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Akosua Boatemaa Adarkwa Mrs *Kumasi Technical University*, 3cthree@gmail.com

Michael Oppong Mr. *Kumasi Technical University*, ttmichaeloppong@gmail.com

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## MAXIMIZING TECHNOLOGY ACCEPTANCE MODEL (TAM) IN ASSESSING THE USE OF ICT TO PROMOTE DISTANCE EDUCATION IN PUBLIC UNIVERSITIES IN THE ASHANTI REGION, GHANA

by

Akosua Boatemaa Adarkwa Assistant Lecturer, Department of Information Science Kumasi Technical University

> Michael Oppong Assistant Librarian, Kumasi Technical University

#### Abstract

The study investigated maximizing Technology Acceptance Model in accessing the attitude of rural farmers using ICT tools in farming to enhance productivity. Using a positivist philosophical perspective, this study adopted the survey research design to respectively 210 registered level 300 distance education students of both universities pursuing Business Administration from the Kwame Nkrumah University of Science and Technology (KNUST) and the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development (AAMUSTED). The study employed questionnaires as a data collection tool. Findings revealed that ICTs were useful for both institutions giving them some sort of autonomy for students in their education, inducing presentation, demonstration, interaction, and collaboration. Some of the challenges the distance students faced were the limited ICT facilities and services, and technical hitches, among others. The study recommended that these universities should invest in contemporary ICT infrastructure to aid the new generation of distance students.

Keywords: ICT, Distance education, Public Universities, TAM.

#### **Background of the Study**

Over the years, the rise in the pace of technology in this modern era has attracted the attention of educational researchers especially concerning the impacts Information and Communication Technology have on distance education delivery and knowledge acquisition. Education all over the world undoubtedly has been identified as an important means for promoting economic and social development at the individual, institutional, and national levels. The growth of the global economy and the information-based society has pressurized education systems around the world to use technology to teach students the knowledge and skills they need (UNESCO, 2002).

In this study, the researcher emphasized Information and Communication Technologies and their use in distance education. Inputs from distance education students, experts in digital technology, and educationalists at the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, and Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development (AAMUSTED), Kumasi campus were solicited to inform the outcomes of the use of ICT on contemporary distance education. The rising spate of the utilization of ICT in this contemporary world underscores the relevance of ICT, particularly in relation to tertiary education (Unwin, 2005; Robinson, 2008). ICT has thus, become a 'sine qua non' in modern-day education and development efforts in general (Leach et al., 2006). Despite the enormous contributions of ICT in the transformation of higher education in the global south to meet the manpower needs of such countries, their counterparts in the global north, especially in Africa have only made a 'snail' progress in concretizing ICT and distance education. According to Ankra (2014) countries, including Ghana, have paid minimal attention to ICT, thus education has lagged behind in terms of technology. Ghana has become an information-poor country, making the impact of ICT on distance education adequately sparse. However, Arizona et al. (2020) claim that there are so many online learning applications that can be applied in the world of education today. Lukihardianti and Yulianto (2018) further posit that online learning is a form of distance learning/training by utilizing telecommunications and information technology, such as the internet, among others to connect students with their learning resources such as databases, experts/instructors, libraries that are physically separated or even far apart but can communicate, interact or collaborate. Hence, it is worrisome that a developing country like Ghana where physical resources with regard to classrooms, furniture, teaching, and learning materials, among others are limited, could not maximize the use of ICTs via TAM in distance learning to combat the majority of these challenges. This study investigates the maximization of the technology acceptance model in assessing the use of ICTs among distance education students at selected public universities in the Ashanti region of Ghana. The study is lensed by the following objectives:

- To determine the usefulness of ICTs for distance education at public universities in the Ashanti region.
- To investigate the factors influencing the use of ICTs in distance education at public universities in the Ashanti region.
- To determine the challenges faced in the accessibility and utilization of ICTs for distance education public universities in the Ashanti region.

