachers' ICT usage (r =.758**: p= .000). 57.4% variance in teachers' ICT usage is attributed to ICT infrastructure (Adjusted R Square = .572). ICT infrastructure is a statistically significant predictor of teachers' ICT usage (Beta = .758, Sig. = .000).

This is in line with Hennessy et.al, (2010) who noted that ICT can be an effective tool in supporting teaching and learning process in the classroom. However, its introduction into schools does not by itself improve the quality of education or raise students attainment. Effectively introducing technology into schools is also largely dependent upon the availability and accessibility of ICT infrastructure (e.g. hardware, software and communications infrastructure).

McKay and Brockway (1989) noted that ICT infrastructure as the enabling foundation of shared information technology capabilities upon which business depends. They viewed ICT infrastructure as the shared portion of the ICT architecture. Earl (1989) noted ICT

infrastructure as the technological foundation of computer, communications, data and basic systems. He views ICT infrastructure as the technology framework that guides the organization in satisfying business and management needs. Duncan noted that ICT infrastructure as the set of IT resources that make feasible both innovations and the continuous improvement of IT systems.

Laudon and Laudon, (2001) noted that developments in ICT Technological Infrastructure have drastically influenced the competitive business environment as proved by the emergence and strengthening of the global economy, and the transformation of industrial economies to knowledge-and-information-based service economies. This has in turn encouraged most organizations especially in the developed countries to use computer-based information systems in order to remain competitive. According to Government of Kenya ICT policy (2005), inadequate ICT infrastructure has hampered provision of efficient and affordable ICT services in the country.

Greenstein, (2001) there is need to put more emphasis on provision of support infrastructure, such as, energy and roads; supporting software development; Promotion of local manufacture and assembly of ICT equipment and accessories; and Provision of incentives for the provision of ICT infrastructure. Telecommunication infrastructure is a major issue that stands as an impediment to access of information, most people are not able to access digital information due to lack of the necessary infrastructure. This has left a bigger part of the population unable to access the digital information hence discouraging the adoption of ICT thus widening digital divide between developed and developing economies as well as between haves and have not, setting classes and levels of learning institutions rather than sink poverty levels and narrow economic gaps

5.2.2 The effect of teachers ICT Competence on teachers ICT usage in Secondary Schools in Kajjansi Town Council

It was established that ICT Competence of Teachers significantly affect the teachers ICT usage (r =.600[**]: p= .000). 36% variance in teachers ICT usage is attributed to ICT Competence of Teachers (Adjusted R Square = .35.6). ICT Competence of Teachers is a statistically significant predictor of ICT usage (Beta = .600, Sig. = .000).

This is in agreement with Okolie, (2012) who noted that administrators have recognized that there is a need to equip teachers with the necessary skills and experiences that will enable them become 21st century teachers and contribute to the global community. This is so because ICT is believed to be able to enhance teaching in the world since these tools can play a role in reforming education systems, increase access to pedagogical resources, improve management of resources and enhancing pedagogical techniques

Bitner, (2012) noted that it's the skill and attitude of both student and the teacher that determine the effectiveness of technology. Once teachers develop the skill, they could begin to find ways of integrating it into the teaching and learning process.

Mbwesa (2011) that ICT skills and knowledge amongst both teachers and students are increasing day by day which gives hope for smooth transition from the classical methods to the ICT powered lessons.

Afshari et al, (2009) adds that other than the age, lack of confidence and skills were the main hindrances to ICT integration in teaching and learning process. This made them conclude that computer competence can be observed in terms of beliefs concerning their knowledge, basic skills and capacity of performing essential functions using computers.

Farrell (2007) also states that, computer training should not be limited to teachers who teach computing as a discipline but to all teachers. This can be attributed to the fact the teachers today graduate with little or no computer skills from the training institutions. Teachers need to know how to use computers before they can integrate them into the curriculum. On this note therefore school administrators should come up with strategies to ensure that teachers receive this regular training to enhance their skills. Some of the strategies could be, employing the emailing system as a way of communicating other than phone calls, opening up of whatsapp groups for teachers, accepting only soft copies of records of work and schemes of work.

5.2.3 The effect of ICT school policies on teacher's ICT usage in Secondary Schools in Kajjansi Town Council

It was established that ICT school policies significantly affect teacher's ICT usage (r =.808**: p= .000). 65.3% variance in teacher's ICT usage is attributed to ICT school policies (Adjusted R Square = .651). ICT school policies is more statistically significant predictor of teacher's ICT usage (Beta = .808, Sig. = .000).

This is in agreement with UNESCO, (2011) who noted that for any program to be successful, it has to be guided by policies that supports its establishment and guide its operations. Uganda being part of the entire global word it was mandated to observe the recommendation of the United Nations and the Millennium Development Goals (MDGs) that required it come up with ICT policies to achieve sustainable development by 2040.

Uganda Ministry of works report (2003) noted that investment in ICT was no guided by any policy where by schools could lead their own initiatives with donor agencies to have ICT in the schools. In 2012, the government of Uganda came up with a national ICT policy that stream

lined and guided institutions with emphasis on including ICT in the curriculum at all levels of learning from primary, secondary and tertiary. At secondary level the policy mandates all teachers at secondary level to be equipped with ICT skills through works, seminars, conferences as well as formal academic training from institutions of learning, introduce E-learning and increase investment in educational ICT equipment.

Educational ICT Policy, (2006) noted that the educational policy Establish educational networks for sharing educational resources, create opportunities and providing assistance for the disadvantaged, people with special needs, women and the youth to acquire ICT skills. The policy continues to mandate teachers to be equipped with skills to make use of ICTs in preparation of lessons, assessment, record keeping and evaluation of the learning process.

Sabiti, (2016) noted that for any institution to be successful in its endovours, it has to customize national policies to suit its potentials. Policies such as time tabling ICT lessons, staff ICT trainings, loan scheme policy on computer acquisition for teachers, use of mobile phones while at school, computer laboratory rules and many others. Some of policies however have proved to working well for teacher for example the ministry directed all teacher to stop using mobile phones while at school yet mobile phones are a short-term solution to the expensive computer accessories especially internet.

5.3 Conclusion

The study established that ICT infrastructure, ICT policies and teacher's competence influences teacher ICT usage.

ICT infrastructure like computers and computer laboratories makes it easy for teachers incorporate ICT in teaching especially practical skills to the students.

ICT competence of the teacher motivate him and the students to practice every time and acquire more research skills

Policies for ICT use are very important as they promote the use of ICT in schools like digitalized record keeping, assessment and evaluation of learners as well as easing communication and transfer of information

5.4 Recommendation

The study recommended that teachers should be encouraged to own personal ICT equipment to increase accessibility and availability in secondary schools.

School management should consider lobbing support for ICT equipment from Alumini and charity organizations like Rotary clubs

School management should encourage ICT exchange programs and trainings for both teachers and students with other schools as a way of bench marking.

School management should customize national ICT policies to suit their potentials.

The ministry of education and sports should strengthen the monitoring unit to ensure that teachers use ICTs during teaching and learning process in secondary schools

5.5 Areas for Further Study

A detailed study should be carried out on the influence of ICT on the academic performance of learners

A study should be conducted on the influence of ICT use on the performance of teachers in secondary schools in Uganda.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR TEACHERS

Questionnaire for a study on institutional factors and teacher's ICT usage in secondary schools in Kajjansi town council, Wakiso district.

Dear respondent, this questionnaire is intended to facilitate the study on *institutional factors and teachers ICT usage in secondary schools in Kajjansi town council, Wakiso District*. The study is for academic purpose and is carried out as partial requirement of the award of master's degree in education policy, planning and management of Kyambogo University. Your input is highly appreciated and will be handled with utmost confidentiality.