## **Contextual setting**

Distance Education at Kwame Nkrumah University of Science and Technology (KNUST)

The Kwame Nkrumah University of Science and Technology has since 2005 offered Distance Learning programs and was established as the Faculty of Distance Learning under the then Faculty of Science. This was to help build both ongoing and new programs of study from all faculties of the University in the distance learning mode. The Faculty of Distance Learning was separated from the College of Science in 2007 and is now an independent or autonomous institute called the Institute of Distance Learning. The Institute of Distance Learning came into being to support the University's Strategic Plan thus PLAN 2K14 which aimed at enrolling fifty thousand (50, 000) students by the year 2015. The institute was estimated to cater to about 40-50% of the total populace of the projected 50, 000 students. One of the numerous aims of the Institute is to provide greater access to different categories of people who desire to have a university education but are unable to gain access through the regular mode. The Institute provides face-to-face sessions at thirteen (13) learning centers. In addition, the Institute presently runs a total of seventeen (17) undergraduate and twenty (20) postgraduate programs to which seven (7) new programs have been added. The vision of the Institute of Distance Learning, KNUST is "increasing access to relevant and flexible tertiary and continuing education and training anytime, anywhere through the Distance Learning Mode using multimedia" (KNUST, 2017).

# Distance Education at Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development (AAMUSTED).

In the year 2002, after the then University College of Education, AAMUSTED had become a fullfledged university thus Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, the institution introduced a three-year diploma program in Basic Education (DBE) by distance. It is the sole mandate of the Centre for Distance Education (CDE) under the Institute for Distance and E-learning (IDel) of Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development (AAMUSTED), in producing highly qualified teachers for pretertiary institutions in Ghana through the Distance Learning delivery system. The canter serves professional and non-professional teachers by providing distance education programs at the Diploma, Post Diploma degree, Postgraduate Diploma, and Master's degree levels. The canter has currently thirty-seven (37) learning centers across the country. Students get to meet colleagues and also make use of the reference facilities as they attend tutorials at the learning centers during weekends. As distance students, there is the availability of the Moodle Learning Management System to enable interactive teaching and learning (IEDE, 2017).

## **Theoretical Framework**

A trend observed in the educational sector is the setting up of Electronic Learning systems to provide students with online access and educational content (Park, 2009). According to Legris, Ingham, and Collerette (2003), the model that has been able to aid the explanation and prediction of user behaviour of information technology is the Technology Acceptance Model and as such the theory that underpins this research. The Technology Acceptance Model (TAM) was originally proposed by Davis in 1986 (Park, 2009). This theory has been the main theory in explaining how well technology is accepted by a group of people. The theory hinges on four main concepts which are the "perceived ease of use", the "perceived usefulness", "behavioural intentions" and "attitude toward using" (Chuttur, 2009; Park, 2009).



Figure 1: Technology Acceptance Model: Adopted from Park (2009)

According to Park, (2009), in the Technology Acceptance Model, the perceived usefulness and perceived ease of use were defined respectively:

"The degree to which an individual believes that using a particular system would enhance his or her job performance, and, the degree to which an individual believes that using a system would be free of physical and mental effort."

Using this model, the perceived usefulness would connote the degree to which an individual believes that using the e-learning opportunities would enhance his or her studies. Moreover, the perceived ease of use would signify the degree to which an individual believes that using the e-learning opportunities would be free of physical and mental effort. This model feeds into the attribute of "Acceptance".

## Strength of the Model

The Technology Acceptance Model covers all aspects that deal with technological appreciation on the path of the user. It also appeals to the perceived attitude and behaviour of the user of the technology.

The theoretical framework highlights the perceived usefulness of ICT facilities and technology, their perceived ease of use, and their attitude toward using these facilities. The framework also considers the behavioural intention to use and actual use of ICT facilities. As highlighted in the framework, the behavioural intention of use is determined by the attitude toward using and the perceived usefulness of technology in general. Both perceived usefulness and ease of use of ICT technology are affected by external variables. The perceived usefulness is also determined by the ease of use of the ICT technology. The perceived attitude serves as another attribute of ICT usage.

Selim (2003) concludes based on the above information that, the Technology Acceptance Model (TAM) is an important model that helps determine the acceptance and use of effective and efficient learning technology. It, therefore, stands to reason that the TAM fits a research study that examines or investigates the usage of ICT within the Ghanaian tertiary educational setting.

## Relationship between Theoretical Framework

There is a direct relationship between the theoretical framework of the study objectives. The theoretical framework talks about the perceived usefulness of ICT, and this dimension has a direct link with the objective which seeks to assess the usefulness of ICT facilities and services for distance education. The usefulness of ICT facilities makes it legitimate and laudable for the study to investigate whether the selected universities have adequate ICT facilities available for the delivery of distance education for an effective outcome. The theoretical framework (i.e., TAM) emphasizes ease of use of available ICT facilities. This component directly aligns with the study's objective which seeks to find out ICTs usage among distance learners in the selected universities. Attitude toward the use of ICT facilities and technology which is a critical component of TAM is influenced by the usefulness of ICTs to distance students. Once students accept that ICT is very useful to their studies, they are likely to show a positive attitude toward its use and vice versa. The perceived ease of use is also an important component of TAM and serves as a factor that may influence the use of ICTs by students, thus, assessing the perceived ease of use, attitude to, and behavioural intention to use or continue to use ICT by the distance students. Distance students are more likely to use ICTs in distance studies if they have ease of use of ICT facilities and services. Both the ease of use of ICTs and attitude towards the use of ICTs have a direct linkage to the behavioural intension to use and actual use of ICT facilities (components of TAM). The challenges faced in the utilization and accessibility of ICTs for distance education refer to all blockages in the linkages in the theoretical framework. The challenges faced in the use of ICTs can be ascertained through the actual system (ICTs) use which is a component of TAM. Once students start with the usage of ICT facilities, challenges could be identified and measures can subsequently be proposed to improve the effective application of ICTs in distance education.

## **Statement of Problem**

Over the years, distance education has become a 'sine qua non' in promoting quality education for a large range of people at the tertiary levels across the globe. In fact, governments around the world are increasingly embracing distance education as a tactical approach in enhancing local economic development as well as holistic development of their respective countries for the betterment of their human resource base (Ololube, 2011; Feeney, 2010). Studies conducted by Waycott et al. (2010) tend to indicate that distance education programs are becoming relevant in this contemporary time as the 'hub' for the development of knowledge in the world. Efforts seem to be strengthened in many countries, especially the developed ones vis-à-vis in embracing a coherent approach to echo strategically distance education for the large number of people who have difficulties attending conventional institutions at the tertiary level (Olulabe et al., 2012). The United Nations Educational, Scientific and Cultural Organization (UNESCO), which is an agency of the United Nations, has revealed its acceptance of and support for distance education by member countries. According to UNESCO (2018), the world's educational delivery at the higher level should adopt diversification of contents and methods, innovation, infusion of information and communication technologies, flexibility as well as the incorporation of best practices and policy dialogues which allow all and sundry to pursue their education without difficulties. Hence, the use of distance education which ensures full incorporation of information and communication technologies and methods is a pre-requisite, and this aligns with UNESCO's approach to quality education at the higher levels.

In Africa, the current development agenda is centered on 'people' as the focal potential for Africa's development. This aligns with the strategic long-term initiative of the Africa Union (2015) entitled

"Agenda 2063: The Africa we want". In relation to Africa's current commitment to enhancing the skills, abilities, and knowledge of its human resource in order to tap into it to create desirable change by 2063, concerns for quality distance educational programs have received enormous attention. In Ghana for instance, universities are encouraged to open their doors wider to embrace more distance education students in order to improve their capacity to contribute to national growth and development and to support the over-arching aim of the Africa Union (Africa Union, 2015). Therefore, the agony of Ghana as a poor country to unleash the full benefit of ICTs in distance education calls for the such a pertinent investigation into the contemporary use of ICTs in distance education.

## Literature review

## ICT Facilities and Services for Distance Education and Their Uses

Distance education makes tremendous use of ICT facilities and services in order to ensure the transfer of knowledge from instructors to learners. These facilities and services keep evolving, as technologies continually upgrade in the world. As indicated by Beldarrain (2013), ICT has become the bedrock of educational transformation, integrating computers, internets, broadcasting technologies (radio and television) and telephony for effective delivery and sharing of information and knowledge. Ultimately, these technologies (computers, internet, broadcasting technologies, and telephony) have become widely used technologies for distance education. One integral overarching aim of UNESCO is to ensure that every country, both advanced and advancing ones, have access to ICTs educational facilities which are pre-requisite for societal modernization and innovative growth and development (UNESCO, 2005). In this regard, UNESCO tends to provide advisory services for countries to ensure optimal balance emerging ICTs and older available educational technologies, and as well provide the much-needed support to ensure the development of educational software and materials which enhances modernization and easier transfer of knowledge and communications, in tandem with country-specific national and regional cultures, at all levels, especially, at the tertiary institutions. In accordance with Beldarrain (2013) perspective that ICTs in distance education are generally grouped into four main technologies (computers, internets, broadcasting technologies, and telephony), the researcher has grouped all ICT facilities and services for distance education into the four technologies.