SECTION A: BACKGROUND CHARACTERISTICS

Instructions: please tick the most applicable.

1. Gender: Male ◯ Female ◯

2. Age Group

20 -25 yrs		26 - 30 yrs		31- 35 yrs		Over 36 yrs	
1		2		3		4	

3. Highest level of education

Diploma		Degree		Post Graduate	
1		2		3	

4. For how long have you been in the teaching profession?

Less than 5 years		Less than 10 years		Over 10 years	
1		2		3	

5. Have you heard of ICT (Information and Communication Technology) before?

Yes		No		Not sure	
1		2		3	

SECTION B: ICT INFRASTRUCTURE THAT SUPPORT TEACHERS

In this question, please tick the most appropriate option as below to show your response.

5= strong agree; 4= agree; 3= not sure; 2= disagree; 1= strong disagree.

No	Independent variable: ICT infrastructure that support teachers	Strong agree	agree	Not sure	disagree	Strongly disagree
1	The school has a well-equipped computer laboratory					
2	The school has reliable power sources					
3	Teachers own personal ICT equipment					
4	The school has internet connectivity in the entire campus for academic purpose.					
5	All classrooms are equipped with ICT facilities like projectors					
6	Teachers have the necessary software for academic purpose.					
7	Regular repairs and maintenance of ICT equipment is done					

SECTION C: ICT COMPETANCE OF TEACHERS

In this question, please tick the most appropriate option as below to show your response.

5= strong agree; 4= agree; 3= not sure; 2= disagree; 1= strong disagree.

No	Independent variable:	Strong agree	agree	Not sure	disagree	Strongly disagree
1	Most teachers teach lessons with the support of ICT					
2	The school get technical support from ICT staff					
3	Teachers are aware of genuine websites for academic purpose					
3	Teachers receive ICT trainings regularly					
4	Teachers use ICTs to communicate with students					
5	Most teachers are aware of recent software for academic purposes					

6	Teachers are aware of cyber security codes (ethics)					
7	Teachers use ICT in record keeping for students					
8	Teachers use ICT in assessment and evaluation of learners					

In your own opinion, how can the school support teachers to gain skills in the use of ICT?

SECTION D: SCHOOL POLICIES THAT SUPPORT TEACHERS TO USE ICT

In this question, please tick the most appropriate option as below to show your response.

5= strong agree; 4= agree; 3= not sure; 2= disagree; 1= strong disagree.

No	Independent variable: school policies that support teachers to use ICT	Strong agree	agree	Not sure	disagree	Strongly disagree
1	Teachers use ICT in all the lessons throughout the day					
2	There are school policies on the use of ICT by teachers in the school					
3	There is a followed time table by teachers while teaching using ICT					
4	All teachers are supposed to use ICT while teaching					
5	Computer laboratory is strictly out of bounds for student when not lesson time.					
6	Computer laboratory has clear rules and regulations that govern its effective use					
7	ICT equipment are accessible to all the time for teachers					
8	Teachers receive financial support from the school to obtain personal ICT equipment.					
9	ICT budgets are given a priority during budgeting time by the Board of governors.					
10	The school observes all national ICT policies for schools					

SECTION E: TEACHER'S ICT USAGE IN SECONDARY SCHOOLS IN KAJJANSI TOWN COUNCIL, WAKISO DISTRICT.

In this question, please tick the most appropriate option as below to show your response.

5= strong agree; 4= agree; 3= not sure; 2= disagree; 1= strong disagree.

No	Independent variable: Teacher's ICT Usage in Secondary Schools	Strong agree	agree	Not sure	disagree	Strongly disagree
1	Students attend computer lessons					
2	Teachers access online materials for teaching					
3	Teachers possess enough ICT skills for teaching					
4	Teachers share teaching materials using internet					
5	Teachers have access to printers					
6	Teachers use computers in making the schemes of work					
7	Teachers have access to photocopies at school					
8	Teachers use computers in making lesson plans					

APPENDIX II: INTERVIEW GUIDE

1). What is your highest education level?