## The Usefulness of ICT for Distance Education

The use of ICT serves as a powerful tool for expanding educational opportunities both formal and informal education. There is evidence to suggest that ICT facilitates access to experts, resource persons, researchers, mentors, and friends across the world for distance studies. ICT entails the use of computers, the internet, broadcasting technologies as well as telephony (Traxler, 2010). The use of ICT in distance education has ensured that new pedagogical strategies are implemented in distance learning allowing for more autonomy for distance students. In a study conducted by Luu and Freeman (2011), ICT was pictured as a central pillar for the effective presentation of results by students, enhancing peer-to-peer learning for significant academic outcomes. Through ICT, distance education has over the year, been incorporated with voice mail, e-mail, teleconferencing, and computer-based integrated telecommunications and multimedia technologies (Traxler, 2010).

Distance education students' use of ICTs helps them to develop higher skills which help them to effectively collaborate across time and place and solve real-life issues/ practical challenges in society (Fu et al., 2013). Ott and Pozzi (2011) attested that ICT enhances students' understanding of the world and concretizes their cultural perceptions through a global lens. In fact, students seeing

how their instructors use ICT encourages them to study hard and to gain in-depth knowledge on the use of ICT facilities and services. Noor-Ul-Amin (2013) indicated that ICT improves the quality of education through learning facilitation by self, real-time conversation, delayed time conversation, directed instruction, independent problem solving, information seeking and analysis, critical thinking, and the ability to effectively communicate, collaborate and study amongst students and their instructors.

#### Factors Influencing the Use of ICTs for Distance Education

Based on insight from the Technology Acceptance Model, Pai and Huang (2011) indicated that factors influencing the use of ICTs for distance education are the 'perceived usefulness' of ICTs and the 'perceived ease of use' of ICTs. In relation to the 'perceived usefulness', Salari et al., (2009) commented that higher institutions and several other educational stakeholders have come to understand the useful of ICT, and as such, have seen it as relevant too for distance education worldwide. Other researchers such as Abasalt-Khorasani et al., 2011), and Suleiman and Zarafshani (2011) also accept the position that the usefulness and ease of use of ICTs are the factors that have influenced its use for distance education. Other researchers such as Nazaemin and Mirabi (2011) and Moradi et al., (2010) have also indicated that the need for educational innovation is one significant reason for the use of ICTs for distance education. These groups hold the viewpoint that once education is gradually metamorphosing, the need for incorporation of ICTs has become very pertinent, hence making distance education move along with ICTs. Pai and Huang (2011) undertook studies individually to ascertain the factors which tend to influence ICTs for distance education. This was done using the Technology Acceptance Model. Their findings were concurrently the same as i) there was a significant relationship between the perceived usefulness of ICT and the decision to adopt it in distance education; ii) there was a significant relationship between the perceived ease of use of ICT and the decision to adopt it in distance education; iii) there was a significant relationship between the actual use of ICT and the reason to embrace it for distance education, and iv) there was a significant relationship between the attitude of people towards the use of ICT and the reason to embrace it for distance education. Inferentially, Pai and Huang (2011) realized that the perceived usefulness of ICT, the perceived ease of using ICT, the actual use of ICT among people, and the attitude of people towards the use of ICT are the core pillars that underpinned the decision to use ICT for distance education.

#### Challenges Faced in the Utilization and Accessibility of ICT for Distance Education

The relevance of ICT in distance education has been acknowledged. Integration of ICT in education, particularly, distance education ensures that instructors and learners work effectively in an information age (Salehi and Salehi, 2012). Nevertheless, the use of ICT for distance education has some barriers which need to be brought to the desk for educational actors to make deliberate efforts to handle them effectively. According to Yunus et al. (2009), the use of ICT is quite complicated and needs skills from both teachers and instructors. For instance, access to information can pose a real danger of information overload if instructors and students do not have the requisite skills in filtering relevant information, or are unable to establish a coherent organizing principle. Scheopp (2005) presented the challenges as barriers and classified them into intrinsic and extrinsic barriers. From his perspective, barriers are conditions that make it difficult to achieve an aim. Highlighting the differences between intrinsic and extrinsic barriers, Alwani (2005) described intrinsic barriers as those related to instructors, administrators, and learners whilst extrinsic barriers are those associated with the institution in question. He further threw more light on the barriers of ICT in distance education by revealing that such barriers are first-order and cited

access, time, support, resources and training whilst intrinsic barriers are second-order cited attitudes, beliefs, practices and resistance.

## **Research methodology**

Using a positivist philosophical perspective, this study adopted the survey research design. The survey design provided a quantitative description of the trends and opinions of a population by studying a sample of that population (Creswell, 2013). In this study, the Kwame Nkrumah University of Science and Technology (KNUST) and the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development (AAMUSTED). have been chosen as cases and all are located in Kumasi in the Ashanti Region. As contended by Sekhon (2004), the selection of both universities as cases were done in a purposive fashion. The justification for the selection of these two institutions was that both are a representative part of the group of public universities which offer distance education programs in Ghana and have similar characteristics to all other universities in Ghana.

For this study, the target population involved distance education students of both KNUST and AAMUSTED pursuing Business Administration. This is because they are direct beneficiaries and patronize the e-learning service as their curriculum allows them to widely depend on ICTs instead of the predominant use of conventional classrooms. Students from Business Administration specifically Accounting and Human Resource Management programs were used because these are programs commonly run by the two universities. Hence, in order to ensure sound comparison, students from these two programs were considered. The total target population of this study comprises 210 registered level 300 distance education students of both universities pursuing Business Administration. All the members were considered since the study was based on a census approach. The questionnaire was mainly semi-structured, but most of the questions were coded to allow for easy analysis of the data.

## Data analyses and discussions

## **Demographics**

In KNUST, out of the 138 distance student respondents, 3(2.2%) were between 16-19 years, 53 (38.4%) were between 20-25 years, 50(36.2%) were within 26-31 years, 21(15.2%) were within 32-35 years, and 11(8.0%) were above 35 years. Also, in AMMUSTED, out of the 67 distance student respondents, 2(3.0%) were between 16-19 years 27 (40.3%) were within 20-25 years, 22(32.8%) were between 26-31 years, 11(16.4%) were within 32-35 years, and 5(7.5%) were above 35 years.

It can therefore be observed that the majority of the respondents were within the age range of 20-25 years for both institutions. This implies that many of the students fell within the age bracket of 20-25 years.

Out of the 138 students engaged from KNUST, a total of 88(63.8%) were males whilst 50(36.2%) were females. Also, in AMMUSTED, out of the 67 students engaged, 43(64.2%) were males visà-vis 24 (35.8%) females.

It can therefore be ascertained that there were more males than females in distance education in the two universities. This finding confirms in the various universities that the males are more than

females. The finding is in accordance with the Gender Parity Index (GPI) of the Ministry of Education which indicates that in Ghana, males are higher in number at the various tertiary institutions compared to females. The responses have been depicted in Figure 5.



Figure 5: Age range of respondents



Figure 6: Gender of respondents

## The Usefulness of ICT for Distance Education

ICT for distance education is useful and has implications on distance education. It was therefore deemed necessary to investigate the usefulness of ICT for distance education from the students' perspective. This has been presented in this section of the study.

## ICT Use and its Usefulness to Students

In examining the usefulness of ICT for distance education, students were asked how well the use of ICT and its tools had helped them in their education as distance learners. The responses from the respondents have been depicted in Table 1.

The findings as indicated in Table 1 reveal that in KNUST, out of the 138 students engaged, 64 (46.4%) indicated they are able to use ICTs 'well', 47(34.1%) indicated 'extremely well', and 26(38.8%) indicated 'somehow' when they were posed with how ICT and its tools had helped them. In AMMUSTED, 30 (44.8%) opted for 'somehow', 26(38.8%) indicated 'well', 10(14.9%) indicated 'extremely well', and 1(1.5%) indicated not well when they were also asked the same question on how well ICT and its tools had helped them. From the findings, more students in KNUST revealed that ICT and its tools had helped them very well compared to those in AMMUSTED.

	KNUST		AMMUSTED	
Response	Frequency	Percent	Frequency	Percent
Extremely well	47	34.1	10	14.9
Well	64	46.4	26	38.8
Somehow	26	18.8	30	44.8
Not well	-	-	1	1.5
Non- response	1	0.7	-	-
Total	138	100.0	67	100.0

Table 1: ICT Use and its Usefulness

## Distance Learners and their ICT literacy Level

Literacy is generally seen as the ability to read and write. ICT literacy is defined as the ability to understand and use ICT tools and services. Distance education students are expected to be ICT literates, hence, there was the need to investigate into how ICT has improved the ICT literacy of the students. The responses from the respondents have been depicted in Table 2.