2). Does this school have adequate ICT infrastructure?

3). Do you think adequate ICT infrastructure affects teachers' ICT usage. If yes, how?

4). Are teachers in this school well equipped with ICT skills?

5). Do you think equipping staff with ICT skills affects their ICT usage. If yes, how?

6). Does this school have the relevant ICT policies?

7). Do you think having favorable school ICT policies affects teachers' ICT usage. If yes, how?

8). What are the challenges faced by teachers in using ICT?

APPENDIX III: OBSERVATION CHECK LIST

Name of school

No	Name of item	Response		
		Observation status		Quantity of ICT accessory
		Yes	No	Qty
1	Computers (desktop)			
2	Projectors			
3	Photocopier			
4	Printers			
5	Internet			
6	Generator			
7	Functional sockets			
8	Television set			
9	Radios			
10	Scanners			
11	Safety devices like lightening arresters			
12	Modems			
13	Tablets			
14	Mobile phones			
15	IPads			
16	Laptops			
17	Uninterrupted power supply (UPS)			
18	Technician			
19	ICT policy			

APPENDIX IV: ACCEPTANCE LETTER FROM THE KYAMBOGO UNIVERSITY

KYAMBOGO UNIVERSITY

P. O. BOX 1, KYAMBOGO – KAMPALA, UGANDA
TEL: +256-0414-285037/285001, www. Kyambogo.ac.ug
FACULTY OF EDUCATION
Department of Educational Planning and Management

Date: 05th July 2019

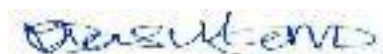**TO WHOM IT MAY CONCERN**

Dear Sir/Madam

RE: LUKENGE SAMUEL- 17/U/14542/GMED/PE

This is to certify that Lukenge Samuel is a student in our department pursuing a Master of Education in Policy Planning and Management. He is carrying out research as one of the requirements of the course. He requires data and any other information on the topic titled:

"Institutional factors and teachers' ICT usage in secondary schools: a case of Kajjansi Town Council, Wakiso District"

Any assistance accorded to him is highly welcome. He is strictly under instructions to use the data and any other information gathered for research purposes only.

Thank you.

Dr. George Wilson Kasule

HEAD OF DEPARTMENT, EDUCATIONAL PLANNING & MANAGEMENT

APPENDIX V: MORGAN'S TABLE FOR SAMPLE SIZE

Population Size		Confidence = 95% Margin of Error				Confidence = 99% Margin of Error		
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1000	278	440	606	906	399	575	727	943
1200	291	474	674	1067	427	636	827	1119
1500	306	515	759	1297	460	712	959	1376
2000	322	563	869	1655	498	808	1141	1785
2500	333	597	952	1984	524	879	1288	2173
3500	346	641	1068	2565	558	977	1510	2890
5000	357	678	1176	3288	586	1066	1734	3842
7500	365	710	1275	4211	610	1147	1960	5165
10000	370	727	1332	4899	622	1193	2098	6239
25000	378	760	1448	6939	646	1285;	2399	9972
50000	381	772	1491	8056	655	1318	2520	12455
75000	382	776	1506	8514	658	1330	2563	13583
100000	383	778	1513	8762	659	1336	2585	14227
250000	384	782	1527	9248	662	1347	2626	15555
500000	384	783	1532	9423	663	1350	2640	16055
1000000	384	783	1534	9512	663	1352	2647	16317
2500000	384	784	1536	9567	663	1353	2651	16478
10000000	384	784	1536	9594	663	1354	2653	16560
100000000	384	784	1537	9603	663	1354	2654	16584
300000000	384	784	1537	9603	663	1354	2654	16586