As presented in Table 4.16, in KNUST, out of the 138 students, 73(52.8%) indicated 'Yes', 35 (25.4%) indicated 'Not completely', 27(19.6%) indicated 'Maybe' and 3(2.2%) indicated 'no' when asked how ICT had improved their ICT literacy level. For AMMUSTED, out of the 67 students, 24(35.8%) indicated 'not completely', 19(28.3%) indicated 'yes'. 18(26.9% indicated 'maybe' and 6(9.0%) indicated 'no' when asked similar questions related to ICT literacy level.

Comparing the two universities, more students from KNUST confirmed that ICT has significantly improved their ICT literacy compared to their counterparts from AMMUSTED. ICT literacy is key in distance education and should therefore not be downplayed by any means. This calls for the need to structure distance education curricula in a manner that allows students to persistently improve their ICT literacy level.

 Table 2: Usefulness of ICT in Improving ICT Literacy Level of Students

<b>i</b> de le <b>1</b> e sej di de sej 1 e		
	KNUST	AMMUSTED

Ease of use	Frequency	Percent	Frequency	Percent
Yes	73	52.8	19	28.3
Not completely	35	25.4	24	35.8
Maybe	27	19.6	18	26.9
No	3	2.2	6	9.0
Total	138	100.0	67	100.0

## The Usefulness of ICT for Distance Studies

It is widely accepted that ICT is very useful for distance education. It was therefore relevant to investigate the diverse use of ICT for distance studies. The responses based on 'strongly agree' from respondents have been presented in Table 3.

As presented in Table 3, students were asked diverse range of usefulness. In relation to the question on how ICT has allowed for 'autonomy in education', 28(20.3%) respondents from KNUST as compared to 25(37.3%) from AMMUSTED strongly agreed. Another perceived usefulness of ICT was ICT has ensured students have 'effective coordination with instructors. With this, 33(23.9%) students from KNUST strongly agreed whilst 14(20.9%) from AMMUSTED also strongly agreed.

Information was also gathered on the usefulness of ICT in terms of 'unearthing diversity in learning', and with this, KNUST had 48(34.8%) who strongly agreed vis-à-vis 16(23.9%) students from AMMUSTED. In terms of the 'elimination of barriers of quality education' as a usefulness to ICT, 42(30.4%) students from KNUST strongly agreed compared to 27(40.3%) from AMMUSTED.

In relation to the fact that ICT 'enhances accessibility and innovation', in KNUST, 24(17.4%) strongly agreed whilst 44(65.7%) students from AMMUSTED strongly agreed. Students' views were also gathered on the usefulness of ICT in terms of 'skills enhancement' and with this, 48(34.8%) students from KNUST strongly agreed and 39(58.2%) students from AMMUSTED also strongly agreed. In relation to the usefulness of 'enhanced internet know-how', whilst in KNUST, 34(24.6%) strongly agreed, 31(46.3%) from AMMUSTED strongly agreed.

ICT 'increases opportunity to network' was considered perceived usefulness and students' views were consulted on it. The results indicated that 29(21.0%) KNUST students strongly agreed and 22 (32.8%) AMMUSTED strongly agreed. The other usefulness tested were, 'improved academic and administrative functions' and 'increased ability in ICT usage'. In terms of the former usefulness, 30 (21.7%) from KNUST agreed as compared to 22(32.8%) from AMMUSTED. Emphasizing on the latter usefulness, 28 (20.3%) from KNUST strongly agreed and 26(38.8%) from AMMUSTED also strongly agreed.

Usefulness of ICT	Institution	Frequency	Percentage
Autonomy in advastion	KNUST	28	20.3
Autonomy in education	AMMUSTED	25	37.3
Effective econdination with instructors	KNUST	33	23.9
Effective coordination with instructors	AMMUSTED	14	20.9

Table 3: Usefulness of ICT

I le conthe d'airconsiter in le comin a	KNUST	48	34.8
Unearthed diversity in learning	AMMUSTED	16	23.9
Elimination of barriers to quality	KNUST	42	30.4
education	AMMUSTED	27	40.3
Enhanced accessibility and innevation	KNUST	40	29.0
Emanced accessionity and innovation	AMMUSTED	51	76.1
Enhanced communication	KNUST	24	17.4
	AMMUSTED	44	65.7
Skille enhancement	KNUST	48	34.8
Skills enhancement	AMMUSTED	39	58.2
Enhanced internet know how	KNUST	34	24.6
Emanced internet know-now	AMMUSTED	31	46.3
Increased apportunity to notwork	KNUST	29	21.0
Increased opportunity to network	AMMUSTED	22	32.8
Improved academic and administrative	KNUST	30	21.7
functions	AMMUSTED	22	32.8
Increased ability in ICT years	KNUST	28	20.3
increased ability in ICT usage	AMMUSTED	26	38.8

## **Factors Influencing the Use of ICTs for Distance Education**

ICT use is influenced by several factors ranging from economic, socio-cultural, political and technological. It was deemed prudent to find out these diverse factors from the students engaged in this research. The responses based on 'strongly agree' from the respondents have been presented in Table 4.

As indicated in Table 4.18, in terms of socio-cultural factors, students were asked about 'cultural influence on ICT'. With this, in KNUST, 39(28.2%) responded strongly agreed, whilst in AMMUSTED 14(20.8%) also indicated strongly agree. Students were also asked on 'Attitude and ideological influence on ICT'. From KNUST 33(28.2%) indicated strongly agree whilst in AMMUSTED, 16(23.8%) also indicated strongly agree.

In relation to the technological factors, students were asked the question 'on the quantity of facilities and services. With this, 48(34.7%) KNUST students, strongly agreed, while in AMMUSTED 51(76.1%) also strongly agreed. With 'Technological advancement', responses from students were, KNUST 44(31.8%) strongly agreed whilst in AMMUSTED 28(41.7%) strongly agreed.

For political factors, students were asked on the question "Political ideology on ICT". With this, responses from KNUST revealed 65(47.1%) who strongly agreed as compared to 25(37.3%) from AMMUSTED who also strongly agreed. Another factor was 'Government policies on ICT' and with this, students from KNUST, 71(51.4%) answered strongly agreed whilst in AMMUSTED, 27(40.2%) strongly agreed.

The final factors were economic factors, and with that, students were asked whether 'cost of ICT facilities and services' could influence the level of use of ICTs by students and instructors for distance studies. With this, students from KNUST 48(34.7%) strongly agreed. In AMMUSTED,

19 (28.3%) also indicated strongly agree. Another factor on economic thus 'Resource availability on ICT' influencing the use of ICT. KNUST 57(41.3%) responded strongly agree whilst in AMMUSTED, 22(32.8%) also strongly agreed.

In tandem with the findings, key attention should be paid to the aforementioned factors in order to enhance the use of ICT amongst distance education students in the two universities.

Factors	Institution	Frequency	Percentage		
Socio-cultural factors					
Cultural influence in the use of ICT	KNUST	39	28.2		
	AMMUSTED	14	20.8		
Attitude and ideological influence in ICT	KNUST	33	23.9		
	AMMUSTED	16	23.8		
Technological factors					
Quantity of facilities and services	KNUST	48	34.7		
	AMMUSTED	51	76.1		
Technological Advancement by tutors and	KNUST	44	31.8		
students					
	AMMUSTED	28	41.7		
Political factors					
Political ideology on ICT	KNUST	65	47.1		
	AMMUSTED	25	37.3		
Government policies on ICT	KNUST	71	51.4		
	AMMUSTED	27	40.2		
Economic factors					
High cost of ICT facilities and services	KNUST	48	34.7		
	AMMUSTED	19	28.3		
Resource availability on ICT	KNUST	57	41.3		
	AMMUSTED	22	32.8		

Table 4: Factors Influencing the Use of ICTs

## **Challenges of Utilization and Accessibility of ICTs**

The utilization and accessibility of ICTs for distance education are impeded by certain challenges. These challenges could be intrinsic or extrinsic. The study therefore investigated into the specific challenges facing students in their utilization and accessibility to ICT facilities and services for their distance studies. The section talks about the challenges both intrinsic and extrinsic in nature.

Intrinsic challenges are associated with the difficulties associated with individuals' use of ICT. Whilst the extrinsic challenges are associated with a system or the entire institution. The responses based on 'strongly agree' from the respondents concerning the challenges have been espoused in Table 5.

As indicated in Table 5, in relation to intrinsic challenges, students revealed several challenges. However, one intrinsic challenge was 'ICT is complicated and needs special skills. Of this, students from KNUST, 45(32.6%) strongly agreed, whilst in AMMUSTED, 27(40.3%) strongly agreed.

Regarding the statement 'Tutors and students' resistance to change' of this, 35(25.4%) of students from KNUST strongly agreed. In AMMUSTED, 19(28.4%) Strongly agreed with this statement.

In relation to the statement 'Difficulties in the integration of ICT in course delivery,' Results from KNUST indicated 20(14.5%) Strongly Agreed, whilst in AMMUSTED 11(16.4%) Strongly agreed. Another intrinsic challenge as 'Unprofessional ICT tutors. With this, 32 (23.1%) strongly agreed with KNUST, whilst in AMMUSTED 19 (28.4%), also strongly agreed.

Last on the intrinsic challenge is the statement 'Limited time to explore emerging technologies' Responses among the institutions were KNUST, 120(87.0%) strongly greed, and in AMMUSTED 50(74.6%) also Strongly Agreed.

Among the extrinsic challenges, one of the challenges was 'limited facilities and services. Responses indicated that KNUST 45(32.6%) strongly agreed, whilst in AMMUSTED 21(31.3%) also strongly agreed.

Another statement on extrinsic challenge thus 'Difficulties with technical hitches' Responses include 27(20.0%) strongly agreed with KNUST, and 14(20.9%) strongly agreed from AMMUSTED. Finally, with 'High cost of ICT tools' Responses indicate from KNUST, 40(29.0%) strongly agreed, whilst in AMMUSTED 15(22.4%) strongly agreed.

Challenges	Institution	Frequency	Percentage	
Intrinsic challenges				
ICT is complicated and needs special	KNUST	45	32.6	
skills	AMMUSTED	27	40.3	
Tutors and students` resistance to change	KNUST	35	25.4	
	AMMUSTED	19	28.4	
Difficulties in integration of ICT in	KNUST	20	14.5	
course delivery	AMMUSTED	11	16.4	
Unprofessional ICT tutors	KNUST	32	23.1	
	AMMUSTED	19	28.4	
Limited time to explore emerging	KNUST	120	87.0	
technologies	AMMUSTED	50	74.6	
Extrinsic challenges				
Limited ICT facilities and services	KNUST	45	32.6	
	AMMUSTED	21	31.3	
Difficulties with technical hitches	KNUST	27	20.0	
	AMMUSTED	14	20.9	
High cost of ICT tools	KNUST	40	29.0	
	AMMUSTED	15	22.4	

Table 5. Challenges faced in the Utilization and Accessibility of ICT

## **Conclusions and recommendations**

The study concludes that the usefulness of ICTs for distance education from both institutions gives them some sort of autonomy for students in their education, induced presentation, demonstration, drill and practices, interaction and collaboration with instructors, ensured variety and change in accommodating different learning styles, eliminated socio-economic, politico-cultural and geographical imbalances. This affected the quality of education, increased information accessible to students and assisted them in trying new strategies, thinking, and creativity, strengthened instructor-students communication, and enhanced the acquisition of skills. It also provided challenging and authentic content that compels and engages students throughout the learning process, induced internet surfing for information, ensured access to a wide range of resourceful persons including experts, researchers, professionals, and friends, and enhanced students' performance. The study further concluded on diverse factors categorized into socio-cultural, technological, political, and economic as factors influencing the drive towards ICTs in distance education. The main factors included knowledge, beliefs, arts, morals, traditional laws and customs, level of technological development, perceptions and attitudes, and the cost involved in the use of ICTs. These among others were seen to have an influence on the use of ICTs for distance education.

It was also deemed worthy to ascertain the challenges faced by students in the utilization and accessibility of ICTs for distance education. It was confirmed that some key challenges which were grouped primarily into intrinsic and extrinsic problems. The intrinsic problems identified in the study were that ICT is complicated and the resistance to change by students and instructors. The extrinsic problems were the limited ICT facilities and services, technical hitches and their difficulties and huge cost involved in the use of ICT as the students indicated. The study recommended that these universities should invest into contemporary ICT infrastructure to aid the new generation of distance students with diverse theoretical models that are of ease of use by the distance students.

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